

North West & North Wales Coastal Group

North West England and North Wales Shoreline Management Plan SMP2

Appendix E - Issues and Objectives Evaluation

Contents Amendment Record

This report has been issued and amended as follows:

Issue	Revision	Description	Date	Approved by
1	0	Draft for client review	22 August 2008	A Parsons
2	1	Draft Final	17 March 2009	A Parsons
3	2	Consultation Draft	1 October 2009	A Parsons
4	0	Final	31 August 2010	A Parsons

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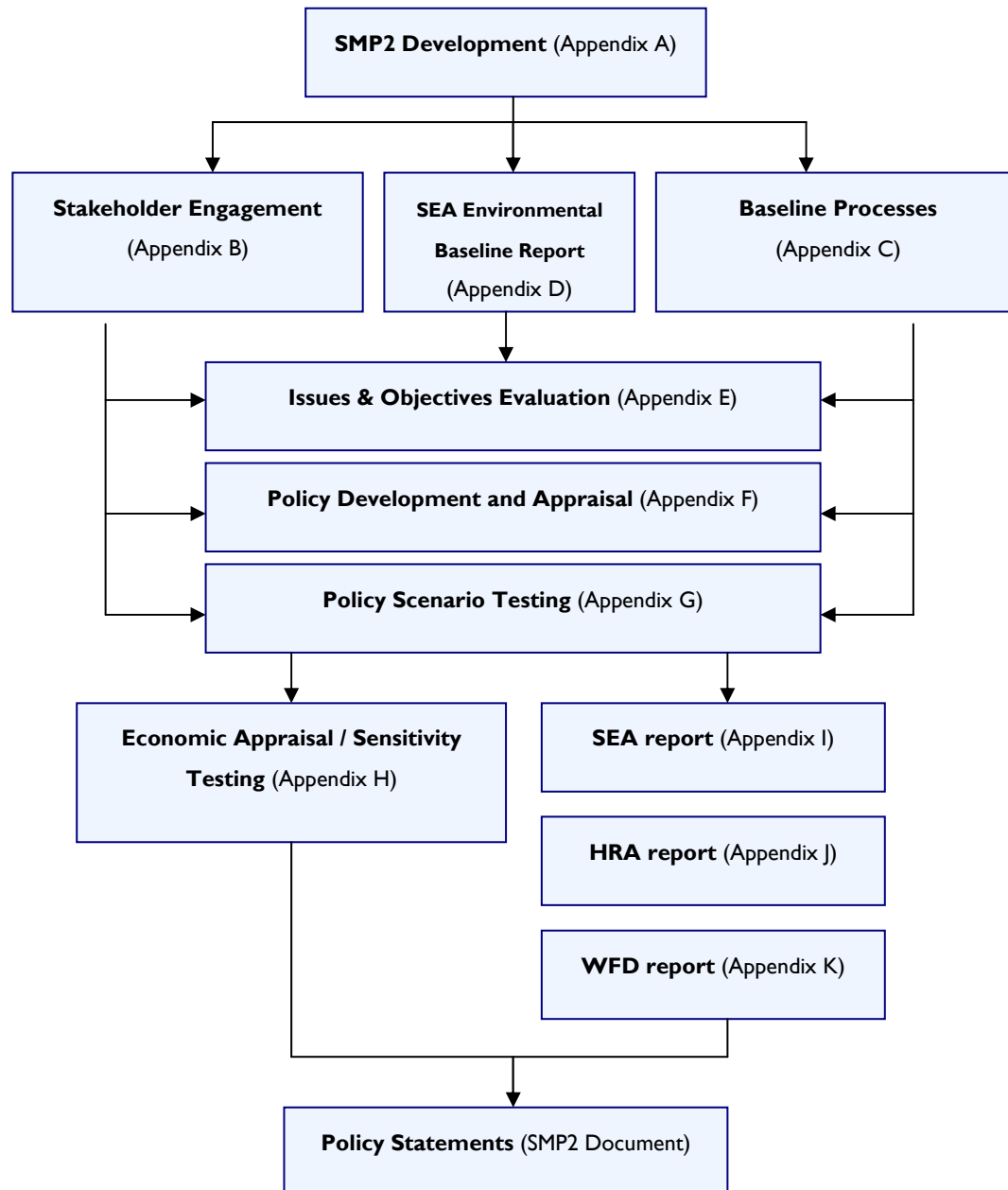
The Supporting Appendices

These appendices and the accompanying documents provide all of the information required to support the Shoreline Management Plan. This is to ensure that there is clarity in the decision-making process and that the rationale behind the policies being promoted is both transparent and auditable.

The appendices are:

A: SMP2 Development	This reports the history of development of the SMP2, describing more fully the plan and policy decision-making process.
B: Stakeholder Engagement	All communications from the stakeholder process are provided here, together with information arising from the consultation process.
C: Baseline Process Understanding	Includes baseline process report, defence assessment, NAI and WPM assessments and summarises data used in assessments.
D: SEA Environmental Baseline Report (Theme Review)	This report identifies and evaluates the environmental features (human, natural, historical and landscape).
E: Issues & Objectives Evaluation	Provides information on the issues and objectives identified as part of the Plan development, including appraisal of their importance.
F: Policy Development and Appraisal	Presents the consideration of generic policy options for each frontage, identifying possible acceptable policies, and their combination into 'scenarios' for testing. Also presents the appraisal of impacts upon shoreline evolution and the appraisal of objective achievement.
G: Policy Scenario Testing	Presents the policy assessment and appraisal of objective achievement towards definition of the Preferred Plan (as presented in the Shoreline Management Plan document).
H: Economic Appraisal and Sensitivity Testing	Presents the economic analysis undertaken in support of the Preferred Plan.
I: Strategic Environmental Assessment (SEA) Report	Presents an overview of the environmental assessment process and shows how the requirements of the EU Council Directive 2001/42/EC (the Strategic Environmental Assessment Directive) are met.
J: Habitats Regulations Assessment	Presents an assessment of the effect the plan will have on European sites.
K: Water Framework Directive Assessment	Presents the Water Framework Directive assessment of the potential hydromorphological changes and consequent ecological impact of the preferred SMP2 policies.
L: Metadatabase and Bibliographic database	All supporting information used to develop the SMP2 is referenced for future examination and retrieval.

Within each appendix cross-referencing highlights the documents where related appraisals are presented. The broad relationships between the appendices are illustrated below.



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EI Assessment of Issues and Objectives

EI.1 Introduction

In order to develop policies, there needs to be a clear understanding of the issues and objectives that will need to be addressed by future shoreline management. This report identifies the key issues and objectives for the coast between Great Orme's Head, in North Wales and the Scottish Border and should be read in conjunction with the SEA Baseline Report - Theme Review (see **Appendix D**).

EI.1.1 Identification of features and issues

Features and related coastal erosion and flood risk issues were identified using the SEA Baseline Report (Theme Review - see **Appendix D**) and information gathered as part of the Initial Consultation exercise and during stakeholder meetings. The identification of key issues is therefore based on information made available to us at the time of writing this document. The tables also include a summary of key considerations for each region, which defines the key characteristics of an area and identifies potential areas of conflict, which will need to be considered when developing policies.

The inland boundary of the SMP2 has been taken to be 1km inland of the coastline between Great Ormes Head, North Wales and the Scottish border, modified to include major estuaries and the whole indicative coastal flood risk zone where this extends further inland.

The coast has been sub-divided into 21 sections:

- A - Great Orme to Little Orme
- B – Little Orme to Point of Ayr
- C – Dee Estuary
- D – Hilbre Point to Perch Rock
- E – Mersey Estuary
- F – Seaforth to Southport Pier
- G – Ribble Estuary, including the Rivers Douglas and Crossens
- H – Lytham Jetty to River Wyre
- I – Wyre Estuary
- J – Knott End-on-Sea to Heysham
- K – Lune Estuary
- L – Heysham to Roa Island
- M – Kent Estuary
- N – Leven Estuary
- O – Walney Island
- P – Duddon Estuary
- Q – Hodbarrow Point to St Bees Head

- R – Ravenglass Estuary complex, including the Rivers Irt, Mite and Esk
- S – St Bees Head to Grune Point
- T – Moricambe Bay, including the Rivers Wampool and Waver
- U – Cardurnock to the Scottish Border, including the Rivers Eden and Esk

El.1.2 Definition of objectives

The setting of objectives helps to ensure both clarity and consistency across the Shoreline Management Plan (SMP2) area, whilst the identification of why a feature is important and any potential issues associated with coastal erosion and flooding, helps us to understand how an objective may be achieved.

An objective defines a target or goal that the SMP2 aspires to in delivering the plan. However, it is important to understand that quite commonly there are conflicting objectives for a particular stretch of coast. Therefore it is likely that not all objectives will be or can be achieved at every location but the aim of the SMP2 is to seek to provide a balanced plan, which considers people, nature, historic and socio-economic realities.

Using the Defra Shoreline Management Plan Guidance (2006¹), Strategic Environmental Assessment (SEA) guidelines and through internal discussions, a list of objectives was developed and, using the issues identified, appropriate objectives were defined for each feature. Those objectives which relate to statutory requirements are shown in **bold text**.

The objectives defined in Table I cover broad 'high level' features that may influence policy decisions in coastal management and that can be used to adequately assess policy options. Some assets such as those associated with commercial dredging activities are unlikely to be affected by policy decisions in coastal management, and are therefore excluded from the Table I below.

El.1.3 SMP2 Objectives

Table I shows the generic SMP2 objectives that were defined for the SMP2 following the identification of key assets and features within the plan area (and following the scoping out of SEA receptors not relevant to the SMP2). These objectives will provide a framework to develop and appraise sustainable policies in relation to risks from coastal flooding and erosion.

Table I SMP2 Objectives

Objective	Features covered by the objective (following scoping)
To minimise coastal flood and erosion risk to people and residential property	Houses Community
To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	Key vulnerable community facilities (e.g. surgeries, hospitals, aged persons homes, schools, shops, churches, libraries, universities etc) Key amenity facilities (e.g. public open space etc) Key recreational facilities (e.g. golf courses, bathing

¹ Defra, 2006. Shoreline Management Plan Guidance. Volume 1: Aims and Requirements. Volume 2: Procedures. Available from: <http://www.defra.gov.uk/environ/fcd/guidance/SMP2.htm>

Objective	Features covered by the objective (following scoping)
	beaches, formal promenades, national cycle routes, Country Parks, Public Rights of Way, Castles and Forts etc) Access to community/amenity facilities
To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	Shops, offices, businesses, factories, warehouses, areas identified for regeneration, caravan parks, airports, stone and mineral extraction sites, military establishments and others key areas of employment
To minimise the impact of policies on marine operations and activities	Ports and harbours, Boatyards Moorings, Yacht and Sailing Clubs Ferry routes and waterways Coastguard, lifeboat and lifeguard. Access to the sea and navigation Commercial fishing grounds and shell fisheries (e.g. Shellfish Harvesting Areas)
To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	A, B and minor roads (where linkage is a key issue) Railway lines and stations Airfields and aerodromes International airports Pumping stations, sewage works, wind turbines, landfills, quarries, existing power generating facilities (e.g. windfarms) , sub-stations Access for emergency services
To support natural processes and maintain geological exposures throughout nationally designated geological sites	Geological Site of Special Scientific Interest (SSSIs)
To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain / achieve favourable condition of their interest features (habitats and species)	Special Protection Areas (SPAs), Special Area of Conservation (SACs), Ramsar Sites and Marine Protected Areas
To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	Site of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs)
To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	Local Nature Reserves (LNRs) RSPB reserves Regionally Important Geological Sites (RIGS) & Geological Conservation Review sites (GCR)

Objective	Features covered by the objective (following scoping)
	There is also a generic statutory duty (Natural Environment and Rural Communities Act 2006) to have regard for the conservation of biodiversity which applies to all public bodies and which extends beyond designated sites.
To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats	National BAP habitat, local BAP habitat
To manage and minimise risk of pollution from contaminated sources	Historic and active landfill sites, major industry and hazardous waste sites, anecdotal evidence of disused mines, potentially contaminated land, designated bathing water, surface and ground water
To maintain and enhance features as a natural flood defence	Beaches Dune systems
To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.	World Heritage Sites Scheduled Monuments (SM) (England and Wales) Registered Parks and Gardens Listed Buildings Conservation Areas Non-designated archaeology that has been identified by archaeologists as nationally important
To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	Changes in landscape character and views within: Areas of Outstanding Natural Beauty (AONB) National Parks Heritage Coasts
To minimise coastal flood and erosion risk to agricultural land and horticultural activities	Grades I – 3A Farmland
To minimise coastal flood and erosion risk to MoD ranges.	Ministry of Defence sites (including UK disposal sites, Core sites and Firing Ranges)

NB. With regard to the statutory nature conservation designation objectives, there is considerable scope for overlap (eg. an LNR could also be a SPA, SAC, Ramsar site or SSSI). Where this occurs, sites are listed together and both objectives are included.

El.1.4 Links to other plans and projects

The SMP2 represents the first ‘tier’ in the strategic coastal erosion and flood risk management process, providing the overall framework within which more detailed assessments of flood and erosion risk, such as strategy plans and coastal management schemes, can be carried out. These assessments cover smaller areas and so are generally better able to address local features of importance and local issues.

Planning

The SMP2 process aims to achieve an integrated approach to coastal management. The SMP2 's relationship with the land use (spatial) planning process is particularly important with links to both regional spatial strategies and local development frameworks (see the Theme Review Appendix).

Catchment Flood Management Plans (CFMPs)

The SMP2 boundaries overlap with the boundaries of a number of adjacent CFMPs and therefore some interests and issues of concern may expand across both plans. The SMP2 overlaps with the following CFMPs:

Conwy and Clwyd

River Dee

Mersey

Wyre

Eden

Derwent

SW Lakes

Kent and Leven

Lune

Ribble

Douglas

Alt and Crossens

EI.2 COASTAL UNIT A – GREAT ORME TO LITTLE ORME

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Llandudno	<p>An important tourist resort supporting a range of tourist attractions, accommodation, shops, recreational and tourist facilities as well as residential and community properties. The promenade and picturesque beach front properties, where many hotels are located, are an important attraction for tourists, which being located along the coast are therefore at higher risk.</p> <p>The town is situated on low lying ground. The topography of the town means that some areas away from the promenade are at equivalent risk of flooding - in particular Mostyn Street (the main shopping street) and Lloyd Street and their surroundings.</p> <p>The Orme and land to the south of Llandudno is higher ground.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>This section of coast is characterised by the limestone headlands of Great Orme's Head and Little Orme's Head which enclose the sweeping sandy bay of Llandudno Bay. The isolated, self-contained bay has little interaction with adjoining coastlines. Sediment movement from the west to east is limited by Little Orme's Head.</p> <p>Both headlands are of geological value and therefore a key consideration will be the conservation of these assets. This should not be an issue because these headlands are undeveloped.</p>
Infrastructure	<p>The A470 is the main route into and out of Llandudno and joins the A55, which forms part of the TEN-T, which provides the primary link between North Wales and the North West of England. B5115 (North shore promenade) and Maedu Avenue / Bryniau Road are also significant routes into the town, Flooding of B5115 along the coast could be a significant issue.</p> <p>Llandudno Station and Deganwy Station are both located on the North Wales Coast Railway Line, which is the primary route connecting North Wales to the North</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>A key driver within the bay will be the continued protection of Llandudno and the link roads (A546 and B5115), while maintaining the recreation beach and local tourism attractions.</p>

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	West of England. Flooding of these primary road and rail routes would compromise their operation. Other key infrastructure and services such as the hospital and RNLI lifeboat station could be affected by flooding and/or erosion.		
Community Facilities	Llandudno General Hospital, Fire Station, Ambulance Station, Town Hall and several schools are all located in Llandudno in close proximity to the coast in an area at risk from tidal flooding, which could have a detrimental impact on the operation of the facilities. Local sports facilities in the area include The Oval (cricket ground), new Swimming Pool, Football Ground, Bowling Greens and Tennis Courts. Other recreational facilities include the Theatre, a number of children’s playgrounds, park areas and paddling pools.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Beaches	There are two beaches at Llandudno, North Shore and West Shore. The beach not only acts as an amenity resource, but also has an important defence role. Stabilisation of the upper beach may be an issue in the future as sea levels rise.	To maintain and enhance the feature as a natural defence. To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds. The continuation of natural processes is important on this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and	

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
		species)	
Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC	Noted for its sandbanks (covered by seawater at all times) sandflats, mudflats and reefs. Anthropogenic activities including, construction of coastal defences and offshore aggregate dredging could cause disturbance to the European habitats and disrupt physical processes essential for the maintenance of these habitats.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Coedwigoedd Penrhyn Creuddyn / Creuddyn Peninsula Woods SAC	Noted for its broad-leaved deciduous woodland of slopes, screes and ravines. The net area of this site could be reduced by coastal erosion.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Great Orme`s Head / Pen y Gogarth SAC & SSSI (biological)	Noted for its European dry heath and semi-natural dry grassland and scrubland, maritime cliff vegetation and a mixture of other plant communities and habitats. The site also supports a nationally important breeding sea bird colony. The continuation of natural process is important at this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Great Orme`s Head / Pen y	Significant for its Carboniferous Limestone, inland outcrops, disused quarries and the Great Orme Copper	To support natural processes and maintain geological exposures throughout nationally	

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Gogarth SSSI (geological)	Mines. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	designated geological sites	
Criegiau Rhwledyn / Little Ormes Head SSSI (biological)	The limestone supports calcicolous grassland communities & the cliff, rock and quarry outcrops support a mixture of coastal habitats. The site also supports a nationally important population of breeding cormorant. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Criegiau Rhwledyn / Little Ormes Head SSSI (geological)	The site is of importance for its Carboniferous stratigraphy. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Aber Afon Conwy SSSI	A coastal plain estuary of special interest for its marine and terrestrial invertebrate biology. Any changes to coastal evolution could affect this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Great Orme, Deganwy Quarries & Little Orme GCR Sites and Little Orme	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Thrust, Little Orme, Llandudno North Sea, Great Orme, Landudno (Marcham) & Great Orme Head RIGS			
Conwy BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	Up to 13 Scheduled Monuments are present within this unit, and range in date and type from prehistoric burial mounds, hut circles and copper mines to medieval defensive monuments. Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.	
Great Orme Heritage Coast	Valued as an important feature of the landscape.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	
Tourism	The town of Llandudno is the major settlement in the coastal zone and forms one of a number of tourist resorts along the north Wales coastline. The town and seafront dominate much of the coastal zone, although there Great Orme's Head is a significant visitor 'magnet' for tourists, based on its natural beauty.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities. To minimise coastal flood and erosion risk to people and residential property	

COASTAL UNIT A – GREAT ORME TO LITTLE ORME			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
		To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Llandudno Pier and promenade	Locally important tourist features. The beach and prom are a popular location for tourists, as well as being a historic characteristic of the town. Access to the sea for private yachts/boats should be maintained.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities. To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Golf Courses	Two golf courses, Maesdu Golf Course and the North Wales Golf Club are situated in Llandudno. Both are located along the western shoreline of Llandudno, and would be adversely affected by coastal erosion / flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 5 agricultural land. There are some pockets of Grade 2 and non agricultural land.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
The North Wales Path	The North Wales Path winds for 60 miles along the coast from Bangor to Prestatyn, mostly along public footpaths The route is very popular and is an important tourist and recreation attraction.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	

EI.3 COASTAL UNIT B – LITTLE ORME TO POINT OF AYR

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Penrhyn Bay and Rhos on Sea	<p>A large number of coastal properties in Penrhyn Bay are at risk from coastal erosion. However, residential properties in the southeast of Penrhyn Bay and in Rhos on Sea are at particular risk from tidal flooding. Rhos-on-Sea also has shops within the area of coastal flood risk which are popular with tourists.</p> <p>Penrhyn Bay sewage pumping station is also in the coastal flood risk zone.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>This stretch of the coastline includes the settlements of Colwyn Bay, Abergele, Rhyl and Prestatyn, as well as the Clwyd Estuary. This section consists of a large embayment bounded by Little Orme and the Point of Ayr. To its western end, the embayment is characterised by a series of gently curved cusped bays that are held in position by a number of headlands, and to the centre and east, the coastline sweeps in a north-easterly direction to the mouth of the Dee Estuary.</p>
Colwyn Bay	<p>This is a tourist destination as well as a commercial centre with a local function. Most of the town centre is set back from the coast on slightly higher ground. The key issue with Colwyn Bay is the A55 and railway running close to the promenade. Colwyn Bay beach, pier and promenade are popular tourist areas and are particularly popular for watersport and fishing activities.</p> <p>The coastal flood risk area includes Eirias Park, which includes sub-regionally important sport and leisure facilities and Llandrillo College are at risk of tidal flooding.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>There are numerous conservation designations along the frontage, with the eastern boundary part of the Dee Estuary Special Protection Area, Ramsar site and Marine Protected Area. This is to conserve the extensive tidal flats and protect the numerous waterfowl that use the habitat. The Dee Estuary pSAC, pSPA and pRamsar designation, however, extends to Prestatyn and includes the sand dune habitats at Gronant and Talacre Warren.</p>
Llanddulas	<p>Llanddulas lies between Old Colwyn and Abergele. There are a number of coastal caravan parks along this frontage.</p> <p>Two limestone extraction quarries are located</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>Development extends along much of</p>

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	above the cliff tops at Llanddulas. (the cliff is unstable). The extracted rock is transported down to the shore and is loaded direct to ships for transport.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	this frontage, with the A55 and A548 as important link roads. The railway line also runs along the coast for most of this section. A potential area of conflict may be the continued protection of these important tourist and economic areas, from erosion and flooding, whilst enabling natural processes to continue. The Point of Ayr at the mouth of the Dee is reliant upon both longshore drift and sand from the west and interactions with the offshore banks of the Dee Estuary. Any changes to these could affect the environmental integrity of the site. The shingle feature at Gronant is also an important physiographic feature.
Abergele / Towyn / Pensarn / Kimmel Bay	Residential and commercial properties, transport infrastructure, key community infrastructure and significant commercial tourism facilities in this low-lying area are at particular risk from tidal flooding. - Towyn suffered from widespread flooding in 1990. The area has a significant number of holiday caravan sites along the coast. Within Kimmel Bay tourism is an important element, with around 53,000 bed spaces in the area.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Rhyl / Prestatyn	These popular tourist resorts host a wide range of tourist destinations, as well as residential and commercial properties and community facilities. The whole resort lies on the low lying coastal flood plain and is at flood risk. Tourism in Prestatyn and District is extremely successful-it attracts the typical north Wales tourist- the “caravaner” from north west England and the Midlands and the day tripper. The main attractions without doubt are the sea and the extensive beach. It offers a unique experience: beach, seaside, sand dunes. Key facilities such as railway stations, Police Stations, Court House and several schools, as well as community infrastructure such as sewage treatment works and electricity sub-stations etc are	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>at risk from tidal flooding.</p> <p>There are also a number of public and private redevelopment projects underway in the area, including upgrading the harbour and developing a new marina at West Rhyl.</p> <p>The cable landfall from the North Hoyle Wind farm is at Rhyl.</p>		
Infrastructure	<p>The A55 forms part of the trunk road network linking the coastal towns, as well as part of the Trans European Network (TENs) through to Ireland, which seeks to secure important European routes. The road runs close to the shore west of Abergele through to Colwyn Bay and would be at risk of flooding and erosion. Promenade roads are key to much of this unit and the closure of these roads due to wave overtopping can have a key impact on other routes in the area. This is particularly noticeable at the Old Colwyn end of Colwyn Bay promenade which is regularly affected by overtopping.</p> <p>The train line runs adjacent to the coast through much of the area and would be at risk of erosion and flooding.</p> <p>Pensarn sewage pumping station is also in the coastal flood risk zone.</p>	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Minerals/Waste	Two limestone extraction quarries are located above the cliff tops at Llanddulas. (the cliff is unstable). The extracted rock is transported down	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>to the shore and is loaded direct to ships for transport. The loading facilities could be affected by any changes to the coastline. Only one jetty is currently in use for ship movement of limestone aggregate. The other jetty is disused and this quarry is currently used for landfill.</p> <p>There are two tip sites in low lying areas, Morfa Tip Site, West Rhyl and the former tip site in Tip Lane, Prestatyn. There is also a Landfill at the bottom end of the Clwyd located on the right had bank</p>	<p>assets and activities.</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Offshore Wind Farms	<p>North Hoyle windfarm is operational, Rhyl Flats is currently under construction and Gwynt y Mor is currently under consideration.</p> <p>Cabling from Rhyl Flats Wind Farm crosses the beach at Kinmel Bay and Gwynt y Mor is proposed to have cable crossings in a similar area, which may affect future shoreline evolution in this area.</p>	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Offshore Dredging	There are two active, licensed dredging areas located offshore.	To minimise the impact of policies on marine operations and activities	
Beaches	<p>The beach not only acts as an amenity resource, but also has an important defence role along this frontage.</p> <p>Stabilisation of the upper beach may be an issue in the future as sea levels rise.</p>	<p>To maintain and enhance the feature as a natural defence.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Clwyd Estuary	At the coast, the Afon Clwyd flows north eastwards along the Rhyl frontage for about a kilometre before being trained seawards across the wide sand	To manage risk of flooding / erosion to key community, recreational and amenity facilities.	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	foreshore and sand dunes. The mouth is limited by spits that have been largely built over. Human pressures are forcing the low sand dunes at Horton's Nose on the western bank of the Clwyd Estuary to erode.		
The Dee Estuary / Aber Dyfrdwy SPA & Ramsar, The Dee Estuary / Aber Dyfrdwy SAC, The Dee Estuary / Aber Dyfrdwy SSSI & Gronant Dunes & Talacre Warren SSSI	<p>Noted for its sandflats, mudflats, Atlantic salt meadows, Salicornia beds, transitional habitats and individual species.</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds.</p> <p>Gronant Dunes & Talacre Warren constitutes the only significant remnant of what was once an extensive dune system along the north coast of Wales. The presence of breeding little terns (an Annex I species) on the beach at Gronant should be noted. This is the last remaining site for the species in Wales, and their preference for occupying this beach location makes them vulnerable to coastal change and management of the coast. The landscape value of this site is also greatly valued, as much of the North Wales coastal landscape has been significantly degraded over the years.</p> <p>Construction of coastal defences could cause disruption to physical processes essential for the maintenance of these habitats. The SAC includes reference to Annex I habitat of drift line vegetation and sand dunes which are reliant upon continuation of natural sediment transport processes.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds. The continuation of natural processes is important on this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Y Fenai a Bae Conwy / Menai Strait and Conwy Bay SAC	Noted for its sandbanks (covered by seawater at all times) sandflats, mudflats and reefs. Construction of coastal defences could cause disturbance to the European habitats and disrupt physical processes essential for the maintenance of these habitats.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Coedwigoedd Penrhyn Creuddyn / Creuddyn Peninsula Woods SAC	Noted for its broad-leaved deciduous woodland of slopes, screes and ravines. The net area of this site could be reduced by coastal erosion.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Dee Estuary proposed SPA, and Ramsar	The Dee Estuary pSPA and pRamsar Site extends to Prestatyn. The sand dune habitats at Gronant and Talacre warren are classified features. The shingle feature at Gronant is also both an important physiographic feature but also is an integral part of the Dee Estuary as it is a breeding site for Wales' only little tern colony as well as being an important high tide waterfowl roost	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Traeth Pensarn SSSI	Of special botanical interest for its vegetated shingle beach plant communities.	To avoid adverse impacts on, conserve and where practical enhance the designated	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Construction of coastal defences could cause disruption to physical processes essential for the maintenance of these habitats.	interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Criegiau Rhwledyn / Little Ormes Head SSSI (biological)	The limestone supports calcicolous grassland communities & the cliff, rock and quarry outcrops support a mixture of coastal habitats. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Criegiau Rhwledyn / Little Ormes Head SSSI (geological)	The site is of importance for its Carboniferous stratigraphy. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Little Orme GCR Site and Cefn yr Ogof Cave, Prestatyn Hillside Quarries, Splash Point, Rhyl, Gwespyr Quarry & Pentre Qaurry & Gronant Borehole RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Conwy, Denbighshire & Flintshire BAPs	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Clwydian Range AONB	Open heather moorland, small hedged fields and coppice woodland. In places limestone rock	To conserve and enhance nationally designated landscapes in relation to risks	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>outcrops are exposed in attractive wooded escarpments and on the fringes of the area highly fertile farmland gives a soft pastoral foreground to the hills.</p> <p>The AONB aims to conserve these and other features by helping to guide & manage change.</p>	<p>from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives</p>	
Heritage features	<p>11 Scheduled Monuments are present within this unit and relate to the medieval settlement of Prestatyn and the defence of this and the surrounding area, which includes Rhuddlan Castle. Prehistoric remains are also recorded as is a post medieval chapel. Two Registered Parks and Gardens and 14 Conservation Areas were also recorded within this unit</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The coastal zone is comprised of a number of resorts along the coast which form an urban linear strip along the coast. The resorts of Prestatyn, Rhyl, Abergele and Colwyn Bay form the major urban resorts which rely on the seafront as major generators of income from visitors. The zone contains a large number of holiday and caravan parks, many of which are located in close proximity to the sea.</p> <p>The urban areas retain an important link to the Snowdonia National Park as well as being easily</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	

COASTAL UNIT B – LITTLE ORME TO POINT OF AYR			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	accessible to large conurbations, such as Chester and Liverpool.		
Golf Courses	<p>Abergele Golf Club is located inland and is protected in effect by the A55, but could be affected by flooding. Rhos on Sea Golf Club is in a low lying area on the coast and would be affected by erosion and flooding.</p> <p>Further, Prestatyn Golf Club, located to the east of Prestatyn and Rhyl Golf Course are both at risk of flooding.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Agricultural Land	Low lying land to the south of Abergele is used for agricultural purposes, and is high grade (Grade 2).	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
The North Wales Path / Offas Dyke Path / National Cycle Route 5	<p>The North Wales Path winds for 60 miles along the coast from Bangor to Prestatyn, mostly along public footpaths. The route is very popular and is an important tourist and recreation attraction.</p> <p>Offas Dyke Path is a national trail that extends inland, starting from the coast at Prestatyn.</p> <p>National Cycle Route 5 also runs along the coast throughout this unit and is vulnerable to both erosion and coastal flooding on certain sections.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	

EI.4 COASTAL UNIT C – DEE ESTUARY

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Flint/Shotton/Connah's Quay	The towns of Flint – Connah's Quay area contain a number of residential properties as well as a large number of industrial employment sites. The industrial sites are largely focussed around Flint/Queensferry/Shotton. Key facilities including waste water treatment plants are on the coastal plain	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	The Dee Estuary is a single spit enclosed estuary, with a wide mouth characterised by several channels and sandbanks, and the small rounded spit of the Point of Ayr on the western bank. There is heavy industrial use within the estuary, with gas-fired power stations at Deeside and Connahs Quay, and the British Aerospace Factory in Chester, and large urban areas, including the city of Chester. Navigation and associated maintenance dredging is an important issue within the estuary, not just for industry but also for recreation. The railway and A548 extend along the western bank. These are interspersed with agricultural land and historical remains ranging from pre-historic, to extensive medieval structures at Chester and remnants of Roman settlements.
Chester	Chester is a major city within the north west region, with an important business and tourism function. The city acts as a hub for surrounding residential areas. Many international/HQ-type business centres are located here, on the gateway to Wales. The city also has an important tourism function, not least due to its Roman history. Chester is recognised for its archaeological and architectural heritage assets. The Chester to Shropshire union canal enters the River Dee at Chester. The integrity of Chester Weir is important. It was originally built for amenity but it does produce Hydro electricity. There would be implications on flood defence if it were to collapse.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.	
Neston and Heswall	The settlements of Neston and Heswall contain significant numbers of residential properties together with associated infrastructure and facilities. Although these settlements are generally set on higher ground, there are significant numbers of properties within the coastal / tidal flood risk zone. There are also key community infrastructure	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	There are numerous conservation designations along the frontage, with the Dee Estuary designated a Special Protection Area, Ramsar site, Special Area of Conservation and Site of

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	facilities such as Neston and Heswall Sewage Treatments Works and Neston School.		<p>Special Scientific Interest protecting the extensive tidal flats and protect the numerous waterfowl that use the habitat. Large sections of the tidal flats are shell fisheries harvesting areas.</p> <p>Key considerations are that any management changes to the estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also adjacent coasts.</p> <p>Subsequent changes in erosion / accretion of fringing saltmarshes will affect management decisions. Changes will also affect designated areas which cover both saltmarsh and intertidal areas. Designations will also be potentially affected by changes in management of the River Dee (up to Chester).</p>
West Kirby	<p>West Kirby contains a significant number of residential and commercial properties as well as recreational / amenity / tourist facilities. There are flooding and wind blown sand issues along this frontage. Tidal flooding of the highway and gardens along South Parade occurs approximately 4 times / year.</p> <p>West Kirby Marine Lake is an important amenity asset for water sports. The protection offered by the outer wall of West Kirby Marine Lake reduces the frequency of flooding at this location and for proposals for the regeneration of West Kirby,</p> <p>At West Kirby, issues also exist around the bathing water quality – and how it is affected by discharges from the United Utilities surface water outfall; and the management of the foreshore as an amenity area (it was previously granted ENCAMS Rural Beach Status).</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Hilbre Island	<p>Is one of three islands at the mouth of the Dee which form the Hilbre Islands Local Nature Reserve. Hilbre Island has a few properties and is nationally designated as part of the Dee Estuary SSSI.</p> <p>Hilbre Island is a key feature in terms of Heritage, nature conservation, geological interest, coastal processes, coastal defence, recreation and</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve</p>	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>navigation.</p> <p>Within the Hilbre Island archipelago concerns exist around the erosion of Little Eye and the loss of heritage and amenity features. Elsewhere on Middle Eye and Hilbre similar concerns relate to the erosion of the sandstone cliffs and the impact this erosion has on amenity use (loss of asset and safety issues) and also loss of heritage, in particular the Listed Lifeboat Station and slipway on Hilbre Island. It is noted however that the eroding nature of the island is a key feature within the SSSI and SAC.</p> <p>With regard to coastal processes Hilbre Island acts as an anchor for East Hoyle Bank which affords protection to much of North Wirral. The position of the channel to the east of West Hoyle is also determined by the presence of the archipelago.</p>	<p>favourable condition</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Coastal villages and isolated coastal properties	A number of small settlements and isolated properties are located along the banks of the Dee Estuary and therefore may be prone to coastal erosion and flooding.	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Infrastructure	The A55, North Wales Coast Line and Wirral Line are the primary transport routes within this coastal section and form part of the TEN-T, and provide key linkages between North Wales and the North West of England. Flint and Shotton Station and West Kirby Station are both located on these lines. Significant flooding of these primary road and rail routes would compromise their safe operation. This	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise coastal flood and erosion risk to MoD ranges.</p>	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>section also includes the Bidston -Wrexham “Borderlands” line, which runs close to the saltmarshes around the MoD shooting Range/Deeside Industrial Park and crosses the River Dee at Shotton.</p> <p>There are sewage works at Queensferry and Chester which can have a detrimental effect on the water quality within the estuary.</p>		
Marine Operations and Services	<p>The Port of Mostyn has berth facilities for handling airbus A380 wings for the BAE factory at Hawarden as well as offshore windfarm construction facilities, dealing with windfarms as far away as the Solway Firth. As a result, the port has a significant support role in major projects in the North Wales area.</p> <p>West Kirkby Marine Lake is also located within this unit. The 52 acre lake is totally enclosed, mainly non-tidal, offering water sport activities.</p> <p>The integrity of training walls and maintenance of navigation channels within the Dee Estuary is an issue. Navigation needs to be maintained up to the Airbus Factory at Broughton so siltation in the canalised sections can be a problem. This can also affect the Port of Mostyn. Maintenance dredging to maintain the main navigational channel and access at Port of Mostyn, and the disposal of the arisings may have implications for recreational navigation.</p>	<p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Major Industry and Hazardous Waste	<p>There are several significant industrial facilities, which are located in the coastal flood risk zone..</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical</p>	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	These include Shotton steelworks, Shotton paper mill, Deeside Industrial Park and the British Aerospace Factory. In addition to the damage caused to the facilities by flooding there could potentially have a detrimental impact on the environment if left unprotected from coastal erosion or flooding.	services. To manage and minimise risk of pollution from contaminated sources	
Landfill sites	There are 2 historic landfill sites within the River Dee estuary. A number of other smaller historic and authorised landfill sites dot the coastline. Integrity of these industrial landfill frontages especially along the Welsh shoreline of the estuary will be an issue.	To manage and minimise risk of pollution from contaminated sources	
Energy Generation	Connah's Quay and Deeside are operational gas power stations located close to the bank of the River Dee where there is the potential for the sites to be affected by flooding. Both their intakes and discharges are at Connahs Quay. Further, Chester Weir produces a small amount of hydro-electric power. Maintenance of tidal flushing capacity between Oakenholt and Connah's Quay to meet power station cooling water requirements is an important issue.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
The Dee Estuary / Aber Dyfrdwy SPA & Ramsar, The Dee Estuary / Aber Dyfrdwy SAC, The	Noted for its sandflats, mudflats, Atlantic salt meadows, Salicornia beds, transitional habitats and individual species. Supports International assemblage of Annex I birds	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Dee Estuary / Aber Dyfrdwy SSSI, Mersey Narrows and North Wirral Foreshore potential SPA & Ramsar. North Wirral Foreshore SSSI	and regularly occurring migratory birds. on intertidal sand and mudflats, embryonic saltmarsh and man-made lagoons. Any changes to coastal evolution could affect this site. Currently, there are issues with regards to coastal defence works and there impact on coastal processes. The SAC includes reference to Annex I habitat of drift line vegetation and sand dunes which are reliant upon continuation of natural sediment transport processes.	species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds. The continuation of natural processes is important on this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Deeside and Buckley Newt Sites SAC Connah's Quay Ponds & Woodlands SSSI	Waterbodies created by the extraction of clay, sand and coal, as well as for agricultural purposes, provide breeding habitat for great crested newts and other amphibians plus broadleaved woodland. The net area of these sites could be reduced by coastal erosion.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Dee Estuary proposed	The Dee Estuary pSPA and pRamsar Site extends to	To support natural processes and maintain	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
SPA, and Ramsar	<p>Prestatyn. The sand dune habitats at Gronant and Talacre warren are classified features. The shingle feature at Gronant is also both an important physiographic feature but also is an integral part of the Dee Estuary as it is a breeding site for 'Wales' only little tern colony as well as being an important high tide waterfowl roost.</p> <p>Red Rocks SSSI forms part of the proposed Dee Estuary Ramsar Site. Inner Marsh Farm and Shotton Lagoons and Reedbeds SSSI's form part of the proposed Dee Estuary SPA and Ramsar Site.</p>	and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Red Rocks SSSI	<p>Sand dune system including a brackish dune slack and reedbeds. Natterjack toads and sandhill rustic moth also present.</p> <p>The net area of these sites could be reduced by coastal erosion.</p> <p>Red Rocks SSSI forms part of the proposed Dee Estuary Ramsar Site.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Dee Cliffs SSSI (biological)	<p>Designated for clay cliff and bank habitat, some marl pits which have a rich flora and fauna and an area of herb-rich neutral grassland.</p> <p>Local management issues include provision of access points across the eroding structures and also public safety issues at both the top and bottom of the cliffs.</p> <p>The net area of these sites could be reduced by coastal / cliff erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Dee Cliffs SSSI (geological)	An important site for the study of Late Devensian glacial deposits. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
The Dungeon SSSI (geological)	Small wooded ravine which shows a natural stream section through the Tarporley Siltstone Formation of the Mercia Mudstone Group, of Triassic age. Erosion is the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Heswall Dales SSSI	Dry heathland community, with damp heath and acidic marshy grassland developed along some of the natural water courses. The net area of these sites could be reduced by coastal / cliff erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Inner Marsh Farm SSSI	The site consists of a complex of open water and wetland habitats and is notified for its ornithological interest. It is worth noting that the Inner Marsh Farm SSSI will be supporting species from the adjacent/nearby Dee Estuary SPA, and are therefore functionally linked to the SPA, despite not being SPA designated themselves. This site could be at risk of salt water inundation. Inner Marsh Farm SSSI forms part of the proposed Dee Estuary SPA and Ramsar Site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Afon Dyfrdwy – River Dee SSSI (biological) River Dee and Bala Lake SAC	Designated for its range of river habitat types, saltmarsh transition habitats and a number of fish species, in particular an important salmonid population and migratory species that move between the river and the estuary (eg. Lamprey). Any changes to coastal evolution could affect this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Afon Dyfrdwy – River Dee SSSI (geological)	The geomorphological interest is upstream of Holt hence outside the SMP2 2 area. However the river is tide locked upstream as far as Holt at times and with predicted sea level rise there may be impacts on this site in future	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Shotton Lagoons & Reedbeds SSSI	The site is of special interest for its reedswamp vegetation, characterised by common reed and supports the largest Welsh breeding colony of common terns. It is worth noting that the Shotton Lagoons SSSI will be supporting species from the adjacent/nearby Dee Estuary SPA, and are therefore functionally linked to the SPA, despite not being SPA designated themselves. Any changes to coastal evolution could affect this site. Shotton Lagoons and Reedbeds SSSI forms part of the proposed Dee Estuary SPA and Ramsar Site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Inner Marsh Farm RSPB Reserve	30 ha of land at Inner Marsh Farm, where freshwater pools have been excavated, ditches re-profiled and wet grassland created. The site is designated as a SSSI for its internationally important concentrations of wintering wildfowl and waders.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites.	
Thurstaston Common, Thurstaston & The Dungeon GCR Site and Broughton Brook, Wepre Gorge, Coed Pen-y-maes, Nant Felin Blwm, Ffynnongroyw Quarry, Hilbre Point and Red Rocks, Heswell Beacons, Hilbre Island, Caldly Hill, Telegraph Road, Thurstaston, Heswell Dales, Burton Village, Burton Point, Shropshire Union Canal, Roman Quarries, Chester, The Dungeon & Dee Cliffs, Caldly RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Flintshire & Cheshire BAPs	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	24 Monuments are present within this unit, ranging	To avoid loss due to erosion and/or flooding to	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>from the prehistoric promontory fort at Burton Point to the post medieval Kelsterton Brewery and Flint Castle. The SMs also include the main known surviving structures of Roman and medieval Chester. As shown by their designation, these are of national, and in some cases, international importance.</p> <p>The unit includes substantial Roman remains, the early medieval (Wats Dyke) and extensive medieval defensive and religious structures associated with the town of Chester. 7 Registered Parks and Gardens, 801 Listed buildings and 4 Conservation Areas are also recorded for this unit.</p> <p>Of the scheduled sites in Chester, there is a high risk of flooding, erosion or flood defences adversely affecting Dee Bridge and some sections of the City walls and related structures. Other sites are on higher ground within the city and unlikely to be impacted.</p> <p>A number of other heritage features along this section are also noted to be at risk from coastal erosion or flooding now or in the future. For example, although on rising ground, the proximity of the promontory fort on Burton Point to the estuary suggests there is the potential for negative impact either through erosion or from works to mitigate flooding elsewhere. Low lying sites such as Shotwick Hall and Castle and Belgrave moated sites and settings could be detrimentally impacted by</p>	<p>key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>flooding, erosion or defence works. In addition, at St Andrew's medieval hospital and limekiln, Denhall, flood defences could detract from its historical association with the river from a time when Denhall was an important port.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>		
Tourism	<p>The tourist value of the coastal and estuarine zone is largely in its significant natural beauty as well as its accessibility from major conurbations in the wider area through cycle and long-distance footpaths.</p> <p>The key centre for tourism activity and economy is Chester which thrives as a historically significance city, containing a number of attraction which capitalise on its Roman and medieval legacy.</p> <p>Navigation is also a recreational activity and the interaction between commercial and recreation needs should be recognised. Maintenance dredging to maintain the main navigational channel and access at Port of Mostyn, and the disposal of the arisings may have implications for recreational navigation. Moorings at Heswall and Thurstaston have been silting for many years and access into the main estuary and open coast is difficult except on the highest tides. Similar problems are likely to occur at West Kirby.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Agricultural Land	This coastal section consists of a mix of the	To minimise coastal flood and erosion risk to	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	following land classifications which are at risk from coastal erosion and flooding, urban, non-urban and Grades 2, 3, 4 and 5 agricultural land.	agricultural land and horticultural activities	
Shell Fisheries	There are 5 licensed sites for shell fisheries within the Estuary. The EA has recently implemented licensed fishing from what was previously an unregulated operation. The activity has had an impact in the past on other activities within the estuary The Dee Estuary is also important for its Salmonid Fisheries.	To minimise the impact of policies on marine operations and activities	
Golf Courses	A large number of golf clubs, including the Caldy, Heswall, Chester and Royal Liverpool Golf Clubs, are located around the Dee Estuary. The Royal Liverpool Golf Club is protected by a fronting saltmarsh and dune system.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Airfields	Hawarden Airport which includes a large Airbus factory and a Raytheon aircraft factory, and Sealand Airfield, a former RAF base, which recently partially closed, are both sited where flooding could potentially impact on their operation.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
The North Wales Path	The North Wales Path winds for 60 miles along the coast from Bangor to Prestatyn, mostly along public footpaths The route is very popular and is an important tourist and recreation attraction.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	

COASTAL UNIT C – DEE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
<p>Landscape Character Areas 61: Shropshire, Cheshire and Staffordshire Plain</p> <p>59: Wirral</p>	<p>Area 61 covers the inner Dee Estuary, including Chester. Features that define the area include a unified rural landscape with an extensive gently rolling plain, interrupted by sandstone ridges, the most prominent being the Cheshire Sandstone Ridge.</p> <p>Area 59 covers the English Dee shoreline and the western part of the Wirral peninsula. Features that define the area include intertidal mud/sand flats and salt marshes along the Dee estuary and extensive dune systems, particularly at Meols. The formal landscape created by former large country estates, country parks and mixed agricultural land is interspersed with residential development, with extensive areas given over to horticulture.</p>	<p>To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion</p>	

EI.5 COASTAL UNIT D – HILBRE POINT TO PERCH ROCK

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Hoylelake	<p>Hoylelake is a seaside town and a key destination for recreational water sports with a number of sailing and sand yachting clubs. It is also one of the premier sites for Sand Yachting in Britain with the town's beach, which reaches nearly a quarter mile of shore, being the venue for the European Sand Yacht Championships. There are local concerns about the increase in vegetation growing on the beach and the development of saltmarsh at this amenity frontage. The amenity beach at Hoylelake is maintained by removing this vegetation. Wind blown sand is also an issue at Hoylelake from Kings Gap to Hoyle Road.</p> <p>Hoylelake is a largely residential area with an active nightlife in the town centre, located at the original village of Hoose.</p> <p>Further the town supports one of the oldest permanent lifeboat stations in the country, manned by the RNLI.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p>	<p>The Wirral coastline is bounded by the Dee Estuary in the west and the Mersey Estuary in the east. Much of the frontage is low-lying and therefore has a high flood risk.</p> <p>The key controls on this coastline are the Mersey and Dee estuaries, which have strongly influenced the evolution of the coastline.</p> <p>Development of the coastline is dependant on the offshore banks and activities in the Dee and to a lesser extent, the Mersey. Hilbre Island and the Mersey Training Walls have both affected the Wirral frontage, the later has caused accretion along the frontage.</p> <p>Sediment is transported from west to east along the frontage. Sediment is largely supplied to this frontage largely via littoral drift from the North Wales coastline. Littoral drift does not continue across the mouth of the Mersey Estuary. Instead, material is transported into the Mersey Estuary, which acts as a sink for material lost from the Wirral frontage.</p>
Moreton	<p>The coast at Moreton is part of a stretch of sand that runs from Meols to Leasowe known as Mockbeggar Wharf and forms part of the North Wirral Coastal Park. A key tourist and heritage attraction in this area is Leasowe Lighthouse, the oldest brick-built lighthouse in Britain built in 1763.</p> <p>An extensive seawall protects large areas of Meols, Moreton and Leasowe from tidal flooding. Concerns exist about the integrity of the defence. Along the</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p>	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Meols frontage tidal flooding of the Meols promenade, gardens and open spaces occurs approximately twice per year.		<p>The area is highly defended and largely urbanised, with the settlements of Hoylake, and Moreton, and recreational facilities such as golf courses and the marine lake at Wallasey.</p> <p>Potential conflict exists between the continued protection of the frontage whilst fulfilling requirements of the SPA, which is designated for the intertidal sand and mudflats and embryonic saltmarsh. There is potential for coastal squeeze with sea level rise.</p>
Leasowe	<p>The sand dunes at Leasowe are the largest such system on the Wirral. Much of the area is at or below sea level and is protected by a coastal embankment. Spray overtopping causes flooding to the highway between New Brighton and Leasowe Revetment on most spring tide periods between October and April.</p> <p>Along the embankment are the remains of fortifications built during the Second World War. Coastal erosion and flooding would be detrimental to these features.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Wallasey	<p>Wallasey is a predominantly residential area, which includes the seaside resort of New Brighton, which has the longest promenade in the UK and is a popular recreational facility for walking and cycling. Accessible from the promenade is Fort Perch Rock, a coastal defence battery built in 1825, which was originally cut off at high tide, but is now fully accessible due to coastal reclamation and is operating as a museum. Also adjoining the promenade is the New Brighton Marine Lake used for recreational watersports.</p> <p>There are a number of redevelopment projects proposed for the New Brighton frontage.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Coastal villages and	A number of small coastal villages and isolated	To minimise coastal flood and erosion risk to	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
isolated coastal properties	properties are located on the Wirral Coast and therefore may be prone to coastal erosion and flooding.	people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Infrastructure	There are several key routes within this section and in particular the M53, which not only forms part of the Strategic Road Network but also the TEN-T. These networks are the primary routes which link the Wirral area to the rest of the north west and therefore any flooding can have a detrimental impact on the safe and efficient operation of these infrastructure networks.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Energy Generation	Burbo Bank is an operational off-shore wind farm located off the Wirral coastline. The cable landfall for Burbo bank is at Gunsite at Leasowe Revetment.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Offshore Dredging	Dredging area 457 is located off the Wirral coastline.	To minimise the impact of policies on marine operations and activities	
Beaches	There are four beaches within this coastal section at West Kirby, Meols, Moreton and New Brighton, which could be lost if erosion is allowed to prevail. The beach not only acts as an amenity resource, but also has an important defence role.	To maintain and enhance the feature as a natural defence. To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Mersey Narrows and North Wirral Foreshore potential SPA & Ramsar and North Wirral	Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on intertidal sand and mudflats, embryonic saltmarsh and man-made lagoons. Any changes to coastal evolution could affect this	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Foreshore SSSIs	site.	species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds. The continuation of natural processes is important on this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Dee Estuary / Aber Dyfrdwy SAC & SSSI	Noted for its sandflats, mudflats, Atlantic salt meadows, Salicornia beds, transitional habitats and individual species. Currently, there are issues with regards to coastal defence works and their impact on coastal processes. The SAC includes reference to Annex I habitat of drift line vegetation and sand dunes which are reliant upon continuation of natural sediment transport processes.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Meols Meadows SSSI	Damp unimproved neutral grassland, separated by ditches containing tall fen vegetation. This site could be vulnerable to changes in water levels.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Grange Hill & Boundary Road, Bidston RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cheshire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	No Scheduled Monuments exist within this unit. However 1 Registered Park and Garden, and 61 Listed buildings are recorded. Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.	To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.	
Tourism	Despite its location near to major conurbations, much of the coastal zone is protected by open space/green belt designations. The zone is on the route of the North Wirral Coastal path and retains a high level of accessibility to Liverpool and other towns on the Wirral. The tourist economy is based on this high level of accessibility as well as more 'formal' amenities, such as the Maine Lake at New Brighton. Leasowe Castle was built in 1593 and as well as a tourist attraction, the castle is a popular venue for weddings and functions.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
North Wirral Coastal	This coastal park runs for four miles along the coast, and includes public open space, common land,	To minimise coastal flood and erosion risk to key	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Park	natural foreshore and sand-dunes. The park provides for a wide variety of recreational activities ranging from sailing to horse riding. These features and activities are at risk from coastal erosion and flooding.	community, recreational and amenity facilities.	
Agricultural Land	The majority of the land fronting the coast consists of urban and non agricultural uses. There are some pockets of Grade 2 agricultural land to the east of Hoylake, east Meols and to the east and west of Wallasey. There are larger pockets of Grade 3 and 4 agricultural land to the east of Hoylake.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	Shell Fisheries are present on East Hoyle Bank. The current position of the Meols channel has had an impact on commercial and recreational sailing with commercial fishing activities declining considerably. However, small scale commercial offshore fishing is still undertaken from Meols.	To minimise the impact of policies on marine operations and activities	
Golf Clubs	Wallasey Golf Club, Warren Golf Club and Leasowe Golf Club are all located along the coastline and are at greatest risk from coastal erosion and flooding. Bidston Golf Club is located further inland but is still affected by flooding.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Landscape Character Areas 59: Wirral	Area 59 covers the English Dee shoreline and the western part of the Wirral peninsula. Features that define the area include intertidal mud/sand flats and	To conserve and enhance nationally defined landscapes in relation to risks from coastal	

COASTAL UNIT D – HILBRE POINT TO PERCH ROCK			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
58: Merseyside Conurbation	<p>salt marshes along the Dee estuary and extensive dune systems, particularly at Meols. The formal landscape created by former large country estates, country parks and mixed agricultural land is interspersed with residential development, with extensive areas given over to horticulture.</p> <p>Area 58 covers the urban sprawl of the City of Liverpool and its environs, together with the urban/industrial areas of Birkenhead north-east of the mid-Wirral sandstone ridge.</p>	flooding and erosion	

EI.6 COASTAL UNIT E – MERSEY ESTUARY

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Wallasey	Wallasey is a predominantly residential area, which includes the seaside resort of New Brighton, which has the longest promenade in the UK and is a popular recreational facility for walking and cycling. 'Wirral Waters' is a regeneration scheme has been proposed by Peel Holdings for Wirral Docks (between Wallasey and Birkenhead).	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	The Mersey Estuary has a deep narrow mouth, with rocky shores. There are extensive sandbanks and sandflats outside the mouth, and long training walls for the navigational channel. The estuary has been almost entirely industrialised with extensive port facilities at Liverpool, power stations and oil refineries and onshore wind farms.
Birkenhead	Birkenhead is an industrial town well know for its ship building, with a number of ports, docks and associated industries and infrastructure. The urban area is mostly set on higher ground, not at significant risk of tidal flooding. The land near the shoreline, at greatest risk from erosion and flooding is predominantly industrial and residential, but includes some community facilities and amenities.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise the impact of policies on marine operations and activities To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	The main potential area of conflict is in the inner section of the estuary where intertidal areas are internationally designated. Activities such as dredging and dumping of spoil could impact on adjacent shorelines.
Bebington	Bebington is predominantly a residential area, which includes the Port Sunlight conservation area, one of the original planned towns, designed to accommodate factory workers and supporting community facilities and infrastructure. The area now contains over 900 Grade II listed buildings and has been put forward for World Heritage Site status. The areas in close proximity to the bank of the River Mersey puts it at risk from tidal flooding.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	Key considerations are that any management changes to the estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also adjacent coasts. Subsequent changes in erosion / accretion of intertidal habitats will

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Ellesmere Port	<p>Ellesmere Port is a large industrial town and cargo port located on the southern bank of the River Mersey. The large area of low-lying land between Ellesmere and Runcorn is at risk from coastal / tidal flooding. This reclaimed area is primarily industrial, being dominated by a Vauxhall Motors car factory, Shell oil refinery at Stanlow and a former ICI chemical works. The Ince Marshes, Former Ince B Power Station is also located in Ellesmere Port and is subject to redevelopment by Peel Holdings for a waste management, waste recovery park and refuse derived fuel power station.</p> <p>Another significant development at risk from flooding is the Cheshire Oaks Designer Outlet, which is the UK's largest outlet centre.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in management of the River Mersey.</p> <p>The Schedule 4 Boundary in the Coast Protection Act is located at the mouth of the Mersey. Although Local Authorities have permissive powers to deal with flooding in the estuary they do not have equivalent powers for managing erosion risk as the Mersey Estuary is not open coast. The situation is made more complicated by the non-Main River status of the Mersey Estuary. Erosion issues can exist further upstream than the current Schedule 4 boundary. These erosion problems cannot be addressed by the Coast Protection Act due to the current position of the boundary. Whilst there is overlap of the SMP2 and the CFMP any future coastal defence policy is not backed up with the necessary legislation to ensure its delivery.</p>
Runcorn	<p>Runcorn is an industrial town and cargo port located on the southern bank of the River Mersey. Chemical industries and warehousing and distribution are the main industries operating in the area. The more potentially polluting industries are located along the Mersey River bank, predominantly at Weston and Astmoor Industrial Estate and require protection from flooding and erosion. Most of Runcorn lies on higher ground and so not at tidal flood risk. However, there are residential and commercial properties and associated infrastructure adjacent to the estuary and ship canal which are at flood risk.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Warrington	<p>Warrington is characterised by employment in light</p>	<p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	industry, distribution and technology following the decline in manufacturing industries. Land along the banks of the estuary in Warrington is predominantly developed for light industry, but the risk from tidal flooding reaches further inland to areas which are predominantly residential.	<p>people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Widnes	Widnes is an industrial town located on the north bank of the River Mersey and is a key centre for the chemical industry with a number of factories being located in the town. Flood risk and erosion has the potential to impact on a number of residential properties, particularly those adjacent to the Runcorn bridge and located between Widnes and Hale village. There are some industrial areas and the town centre, which is also at potential risk from tidal flooding.	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Great Sankey	Great Sankey was formerly an area of industrial growth but is now predominantly a residential suburb of Warrington and is at risk from flooding.	To minimise coastal flood and erosion risk to people and residential property	
Liverpool	<p>Liverpool's economy land use and growth is based around its status original status as a major port, which attracted ship building, traditional manufacturing industries and associated infrastructure.</p> <p>The area of Liverpool at greatest risk from erosion and tidal flooding is predominantly port based industry, but also includes residential and</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>commercial areas.</p> <p>There are a number of new developments within the Liverpool area, including the ‘Wirral Waters’ and the Seaforth Triangle development by Liverpool Docks</p>	<p>industrial, commercial, economic and tourism assets and activities.</p>	
Bootle	<p>Bootle’s economy and land use is based around the docks in the River Mersey Estuary and is therefore characterised by port uses, its associated infrastructure and industry.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Coastal villages and isolated coastal properties	<p>A number of small settlements and isolated properties are located along the banks of the River Mersey and therefore may be prone to erosion and flooding.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Marine Operations and Activities	<p>The following marine operations are located within this coastal section: Port of Liverpool, Cammel Laird Ship Yard, Port of Garston, Albert Dock, Liverpool Marina, Ellesmere Port Dock and are essential for handling large quantities of freight and cargo, as well as passenger ferries. These marine operations and associated infrastructure have potential risks from flooding and coastal erosion and there is a need to manage these risks in order to</p>	<p>To minimise the impact of policies on marine operations and activities</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	maintain the effective operation of these facilities.		
MoD	The Defence Bills Agency site in Liverpool has been identified as being surplus to Defence requirements and is to be put up for disposal and could therefore be a key development opportunity which will need to consider the threat from flooding.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Major Industry and Hazardous Waste	<p>Eastham Oil Refinery, Quinn Glass, Ince Marshes, Stanlow Petrochemicals Complex, the Cammel Laird Ship yard, Bridgewater Paper Co Ltd and Weston Salt Union Power Plant are all located on the bank of the River Mersey requiring protection from flooding and erosion potential pollution of the river from contaminated materials. The Vesta Oil Terminus and Jetty are no longer operational and have fallen into disrepair; however, the site still presents potential pollution issues.</p> <p>A number of landfills are located along the estuary that may have potential for pollution if erosion takes place.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Infrastructure	<p>There are several key routes within this section and in particular the M53, M56, M62, M6, which not only form part of the Strategic Road Network but also the TEN-T. The Mersey road tunnels are also considered key infrastructure. The ventilation towers for the Birkenhead and Wallasey road tunnels are situated within 10m of the existing river walls.</p> <p>Further provisions include the following railway</p>	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>stations: New Brighton Station, Birkenhead Station, Warrington Central Station and Warrington Bank Quay Station, which are on key Lines connecting Liverpool to Manchester and also Wirral via the Mersey Tunnel. The West Coast Mainline also runs through this section, providing vital strategic links to the rest of the UK and also forms part of the TEN-T. These strategic networks are essential routes which integrate the north west with the UK and beyond to Europe and therefore the impact of flooding can be detrimental to the safe and efficient operation of these infrastructure networks.</p> <p>The Manchester Ship Canal is an essential element of infrastructure for transferring freight and provides the connection for a number of ports, harbours and warehouses, which provide numerous jobs and economic benefits. Tidal flood risk along the Manchester Ship Canal has an affect as far upstream as Warrington.</p> <p>There is a new link between Albert House docks to the Leeds-Liverpool Canal, which runs parallel to the Shore.</p>		
Liverpool Airport	Liverpool Airport provides national and international connections for passengers and cargo and is therefore a vital gateway to the rest of the world and a key economic driver which needs to be protected.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
New Mersey Crossing	There is a proposed new bridge crossing upstream of the existing Runcorn bridge, possibly to go to	To manage risk of flooding to key community,	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Public Inquiry in Autumn / Winter 2008. This could have implications for changes to future flood risks and changes in channel morphological evolution. However, such proposals would need to be supported by a full EIA that would consider all potential implications.	recreational and amenity facilities To maintain the integrity and setting of internationally designated heritage sites and landscapes.	
Community Facilities	Several schools in Warrington and Widnes, Warrington Town Hall, and Warrington Hospital are key community facilities which service the local and wider community and are located in areas potentially at risk from tidal flooding, over the SMP2 period which might affect their operation.	To manage risk of flooding to key community, recreational and amenity facilities	
Energy Generation	Fiddlers Ferry is an operational coal fired power station located further inland but is still at risk from flooding. The former Ince B Power Station is located on the bank of the Mersey. Flooding / erosion of this site may cause pollution issues. Royal Seaforth Dock is an operational onshore wind farm located at Liverpool Docks. An application has been submitted for an onshore windfarm at Causeway Bridges near Warrington. Although some distance inland, it is still within a flood risk area.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services. To manage and minimise risk of pollution from contaminated sources	
Dredging	The following are active dredging sites located within the Mersey Estuary: 175/1 NSB, 193/1 CMXM, 195/1 UMD, 175/2 NSB, 193/2 CMXM,	To minimise the impact of policies on marine operations and activities	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	195/2 UMD, 175/1 NSB.		
Mersey Estuary SPA, Ramsar and SSSI	<p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on intertidal sand and mud flats and saltmarsh.</p> <p>The site is vulnerable to physical loss through land claim and development.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Mersey Narrows and North Wirral Foreshore potential SPA & Ramsar Mersey Narrows SSSI	<p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on intertidal habitats and man-made lagoons.</p> <p>Any changes to coastal evolution could affect this site.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Liverpool Bay pSPA	<p>Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds.</p> <p>The continuation of natural processes is important</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	in this site	species)	
New Ferry SSSI	Notified for its large areas of intertidal sand, mudflats and other habitats. Any changes to coastal evolution could affect this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Dibbinsdale SSSI	Semi-natural broad-leaved woodland, reed swamp, fen pasture and neutral grassland. The net area of these sites could be reduced by erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Frodsham GCR Site and Mill Road, Bromborough, Lower Flaybrick Road, Road Cutting, Helsby, Liverpool Road, Widnes & Hale Lighthouse and Beach RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cheshire & North Merseyside BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	Part of the Liverpool Maritime Mercantile City World Heritage Site lies within this unit. In addition 10 Scheduled Monuments are present ranging from a prehistoric promontory fort at Helsby Hill, a Roman fortlet, to a medieval Abbey (Stanlow), a	To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>priory (Birkenhead), granges and associated features. 3 Registered Parks and Gardens, 1036 Listed Buildings are also recorded.</p> <p>A number of heritage features along this section are noted to be at risk from coastal erosion or flooding now or in the future. Bromborough Court House moated site and fishponds near the Mersey, the Speke House moated site, the Duck decoy pond at Marsh Bridge, the Roman fortlet at Ince and Birkenhead Priory are all noted to be at potential risk from flooding, erosion or flood defence works. Stanlow Abbey Cistercian monastery and monastic grange is effectively an island and therefore is also at high risk of damage from flooding, erosion or defence works.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>cultural heritage assets, sites and their setting.</p>	
Liverpool – Maritime Mercantile City World Heritage Site	<p>Areas within the City of Liverpool historic centre and Docklands have been designated a World Heritage Site. The designation includes a great number of significant commercial, civic and public buildings, including St George’s Plateau.</p>	<p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The city of Liverpool is a regional, national and international destination which is renowned for its cultural, artistic, leisure and entertainment assets. Combined with Birkenhead, the area is a major generator of income through its tourist activity and the designation of World Heritage Site status to the</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>dock area has greatly increased its profile in recent years.</p> <p>The Mersey Waterfront Regional Park spans more than 70 miles (120km) of the City Region's coastline. It takes in the River Mersey, its estuary, and parts of the rivers Dee and Ribble. It is a major internationally acclaimed attraction with a unique sense of place for people to live, work, invest and visit.</p>	<p>industrial, commercial, economic and tourism assets and activities.</p>	
Agricultural Land	<p>The majority of this coastal section consists of urban areas and Grade 2 & 3 agricultural land.</p> <p>There is an area of Grade 1 agricultural land at Hale, to the east of Liverpool Airport.</p> <p>There are pockets of Grade 5 agricultural land at Ellesmere Port and Widnes.</p> <p>There are a number of Historic and Authorised landfill sites along the river banks, most notably in Liverpool, to the west of Frodsham and south west of Warrington.</p>	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Shell Fisheries	<p>The River Mersey Estuary is identified as a Shell Fisheries Harvesting Area.</p>	<p>To minimise the impact of policies on marine operations and activities</p>	
Golf Courses	<p>Eastham Lodge Golf Club is located relatively near to the bank of the River Mersey and is at greatest risk from flooding in this section.</p> <p>Although Sutton Hall Golf Club and St Micheals Jubilee Golf Course are located further inland there is still the potential for the courses to be affected by</p>	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	

COASTAL UNIT E – MERSEY ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>flooding.</p> <p>Poulton Park Golf Club and Lymm Golf Club are a significant distance inland but there is still the potential for the course to be affected by flooding.</p>		
<p>Landscape Character Areas</p> <p>58: Merseyside Conurbation</p> <p>60: Mersey Valley</p>	<p>Area 58 covers the urban sprawl of the City of Liverpool and its environs, together with the urban/industrial areas of Birkenhead north-east of the mid-Wirral sandstone ridge.</p> <p>Area 60 includes the River valley landscape of the Mersey, its estuary and associated tributaries and waterways. The area includes a range of landscape types, including salt marshes around the estuary as well as large scale highly visible industrial development, particularly at the river crossings of Runcorn, Widnes and Warrington. The area also has a distinctive cultural landscape with the major towns of Runcorn, Warrington and Widnes having much in common in relation to past and existing development pressures.</p>	<p>To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion</p>	

EI.7 COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Crosby	<p>Crosby is generally regarded as an outlying suburb of Liverpool and therefore the predominant land use is residential. However, Crosby also has several miles of beach, a marina and a number of parks. Popular use for tourism especially with statues. Residential development is located on low lying land close to the coastline and therefore it is at significant risk from tidal flooding.</p> <p>Crosby Marine Lake falls within this unit. Most of the Park was reclaimed using fill from docks and the Mersey Tunnel as well as from builders rubble. There is a need to protect and maintain the lake pipeline. There are also issues of wind blown sand in this location.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>The frontage is characterised by a large undefended dune system which is an important barrier to tidal inundation of the low-lying hinterland.</p> <p>The frontage is significant for nature conservation as it is one of the larger dune systems within the UK. A continuation of natural processes is extremely important for these designations. However as much of this coastline is not artificially defended this should not be an issue.</p> <p>Key areas of potential conflict are the urban areas of Southport and Crosby, the Ainsdale Holiday Centre and the River Alt, which is currently trained by a training wall.</p>
Hightown	<p>Hightown is a primarily residential settlement, potentially at risk of coastal erosion and flooding, with risks strongly related to movement of the Alt channel and sea level rise response.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>The evolution of this transitional coast is heavily influenced by both the Mersey and Ribble Estuaries and therefore is dependant on the management of the Ribble Estuary and activities such as dredging and spoil dumping in the Mersey Estuary. The Mersey training walls also effect processes along this stretch of</p>
Formby	<p>Formby is largely a residential town, which also attracts large numbers of tourists during the summer months, with day trippers attracted to its beaches, sand dunes and wildlife. There are two main spots along the Formby Coast which are particularly popular, at Lifeboat Road and Victoria Road.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Southport	<p>Southport is a seaside town and popular tourist destination, with a number of tourist attractions and</p>	<p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>extensive sand dunes. Although generally on slightly higher ground, commercial, recreational and amenity / tourist properties / venues located along the seafront may be at risk of coastal erosion and tidal flooding in the future if the current trend of foreshore accretion reverses.</p> <p>Sea walls are also amenity structures.</p>	<p>people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	coastline.
Coastal villages and isolated coastal properties	A number of small settlements and isolated properties are located along the coastline in this coastal section and therefore may be prone to coastal erosion and flooding.	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Marine Operations and Activities	<p>Area important for sailing and watersport activities and includes a Sailing Club & Yacht Club (Blundellsands Sailing Club).</p> <p>Access to the coast for sea fishing and shrimp fisheries is important.</p>	To minimise the impact of policies on marine operations and activities	
MoD	RAF Woodvale at Formby is a military airport and classified as a Core MoD site. The site is located in close proximity to the coastline but is currently protected from tidal flooding. The Altcar Firing Range/TAVRA is also located along this frontage.	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to MoD ranges.</p>	
Infrastructure	The A565 is the main coastal road which connects Southport to Formby. Due to the route it takes along the coast, it is at potential risk from both coastal erosion and flooding, which may prevent the safe operation of this route.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>The northern rail line and southport Railway Station, which provides a destination for tourists as well as a key linkage to Manchester, is also located in a flood risk area, which may impact on its operation.</p> <p>The area includes the Mersey Estuary Pollution Elevation Scheme (MEPAS) as well as the pumping stations and pipeline at Crosby to Hightown</p> <p>There is fibre optic cable which comes ashore at Ainsdale.</p>		
River Alt	<p>The River Alt is a key feature in local geomorphology. Changing pumping regime can alter river structure. Historically the river has caused erosion across Crosby frontage hence needing to be trained. The United Utilities outfall at Hightown currently fixes the river in position. Removal of this feature would effect local coastal processes.</p> <p>The river is used recreationally (e.g. Blundellsands Sailing Club) for to access open water.</p>	To minimise the impact of policies on the River Alt. To manage risk of flooding and erosion to key community, recreational and amenity facilities	
Beaches	<p>There are eight beaches within this coastal section at Crosby – Hall Road west, Crosby – Mariners Road, Formby, Formby – Lifeboat Rd, Formby – Victoria Rd, Hightown, Southport and Ainsdale which could be lost if erosion is allowed to prevail.</p> <p>The beaches are important for tourism, biodiversity and for coastal defence. Where the beach fronts hard defences their loss will result in failure of defence. Where the beach fronts soft defence their</p>	<p>To maintain and enhance the feature as a natural defence.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	loss will result in erosion of the soft defences.		
Dunes	The Formby dune system is internationally designated and provides an important natural form of coastal defence and protection to the backing low lying areas. Water extraction practises take place from these dunes.	To maintain and enhance the feature as a natural defence. To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Altmouth Pumping station	The large pumping station at Altmouth artificially drains a large pumped drainage area east of Formby. Changes to the discharge channel could adversely affect operation. Tidal flood risk could affect operation.	To manage risk of flooding to people and property	
Mersey Narrows and North Wirral Foreshore potential SPA & Ramsar	Supports International assemblage of Annex I birds and regularly occurring migratory birds on intertidal habitats and man-made lagoons. Any changes to coastal evolution could affect this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Ribble & Alt Estuaries SPA & Ramsar	Supports International assemblage of Annex I birds and regularly occurring migratory birds on dunes, intertidal flats and saltmarsh. The distribution of habitats is particularly vulnerable to changes in the physical environment (natural or human induced), in particular, coastal squeeze and the effects of climate change.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory	To support natural processes and maintain and enhance the integrity of internationally	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	birds. The continuation of natural processes is important on this site.	designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Sefton Coast SAC & SSSI (biological),	Noted for its internationally important variety of sand dune types, dune vegetation and intertidal mudflats and sandflats. Parts of this site are being reduced by coastal erosion.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Sefton Coast SSSI (geological)	The coast is of special interest for coastal geomorphology, in particular for the large, mobile dune system and the multiple sand bars that occur on the foreshore. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Mersey Narrows SSSI	Notified for its large areas of intertidal sand and mudflats. Any changes to coastal evolution could affect this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Ainsdale Sand Dunes	Ainsdale Sand Dunes NNR forms part of the Sefton	To avoid adverse impacts on, conserve and	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
NNR	<p>Coast dune system. The area forms part of the Sefton Coast Ramsar and SAC.</p> <p>Over 450 plant species are present in the dune system, including 33 that are locally or regionally rare like petalwort, seaside centaury, yellow bartsia, round-leaved wintergreen, dune helleborine and pendulous flowered helleborine.</p> <p>The reserve also supports sand lizards and great-crested newts, together with a large population of natterjack toads. Inland, areas of pine woodland are home to red squirrels.</p>	<p>where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Cabin Hill NNR	<p>Cabin Hill NNR forms part of the Sefton Coast dune system.</p> <p>The reserve falls within the Mersey Estuary SPA, the Ribble and Alt Ramsar site, and the Sefton Coast SAC.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Ainsdale GCR Site	<p>Geological features of local interest located within the coastal unit.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites</p>	
North Merseyside BAP	<p>Lists a number of local and national habitats and species which may be present within the coastal unit.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species</p>	
Heritage features	<p>One Scheduled Monument is known for this unit, a cross at Hightown Station. In addition one Registered Park and Garden and 170 listed buildings</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To avoid impacts upon, conserve and where</p>	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>are recorded.</p> <p>Locally important heritage features include the Track way and submerged forest at Hightown, the Footprint at Formby, WW2 remains and Southport Pier.</p> <p>Behind the immediate coastal strip are a series of lowland mosses or former mosses, including Downholland, Altcar and Halsall Mosses. These are known to retain and cover early to mid-prehistoric material and sites, as well as to preserve organic materials (including pollen and other 'natural' indicators) whilst they remain wet or waterlogged. Later settlement sites fringe these mosses or are located on higher 'islands' within them. Reclamation during the medieval and post medieval periods has often left distinctive field patterns, sometimes including long thin 'turf dales' or peat cutting areas, which are usually bounded by ditches. In rural areas early post medieval buildings of Cruck construction are sometimes encountered. These may be difficult to identify from the exterior due to later alterations. Windmills and windmill sites are locally common.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>practical enhance the designated interest of nationally designated heritage sites and their settings.</p> <p>To avoid adverse impacts upon, conserve and where practical enhance the interest of other nationally, regionally or locally important cultural heritage sites and their settings.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	Much of the Sefton Coast is renowned for its natural beauty and ecological importance and combined with the leisure use of the beach/dune	To minimise coastal flood and erosion risk to people and residential property	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>area, the rural coastal zone is a significant generator of tourist economy in itself.</p> <p>Nevertheless, the zone is dominated by three major settlements: Formby, Crosby and Southport as well as being very easily accessible from Liverpool and the Wirral.</p> <p>Southport in particular, is a significant tourist destination due to its importance as a ‘high order’ resort and a renowned speciality shopping destination.</p> <p>The importance of tourism and leisure activity is also reflected in the ‘formalised’ amenities such as the Marine Lake (Crosby), Ainsdale-on-Sea Holiday Centre (Southport) and Southport Pier.</p> <p>The Anthony Gormley artwork on Crosby Beach attracts a huge amount of interest in the area with large numbers of people visiting the beach to see the statues.</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Agricultural Land	<p>Along the coast within this coastal section the land is predominately a mix of urban, non agricultural and Grade 5 agricultural land. Further inland there are large areas of Grade 1 and 2 agricultural land which stretches from Litherland north to the River Ribble, between Formby and Ormskirk.</p>	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p>	
Fishing	<p>There is fisheries activity in this section with suction dredging and tractor dredging off the coast.</p>	<p>To minimise the impact of policies on marine operations and activities</p>	
Golf Courses	<p>There are 6 golf courses within this coast section.</p>	<p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT F – SEAFORTH TO SOUTHPORT PIER (INCLUDING RIVER ALT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Those most at risk from flooding and erosion include: West Lancashire Golf Club, Formby Golf Club, The Royal Birkdale Golf Club and Hillside Golf Club, all of which are located along the coast or in close proximity to the coastline. Other clubs may become vulnerable to tidal flooding or erosion in the longer term.	industrial, commercial, economic and tourism assets and activities.	
Landscape Character Areas 58: Merseyside Conurbation 57: Sefton Coast 32: Lancashire and Amounderness Plain	<p>Area 58 covers the urban sprawl of the City of Liverpool and its environs, together with the urban/industrial areas of Birkenhead north-east of the mid-Wirral sandstone ridge.</p> <p>Area 57 covers a landscape comprising low-lying coastal areas with inter-tidal sands, silts and muds, dune systems and dune heaths, with salt marshes along the Ribble Estuary. Features that define the area include wide sinuous beaches with extensive sand dune sequences alternating with slacks.</p> <p>Area 32 covers the largely rural agricultural landscape of the Ribble estuary as well as the Victorian coastal resorts of St Annes, Blackpool and Fleetwood.</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.8 COASTAL UNIT G – RIBBLE ESTUARY

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Preston	<p>Preston is England's 50th City and is the main economic centre in Central Lancashire. The City is a major centre of the British defence aerospace industry with BAE Systems being located at two sites, Warton and Salmsbury as well as two further office complexes. Since being awarded its City status, Preston has been a focus for significant investment with a number of residential, office and hotel developments planned, as well as a new central business district.</p> <p>There are plans for development around Preston Chorley and South Ribble which will be known as the South Lancashire City Development.</p> <p>There has also been problems with run off into the estuary due to increased development within the Ribble Valley.</p> <p>The settlement pre-dates the Norman Conquest, and has a medieval core, although little of these dates are known to survive. 18th-19th century structures are much more common, particularly relating to industrial expansion. Very early material is generally confined to deposits within the river gravels and a considerable quantity were encountered whilst digging the Preston Dock, along with later remains. Several historic bridges and bridge sites cross the river at Preston.</p>	<p>To manage risk of tidal flooding to people and property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their settings.</p>	<p>The Ribble Estuary is funnel-shaped in form with areas of fringing saltmarsh which act as a natural form of defence. The mudflats in the upper parts have undergone widespread reclamation. Land use is largely low-grade agriculture close to the shoreline on the low-lying marshland, but there is high grade land set further back in the flood plain and extensive development for horticulture. This, together with the large urban area of Preston in the inner estuary and infrastructure along the northern bank (A548) means that the management of flood risk is important within the estuary.</p> <p>The estuary is internationally and nationally designated, specifically for its bird habitats.</p> <p>There may be further opportunities for habitat creation within the estuary.</p> <p>Key considerations are that any management changes to the estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also</p>
Coastal villages and	A number of small settlements and isolated	To minimise coastal flood and erosion risk to	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
isolated coastal properties	properties are located along the banks of the estuary and therefore may be prone to coastal erosion and flooding.	people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	the adjacent open coasts of Flyde and Sefton. Subsequent changes in erosion / accretion of intertidal habitats will affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in management of the River Ribble.
Marine Operations and Activities	Preston Docks is the site of an expanding residential and commercial complex as well as a marina and therefore it is necessary to maintain protection against flooding and coastal erosion. There are three other marinas in this coastal section, Fairhaven Sailing Marina, Hesketh Bank Sailing Marina and Southport Sailing Marina, all of which are at risk from coastal erosion and flooding. Training walls within the estuary are not maintained and therefore there is no formal navigable channel.	To minimise the impact of policies on marine operations and activities	
Infrastructure	There are several key highway links crossing the extensive coastal flood plain, the most significant being the A565 between Preston and Southport.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Warton Aerodrome	The Warton Aerodrome is located on the northern bank of the estuary. It is one of a number of sites owned by BAE and is the largest employment site in Lancashire with around 7000 employees. Test flights are also conducted from here. The low lying site is at significant risk from coastal erosion and flooding	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities. To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Crossens Pumping station / Crossens catchment.	Large land drainage pumping station located adjacent to Banks, provides artificial drainage and fluvial flood risk management to the large Crossens marshes area east of Southport. Changes to the outfall channel into the Ribble could adversely affect	To manage risk of tidal flooding to people and property To minimise coastal flood and erosion risk to agricultural land and horticultural activities	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	operation. There is high grade agricultural land and many properties at potential coastal flood risk in this artificially drained catchment.		
Community Facilities	The University of Central Lancashire and Southport and Formby District General Hospital are both key facilities, which serve the local and wider communities, which are located well inland but are still at potential risk from flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Minerals and Waste	<p>Brockholes Quarry, near Preston is located on the southern bank of the River Ribble and is at risk from erosion and flooding.</p> <p>Nuckwood Quarry located well inland to the east of Southport is still within an area at risk from flooding.</p> <p>There are landfill sites and sewage works at Clifton Marshes and sewage works at Marshside.</p>	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Ribble & Alt Estuaries SPA & Ramsar and Ribble Estuary SSSI	<p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on dunes, intertidal flats and saltmarsh. The site also includes the largest area of grazed greenmarsh in Britain.</p> <p>The distribution of habitats is particularly vulnerable to changes in the physical environment (natural or human induced), in particular, coastal squeeze and the effects of climate change.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Martin Mere SPA, Ramsar & SSSI	Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on open water, marsh and grassland. The value of the site is dependent on the ability to carefully control water levels.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Lytham Coastal Changes SSSI (geological)	Four separate locations within the town of Lytham St Anne's which provide a basic stratigraphic record of coastline changes. Buried interest feature.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites.	
Newton Marsh SSSI	Grazed, improved pasture reclaimed from former saltmarsh but retaining a number of pools and ditches. Also important for wintering waterfowl. It should be noted that Newton Marsh SSSI will be supporting qualifying species from the adjacent/nearby Ribble and Alt SPA, and is therefore functionally linked to the SPA, despite not being SPA designated itself. Any changes to coastal evolution could affect this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Hesketh Golf Links SSSI	Fixed "grey" sand dunes are the main feature of this site and the specialised habitat of the sand lizard	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	(nationally rare). The net area of these sites could be reduced by coastal erosion.	conservation sites. Maintain/achieve favourable condition	
Ribble Estuary NNR	The Ribble Estuary NNR extends over half of the total area of the Ribble estuary, including extensive areas of mud and sand flats and almost all of the saltmarsh habitat. The reserve is considered the most important site in the UK for wintering wildfowl and forms part of the Ribble and Alt Estuaries Ramsar site and SPA.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Marshside RSPB Reserve	Newton Marsh SSSI is a freshwater wetland that is also important for breeding waders, including black tailed godwit – this is the only site in northern England for this nationally scarce species. The RSPB Marshside reserve is within this unit. This freshwater wetland is important for wintering waterfowl and breeding waders, including Annex I species (ruff and golden plover) and is functionally linked to the SPA.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Hesketh Out Marsh RSPB Reserve	Newly developed managed realignment site. Aim is to manage the site as a breeding ground for wading birds such as lapwings, redshanks, avocet and oystercatcher and as a vital winter refuge for species like pink-footed geese, whooper swans, wigeons, teals and golden plovers. The continuation of natural processes is important on this site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Crossens Pumping Station & Skellow Clough, Bispham RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
North Merseyside & Lancashire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	<p>11 Scheduled Monuments of Roman to eighteenth century date are known within this unit. In addition 7 Registered Parks and Gardens, 533 Listed Buildings and 12 Conservation Areas are recorded.</p> <p>A number of these features are noted to be at risk from coastal erosion or flooding now or in the future. For example, Penwortham Old Bridge and Rufford moated site are at potential risk from flooding, erosion or flood defence works.</p> <p>Behind the immediate coastal strip are a series of lowland mosses or former mosses, including Burscough, Rufford and Tarleton Mosses and the former area of Martin Mere. To the north of the estuary the former Marton Mere and Lytham Mosses exist. These are known to retain and cover early to mid-prehistoric material and sites, as well as to preserve organic materials (including pollen and other 'natural' indicators) whilst they remain wet or waterlogged. Later settlement sites fringe these mosses or are located on higher 'islands' within them. Reclamation of the mosses during the medieval and post medieval periods has often left</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>distinctive field patterns, sometimes including long thin 'turf dales' or peat cutting areas, which are usually bounded by ditches.</p> <p>In rural areas early post medieval buildings of Cruck construction are sometimes encountered. These may be difficult to identify from the exterior due to later alterations. Windmills and windmill sites are locally common.</p> <p>Reclamation of salt marshes in the twentieth century along the Ribble and Douglas have considerably narrowed the estuary and early flood defences are now to be found at a distance from the present coastline, these may include banks of Saxon and medieval dates. River deposits within these reclaimed areas and elsewhere are known to have potential for material of prehistoric and later dates, and there is also some potential for 'hulked' vessels at the river fringes and wrecks elsewhere in and outside the estuary.</p> <p>Small ports once existed at Freckleton, Lytham and Tarleton, the latter also having the Douglas Navigation. These sites and others have some potential for the preservation of 'hulked' ships.</p> <p>WWII features are known at Warton, and others may yet survive.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>		

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Tourism	<p>Much of the coastal, estuarine and flood zone is rural in character, although the zone is within the hinterland of two large settlements: Preston and Southport which are major economy generators as tourist destinations.</p> <p>Much of the Ribble Estuary and the area to the south of the A585 is an important destination by virtue of its natural beauty and leisure activity and is easily accessible from the two major settlements.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Agricultural Land	<p>A significant proportion of this coastal area is Grade 1 Agriculture, with some other large areas of Grade 4 and 5 along the coastline, and pockets of 2 and 3 along the River Ribble and further inland. Preston and Southport form the two most significant areas of urban land.</p>	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p>	
Shell Fisheries	<p>There is a large area at the River Ribble Estuary designated as a Shell Fisheries Harvesting Area, which could be affected by erosion.</p>	<p>To minimise the impact of policies on marine operations and activities</p>	
Golf Courses	<p>Southport Golf Links and Hesketh Golf Club are both located in close proximity to the coastline and are therefore at most risk to flooding and coastal erosion in this section.</p> <p>Penwortham Golf Club and the Fishwick Hall Golf Club are both located adjacent to the River Ribble and are therefore at risk from erosion and flooding.</p> <p>Southport Old Links and Ashton and Lea Golf Club are both located further inland, but are still at risk</p>	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	

COASTAL UNIT G – RIBBLE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	from flooding.		
Landscape Character Areas 57: Sefton Coast 32: Lancashire and Amounderness Plain	<p>Area 57 covers a landscape comprising low-lying coastal areas with inter-tidal sands, silts and muds, dune systems and dune heaths, with salt marshes along the Ribble Estuary. Features that define the area include wide sinuous beaches with extensive sand dune sequences alternating with slacks.</p> <p>Area 32 covers the largely rural agricultural landscape of the Ribble estuary as well as the Victorian coastal resorts of St Annes, Blackpool and Fleetwood.</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.9 COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Lytham St Annes	<p>Lytham St Annes is a residential and coastal resort town located at the entrance to the Ribble estuary. There has been development on former sand dunes along much of the frontage and so there are risks of coastal erosion. The eastern part of the town is low lying and there are residential, commercial and amenity properties at potential coastal flood risk. There are a number of proposed developments within the area.</p> <p>Whilst much of Lytham St Annes is of mid-nineteenth century date and later, there are some earlier structures including the medieval and later Lytham Hall and Park, the latter being a Registered Park. It has a character that is distinct from its neighbour Blackpool and has five Conservation Areas as well as many Listed Buildings. The windmill at Lytham is not only a significant landmark due to its position, but is also one of only a very few mills to retain its cap and sails.</p> <p>Lytham formerly had a small port, and there is some potential for 'hulked' ships in the vicinity.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>The frontage is heavily urbanised, with the resort of Blackpool and its associated infrastructure spreading into Thornton and Cleveleys such that urban sprawl characterises most of the frontage. There is a major port at Fleetwood, in the north of this frontage. The Fylde coast area has a very high tourist value. Much of the coastline is artificially held by defences. This may however, not be an issue for much of the frontage, although there is a drift divide along the shoreline.</p> <p>The coastline falls within the boundaries of the Morecambe Bay Special Area of Conservation, Special Protection Area and Marine Protection Area. These designations front large urban areas to the north (Fleetwood) and south (Lytham St Annes) of the frontage, potentially creating areas of conflict.</p>
Blackpool	<p>Blackpool is a large coastal resort with an economy which is primarily tourism based. However, Blackpool's tourism industry has suffered since the 1960's, due to cheap flights and package holidays to Europe and are therefore looking to regenerate and rejuvenate the economy, with new investments such as the recent super Casino bid and 'Storm City' a</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine</p>	<p>Along this frontage there is some interaction with the Ribble and Wyre Estuaries and Morecambe Bay. A number of skears/scars are located off Rossal Point which provide some</p>

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>£500 m scheme to build, a proposed multi-themed indoor entertainment complex on a 30 acre site between Rigby Road and Central Drive, which is located within an area at risk from flooding.</p> <p>Many of the current main tourist attractions such as the Pleasure Beach, promenade and piers are largely focused along the coastline south of the Tower and are therefore in the coastal flood plain and reliant on flood defences to provide the manage the risk from tidal flooding. Much of the seafront promenade area is constructed on reclaimed land and is at risk of coastal erosion. The local football ground is situated near to the shore along this frontage.</p> <p>As at Lytham St Annes, the majority of this settlement is of mid-nineteenth century and later, with some older buildings. It has a different character to its neighbours, and only one Conservation Area within the study area. It does have, however, a number of listed buildings including the world-famous tower complex.</p> <p>Squires Gate airfield has important WWII links.</p> <p>The Blackpool football club is within the flood risk zone.</p>	<p>operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>localised protection to the shore.</p> <p>Under a scenario of rising sea levels there may potentially be an issue with sustaining recreational beaches. There are also significant coastal flood risks along much of the Fylde coast, apart from the northern part of Blackpool which is on higher ground.</p>
Cleveleys	<p>Cleveleys is an important residential town and coastal resort. It is low-lying and there are large numbers of commercial, residential and community / amenity properties at coastal flood risk.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key</p>	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
		<p>community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Fleetwood	<p>Fleetwood’s economy was originally tourism and fishing based and it still revolves around these traditional areas of fishing, tourism, port activity and light industry, but since the early 1970s the town has struggled economically. There are plans to regenerate the town centre and waterfront to include new housing, retail offer, recreational facilities and entertainment attractions</p> <p>Fleetwood is a planned and planted town of the early nineteenth century, and its core contains many fine buildings of this date. The enclosed dock of 1877 was initially successful and later became the premier West Coast fishing port. It has a Conservation Area and a number of Listed Buildings.</p> <p>North Wharf, off Fleetwood, has a concentration of reported wrecks.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Infrastructure	<p>The A584 coastal road is a key route connecting the resorts along the Fylde coast and is at risk of tidal flooding and / or potential coastal erosion at a number of locations.</p> <p>The coastal tramway runs along the promenade at Blackpool and close to the coast along the rest of</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>its route and is at risk of tidal flooding and erosion.</p> <p>There are also a number of railway stations which are on the coastal route in close proximity to the coastline, or within the coastal flood plain and so the operation of the rail link and stations could be affected by tidal flooding</p> <p>Blackpool International Airport, located within this section, is in close proximity to the shore and therefore could be affected by tidal flooding.</p> <p>The Isle of Man Electricity interconnector goes offshore along this frontage at Anchorsholme. There is a large UU outfall at Manchester Square and pumping station which could be at risk. There is a further pumping station at Anchorsholme Park and a large sewerage pipe ‘the Fylde interceptor’ which runs right up to Fleetwood.</p>		
Community Facilities	There are several hospitals and schools in Cleveleys, Fleetwood and Blackpool which are in the coastal flood risk zone and at potential flood risk.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Beaches	<p>There are seven beaches along this coastal section, Blackpool – Central, Blackpool – North, Blackpool – South, St. Annes, St. Annes North, Bispham and Fleetwood which could be lost if coastal erosion is allowed to prevail.</p> <p>The beach not only acts as an amenity resource, but also has an important defence role.</p>	<p>To maintain and enhance the feature as a natural defence.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Dunes	The St Annes dune system is nationally designated	To maintain and enhance the feature as a natural	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	and provides an important natural form of coastal defence and protection to the backing low lying areas. Sand extraction has resulted in erosion issues at the base of the dunes where sand is stockpiled before being taken away.	defence.	
Morecambe Bay SPA, Ramsar & SAC	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Ribble & Alt Estuaries SPA & Ramsar Ribble Estuary SSSI	<p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on dunes, intertidal flats and saltmarsh. The site also includes the largest area of grazed greenmarsh in Britain.</p> <p>The distribution of habitats is particularly vulnerable to changes in the physical environment (natural or human induced), in particular, coastal squeeze and</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and</p>	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	the effects of climate change.	where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Liverpool Bay / Bae Lerpwl potential SPA	Feeding grounds for an International assemblage of Annex I birds and regularly occurring migratory birds. The continuation of natural processes is important in this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Wyre Estuary SSSI	Part of the Morecambe Bay intertidal system, comprising of saltmarshes, mud-flats and sandbanks. As such, the continuation of natural coastal processes is required to safeguard its status as an internationally important intertidal area.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Lytham St Anne's Dunes SSSI	The remnants of an extensive dune system. At Starr Hills the dunes reach their maximum width and are important as the best example of a calcareous dune system remaining in Lancashire. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Lytham Coastal Changes SSSI (geological)	Four separate locations within the town of Lytham St Anne's which provide a basic stratigraphic record of coastline changes. Coastal processes are the key to the conservation of geological SSSIs and therefore a "threat" is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Ribble Estuary NNR	The Ribble Estuary NNR extends over half of the total area of the Ribble estuary, including extensive areas of mud and sand flats and almost all of the saltmarsh habitat. The reserve is considered the most important site in the UK for wintering wildfowl and forms part of the Ribble and Alt Estuaries Ramsar site and SPA.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Lytham St Annes GCR Site and RIGS	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Lancashire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	<p>No Scheduled Monuments exist within this unit. However 4 Registered Parks and Gardens, 150 listed buildings and 7 Conservation Areas are recorded., along with many non-designated sites. As well as within the town centres, there is a concentration of Listed Buildings at Rossall Grange, formerly a medieval monastic estate centre and latterly a private house and now a public school.</p> <p>Settlement is generally of mid-nineteenth century and later date, but a few earlier survivals are to be found.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Tourism	<p>The coastal zone which comprises the towns of Blackpool, Fleetwood, Cleveleys and Lytham St. Anne's is a major regional and national destination. Blackpool in particular is considered a major tourist magnet, capitalising on its assets as the 'entertainment capital' of the north west.</p> <p>The hub of tourism activity and economy-generating activity is based around the sea front and piers at Blackpool as well as Fleetwood and Lytham St. Anne's which also have piers and 'formalised' seafront areas. Other leisure activities on the seafront include Fairhaven Lake (Lytham St. Annes) and Boating Pool (Fleetwood) which take advantage on the marine environment. There is also a formalised promenade for much of the coastal zone along this section which creates a high level of north-south permeability.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Promenades/Piers	<p>There are six promenades and piers within this coastal section, which could be at risk due to coastal erosion and /or flooding</p>	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Agricultural Land	<p>The majority of this coastal section comprises primarily of urban land along the coast and Grades 2 and 3 Agricultural Land located further inland.</p>	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p>	
Shell Fisheries	<p>A Shell Fisheries Harvesting Area is located off the coast of Fleetwood.</p>	<p>To minimise the impact of policies on marine operations and activities</p>	

COASTAL UNIT H – LYTHAM JETTY TO RIVER WYRE			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Golf Courses	There are numerous golf courses within this coastal section, with those located along the coast on low lying ground at most risk from coastal erosion and flooding.	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Landscape Character Areas 32: Lancashire and Amounderness Plain	Area 32 covers the largely rural agricultural landscape of the Ribble estuary as well as the Victorian coastal resorts of St Annes, Blackpool and Fleetwood.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.10 COASTAL UNIT I – WYRE ESTUARY

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Fleetwood	<p>Fleetwood’s economy was originally tourism and fishing based and it still revolves around the traditional areas of fishing, tourism, port activity and light industry, but since the early 1970s the town has struggled economically. There are plans to regenerate the town centre and waterfront to include new housing, retail offer, recreational facilities and entertainment attractions. However, almost all of Fleetwood is low-lying and within the coastal flood plain.</p> <p>Fleetwood is a planned and planted town of the early nineteenth century, and its core contains many fine buildings of this date. The enclosed dock of 1877 was initially successful and later became the premier West Coast fishing port. It has a Conservation Area and a number of Listed Buildings.</p> <p>North Wharf, off Fleetwood, has a concentration of reported wrecks.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>The Wyre Estuary is an integral component of the Morecambe Bay complex of estuaries and bays that characterise the coastal environment in this area of the West Coast. The River Wyre has a tidal bore, which runs the whole length of the estuary.</p> <p>The estuary is characterised by marshland and agricultural areas. The mouth is heavily constrained by urban development. There is some urban and industrial settlement in the Thornton area, including the Hillhouse Plant commercial power station; otherwise any residential use is in the form of small villages and scattered farms. The A588 road crosses the estuary south of Hambleton. The regeneration of Fleetwood may potentially be an area of conflict.</p>
Thornton	<p>Thornton has a significant number of residential, commercial and light industrial properties which are at coastal / tidal flood risk. There are also a number of former (?) chemical works sites adjacent to the banks of the Wyre.</p> <p>Regeneration is planned at Thornton.</p> <p>The former site of Burn Hall and Burn Hill adjacent may have been occupied since prehistoric or Roman</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p>	<p>Parts of the coastal unit fall within the boundaries of the Morecambe Bay Special Protection Area, Special Area of Conservation and Marine Protection Area.</p> <p>Key considerations are that any management changes to the estuary,</p>

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	times, and was the centre of a medieval estate. Marsh Mill at Thornton retains cap, sails and internal machinery, and is an important heritage and education resource.		<p>in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also adjacent open coasts.</p> <p>Subsequent changes in erosion / accretion of intertidal habitats will affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in management of the River Wyre.</p>
Coastal villages and isolated coastal properties	Hambleton, Great Eccleston, Little Eccleston, St Michaels on Wyre, all have properties located within the tidal flood plain.	To manage risk of coastal / tidal flooding to people and property.	
Infrastructure	<p>The main A585 road into Fleetwood is in the coastal flood risk zone.</p> <p>The Port facilities rely on dredging the approach channel. The Fleetwood to Knott End Ferry service operates across the mouth of the Wyre.</p> <p>A sub-station is located at Stannah. A new gas fired power station has been proposed on the ICI site.</p>	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Hill House Site	Victrex Technology Centre and other developments at the Hill House Site. Victrex plc is a manufacturing plant and research facilities. Victrex manufactures thermoplastic materials. The centre is located on the banks of the River Wyre.	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.</p>	
Minerals and waste	<p>The Jameson Road landfill site is located on the western bank of the Wyre, between the sites of the former Fleetwood and Burn Naze power stations.</p> <p>There is a waste water treatment works and landfill site in the coastal flood plain at Clifton Marshes.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Morecambe Bay SPA,	Confluence of the Leven, Kent, Lune and Wyre	To support natural processes and maintain	

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Ramsar & SAC	<p>estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Lune Estuary SSSI	<p>Part of the Morecambe Bay intertidal system, comprising of saltmarshes, mud-flats and sandbanks. As such, the continuation of natural coastal processes is required to safeguard its status as an internationally important intertidal area.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Wyre Estuary SSSI	<p>Part of the Morecambe Bay intertidal system, comprising of saltmarshes, mud-flats and sandbanks. As such, the continuation of natural coastal processes is required to safeguard its status as an internationally important intertidal area.</p> <p>There is a boulder clay rocky skear at the mouth of the estuary which forms a natural barrier and is of geological importance.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	The estuary together with Barnaby’s Sands and Burrows Marsh support the largest area of ungrazed saltmarsh in North West England.		
Lancashire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	<p>One Scheduled Monument is recorded within this unit, a Dovecote at Great Ecclestone. 65 Listed Buildings and 3 Conservation Areas are also recorded.</p> <p>Skippool is recorded as a small coasting port and had customs facilities as early as 1708. Bronze Age pottery and a nearby Romano-British settlement indicate a much longer history. Areas of saltmarsh and muddy creeks have potential for hulked ships and the sandbars and flats of the estuary and its approaches are known for their wrecks.</p> <p>The eastern side of the estuary is less densely populated than the west but still intensively occupied by scattered farms and villages. Heavily drained lands here include the fringes of the former Pilling-Stalmine-Winmarleigh Moss complex, which developed in the mid-prehistoric period and preserve material of Mesolithic to Bronze Age date, as well as indications of their reclamation in the medieval and post medieval periods. In contrast the area between Stalmine, Preesall and Knott End features numerous large water-filled sinkholes associated with the nineteenth and twentieth</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>century exploitation of the salt beds below, as well as large numbers of smaller ponds. In this area a number of finds of prehistoric and Roman material have also been made</p> <p>There is significant potential for 'hulked' ships within its tidal creeks, marshes and mud flats, e.g. at Skippool.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>		
Tourism	The coastal zone has significant amenity value within the natural beauty of the River Wyre estuarine environment. Despite the rural appearance of the eastern side of the estuary, the zone is accessible from larger conurbations, such as Fleetwood, Cleveleys and Blackpool which makes it an important tourist destination. Leisure sailing is also popular in this area.	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Fishing	The coastline in Unit I, including the River Wyre, is popular for recreational fishing which will potentially be affected by erosion, flooding and changes in coastal processes.	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p>	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 5 agricultural land. There are some pockets of Grade 2 agricultural land. An authorised landfill site and historical landfill site are located off the coast.	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	

COASTAL UNIT I – WYRE ESTUARY			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast	To minimise the impact of policies on marine operations and activities	
Wyre Way	The Wyre Way is a 41 mile recreational route, which follows the course of the River Wyre from its source in the Forest of Bowland to the sea at Fleetwood and Knott End, using existing footpaths and concessionary routes. The route is at significant risk from erosion and flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Golf Clubs	Knott End Golf Club, Fleetwood, is located on the banks of the River Wyre Estuary. The golf course is at significant risk from erosion and flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to people and residential property	
Landscape Character Areas 32: Lancashire and Amounderness Plain	Area 32 covers the largely rural agricultural landscape of the Ribble estuary as well as the Victorian coastal resorts of St Annes, Blackpool and Fleetwood.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.11 COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Heysham and Port of Heysham	<p>Heysham is a small, coastal settlement near Lancaster in the county of Lancashire. It overlooks Morecambe Bay and has two nuclear power stations which are visible landmarks from hills in the surrounding area (see unit J). Heysham consists of mainly residential properties and merges into Morecambe. The coastal settlement is potentially vulnerable to coastal erosion and flooding. There is also a church at Heysham where the graves are potentially eroding.</p> <p>The harbour and port is mainly used as a major ferry terminal, with daily sailings to the Isle of Man and Belfast. The port is also home to large industrial premises. There is a dedicated train terminus and line for the Port located on the banks of the port. Shifting sandbanks can affect port operations and management of coastal defences needs to consider this too.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>The Lune Bay shoreline consists of a predominantly low lying hinterland fronted by saltmarsh and a wide sandy intertidal zone which attenuates waves and provides protection to the shoreline. The Rivers Lune and Cocker are located along this coast, while the River Wyre bounds the section to the west. The headland at Heysham, forming the boundary to the north of this section, separates Lune Bay from Morecambe Bay.</p> <p>Erosion at Sunderland Point is contentious.</p> <p>The frontage largely consists of agricultural land use – low-grade on the shoreline itself, better quality further inland. There is some recreation and tourist use, and scattered settlements, including Knott End-on-Sea at the western end.</p> <p>This section of coastline falls within the boundaries of the Morecambe Bay Special Protection Area, Special Area of Conservation and Marine</p>
Heysham Power Station 1 and 2	<p>Nuclear power station located in adjacent to the Port of Heysham on the banks of Morecambe Bay, operated by British Energy. The site is divided into two separately-managed stations, Heysham 1 and Heysham 2, both of the advanced gas-cooled reactor (AGR) type, with two reactors each.</p> <p>The sites proximity to the coast makes the power stations and or infrastructure servicing the stations potentially susceptible to flooding and erosion.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.</p>	

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Coastal villages and isolated coastal properties	Between the Wyre and the Lune the hinterland is low-lying with an extensive coastal flood risk area. A number of small settlements, including Knott End, Preesall, Pilling and Sunderland Point, and isolated properties are located in this area and therefore may be prone to coastal erosion and flooding. The only access to Sunderland Point is via a causeway across the marshes, but this is tidal.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	Protection Area. The entire area is a shell fisheries hatching area. Evolution of the frontage is intrinsically linked with the regimes of the Wyre, Lune and Cocker and behaviour of channels and banks within Morecambe Bay.
Minerals/Waste	Cockerham Quarry, a clay and shale extraction quarry, is located to the north of the village of Cockerham. The site is bounded by the A588 to the east, Hillam Lane to the north, Hasty Beck to the west and a tributary of Hasty Beck to the south. The site is mainly undulating land used for the grazing of cattle.	To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	Sediment drift is northerly along the frontage, however, drift rates are low.
Beaches	Pilling Sands Beach (Preesall) is located within this coastal unit. Access to the identified beaches could be compromised if erosion is allowed to prevail. There is un-consented motorcycle activity on the intertidal area which is likely to compromise its stability. Control of the activity is difficult.	To maintain and enhance the feature as a natural defence. To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Morecambe Bay SPA, Ramsar & SAC	Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>		
Lune Estuary SSSI	<p>Part of the Morecambe Bay intertidal system, comprising of saltmarshes, mud-flats and sandbanks. As such, the continuation of natural coastal processes is required to safeguard its status as an internationally important intertidal area.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Cockerham Marsh SSSI	<p>The site contains the only colony of the natterjack toad (<i>Bufo calamita</i>) in Lancashire.</p> <p>Any change in coastal evolution could affect the habitat that this species relies upon.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Winmarleigh Moss SSSI	<p>The site is important as the largest area of lowland raised mire remaining in Lancashire.</p> <p>This site is particularly vulnerable to land drainage.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
River Wyre Section, Knott End & Cockersand Abbey Coastal Rock RIGS	<p>Geological features of local interest located within the coastal unit.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Lancashire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	<p>One Scheduled Monument is recorded within this unit, Cockersand Premonstratensian Abbey. The Abbey is located on the shoreline, to the south of the mouth of the River Lune. The shoreline is currently eroding, with the on-going loss of archaeological remains. The site is therefore at high risk of further erosion and loss.</p> <p>41 Listed Buildings are also recorded.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The attraction of the coastal zone is inherent in the natural beauty of the River Lune estuary although there is a significant tourist economy in Lancaster which, as a regional centre, is a significant settlement in zone.</p> <p>The city offers a number of historic attractions, but is also able to offer opportunities for shopping and ‘formalised’ leisure activities. The proximity to the coast and resorts such as Morecambe and Heysham as well as the Lake District national Park make the city an important destination.</p> <p>The city is easily accessible by car as well as cycle and long-distance footpaths. The city is also well linked into the canal network which is prevalent in this area, making the surrounding countryside accessible for leisure</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>purposes.</p> <p>There are a number of holiday caravan sites along the frontage at Pilling and Cockerham.</p>		
Agricultural Land	The land in this coastal section consists of a mixture of Grade 3, Grade 4 and Grade 5 agricultural land. There are some pockets of Grade 2 agricultural land also.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast, exact locations will change from year to year.	To minimise the impact of policies on marine operations and activities	
National Cycle Route 6 and Lancashire Coastal Way	<p>Coastal Sustrans National Cycle Route 6 runs from Preston through Lancaster to Kendal and Windermere in the Lake District. The route mainly runs along the Lancaster canal and inland up to Kendal, and is therefore at minimal risk to flooding or erosion.</p> <p>Lancashire Coastal Way follows the coastline from Merseyside to Cumbria.</p> <p>The routes are very popular and are an important tourist and recreation attraction.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
<p>Landscape Character Areas</p> <p>32: Lancashire and Amounderness Plain</p> <p>31: Morecambe Coast and Lune Estuary</p>	<p>Area 32 covers the largely rural agricultural landscape of the Ribble estuary as well as the Victorian coastal resorts of St Annes, Blackpool and Fleetwood.</p> <p>Area 31 includes a range of coastal landscape features towards the mouth of the Lune estuary including: extensive salt marshes; reclaimed mosses and marshland; a small area of remnant mossland at Heysham; sand and shingle beaches north of the</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT J – KNOTT END-ON-SEA TO HEYSHAM			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>estuary; and sandstone cliffs at Heysham. Development is generally concentrated along the coastal strip where Heysham power station and caravan sites dominate the coastal scenery, with the remaining pastoral elements providing important countryside wedges.</p>		

EI.12 COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)

COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Lancaster	<p>Important historical and commercial centre. The City is a major tourist attraction with its rich history, including a Castle and Cathedral, being its main appeal.</p> <p>Includes a wide range of visitor attractions and community facilities, such as educational and leisure facilities, including the University of Cumbria and Royal Lancaster Infirmary, most of which are located on higher land and are therefore at lower risk.</p> <p>The river Lune runs through the centre of the City and some of the City is located on low lying ground, therefore key infrastructure such as roads and bridges are at potential coastal flood risk. Commercial river activity is minimal; however, development and activity on flood plains is evident and continued.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>The Lune Estuary is an integral component of the Morecambe Bay complex of estuaries and bays that characterise the coastal environment in this area of the West Coast.</p> <p>The mouth is constrained by the outcrops at Sunderland Point and Plover Hill. The estuary itself is characterised by extensive areas of saltmarsh in the outer estuary which act as a natural form of defence, and training walls which constrain the channel within the middle estuary. Saltmarsh areas are changing with some being rapidly eroded. The training walls are no longer maintained and this is partly responsible for the loss of saltmarsh.</p>
Villages and isolated properties along the estuary shoreline	<p>A number of small settlements, such as Overton, Sunderland Point and Glasson, and isolated properties are located along the banks of the Lune Estuary and therefore may be prone to coastal erosion and flooding.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>Morecambe Bay and the Irish Sea provide the main sources of sediment to the Lune Estuary. The mouth of the estuary is a shell fisheries hatching area, and the intertidal areas within the estuary are internationally designated.</p>
Glasson Dock and Marina	<p>The dock has some limited commercial traffic and the marina and canal link are locally important recreational / tourist facilities. They are located in the coastal flood risk zone and proximity to the coast makes them susceptible to erosion and tidal</p>	<p>To avoid loss due to erosion of and manage risk of tidal flooding to industrial, commercial, amenity and recreational economic assets and activities and tourism</p>	<p>Land use is largely agricultural on the low-lying hinterland, interspersed with a number of small settlements</p>

COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>flooding.</p> <p>The training walls in the Lune are maintained by Glasson Docks.</p>		<p>at Sunderland, Overton and Glasson as along with the large urban area of Lancaster in the inner estuary. The railway and a number of roads cross the estuary near its normal tidal limit at Lancaster. A causeway across Lades Marsh links the villages of Overton and Sunderland. These features and settlements are potentially areas of conflict within the estuary.</p> <p>Key considerations are that any management changes to the estuary, in terms of managed realignment or hold the line policies, could impact on the entire estuary regime and also adjacent coastlines within Lune Bay</p>
Infrastructure	<p>The M6 is a major transport route from Scotland down the west coast of England to Birmingham and forms part of the trunk road network, as well as part of the Trans European Network (TENs). As well as this the West Coast Mainline Railway is a key transporter route that follows a similar route. The routes travel close to the coast at Lancaster, but are at negligible risk from erosion or flooding due to their high location.</p> <p>A causeway has been built across Lades Marsh linking Overton and Sunderland. This gives restricted access due to tidal flooding.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	

COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Morecambe Bay SPA, Ramsar & SAC	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Lune Estuary SSSI	Part of the Morecambe Bay intertidal system, comprising of saltmarshes, mud-flats and sandbanks. As such, the continuation of natural coastal processes is required to safeguard its status as an internationally important intertidal area.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Lancashire BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Heritage features	Four Scheduled Monuments are recorded for this unit, three of which are industrial heritage sites including a glass works and a multi phase site of Roman and medieval date at Castle Hill. 356 Listed	To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally,	

COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>Buildings and 8 Conservation Areas are also recorded. The conservation area at Sunderland Point includes the village, a total of 23 houses and the wharf and gate pier.</p> <p>A number of heritage features along this section are noted to be at risk from coastal erosion or flooding now or in the future. For example, both Glasson Dock and Skerton Bridge are at risk of flooding or coastal defence works.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Golf Club	Lancaster Golf Club is located on the banks of the Lune Estuary and is at risk from erosion and flooding. There is a bridle way which runs to the golf club from Glasson/Heysham.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 2, Grade 3 and Grade 5 agricultural land.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
Landscape Character Areas 31: Morecambe Coast and Lune Estuary	Area 31 includes a range of coastal landscape features towards the mouth of the Lune estuary including: extensive salt marshes; reclaimed mosses and marshland; a small area of remnant mossland at Heysham; sand and shingle beaches north of the estuary; and sandstone cliffs at Heysham. Development is generally concentrated along the	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT K – LUNE ESTUARY (PLOVER SCAR TO HALL END SCAR)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	coastal strip where Heysham power station and caravan sites dominate the coastal scenery, with the remaining pastoral elements providing important countryside wedges.		

EI.13 COASTAL UNIT L – HEYSHAM TO ROA ISLAND

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Morecambe	<p>An important tourist resort in the North West supporting a range of tourist attractions, accommodation, shops, recreational and tourist facilities as well as residential and community properties. The promenade and beach front properties are an important attraction for tourists, which being located along the coast are therefore at higher risk of tidal flooding and erosion.</p> <p>The town is situated on low lying ground, therefore there are many properties and key infrastructure assets such as roads, the Morecambe Branch Line and the railway terminus of Morecambe that could be affected by tidal flooding and erosion. There are also several schools, and potentially a hospital in the coastal flood risk zone.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>This section of coastline between Heysham and Roa Island comprises the ‘main bay’ of Morecambe Bay, where the local estuaries strongly influence the characteristic shifting banks and channels.</p> <p>The area is characterised by low-lying land with wide sand inter-tidal foreshores with local shingle patches, interspersed with limestone cliffs fronted by saltmarsh, such as those between Hest Bank and Arnside. Towards the north of the frontage the hinterland is characterised by low till cliffs and a number of scars along the foreshore.</p>
Grange-over-sands	<p>Grange over sands is a small town on the northern margins of the Bay at the mouth of the Kent estuary. Although generally built on quite steeply sloping higher ground out of the coastal flood risk zone seafront properties and infrastructure such as the coastal railway and promenade are at risk of tidal flooding / erosion.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>Land uses vary between agricultural and urban/industrial. The main potential areas of conflict lie around the main urban settlements of Heysham, Morecambe, Camforth and Grange-over-sands, the Port of Heysham, and Heysham nuclear power station.</p>
Coastal villages and isolated coastal properties	<p>A number of small settlements, such as Carnforth, Silverdale, Anside, Aldingham, Roosebeck, Rampside, Roa Island and other more isolated properties are located along the banks of Morecambe Bay and therefore may be prone to</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>The confluence of the Leven, Kent, Lune and Wyre estuaries collectively form the largest single area of continuous intertidal mudflats and</p>

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	coastal erosion and flooding.		sandflats in the UK. These intertidal areas are internationally and nationally designated for their nature conservation value, which largely depends upon the continuation of natural coastal processes operating within the bay.
Infrastructure	<p>The Ulvertson to Barrow coast road is subject to coastal erosion at a number of locations.</p> <p>The Cumbrian Coastal Railway, an important link for the nuclear industry as well as for the local community, runs alongside / close to the shore in a number of locations. Railway viaducts have been constructed across the mouths of the Kent and Leven Estuaries. There are also a number of railway stations which are on the coastal route in close proximity to the coastline, or within the coastal flood plain and so the operation of the rail link and stations could be vulnerable to tidal flooding or coastal erosion, for example between Morecambe and Hest Bank..</p> <p>Tourist caravan parks are a feature of Morecambe Bay.</p>	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	<p>Evolution of the frontage is intrinsically linked with the regimes of the Wyre, Lune and Kent and Leven Rivers and the behaviour of their associated channels and banks within Morecambe Bay.</p> <p>Key considerations are that any management changes within Morecambe Bay, in terms of managed realignment or hold the line policies, will impact on the entire regime of the Bay and also adjacent coasts (Walney Island and south the frontages in the south of Morecambe Bay).</p>
Landfill Sites	<p>There are two landfill sites within the Unit, Salt Ayre and Cotestones; Salt Ayre Landfill site lies approximately 1.5 km northwest of Lancaster to the south of Ovington Road. The site occupies land on the northern bank of the River Lune.</p> <p>Cotestones is a former municipal waste landfill and former household waste centre located on the north bank of the River Keer to the west of Warton on coastal marsh. The site is being restored to agriculture for sheep grazing which has been achieved in the eastern and south-western segments</p>	<p>To ensure safety and minimise / reduce the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>Subsequent changes in erosion / accretion of intertidal areas within the bay will affect management decisions. Changes will also affect designated areas which cover both saltmarsh and intertidal areas.</p> <p>The parish church at Heysham is on</p>

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	of the site. Further erosion in this location would begin to erode the waste tip.		the eroding cliff top. Graves are at risk of being lost. The church would like the cliff to be defended, however, this may not be a sustainable option.
Beaches	There are a number of recognised beaches in Unit L: These include Half Moon Bay (Heysham), Morecombe North and South (Morecombe) and Hest Bank (Lancaster) as well as lesser used beaches at locations such as Aldingham and Roosebeck. The identified beaches could be lost if erosion is allowed to prevail.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To maintain and enhance the feature as a natural defence.	The Ulvertson coast road is subject to erosion at specific points. Sustainability of the road position will be questionable in the future, therefore, potential realignment of the road should be investigated. Caravan Parks are a feature of Morecambe Bay, some of which are located on reclaimed marsh and are therefore at flood risk.

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Morecambe Bay SPA, Ramsar, SAC & SSSI	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated conservation sites. Maintain/achieve favourable condition.</p>	
Leighton Moss SPA, Ramsar, SSSI	<p>The site supports an international assemblage of Annex I birds and regularly occurring migratory birds on the largest reedbed in North West England.</p> <p>This site is particularly vulnerable to land drainage. It would once have had direct tidal influence; discussion is needed to decide whether this should be allowed / encouraged to recur.</p> <p>Leighton Moss also forms part of the coastal protection.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated conservation sites. Maintain/achieve favourable condition.</p>	
Morecambe Bay	Woodland and other vegetation growing on	To support natural processes and maintain	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Pavements SAC	Limestone pavements and on slopes, screes and ravines. The net area of these sites could be reduced by cliff / coastal erosion.	and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Sea Wood SSSI	Rare example of woodland on boulder clay overlying limestone. Any changes to coastal evolution could affect this feature.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Iron Pit Spring Quarry SSSI (geological)	A key palaeontological and stratigraphical locality of importance in regional comparisons in the Lower Carboniferous. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Barker Scar SSSI (biological)	Cliff ledges and tops support interesting limestone grassland with patches of scrub and woodland. The net area of this site could be reduced by cliff / coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Barker Scar SSSI (geological)	Cliffs provide good exposures of Carboniferous limestone. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Humphrey Head SSSI	A small Carboniferous limestone promontory	To avoid adverse impacts on, conserve and	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
(biological)	<p>supporting a variety of habitats including calcareous grassland, open cliff, and native broad-leaved woodland.</p> <p>The net area of this site could be reduced by cliff / coastal erosion.</p>	where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Humphrey Head SSSI (geological)	<p>The site is of high geological interest and is an important locality for studies of Lower Carboniferous fossils.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Wart Barrow SSSI	<p>A mosaic of habitats made up of limestone grassland, bracken, scrub and woodland.</p> <p>The net area of this site could be reduced by coastal erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Meathop Woods & Quarry SSSI (biological)	<p>Native broad-leaved woodland covers most of the site and limestone cliffs, grassland, scrub and a disused quarry are also included.</p> <p>The net area of this site could be reduced by coastal erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Meathop Woods & Quarry SSSI (geological)	<p>Location recognised as a classic site for the study of the marine organisms that flourished in the Lower Carboniferous sea.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the</p>	To support natural processes and maintain geological exposures throughout nationally designated geological sites	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	construction of coastal defences.		
Meathop Moss, Nichols Moss & Foulshaw Moss SSSIs	Designated for its bog habitat. These sites are particularly vulnerable to land drainage.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Hawes Water SSSI	Areas of peat overlying marl deposits contribute, along with adjacent limestone exposures, to a remarkable range of habitats centred upon the lake. This site could be at risk of tidal inundation.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Gait Barrows (biological) SSSI	Nationally important examples of limestone pavement and its flora. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Gait Barrows (geological) SSSI	National geologically important examples of limestone pavement. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Arnside Knott SSSI	An intricate mosaic of limestone habitats of unimproved calcareous grassland, basic dry heath, scrub and woodland. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Far Arnside SSSI	Limestone grassland including an area of cliff-top grassland interspersed with patches of scrub. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Silverdale Golf Course SSSI	Site supports a moderately species-rich unimproved, calcareous grassland habitat. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Trowbarrow Quarry SSSI (geological)	Comprises an interesting section through the Lower Carboniferous Urswick Limestone. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Thrang End & Yealand Hall Allotment SSSI	A wide range of habitats, including calcareous and acidic grasslands, bracken, heather, hawthorn and hazel scrub and woodland. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Jack Scout SSSI	An important for supporting an area of calcareous grassland. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Crag Bank SSSI	An area of boulder clay ridges and marshy grassland on calcareous peaty soil.	To avoid adverse impacts on, conserve and where practical enhance the designated	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Any change to coastal evolution could affect this feature.	interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Heysham Moss SSSI	A small lowland raised bog. This site is particularly vulnerable to land drainage issues.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Leighton Moss RSPB Reserve	Leighton Moss is the largest reedbed in north-west England, and consequently is home to breeding bitterns, bearded tits and marsh harriers. Leighton Moss SPA, Ramsar, SSSI & RSPB Reserve is a freshwater wetland that would be adversely affected by tidal inundation. Other freshwater wetland enhancement and creation projects are underway in the vicinity of Leighton Moss, eg Silverdale Moss and Barrowscout fields. RSPB visitor facilities include seven hides, a tearoom, shop and educational facilities.	To avoid impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Humphrey Head GCR Site and Warton Crag, Burton Well, Silverdale, Heysham Head and Half Moon Bay, Jack Scout / Silverdale Shore, Lundsfield Quarry North, Camforth, Red	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Bank Coastal Drumlin, Bolton le Sands, Red Nab, Heysham & Thwaite House Moss, near Camforth RIGS			
Lancashire & Cumbria BAPs	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its social and cultural roots. The National Park aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	
Arnside & Silverdale AONB	A core biodiversity resource of national and regional importance. The AONB aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	
Heritage features	14 Scheduled Monuments were recorded within this unit, these range in date from prehistoric sites such as Warton Crag to the remains of a WWII airfield at Cark. Caves, medieval and post medieval sites are also features of this unit. One Registered Park and Garden is recorded in addition to 285 Listed Buildings and 2 Conservation Areas. A number of heritage features along this section are noted to be at risk from coastal erosion or flooding	To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>now or in the future. The site and setting of St Patrick’s early Christian chapel and associated cemetery, Lower Heysham, is at potential risk from coastal erosion or coastal defence work. In addition, the seaward side of Moat Hill, motte and bailey castle and earlier ringwork has been partially destroyed by coastal erosion and is clearly at risk of further coastal erosion in the future.</p> <p>Within the intertidal zone, there is the potential for both natural and manmade features of archaeological significance, such as buried forest beds, as formally seen off Grange-over-Sands. The potential exists for early Holocene land surfaces, and evidence of human activity throughout this area. Fishtrap complexes recorded at Cowp Scar and Wadhead Scar demonstrate the potential for medieval and post-medieval structures, sometimes on a large scale, and that the movement of tidal trends and channels has the potential to both erode and cover such features at short notice.</p> <p>While evidence of prehistoric activity is not abundant, there are known findspots of material of this date within the coastal margins, and the caves within the limestone of south Cumbria and North Lancashire have, when excavated, revealed a long record of human exploitation. Similarly, Romano-British material from the Furness peninsula and barrow-in-Furness suggest activity during this period, although knowledge of settlement sites</p>		

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>remains sparse.</p> <p>While requiring detailed assessment, the coastal zone within this area has high potential for containing the remains of salt making, potentially from prehistory through to the post-medieval period. Evidence is also likely to occur some distance from the modern shoreline in areas of sea defence construction and reclamation.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>		
Tourism	<p>The coastal zone within Morecambe Bay is a varied and diverse area which has particular significance for tourism. Although much of the coast remains rural, significant settlements such as Heysham, Carnforth, Morecambe and Grange-over-Sands. These settlements are tourist attractions in their own right as well as being destinations which are accessible from the adjacent Lake District National Park.</p> <p>The major settlements in the coastal zone are largely Victorian resorts and are based around Morecambe Bay as a significant natural and leisure asset. Significant regeneration in Morecambe has capitalised on the seafront area and restored assets such as the Art Deco Midland Hotel and the Tern Project on the coastal zone, has made this a significant tourist destination</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
National Cycle Route	Cumbrian Coastal Way and Coastal Sustrans	To minimise coastal flood and erosion risk to key	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
72 , Cumbrian Coastal Way and Lancashire Coastal Way	<p>National Cycle Route that starts in Kendal and makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South Shields via Haltwhistle, roughly following Hadrian's Wall.</p> <p>Lancashire Coastal Way follows the coastline from Merseyside to Cumbria.</p> <p>The route is very popular and is an important tourist and recreation attraction.</p>	community, recreational and amenity facilities.	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5. There are also authorised and historical landfill sites within the SMP2 unit.	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
<p>Landscape Character Areas</p> <p>31: Morecambe Coast and Lune Estuary</p> <p>20: Morecambe Bay Limestones</p> <p>7: West Cumbria Coastal Plain</p>	<p>Area 31 includes a range of coastal landscape features towards the mouth of the Lune estuary including: extensive salt marshes; reclaimed mosses and marshland; a small area of remnant mossland at Heysham; sand and shingle beaches north of the estuary; and sandstone cliffs at Heysham.</p> <p>Development is generally concentrated along the coastal strip where Heysham power station and caravan sites dominate the coastal scenery, with the remaining pastoral elements providing important</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT L – HEYSHAM TO ROA ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>countryside wedges.</p> <p>Area 20 covers the north of Morecambe Bay. Features that define the area include shifting intertidal sandflats and saltmarsh, gravelly or muddy beaches backed by low limestone cliffs.</p> <p>Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible factories and manufacturing and processing plants, particularly near Workington, Whitehaven, Sellafield and Barrow.</p>		

EI.14 COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)

COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Coastal villages and isolated coastal properties	A number of small coastal villages, including Arnside, Storth and Sandside, and other isolated properties lie close to the shore of the estuary and therefore may be prone to coastal erosion and flooding. These villages are prone to being isolated from flooded routes and rail links, including Arnside Rail Station.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	The Kent Estuary is an integral component of the Morecambe Bay complex of estuaries and bays that characterise the coastal environment in this area of the West Coast. The funnel shaped estuary is characterised by predominantly low-lying land and localised areas of high land at Storth, Sandside and Arnside. The surrounding land is mostly natural, with large areas of saltmarsh and forest. There are large areas of low grade agricultural land on the southern banks and small urban areas on the southern side, namely Arnside and Storth, otherwise human settlements take the form of small villages and farms. The Kent Channel is constrained by the Kent Viaduct at Arnside. These areas provide the main potential for conflict within the estuary.
Infrastructure	The Railway embankment and viaduct between Arnside and Grange has constrained and protected the estuary and so future changes to the management of these assets could impact on flood and erosion risks in the estuary. The B5282 between Arnside, Storth and Milnthorpe runs close to the shore and so is at potential risk of flooding and erosion.	To avoid loss due to erosion of and manage risk of flooding to properties, environmental and economic assets.	
Morecambe Bay SPA, Ramsar, SAC & SSSI	Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation). Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats. The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	As part of Morecambe Bay, the estuary is within the Morecambe Bay Special Area of Conservation, Special Protection Area, Ramsar and Marine Protection Area. Key considerations are that any

COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.		<p>management changes to the estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also adjacent coastlines within Morecambe Bay. The viaduct has constrained and protected the estuary and so future changes to the management of this asset could impact on flood and erosion risks in the estuary.</p> <p>Subsequent changes in erosion / accretion of intertidal habitats will affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in the management of the River Kent.</p>
Witherslack Mosses SAC Foulshaw Moss SSSI	<p>Designated for its bog habitat.</p> <p>The area particularly vulnerable to land drainage. It would once have had direct tidal influence; discussion is needed to decide whether this should be allowed / encouraged to recur.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Morecambe Bay Pavements SAC	<p>Woodland and other vegetation growing on Limestone pavements and on slopes, screes and ravines.</p> <p>The net area of these sites could be reduced by cliff / coastal erosion.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p>	
Underlaid Wood SSSI	<p>Prominent wooded plain with a broad range of limestone habitats.</p> <p>The net area of these sites could be reduced by coastal erosion.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Hawes Water SSSI	<p>Areas of peat overlying marl deposits contribute, along with adjacent limestone exposures, to a remarkable range of habitats centred upon the lake.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature</p>	

COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	This site could be at risk of tidal inundation.	conservation sites. Maintain/achieve favourable condition	
Gait Barrows SSSI (biological)	Nationally important examples of limestone pavement and its flora. The net area of these sites could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Gait Barrows SSSI (geological)	National geologically important examples of limestone pavement. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its social and cultural roots. The National Park aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	
Arnside & Silverdale AONB	A core biodiversity resource of national and regional importance. The AONB aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	

COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Heritage features	<p>Six Scheduled Monuments ranging from prehistoric funerary monuments, medieval settlement sites and post medieval structures such as Castlehead Bridge are present within this unit. Two Registered Parks and Gardens are recorded in addition to 57 Listed Buildings and 2 Conservation Areas.</p> <p>The former floodplain adjacent to lower reaches of the River Kent, alongside the tributary Rivers Winster and Gilpin, are peat-rich mosslands with demonstrated prehistoric potential for wooden structures and artefacts. The palaeoenvironmental record within these deposits has also proved to be well preserved.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The coastal and estuarine zone is largely rural in nature with a limited number of interspersed settlements. Nevertheless, the River Kent estuary in within the Lake District National Park and is a significant tourism 'magnet' by virtue of its natural beauty.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Agricultural Land	<p>The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5.</p>	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p>	
National Cycle Route 72 and Cumbrian Coastal Way	<p>Cumbrian Coastal Way and Coastal Sustrans National Cycle Route that starts in Kendal and makes its way around the Cumbrian coast</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

COASTAL UNIT M – KENT ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South Shields via Haltwhistle, roughly following Hadrian's Wall.</p> <p>The route is very popular and is an important tourist and recreation attraction.</p>		
<p>Landscape Character Areas</p> <p>20: Morecambe Bay Limestones</p>	<p>Area 20 covers the north of Morecambe Bay. Features that define the area include shifting intertidal sandflats and saltmarsh, gravelly or muddy beaches backed by low limestone cliffs.</p>	<p>To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion</p>	

EI.15 COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Ulverston	<p>Ulverston is a market town with the main focus being towards tourism and retail, with a number of shops and pubs based in the centre of the town. The town is predominantly residential with some community facilities and amenity.</p> <p>The town is generally at low risk of tidal flooding as it lies largely on high ground. However, the eastern area adjacent to the canal is low-lying and in the coastal flood risk zone.</p> <p>The Rail Station is on high ground and of low risk; the Furness Rail Line runs through the SMP2 unit along the coast and is at potential risk from flooding and erosion.</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	<p>The Leven Estuary is an integral component of the Morecambe Bay complex of estuaries and bays that characterise the coastal environment in this area of the West Coast.</p> <p>The estuary is characterised by low-lying land interspersed with localised areas of higher land fronted by sand flats and saltmarsh. A large area of saltmarsh has developed south of the Leven Breakwater at Cark.</p> <p>Low-lying land is predominantly low grade agricultural land interspersed with isolated properties and farms.</p>
North Lonsdale Industrial Estate	<p>GlaxoSmithKline pharmaceuticals factory and industrial estate is located on low lying land on the banks of Morecombe Bay adjacent to Canal Foot, Ulverston. , containing mainly light industry and large warehouses, as well as a sewage treatment works.</p> <p>Due to the sites coastal location it has a potential risk to be affected by coastal erosion or flooding. The industrial estate has its own dedicated rail line which links to the Furness Line.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	<p>The village of Greenodd is situated on higher land where the estuary begins to narrow.</p> <p>The Leven Channel is geologically constrained in this area and by the Leven Viaduct, breakwater and associated embankments at Cark. The larger urban area of Ulverston is set back from the shoreline in the outer estuary. These areas provide the main potential for conflict within the estuary.</p>
Infrastructure	<p>The Railway embankment and Leven Viaduct has constrained and protected the estuary and so future changes to the management of these assets could</p>	<p>To avoid loss due to erosion of and manage risk of flooding to properties, environmental and economic assets.</p>	<p>As part of Morecambe Bay, the</p>

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	impact on flood and erosion risks in the estuary.		estuary is within the Morecambe Bay Special Area of Conservation. Social

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Morecambe Bay SPA, Ramsar, SAC & SSSI	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Roudsea Wood & Mosses SAC & SSSI	<p>Designated for its bog habitat & yew woodlands.</p> <p>These sites are particularly vulnerable to land drainage.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Skelwith Hill SSSI	Cliff and foreshore outcrops provide fine exposures	To support natural processes and maintain	

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
(geological)	of Carboniferous Limestone. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	geological exposures throughout nationally designated geological sites	
Barker Scar SSSI (biological)	Cliff ledges and tops support interesting limestone grassland with patches of scrub and woodland. The net area of this site could be reduced by cliff / coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Barker Scar SSSI (geological)	Cliffs provide good exposures of Carboniferous limestone. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its social and cultural roots. The National Park aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	
Heritage features	Two Scheduled Monuments, Frith Hall and Lowwood Gunpowder Works are present within this unit. One Registered Park and Garden and 20	To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk	

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>Listed Buildings are also recorded.</p> <p>The eastern side of the Leven Estuary is bordered by Holker Park and Holker Mosses, containing a number of rural industrial remains, such as bloomeries, charcoal barns, lime kilns, brick kilns and quarries, many situated on or close to the coast. The low-lying moss deposits contain significant palaeoenvironmental potential, while the intertidal mudflats are also an area of potential for fishtraps and timber structures.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The Coastal Unit is largely rural in nature, although the town of Ulverston is immediately to the west of the SMP2 boundary. The area retains good links to the southern Lake District National Park via cycle and long-distance footpaths (Cumbria Coastal Way) as well as Lakeside & Haverthwaite Heritage Railway</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
National Cycle Route 72 and Cumbrian Coastal Way	<p>Cumbrian Coastal Way and Coastal Sustrans National Cycle Route that starts in Kendal and makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South Shields via Haltwhistle, roughly following Hadrian's Wall.</p> <p>The route is very popular and is an important</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

COASTAL UNIT N – LEVEN ESTUARY (FROM VIADUCT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	tourist and recreation attraction.		
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5. An historic landfill is also located within the SMP2 unit.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities To manage and minimise risk of pollution from contaminated sources	
Landscape Character Areas 20: Morecambe Bay Limestones	Area 20 covers the north of Morecambe Bay. Features that define the area include shifting intertidal sandflats and saltmarsh, gravelly or muddy beaches backed by low limestone cliffs.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.16 COASTAL UNIT O – WALNEY ISLAND

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Walney Island	<p>Large marine island off coast of Barrow in Furness connected by road bridge. The island is mainly residential. The four main settlements are Biggar, North Scale, North Walney and Vickerstown.</p> <p>There is concern that a large number of dwellings, including West Shore Park, on the west side of the Island are under threat from coastal erosion. The whole island is also at potential risk from rising sea levels.</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	<p>Walney Island is a barrier island fronted by a shingle and sand beach. At the northern and southern ends of the island, large sand and shingle spits extend into the Duddon Estuary and Morecambe Bay respectively. The sheltered east coast of Walney Island is characterised by large expanses of saltmarsh and mudflats which attenuate the wave energy and protect the shoreline. There is a drift divide along the frontage; however sediment supply is already limited.</p> <p>South of Hillock Whins the Island is part of the Morecambe Bay Special Area of Conservation, Special Protection Area and Marine Protection Area, and north of Vickerstown the Island is within the Duddon Estuary conservation areas. The inner coastline of the island is also protected, although the central west coast contains no designated sites. The main potential area of conflict is therefore around Vickerstown.</p> <p>On Walney Island itself, the land use is mainly agricultural and marshland,</p>
Barrow-in-Furness (Port of Barrow)	<p>Large industrial centre, built on the back of its steel and iron industry, and a major ship building centre in Europe. There has been major redevelopment of Barrow in recent years, not least around its dock, in order to improve its tourism industry. It is also a commercial and recreation centre, with community facilities.</p> <p>Barrow's railway station is located on higher ground away from any potential risk from erosion or flooding.</p> <p>Commercial development and industry is focused</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>around the port, with residential areas beyond.</p> <p>The town is situated partly on low lying ground; therefore key infrastructure such as roads, the RNLI lifeboat station and a large amount of industrial, commercial and residential premises of Barrow-in-Furness could be affected by tidal flooding..</p>	<p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	<p>with small settlements at Biggar and Vickerstown. The inner coastline is more heavily urbanized with the towns of Barrow-in-Furness and Ulverston, and the Port of Barrow. There is a commercial power station at Roosecote Centrica. Much of the Walney Channel provides shell fisheries hatching sites.</p>
Bucleuch Dock, Barrow	<p>The main ship building dock for Barrow in Furness, also housing the Princess Selandia, a major tourist attraction. There are numerous ship building factories, industrial premises and associated offices located within the dockland.</p> <p>The dockland is also served by a number of roads and infrastructure, as well as a sewage works and nature reserve.</p>	<p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise the impact of policies on marine operations and activities</p>	<p>The frontage has interactions with both the Duddon Estuary and Morecambe Bay and their associated sandbanks. As sea levels rise, coastal squeeze may become a potential issue along the defended sections of shoreline.</p>
Roosecote Centrica Power Station	<p>Roosecote Power Station is a 229MWe gas-fired power station on Rampside Road in the Roosecote district of Barrow-in-Furness near the A5087.</p> <p>The power station is located to the east backs of Bucleuch Dock, and is therefore potentially susceptible to tidal flooding and erosion, although significantly protected by Walney island..</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.</p>	
Rampside gas terminal	<p>Major gas pipeline terminal situated north of Rampside serving offshore gas fields. Potentially within the coastal flood risk zone.</p> <p>Pipework connecting to existing gas fields and planned/proposed offshore gas storage areas</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To ensure safety and minimise the risk of pollution and contamination in respect of nuclear</p>	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	crosses Walney Island and then the Walney Channel. The need to defend this pipework will need to be considered particularly at vulnerable crossing points on Walney Island.	facilities and major industrial or hazardous sites.	
Offshore Wind farms	<p>There is one operational offshore wind farm and two offshore wind farms with consent off the coast of Barrow/Isle of Walney, using harbours for construction and maintenance of the wind farm. The risk of tidal flooding can have an impact on the cable when it comes to shore and continues to the required sub-station. Erosion and flooding can cause exposure of the power cables, resulting in serious damage to the cable.</p> <p>Continues access to harbours is required in order to maintain the wind turbines, therefore requiring adequate flood defences.</p>	<p>To ensure tidal flooding and erosion risks to critical road and rail linkages are managed appropriately.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	
Railway Station and Railway Line	Barrow in Furness Rail Station signals the end of the Cumbrian Coastline and the beginning of the Furness Line, which runs to Manchester. Both Barrow Station and Roose Station, to the east of Buccleuch Dock, are set on high ground and are therefore at negligible risk from erosion and flooding. The line, however, runs directly past Buccleuch Dock and is at risk from potential erosion or flooding.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Walney Airfield	The BAE Systems airfield on Walney Island is affected by erosion. The road that fronts West Shore Park is an emergency access to the airfield and if it was lost the airfield would lose its operating	To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	licence.		
Landfill sites	<p>Planning permission has been granted for a landfill site at Roose (Roose Sand Pit Landfill) east of Buccleuch Dock. Its proximity to the dock makes it potentially vulnerable to erosion and flooding.</p> <p>There are also landfill sites on the west coast of Walney, which are eroding.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Walney Channel Salt Workings	The Walney Channel is a unique salt marsh; which allows the salt is extracted from this area. POLICY 47 of the Barrow Local Plan identifies that proposals for the extraction of salt from the Walney Channel Preferred Area will only be permitted if it can be demonstrated that there will be no adverse effects on the operation of the Port of Barrow and there are adequate safeguards against subsidence.	To minimise the impact of policies on marine operations and activities	
Beaches	There are several recognised bathing beaches in Unit O: Biggar Bank, Sandy Gap, West Shore (Walney Island), The identified beaches could be lost if erosion is allowed to prevail.	<p>To maintain and enhance the feature as a natural defence.</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Duddon Estuary SPA, Ramsar, SSSI (biological)	<p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>Important natterjack toad site (North Walney NNR).</p> <p>Mouth of the estuary forms an extensive flat sand plain. The mid and upper reaches are flanked by saltmarsh and beyond high water, extensive sand dunes.</p> <p>The intertidal zone is being threatened by coastal squeeze as a result of land claim and coastal defence works as well as sea level rise and storm surges.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Morecambe Bay SAC, SPA & Ramsar	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>Supports International assemblage of Annex I birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p>	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	are and should continue to be explored.		
Duddon Estuary SSSI (geological)	Designated due to the geomorphological interest of North Walney. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
South Walney & Piel Channel Flats SSSI (biological)	Site displays a diverse association of maritime habitats which include shingle, sand-dunes, mudflats, saltmarsh, rocky shores and artificial freshwater and brackish lagoons. Natural process changes would not result in unfavourable condition provided there was room to roll back. Cavendish Dock falls within the SSSI and is important both for its ecological significance (unusual species due to the warm water from the power station), and as a coastal defence.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
South Walney & Piel Channel Flats SSSI (geological)	The site is important for studies in coastal geomorphology. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Sandscale Haws NNR	Sandscale Haws is a large, intact dune system managed by the National Trust, immediately adjacent to the North Walney NNR. The reserve comprises sand dunes, dune slacks, saltmarsh,	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>shingle, grassland and freshwater marsh.</p> <p>The reserve falls within the Duddon Estuary SPA, is one of the most botanically rich coastal sites in the UK with over 600 recorded species and supports around 15% of the British natterjack toad population.</p> <p>A number of rare invertebrates are also found at the reserve, including the silver spiny digger wasp, ruby-tailed wasp, the bee fly, southern grass bug, flat-backed millipede and Adonis' ladybird.</p> <p>Changes in beach level are an important feature</p>	favourable condition	
North Walney NNR	<p>North Walney NNR is a complex coastal site made up of sand dunes, slacks, salt marsh, wet and dry heath, and grassland.</p> <p>The reserve supports a large number of bird species as well as natterjack toads with as much as a quarter of the UK's entire natterjack population living in the area. A number of rare invertebrates are also found on the reserve including digger wasps and solitary bees, and moths such as the shore wainscot and Portland.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Walney Island GCR Site	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	unit.	and species	
Heritage features	<p>A single Scheduled Monument, Piel Castle, is located within this unit. It is at a high risk from flooding and coastal erosion due to its location on Piel Island. 113 Listed Buildings and 8 Conservation Areas are also recorded.</p> <p>Walney Island itself, boasts one of the most dense concentrations of prehistoric artefactual material within Cumbria, with Mesolithic, Neolithic and Bronze Age activity represented by scatters and concentrations of flint and pottery, from the northern and western sides of the island. Animal footprints and antlers have been recorded within eroding intertidal deposits at the southern and northern ends of the islands, which may equally be prehistoric in origin.</p> <p>The survival of relict field boundaries and ridge and furrow earthworks are also notable, alongside evidence of medieval iron working on the northern end of the Island. Latterly, Walney became a focus for residential development, for those employed in the ship-building industry in Barrow.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	The coastal zone is largely dominated by Barrow in Furness which is the principal settlement in the area. While the town has a distinctive industrial	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key</p>	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>heritage, Walney Island is a key tourist destination, largely based on the ecological and historic characteristics of the island. There is a marina development at Barrow, and cruise liners occasionally visit the port.</p> <p>The town is accessible from other key tourist destinations, particularly the Lake District National Park and is on the Cumbria Coastal Way/Cistercian Way and key Sustrans routes.</p> <p>Piel Island, to the south east of Walney Island is an important tourist attraction.</p>	<p>community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p>	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast and are permanently closed to fishing..	To minimise the impact of policies on marine operations and activities	
National Cycle Route 72 and Cumbrian Coastal Way	<p>Cumbrian Coastal Way and Coastal Sustrans National Cycle Route that starts in Kendal and makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South Shields via Haltwhistle, roughly following Hadrian's Wall.</p> <p>The route is very popular and is an important tourist and recreation attraction.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
The Cistercian Way	The Cistercian Way a long distance footpath from	To minimise coastal flood and erosion risk to key	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Grange over Sands to Roa Island Barrow. The ancient waymarked trail traverses the low limestone fells that fringe the shores of Morecambe Bay and the beaches of the Furness and Cartmel peninsulas.	community, recreational and amenity facilities.	
Golf Clubs	<p>Furness Golf Club is located directly on the coast of Walney, and potentially at risk from coastal erosion or flooding. Defence of the Furness golf course may be having a negative effect on the shoreline north of the fish-tail groyne. The access road to BAE airfield is now defended by temporary rock armour and West Shore Park is at increased erosion risk.</p> <p>Barrow Golf Club is further inland on higher ground and is therefore at lower risk from erosion or flooding.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Landscape Character Area 7: West Cumbria Coastal Plain	Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible factories and manufacturing and processing plants,	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT O – WALNEY ISLAND			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	particularly near Workington, Whitehaven, Sellafield and Barrow.		

EI.17 COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Millom	<p>A small industrial town mainly residential in form with associated shops, recreational, infrastructure and some tourist facilities as well as community properties. The town sits on the banks of the Duddon Estuary, with much of its development locate along the coast and are therefore at higher risk.</p> <p>The town is situated on low lying ground so infrastructure such as roads and the railway terminus could be affected by flooding and erosion.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>Most of the Duddon Estuary comprises extensive intertidal sandflats with only a narrow channel of water remaining at low tide. The marsh provides an important natural form of defence, particularly along the western bank.</p> <p>The estuary provides mostly agricultural land use. There are very few settlements located right on the estuary itself, with the exception of Millom on the north west bank. The railway line follows the estuary shoreline along both banks. The track is located close to the shoreline along the eastern bank and at Foxfield the line crosses the estuary via the Duddon Viaduct. The railway line has the potential to constrain future policy options and natural estuary roll-over in these locations.</p>
Askam in Furness	<p>A small now mainly residential settlement with some tourist facilities as well as community properties. The historically industrial settlement sits on the banks of the Duddon Estuary. Generally situated on higher ground, the town is afforded limited protection by Askam Pier.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	<p>The estuary is internationally protected as a Special Protection Area, Special Area of Conservation and Marine Protection Area.</p>
West Cumbrian Rail Line	<p>The West Cumbrian Line runs from Carlisle to Barrow, running along the coastline of Cumbria between Maryport and Whitehaven. The railway crosses the estuary via the Duddon viaduct.</p> <p>Its runs in close proximity to the estuary shoreline for some distance which makes the line potentially vulnerable to erosion and flooding. In addition, the railway will also hinder the natural roll back of the estuary.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>There may be opportunities for managed retreat and transitional</p>
Coastal villages and	A number of small coastal villages, including	To minimise coastal flood and erosion risk to	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
isolated coastal properties	Dunnerholme, Sandside, Foxfield and isolated properties are situated close to the shoreline and therefore may be prone to coastal erosion and flooding. These villages are prone to being isolated from flooded routes and rail links.	people and residential property To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	wetland habitat creation within the estuary. Key considerations are that any management changes to the estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and also adjacent coasts. Subsequent changes in erosion / accretion of intertidal habitats will affect management decisions.
Beaches	Roan Head Beach and sand dune system in Barrow would be adversely affected by coastal erosion. It is important that natural coastal process is maintained here.	To maintain and enhance the feature as a natural defence. To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Duddon Estuary SPA, Ramsar, SSSI (biological)	<p>Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>Mouth of the estuary forms an extensive flat sand plain. The mid and upper reaches are flanked by saltmarsh and beyond high water, extensive sand dunes.</p> <p>The intertidal zone is being threatened by coastal squeeze as a result of land claim and coastal defence works as well as sea level rise and storm surges.</p> <p>NB. component of Morecambe Bay SAC.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Duddon Estuary SSSI (geological)	<p>Designated due to the geomorphological interest of North Walney.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>	<p>To support natural processes and maintain geological exposures throughout nationally designated geological sites</p>	
Morecambe Bay SAC	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>The Duddon Estuary is a component of the SAC.</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p>	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.		

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Duddon Mosses SAC & SSSI	<p>Designated for its bog habitats.</p> <p>These sites are particularly vulnerable to land drainage. They would once have had direct tidal influence; discussion is needed to decide whether this should be allowed / encouraged to recur.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
North Walney NNR	<p>North Walney NNR is a complex coastal site made up of sand dunes, slacks, salt marsh, wet and dry heath, and grassland.</p> <p>The reserve supports a large number of bird species as well as natterjack toads with as much as a quarter of the UK's entire natterjack population living in the area. A number of rare invertebrates are also found on the reserve including digger wasps and solitary bees, and moths such as the shore wainscot and Portland.</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Sandscale Haws NNR	<p>Sandscale Haws is a large, intact dune system managed by the National Trust, immediately adjacent to the North Walney NNR. The reserve comprises sand dunes, dune slacks, saltmarsh, shingle, grassland and freshwater marsh.</p> <p>The reserve falls within the Duddon Estuary SPA, is one of the most botanically rich coastal sites in the</p>	<p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>UK with over 600 recorded species and supports around 15% of the British natterjack toad population.</p> <p>A number of rare invertebrates are also found at the reserve, including the silver spiny digger wasp, ruby-tailed wasp, the bee fly, southern grass bug, flat-backed millipede and Adonis' ladybird.</p> <p>Changes in beach level are an important feature</p>		
Hodbarrow Point RSPB Reserve	<p>The Reserve is located between the coastal town of Millom and the village of Haverigg and is a Site of Special Scientific Interest. The reserve occupies a flooded haematite iron ore mine and is protected by a vast sea wall.</p> <p>Hodbarrow Lagoon supports large numbers of wading birds and waterfowl, including Common, Sandwich and Little Terns, oystercatchers, herons, grebes and cormorants, spotted redshank and black tailed godwits.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated nature conservation sites.	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	<p>Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its social and cultural roots.</p> <p>The National Park aims to conserve these and other features by helping to guide & manage change.</p>	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Heritage features	<p>Three Scheduled Monuments are located in this unit and include an industrial archaeology site, Duddon Ironworks. 50 Listed Buildings and 1 Conservation Area are also recorded.</p> <p>Later Neolithic and Bronze Age occupation has been recorded at Sandscale Haws, although the majority of known archaeological remains within the Duddon estuary are later in date, with a large number of industrial sites, from the medieval and post-medieval periods, largely relating to slate and limestone quarrying and iron manufacture. The area also contains numerous features from the Second World War, including pill boxes, bombing targets and air raid shelters.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The estuarine and marine environment is largely rural in nature with the towns of Millom, Broughton in Furness and Askam in Furness being the key settlements, along the Duddon Estuary. The towns retain a historic character with key services and are accessible from the lake District National Park. Port Haverigg Holiday Village on the eastern side of the estuary is a key tourist destination/service. The Duddon Estuary Partnership is involved in an eco-tourism initiative in the area.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Agricultural Land	<p>The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and</p>	<p>To minimise coastal flood and erosion risk to</p>	

COASTAL UNIT P – DUDDON ESTUARY (LOWSY POINT TO HODBARROW POINT)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	some Grade 5. A Shell Fisheries Harvesting Area is also located off the coast.	agricultural land and horticultural activities	
Landscape Character Areas 7: West Cumbria Coastal Plain	Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible factories and manufacturing and processing plants, particularly near Workington, Whitehaven, Sellafield and Barrow.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.18 COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Sellafield Nuclear Site and reprocessing plant	<p>Major nuclear power station that has been undergoing decommissioning since 2005. Major nuclear waste reprocessing and storage site. Located close to Seascale.</p> <p>Although not presently in the mapped coastal flood zone, there are long term concerns over extreme flood events (1 in 1000yrs) and coastal erosion impacting on the site.</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p> <p>To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.</p>	<p>The southern frontage is characterised by till cliffs up to 50m high, fronted by shingle upper and sand lower beaches. The Lake District National Park extends along the frontage to the south of Ravenglass. This natural frontage has only isolated properties.</p>
Drigg low level waste repository site.	Nuclear waste storage site located in sand dunes near Drigg. Potentially at long term erosion risk. Removal of the Sellafield pipeline at Drigg has resulted in problems at Seascale.	To ensure safety and minimise the risk of pollution and contamination in respect of nuclear facilities and major industrial or hazardous sites.	The central frontage comprises the Eskmeals and Drigg sand dune systems which extend along the spits of the Ravenglass Estuary.
Coastal villages and isolated coastal properties	<p>A number of small settlements, such as Haverigg, Bootle, Drigg, Braystones, and Netherton, and other more isolated properties are located along the coast and therefore may be prone to coastal erosion and flooding.</p> <p>Haverigg Prison, consisting of a number of single story buildings, is situated within the flood risk area.</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to people and residential property</p>	<p>North of Seascale, till cliffs dominate, and in places they have been set back from the shoreline to accommodate railway embankments. St Bees Head at the northern boundary is formed of sandstone cliffs more than 100m high in places. The key areas to the north include the Drigg Low-level Disposal Site, Sellafield and the associated railway link.</p>
Seascale	Small settlement adjacent to the coast has a number of residential properties, railway station and coastal road at potential risk of erosion.	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to people and residential property</p>	The key constraint along the frontage is the railway which runs along the back of the beach to St Bees.
Sea Mill, St Bees	Coastal land and car park provides valuable amenity for residents and visitors to St Bees. Maintenance of sea defences was undertaken in the 1990's, however	To minimise coastal flood and erosion risk to people and residential property	A number of small settlements are located along the shoreline to the north of Ravenglass, these

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>further work is needed as erosion of the defences is taking place adjacent to Pow Beck outfall for the retention of the car parking amenity.</p> <p>St Bees itself is set back from the coast and should not be at risk.</p>	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	<p>include Seascale, St Bees and isolated properties along the beach at Nethertown, Braystones and Couderton.</p> <p>Erosion of the beach and cliff deposits is the key modern day source of sediment, however, drift rates along the frontage are low due to coastal orientation.</p>
Port Haverigg	<p>Small port mainly used for leisure and recreation, with large water sports centre and holiday park, including caravan park. This is at risk of flooding and erosion.</p> <p>Haverigg commercial and residential centre is based away from the port.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise the impact of policies on marine operations and activities</p>	
Eskmeals Range	MoD range facility located in Eskmeals dunes south of Ravenglass. Susceptible to coastal erosion as well as unknown contaminated waste.	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to MoD ranges.</p>	
Infrastructure	<p>The West Cumbrian Line runs from Carlisle to Barrow, running along the coastline of Cumbria between Maryport and Whitehaven, running between Seascale and St. Bees within this section. The railway line is important for rural communities and, as part of the West Cumbria Master Plan, may become more important for the economy in the future.</p> <p>Its proximity to the coast makes the line vulnerable to erosion and flooding.</p>	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Haverigg III – Wind	Onshore operational wind farm along the coastal	To minimise coastal flood and erosion risk to	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Farm	section that provide renewable energy for the local network. The farm is located in land from the coast on high ground so the risk of flooding and erosion is low.	critical infrastructure and maintain critical services.	
Beaches	There are six beaches in Unit Q: Silecroft, Millom – Braystones, Seascale, Nethertown, Ravenglass, Egremont – St Bees. Beaches with amenities in this section are Haverigg, Silecroft, Seascale and St. Bees. All of these beaches would be adversely affected by coastal erosion.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To maintain and enhance the feature as a natural defence.	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Duddon Estuary SPA, Ramsar & SSSI (biological)	<p>Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on variety of coastal habitats.</p> <p>An important Natter Jack toad population site.</p> <p>Mouth of the estuary forms an extensive flat sand plain. The mid and upper reaches are flanked by saltmarsh and beyond high water, extensive sand dunes.</p> <p>The intertidal zone is being threatened by coastal squeeze as a result of land claim and coastal defence works as well as sea level rise and storm surges.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p> <p>To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition</p>	
Duddon Estuary SSSI (geological)	<p>Designated due to the geomorphological interest of North Walney.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>	<p>To support natural processes and maintain geological exposures throughout nationally designated geological sites</p>	
Drigg Coast SAC	<p>Designated for estuaries & dunes: some of the least disturbed transitions to terrestrial habitats of any estuary found in the UK & a significant variety of dune systems are represented within the site.</p> <p>The estuaries and dunes are considered relatively “natural” and therefore the continuation of natural processes without the threat of development is important.</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)</p>	
Morecambe Bay SAC	<p>Confluence of the Leven, Kent, Lune and Wyre estuaries collectively forming the largest single area of continuous intertidal mudflats and sandflats in the</p>	<p>To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and</p>	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>UK. In addition, the bay is noted for Atlantic Salt Meadows, estuaries, reefs, sub-tidal sandbanks and a variety of dune types (particularly fixed dunes with herbaceous vegetation).</p> <p>The interests of the SAC depend largely upon the coastal processes operating within the bay, which have been affected historically by human activities including coastal protection and flood defence works. Opportunities to reverse coastal squeeze are and should continue to be explored.</p>	maintain/achieve favourable condition of their interest features (habitats and species)	
St. Bees Head SSSI (biological)	<p>Natural cliff-top grassland and heath, sheer cliff face and cliff-fall rubble, shingle and wave-cut platform.</p> <p>The net area of this site could be reduced by cliff / coastal erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
St. Bees Head SSSI (geological)	<p>At various locations, the cliffs expose the St Bees Sandstone and provide good exposure of the Permian rock sequence, marine strata and the Whitehaven Sandstone formation, all of which are of considerable geological interest.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Silver Tarn, Hollas & Harnsey Mosses SSSI	<p>Wetland site comprising a suite of three kettlehole tarns.</p> <p>The net area of this site could be reduced by coastal erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Low Church Moss SSSI	Wetland site supporting a variety of habitats that are very scarce on the intensively farmed west Cumbria coastal plain. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Drigg Coast SSSI	Includes a very broad range of maritime habitats, supporting a particularly rich and varied flora including several species of local or nationally rare distribution. Strandline vegetation occurs intermittently at the foot of the dunes & is reliant on the continuation of natural sediment transport processes.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Annaside SSSI	The vegetation shows a transition from coastal shingle and sand dunes through to dune grassland and semi-improved grassland further inland. An important Natter Jack toad population site. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Annaside & Gutterby Banks SSSI (geological)	Important geomorphological and sedimentological evidence of Cumbrian coast and the Lake District glacial history. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Shaw Meadow & Sea pasture SSSI	Site comprises areas of lowland heath, species-rich wet pasture.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	The net area of this site could be reduced by coastal erosion.	conservation sites. Maintain/achieve favourable condition	
St. Bees Head RSPB Reserve	Natural cliff-top grassland and heath, sheer cliff face and cliff-fall rubble, shingle and wave-cut platform. RSPB reserve designated for the large sea bird colony which breeds on the cliffs. Visitor facilities include three viewing platforms. The net area of this site could be reduced by cliff / coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated nature conservation sites.	
Flewick – St Bees GCR Site	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its social and cultural roots. The National Park aims to conserve these and other features by helping to guide & manage change.	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park Management Plan Objectives	
St. Bees Head Heritage Coast	Valued as an important feature of the landscape.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	
Heritage features	One Scheduled Monument was recorded within this	To avoid loss due to erosion and/or flooding to	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>unit, a stone circle at Seascale How. 37 Listed Buildings and 1 Conservation Area are also recorded.</p> <p>The west coast of Cumbria, between Kirksanton and St Bees contains a high density of prehistoric flint scatters, recorded by, amongst others, the Cherry's from the 1950s through to the 1980s. These sites are predominantly later Mesolithic, Neolithic and Bronze Age in date, although potential Iron Age artefacts have also been recovered. It is presumed that any evidence for Early Mesolithic occupation is below current sea levels. The coastal plain also contains cropmarks, where arable conditions are present, suggesting Neolithic monumental construction within the coastal zone. The intertidal zone contains peat exposures and former forest beds, which have been subject to erosion.</p> <p>Evidence for medieval salt production has been recorded at Waberthwaite and Millom, while place-name evidence suggests other locations within this coastal section may also have formally been associated with this activity.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	The coastal zone is largely rural in character with the small towns of Haverigg, St. Bees and Seascale making up the most significant settlements. The	To minimise coastal flood and erosion risk to people and residential property	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	intrinsic historic character of these settlements as well as the natural beauty of the coast and the proximity to the Lake District National Park makes it an important destination for visitors.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5.. There is an authorised landfill and an historic landfill within the SMP2 unit.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities To manage and minimise risk of pollution from contaminated sources	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
Coast to Coast	The route starts on the Irish Sea coast, at St Bees in Cumbria, crosses the Lake District, the Pennines and the North York Moors, and ends on the North Sea coast at Robin Hood's Bay in Yorkshire. The route is very popular and a tourist attraction.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Landscape Character Areas 7: West Cumbria Coastal Plain	Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT Q – HODBARROW POINT TO ST BEES HEAD			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	factories and manufacturing and processing plants, particularly near Workington, Whitehaven, Sellafield and Barrow.		

EI.19 COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS

COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Ravenglass and Eskdale Railway Line and Station, and Ravenglass Village	<p>This tourist line runs for seven miles (11.3 kilometres) from the Lake District National Park's only coastal village of Ravenglass in the Western Lake District.</p> <p>The Station and Village lie on the banks of the estuary to the Esk, the Mite and the Irt and are therefore at risk from erosion, flooding and coastal processes.</p> <p>The A 595 at the bottom of Muncaster Mill is at flood risk where it is already prone to flooding at high tides.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>The Ravenglass Estuary Complex incorporates three rivers; the Mite, the Irt and the Esk. These three rivers join at approximately the small point of confluence, which currently lies just offshore of Ravenglass village. A single channel then connects the confluence of the three rivers to the sea.</p> <p>The estuary complex is mainly undeveloped, being made up of largely agricultural land with small</p>

COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Coastal villages and isolated coastal properties	Drigg, Saltcotts, ravenglass and Newbiggin are small settlements adjacent to the three estuaries with isolated properties are located adjacent to the coast and therefore potentially prone to coastal erosion and flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to people and residential property	
Drigg Coast SAC	Designated for estuaries & dunes: some of the least disturbed transitions to terrestrial habitats of any estuary found in the UK & a significant variety of dune systems are represented within the site. The estuaries and dunes are considered relatively “natural” and therefore the continuation of natural processes without the threat of development is important.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Drigg Coast SSSI	Includes a very broad range of maritime habitats, supporting a particularly rich and varied flora including several species of local or nationally rare distribution. Strandline vegetation occurs intermittently at the foot of the dunes & is reliant on the continuation of natural sediment transport processes.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Lake District National Park	Designated for its complex geology, diverse landscapes, concentration of common land, wealth of habitats and wildlife, rich archaeology and its	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid conflict with AONB and National Park	

COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>social and cultural roots.</p> <p>The National Park aims to conserve these and other features by helping to guide & manage change.</p>	<p>Management Plan Objectives</p>	
Heritage features	<p>Five Monuments of Roman and medieval date are located within this unit and include Ravenglass Roman Fort and Bath house. The Roman fort at Ravenglass replaced a Hadrianic fortlet of c. 120 - 130 AD which may have formed part of the western extension of the Hadrianic frontier. Later remains also include the well-preserved bath house and extensive traces of a vicus. The western edge of the fort, which was almost totally excavated in the late 1970s, is actively eroding. One Registered Park and Garden, 20 Listed Buildings and 1 Conservation Area are also recorded. The village of Ravenglass has medieval origins and was granted a market charter in 1209.</p> <p>A number of heritage features along this section are noted to be at risk from coastal erosion or flooding now or in the future. The wall and intervallum on the west side of Ravenglass Roman Fort has been destroyed by coastal erosion and there is the potential for considerable further damage. There is also potential for damage through flooding or erosion to Drigg Holme packhorse bridge.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Tourism	The coastal and estuarine environment are largely rural in nature and the natural beauty and proximity of the Lake District National Park make the coastal zone a popular destination for tourists. Ravenglass is the principal settlement; essentially a small historic village with connections to the Ravenglass and Eskdale heritage railway and other historic sites within the hinterland.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Agricultural Land	The land in this coastal section consists of a mixture of Grade 3 and Grade 4 agricultural land, as well as some Grade 5. A Shell Fisheries Harvesting Area is also located off the coast.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
National Cycle Route 72 and Cumbrian Coastal Way	The Coastal Cycle way runs parallel with the railway and is vulnerable along this length of coast.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Landscape Character Areas 7: West Cumbria Coastal Plain	Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT R – RAVENGLASS ESTUARY COMPLEX (IRT, MITE AND ESK) – STARTING FROM ENDS OF SPITS			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible factories and manufacturing and processing plants, particularly near Workington, Whitehaven, Sellafield and Barrow.		

EI.20 COASTAL UNIT S – ST BEES HEAD TO GRUNE POINT

COASTAL UNIT S – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Whitehaven	<p>Important commercial and industrial centre for the west coast of Cumbria.</p> <p>Includes a wide range of visitor attractions, including the newly re-developed harbour, and community facilities, such as educational, health and leisure facilities, some of which are located along the coast and are therefore at potentially higher risk. Much of the town is on higher ground, but the area adjacent to the harbour is at risk of tidal flooding and erosion.</p> <p>The facilities and services of the town are focused around its port, which is mainly for fishing and leisure craft. The railway station of Whitehaven is located to the north of the harbour, which could potentially be affected by flooding. The railway line then travels north along the coast line and is very vulnerable to erosion and flooding.</p> <p>Erosion of colliery spoil at South Shore cliffs is an issue and the frontage south of South Shore has experienced slippage.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>This section of coast is bordered by a resistant cliffed headland at St Bees Head, in the south, and the sand and shingle spit of The Grune, in the north. The frontage is characterised by a combination of soft clay cliffs interspersed with resistant cliffs and sections of narrow dune fields, which back sand and shingle beaches. Historical reclamation, using mine waste, is evident at Whitehaven, Workington and Maryport.</p> <p>This frontage contains a number of urbanized areas, namely Whitehaven, Workington and Maryport, which are heavily industrialised. There are ports at Siloth, Maryport, Whitehaven and Workington, the latter being one of the main hubs in the North West, and a number of minor settlements including Allonby, Flimby and Parton. The coastal railway follows the coastline as far as Maryport where it turns inland. The coastline is less developed north of Maryport. These developed areas and associated infrastructure provide the main potential for conflict along</p>
Workington	<p>Commercial and industrial centre that has recently seen a significant town centre redevelopment plan in operation, a new shopping centre known as Washington Square.</p> <p>Includes a range of industrial, commercial and residential premises, along with community facilities such as educational, leisure and recreational</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism</p>	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>facilities. Many of these facilities are located on the coast and are therefore at high risk. The lower part of the town around the docks and mouth of the Derwent is low lying and there are number of properties including industrial sites within the coastal flood risk zone.</p> <p>The railway station of Workington is located close to the harbour, and therefore, could potentially be affected by flooding. The railway line then travels north along the coast line and is very vulnerable to erosion and flooding.</p> <p>The old slag heap at Workington is experiencing erosion.</p>	<p>assets and activities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>the frontage.</p> <p>The southern boundary of the shoreline is part of the St Bees Head heritage coast, designated for its sandstone headland with sheer fissured cliffs, whilst north of Dubmill Point the shoreline is part of the Upper Solway Flats and Marshes Special Protection Area, Ramsar Wetlands and Marine Protection Area, and the Solway Firth Special Area of Conservation. Offshore of Dubmill Point to Skinburness is a shell fisheries harvesting area.</p>
Maryport	<p>Maryport is an attractive coastal town on the outer Solway estuary, with golf links, coastal sailing, commercial facilities and entertainment, with a rich maritime history.</p> <p>The main focus of activity and development is located around the port. The railway station and the main residential areas of Maryport are set back from the coast and therefore have a reduced risk from tidal flooding and erosion. However, the railway is within the flood risk zone from the river Ellen and at potential risk of tidal flooding, as are a number of other properties and facilities in the area, such as the Fire Station.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise the impact of policies on marine operations and activities</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>Eroding cliffs provide the main source of sediment which is transported north along the frontage. The drift divide at St Bees Head means that this frontage has little interaction with adjacent coastlines to the south. Littoral drift, which is considered to be relatively small, is partially interrupted by the harbours along the frontage. Sediment not intercepted provides a supply of fine material to the Solway.</p> <p>The presence of the Solway Firth influences the behaviour of the shoreline north of Workington and is</p>
Coastal villages and isolated coastal	A number of small settlements and coastal villages and isolated properties on the Cumbrian Coast and	To minimise coastal flood and erosion risk to	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
properties	<p>therefore may potentially be prone to coastal erosion and / or flooding. These include Parton, Flimby, Allonby, Silloth, and Skinburness</p> <p>Allonby, for example, regularly floods resulting in the flooding of three main routes into and out of the village. At other locations there are issues with ongoing erosion and tidal flooding.</p>	<p>people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	considered to play a dominant role in the evolution of the coast north of Allonby to the Solway Firth estuary.
Port of Workington	<p>The largest port in Cumbria and one of the main hubs in the North West. The port is used for freight and cargo, the fishing industry, cruise vessels and leisure craft. There is also a RORO service, which was incorporated for the use of BNFL. The port is also currently used as a railfreight terminal, although this is road to rail, rather than ship to rail.</p>	<p>To minimise the impact of policies on marine operations and activities</p>	
Port of Silloth	<p>Small commercial dock and natural harbour.</p> <p>Important to ensure any management of the shoreline does not adversely affect access to and from Port of Silloth or interfere with commercial activities within the Ports.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise the impact of policies on marine operations and activities</p>	
West Cumbrian Rail Line	<p>The West Cumbrian Line runs from Carlisle to Barrow, running along the coastline of Cumbria between Maryport and Whitehaven.</p> <p>Its proximity to the coast makes the line vulnerable</p>	<p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	

COASTAL UNIT S – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	to erosion and flooding.		
Transport Infrastructure	The B5300 is a key route within unit S providing a strategic link between Maryport (A506) and Silloth. This local road is regularly closed during storm high tides. The coastal defence of this and other routes, however, may cause coastal squeeze.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Wind Farms	There are a number of operational wind farms along the coastal section that provide renewable energy for the local network. These sites require safeguard against flooding and coastal erosion. Siddick Wind Farm, for example, has flooded in 2006, 2007 and 2008 causing operational and safety issues.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	
Beaches	There are two recognised bathing beaches at Whitehaven, Whitehaven Beach and Parton Beach, one at Maryport, two beaches at Workington, Workington Beach and Siddick Beach, and two at Silloth, Silloth Beach and Skinburness Beach. All of these beaches would be adversely affected by coastal erosion.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To maintain and enhance the feature as a natural defence.	
Upper Solway Flats and Marshes SPA & Ramsar	Supports International assemblage of Annex I birds and regularly occurring migratory birds on tidal flats. Supports Natterjack toad population. The site is vulnerable to coastal erosion	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Solway Firth SAC	Designated for estuaries, subtidal sandbanks, intertidal mudflats and sandflats, reefs, pioneer saltmarsh, atlantic salt meadows, perennial vegetation of stony banks, grey dunes and also for sea and river lamprey. Any change to coastal evolution could affect this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
Upper Solway Flats and Marshes SSSI (biological)	Noted as one of the largest continuous areas of intertidal habitat in Britain. Supports Natterjack toad population. The estuarine system of flats and marshes is a dynamic one with shifting channels and phases of erosion and accretion hence the continuation of these natural processes is important for the integrity of the site.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Upper Solway Flats and Marshes SSSI (geological)	The salt marshes provide the finest example in Britain of marsh terraces formed by the processes of creek migration and isostatic uplift. Two Quaternary limestone reference localities contain an abundant fauna of stratigraphical, taxonomic and palaeoecological interest. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Silloth Dunes & Mawbray Bank SSSI	One of only three sand dune systems in West Cumbria; illustrates well the transition from vegetated shingle bank through mobile and fixed sand dune communities to dune grassland and	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	maritime heath. The net area of this site could be reduced by coastal erosion.	favourable condition	
Salta Moss SSSI	Coastal peatland appearing to be intermediate in origin between a raised bog or mire and a valley mire, having characteristics of both. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Maryport Harbour SSSI	Comprises two discrete blocks of grassland and ruderal vegetation and is the only Cumbria locality for the nationally rare purple broomrape. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Siddick Pond SSSI	The pond and the surrounding area of fen, grassland and scrub are the habitat of a rich variety of passage and wintering birds. The net area of this site could be reduced by coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
St. Bees Head SSSI (biological)	Natural cliff-top grassland and heath, sheer cliff face and cliff-fall rubble, shingle and wave-cut platform. The net area of this site could be reduced by cliff / coastal erosion.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
St. Bees Head SSSI (geological)	At various locations, the cliffs expose the St Bees Sandstone and provide good exposure of the Permian rock sequence, marine strata and the	To support natural processes and maintain geological exposures throughout nationally designated geological sites	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>Whitehaven Sandstone formation, all of which are of considerable geological interest.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>		
St. Bees Head RSPB Reserve	<p>Natural cliff-top grassland and heath, sheer cliff face and cliff-fall rubble, shingle and wave-cut platform.</p> <p>RSPB reserve designated for the large sea bird colony which breeds on the cliffs. Visitor facilities include three views platforms.</p> <p>The net area of this site could be reduced by cliff / coastal erosion.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites.	
Barrowmouth Beach, Slatom Bay & Upper Solway Flats and Marshes GCR Site	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
St. Bees Head Heritage Coast	Valued as an important feature of the landscape.	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	
Heritage features	Part of the Hadrian’s Wall World Heritage site is located within this unit. In addition to this 48 Scheduled Monuments are recorded and these range from prehistoric settlement sites through to Haig Colliery and Saltom coal pit. However the	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally,</p>	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>majority of the Monuments (23) are of Roman date and relate to the sea defences which form part of the Hadrian's Wall World Heritage Site. 227 Listed Buildings and 8 Conservation Areas are also recorded.</p> <p>An assessment of salt working sites along this stretch of coastline identified a minimum of twelve medieval largely post-medieval salt production sites, many of which were at risk from erosion and encroachment. The southern part of this area was extensively exploited for coal extraction from the later seventeenth century onwards, alongside alabaster/gypsum mining and sandstone quarrying. The area between Whitehaven and Workington was a former industrial centre, with extractive industries and major iron and steel working sites, now largely ceased.</p> <p>A number of heritage features along this section are noted to be at risk from coastal erosion or flooding now or in the future. Saltom coal pit is at high risk of extensive coastal erosion. The small multivallate hillfort on Swarthy Hill and Beckfoot Roman fort (part of the Hadrian's Wall World Heritage site) and have been assessed as being at risk of further erosion. Coastal erosion has destroyed some remains at Allonby saltpan, but gabion defences were put in place a few years ago. This area however may be at risk of further coastal erosion in the future.</p>	<p>nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.		
Tourism	The section is largely rural although it contains four key settlements: Whitehaven, Workington, Maryport and Silloth. These towns are key tourism ‘magnets’ as historic settlements and contain a number of arts/museum attractions. The area is also a popular destination for its intrinsic natural beauty as well as its proximity to the Lake District National Park.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to key community, recreational and amenity facilities. To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.	
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 4 and Grade 4 agricultural land. An authorised landfill site and historical landfill site is also located within the SMP2 unit.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities To manage and minimise risk of pollution from contaminated sources	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
Golf Courses	The Silloth on Solway Golf Club and the Maryport Golf Course provide links golf in the region and are assisted by the creation and retention of sand dunes. Both are liable to flooding.	To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.	
Whitehaven Marina	The main focus of Whitehaven’s activity is the marina which is mainly used by fishing and leisure craft. The outer harbour is used for sailing and watercraft.	To minimise the impact of policies on marine operations and activities	
National Cycle Route 72, Coasta to Coast	Cumbrian Coastal Way and Coastal Sustrans National Cycle Route that starts in Kendal and	To minimise coastal flood and erosion risk to key	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
cycle route and Cumbrian Coastal Way	<p>makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South Shields via Haltwhistle, roughly following Hadrian's Wall. The very popular Coast to Coast Cycle Route runs from Whitehaven and Workington.</p> <p>The route is very popular and is an important tourist and recreation attraction.</p>	community, recreational and amenity facilities.	
<p>Landscape Character Areas</p> <p>7: West Cumbria Coastal Plain</p> <p>6: Solway Basin</p>	<p>Area 7 covers the coastal strip which extends from the north west of Morecambe Bay to Workington. Features that define the area include mudflats, shingle and pebble beaches with localised sections of dunes, sandy beaches and sandstone cliffs, as well as lowland river valleys and expansive estuarine landscapes with a range of intertidal habitats. The area is rich with industrial history associated formerly with the mining of coal and iron ore and more recently, the chemical industry, power generation and nuclear reprocessing. The area is also characterised by extensive urban fringe areas within the coastal belt with large highly visible factories and manufacturing and processing plants, particularly near Workington, Whitehaven, Sellafield and Barrow.</p> <p>Area 6 covers the area between Workington and the Scottish Border. Features that define the area include raised beaches, dunes, pebble beaches, and sandy shores along the open coast, as well as</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

COASTAL UNIT 5 – ST BEES HEAD TO GRUNE POINT			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>estuarine intertidal mudflats and salt marshes, with wintering and migrating waders and wildfowl, on the fringes of the Solway Firth. The area is also characterised by a dense network of highly managed rivers, streams and ditches interspersed with Victorian coastal resorts.</p> <p>The area has a rich historic, cultural and archaeological heritage.</p>		

E1.21 COASTAL UNIT T – MORICAMBE BAY (GRUNE POINT TO CADURNOCK) (INCLUDING RIVER WAVER AND RIVER WAMPOOL)

COASTAL UNIT T – MORICAMBE BAY (GRUNE POINT TO CADURNOCK) (INCLUDING RIVER WAVER AND RIVER WAMPOOL)			
Location/ feature	Key issues	Objectives that apply	Key Considerations
Coastal villages and isolated coastal properties	A number of small coastal villages (e.g. Skinburness, Anthorn, Angerton, Kirkbride) and isolated properties are located along this section of the Cumbrian Coast and therefore may be prone to coastal erosion and flooding. Defences are mainly agricultural embankments.	To minimise coastal flood and erosion risk to people and residential property To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	Moricambe Bay is situated along the southern shoreline of the Solway Firth. The sheltering effect of the shingle spit at The Grune and the promontory at Cardurnock has resulted in the development of extensive areas of saltmarsh within the sheltered Bay. Fronting the predominantly low-lying hinterland, the broad saltmarsh areas of Skinburness and Newton Marshes characterise the southern fringes, while narrow areas of saltmarsh are evident on the northern edges of the Bay.
Upper Solway Flats and Marshes SPA & Ramsar	Supports International assemblage of Annex 1 birds and regularly occurring migratory birds on tidal flats. Supports Natterjack toad population. The site is vulnerable to coastal erosion	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	The Rivers Waver and Wampool drain into Moricambe Bay. Their tidal channels flow through the mud and sand foreshore, through the Bay and out into the Solway estuary. Land use is largely agricultural, with significant areas of saltmarsh. Much of the bay is a shell fisheries harvesting area.
Solway Firth SAC	Designated for estuaries, subtidal sandbanks, intertidal mudflats and sandflats, reefs, pioneer saltmarsh, atlantic salt meadows, perennial vegetation of stony banks, grey dunes and also for sea and river lamprey. Any change to coastal evolution could affect this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	The shoreline is part of the Upper Solway Flats and Marshes Special Protection Area, Ramsar Wetlands and Marine Protection Area, and the
Upper Solway Flats and Marshes SSSI (biological)	Noted as one of the largest continuous areas of intertidal habitat in Britain. Also supports Natterjack toad population. The estuarine system of flats and marshes is a dynamic one with shifting channels and phases of erosion and accretion hence the continuation of these natural processes is important for the	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

COASTAL UNIT T – MORICAMBE BAY (GRUNE POINT TO CADURNOCK) (INCLUDING RIVER WAVER AND RIVER WAMPOOL)			
Location/ feature	Key issues	Objectives that apply	Key Considerations
	integrity of the site.		<p>Solway Firth Special Area of Conservation. A continuation of natural processes is extremely important for these designations. However as much of this coastline is undefended this should not be an issue. The outer areas of the bay are within the Hadrian's Wall World Heritage Site.</p> <p>The behaviour of Moricambe Bay is primarily governed by the processes operating in the mouth of the Solway Firth. The Grune and the promontory at Cardurnock act to shelter the Bay from significant wind and wave exposure. Interaction between channel orientation and saltmarsh growth is significant within the Bay.</p> <p>Moricambe Bay acts as a sediment sink within the Solway Firth estuary system. Littoral drift transported north along Grune Point and south along the Bowness Common frontage is deflected into and deposited within Moricambe Bay.</p> <p>Key considerations are that any management changes to Moricambe Bay, in terms of managed realignment</p>
Upper Solway Flats and Marshes SSSI (geological)	<p>The salt marshes provide the finest example in Britain of marsh terraces formed by the processes of creek migration and isostatic uplift. Two Quaternary limestone reference localities contain an abundant fauna of stratigraphical, taxonomic and palaeoecological interest.</p> <p>Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.</p>	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Gribbs Meadows SSSI	<p>Comprises a series of herb-rich meadows and is unique in Cumbria as an example of the range of grasslands represented.</p> <p>Open drains and a variable water table give rise to an intricate assemblage of wet and dry grassland communities, hence any change to coastal evolution could affect this site.</p>	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Upper Solway Flats and Marshes GCR Site	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Solway Coast AONB	The area is designated for its internationally important bird life, its value for plant and animal habitats and natural features, together with its	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid	

COASTAL UNIT T – MORICAMBE BAY (GRUNE POINT TO CADURNOCK) (INCLUDING RIVER WAVER AND RIVER WAMPOOL)			
Location/ feature	Key issues	Objectives that apply	Key Considerations
	<p>wealth of important archaeological and historical features.</p> <p>The AONB aims to conserve these and other features by helping to guide & manage change.</p>	conflict with AONB and National Park Management Plan Objectives	<p>or hold the line policies, could impact on the entire estuary regime and also adjacent coastlines within the Solway Firth Estuary.</p>
Heritage features	<p>Part of the Hadrian's Wall World Heritage site is located within this unit. In addition four Scheduled Monuments are recorded which include Kirkbride Roman Fort and St Marys Abbey, Holmcultram. 30 Listed Buildings are also recorded.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	<p>Subsequent changes in erosion / accretion of intertidal habitats will affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in the management of the Rivers Wampool and Waver.</p>
Tourism	<p>The estuarine and coastal environment is particularly with no major towns or settlements. Nevertheless, the proximity of the coastal zone to Carlisle and the lake District National Park as well as the natural beauty of the coastline, make it a distinctive destination for tourists and visitors.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	
Anthorn Radio Station, Carlisle	<p>The active radio station and mast is an MoD Core Site for UK communication. The site is located at high level and is therefore unlikely to be impacted by coastal processes.</p>	<p>To minimise coastal flood and erosion risk to MoD ranges.</p>	
National Cycle Route 72 and Cumbrian Coastal Way	<p>Cumbrian Coastal Way and Coastal Sustrans National Cycle Route that starts in Kendal and makes its way around the Cumbrian coast via Barrow-in-Furness and Whitehaven to Silloth. From Silloth the route heads along the Solway Firth to Carlisle and across Northumberland to South</p>	<p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

COASTAL UNIT T – MORICAMBE BAY (GRUNE POINT TO CADURNOCK) (INCLUDING RIVER WAVER AND RIVER WAMPOOL)			
Location/ feature	Key issues	Objectives that apply	Key Considerations
	<p>Shields via Haltwhistle, roughly following Hadrian's Wall.</p> <p>The route is very popular and is an important tourist and recreation attraction.</p>		
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land, and some Grade 5.	To minimise coastal flood and erosion risk to agricultural land and horticultural activities	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
Landscape Character Areas 6: Solway Basin	<p>Area 6 covers the area between Workington and the Scottish Border. Features that define the area include raised beaches, dunes, pebble beaches, and sandy shores along the open coast, as well as estuarine intertidal mudflats and salt marshes, with wintering and migrating waders and wildfowl, on the fringes of the Solway Firth. The area is also characterised by a dense network of highly managed rivers, streams and ditches interspersed with Victorian coastal resorts.</p> <p>The area has a rich historic, cultural and archaeological heritage.</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	

EI.22 COASTAL UNIT U – CADURNOCK TO SCOTTISH BORDER (INCLUDING RIVER EDEN, ESK AND SOLWAY FIRTH)

COASTAL UNIT U – CADURNOCK TO SCOTTISH BORDER (INCLUDING RIVER EDEN, ESK AND SOLWAY FIRTH)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
Carlisle	<p>Important historical and commercial centre located inland along the River Eden from the study area. The City is a major tourist attraction with its rich history, including a Castle and Cathedral, being its main appeal.</p> <p>Includes a wide range of visitor attractions and community facilities, such as educational and leisure facilities, including the University of Cumbria and Cumberland Infirmary, most of which are located on higher land and are therefore at lower risk.</p> <p>The river Eden runs through the centre of the City and some of the City is located on low lying ground, therefore key infrastructure such as roads and bridges and many properties are in the flood plain and there was extensive fluvial flooding in 2005..Development and activity on flood plains is evident and continued.</p>	<p>To manage risk of flooding to people and property ²</p> <p>To manage risk of flooding to key community, recreational and amenity facilities ¹</p> <p>To minimise coastal flood and erosion risk to industrial, commercial, economic and tourism assets and activities.</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>This section of coast extends from Cardurnock on the southern shoreline of the Solway Firth to the River Sark at the Scottish Border. This area includes the dynamic inner section of the Solway Firth estuary and its confluence with the Rivers Eden, Esk and Sark.</p> <p>The Solway Firth is a relatively natural, structurally controlled estuary. Extensive sandbanks, mudflats and saltmarsh characterise the large intertidal area within this part of the estuary. Land use is largely agricultural, low-grade, low-lying land. There are several small settlements which include Cardurnock, Bowness-on-Solway, Drumburgh, Easton and Glasson, amongst others.</p>
Coastal villages and isolated coastal properties	<p>A number of small coastal villages (e.g. Cardurnock, Bowness-on-Solway, Drumburgh, Easton and Glasson) and isolated properties lie on the Cumbrian Coast and therefore may be prone to coastal erosion and flooding.</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.</p>	<p>The shoreline is part of the Upper Solway Flats and Marshes Special Protection Area, Ramsar Wetlands</p>

² Reference to flooding or erosion will be removed where not applicable

COASTAL UNIT U – CADURNOCK TO SCOTTISH BORDER (INCLUDING RIVER EDEN, ESK AND SOLWAY FIRTH)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
MoD sites at Longtown	The MoD ammunitions and explosives storage site at Longtown is located immediately inland of the study area adjacent to the river Esk and is currently in the fluvial / tidal flood risk zone. Changes to flood risk (e.g. changes to Rockcliffe Marshes) may impact on the operation of this site.	To minimise coastal flood and erosion risk to MoD ranges.	and Marine Protection Area, and the Solway Firth and River Eden Special Areas of Conservation. A continuation of natural processes is extremely important for these designations.
Transport Infrastructure	There are several arterial routes within and around the head of the Solway including the A74 (M), A595, A69, A7 and A74, as well as the main west coast rail link from England to Scotland (Glasgow South Western Line). Any change to coastal and fluvial flooding risks could have significant impact on the safe running of these routes.	To minimise coastal flood and erosion risk to critical infrastructure and maintain critical services.	Sediment transport appears to redistribute material internally rather than transport significant new inputs of material into the system. The behaviour of the shoreline is highly influenced by the mobile nature of the tidal channels within the Solway Firth.
River Eden SAC & River Eden & Tributaries SSSI	Floristically rich northern river on sandstone & hard limestone. Diversity of aquatic plants is amongst the highest of all rivers in Britain. Any change to coastal evolution could affect this site. The River Eden is a popular fishing river and ecological impact both on the River and in the Irish Sea can have a detrimental impact on fish stocks.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	Key considerations are that any management changes within the Solway Firth Estuary, in terms of managed realignment or hold the line policies, will impact on the entire estuary regime and its coastlines. The Coast Protection Act Schedule 4 Boundary is located at near Bowness on Solway, defining the limit of permissive Coast Protection powers of the maritime local authority.
Upper Solway Flats and Marshes SPA & Ramsar,	Supports International assemblage of Annex I birds and regularly occurring migratory birds on tidal flats. Supports Natterjack toad population.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and	Subsequent changes in erosion / accretion of intertidal habitats will

COASTAL UNIT U – CADURNOCK TO SCOTTISH BORDER (INCLUDING RIVER EDEN, ESK AND SOLWAY FIRTH)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	The site is vulnerable to coastal erosion	maintain/achieve favourable condition of their interest features (habitats and species)	affect management decisions. Changes will also affect designated areas. Designations will also be potentially affected by changes in the management of the Rivers Eden, Esk and Sark.
Solway Firth SAC	Designated for estuaries, subtidal sandbanks, intertidal mudflats and sandflats, reefs, pioneer saltmarsh, atlantic salt meadows, perennial vegetation of stony banks, grey dunes and also for sea and river lamprey. Any change to coastal evolution could affect this site.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species)	
South Solway Mosses SAC Bowness Common, Drumburgh Moss & Glasson Moss SSSIs	Complex of estuarine raised bogs supporting typical bog vegetation. The three SSSIs are three of four extensive lowland raised mires on the south Solway plain which support the largest area of this habitat left in Great Britain without significant loss or damage. In addition, there are considerable areas of active bog growth evident across Bowness Common. These sites are particularly vulnerable to land drainage.	To support natural processes and maintain and enhance the integrity of internationally designated nature conservation sites and maintain/achieve favourable condition of their interest features (habitats and species) To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	
Upper Solway Flats and Marshes SSSI (biological)	Noted as one of the largest continuous areas of intertidal habitat in Britain. Also supports Natterjack toad population. The estuarine system of flats and marshes is a dynamic one with shifting channels and phases of erosion and accretion hence the continuation of these natural processes is important for the	To avoid adverse impacts on, conserve and where practical enhance the designated interest of nationally designated nature conservation sites. Maintain/achieve favourable condition	

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Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	integrity of the site.		
Upper Solway Flats and Marshes SSSI (geological)	The salt marshes provide the finest example in Britain of marsh terraces formed by the processes of creek migration and isostatic uplift. Two Quaternary limestone reference localities contain an abundant fauna of stratigraphical, taxonomic and palaeoecological interest. Coastal processes are the key to the conservation of geological SSSIs and therefore a “threat” is the construction of coastal defences.	To support natural processes and maintain geological exposures throughout nationally designated geological sites	
Campfield Marsh RSPB Reserve	The RSPB reserve at Bowness is made up of a mosaic of saltmarsh, peatbogs, farmland and wet grassland providing homes for a great variety of native wildlife. It is a locally important site for breeding lapwings, redshanks and snipe breed in the summer and overwintering swans, ducks and geese.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites.	
Upper Solway Flats and Marshes GCR Site	Geological features of local interest located within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance the designated interest of locally designated conservation sites	
Cumbria BAP	Lists a number of local and national habitats and species which may be present within the coastal unit.	To avoid adverse impacts on, conserve and where practical enhance national and local BAP habitats and species	
Solway Coast AONB	The area is designated for its internationally important bird life, its value for plant and animal habitats and natural features, together with its	To conserve and enhance nationally designated landscapes in relation to risks from coastal flooding and erosion and avoid	

COASTAL UNIT U – CADURNOCK TO SCOTTISH BORDER (INCLUDING RIVER EDEN, ESK AND SOLWAY FIRTH)			
Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>wealth of important archaeological and historical features.</p> <p>The AONB aims to conserve these and other features by helping to guide & manage change.</p>	<p>conflict with AONB and National Park Management Plan Objectives</p>	
Heritage features	<p>Part of the Hadrian’s Wall World Heritage site is located within this unit. In addition to this, 23 Scheduled Monuments are recorded and all but one – Rockcliffe Cross form part of Hadrian’s Wall World Heritage Site. 65 Listed Buildings and three Conservation Areas are also recorded along with other archaeological sites, particularly within Carlisle. For example, Carlisle Castle and Cathedral are exceptional scheduled ancient monuments. Hadrian’s Wall, a Roman fortification wall built in the 2nd Century extending from the Solway Firth across Britain to Wallsend, is an UNESCO World Heritage Site. The section of Hadrian’s Wall vallum between the watercourse 400m south east of Glasson and the access road to Glendale caravan park, in wall miles 76 and 77, has been assessed as being at risk of extensive erosion.</p> <p>Consultation with the appropriate bodies would need to be undertaken to ascertain the level of risk from flooding/erosion to individual features.</p>	<p>To avoid loss due to erosion and/or flooding to key community, recreational and amenity facilities.</p> <p>To minimise coastal flood and erosion risk to scheduled and other internationally, nationally, locally or regionally important cultural heritage assets, sites and their setting.</p>	
Tourism	<p>The area is predominantly rural although is in close proximity to Carlisle and Gretna. This enhances its value and accessibility for ‘day trips’ and its intrinsic value as destination renowned for its natural beauty. The area is also a popular destination due to its</p>	<p>To minimise coastal flood and erosion risk to people and residential property</p> <p>To minimise coastal flood and erosion risk to key community, recreational and amenity facilities.</p>	

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Location/ feature	Key issues and benefits	Objectives that apply	Key Considerations
	<p>proximity and association with Hadrian’s Wall.</p> <p>Gretna is situated in close proximity to the Solway Firth and strategic management of the town-estuary environment would need to be considered</p> <p>The Cumbria Way follows the coast throughout this section, although this long-distance route could be realigned if a ‘hold the line’ approach were considered.</p>		
Agricultural Land	The land in this coastal section consists of a mixture of urban, Grade 3 and Grade 4 agricultural land. An authorised landfill site is also located within the SMP2 unit.	<p>To minimise coastal flood and erosion risk to agricultural land and horticultural activities</p> <p>To manage and minimise risk of pollution from contaminated sources</p>	
Shell Fisheries	A Shell Fisheries Harvesting Area is also located off the coast.	To minimise the impact of policies on marine operations and activities	
Landscape Character Areas 6: Solway Basin	<p>Area 6 covers the area between Workington and the Scottish Border. Features that define the area include raised beaches, dunes, pebble beaches, and sandy shores along the open coast, as well as estuarine intertidal mudflats and salt marshes, with wintering and migrating waders and wildfowl, on the fringes of the Solway Firth. The area is also characterised by a dense network of highly managed rivers, streams and ditches interspersed with Victorian coastal resorts.</p> <p>The area has a rich historic, cultural and archaeological heritage.</p>	To conserve and enhance nationally defined landscapes in relation to risks from coastal flooding and erosion	