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# North West Inshore and Offshore Marine Plans Sustainability Appraisal. Non-Technical Summary. Final Report.



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# North West Inshore and Offshore Marine Plans Sustainability Appraisal. Non-Technical Summary. Final Report.

**Report prepared by:** ClearLead Consulting Ltd. in association with WSP UK Ltd. and MarineSpace Ltd.



**Project funded by:** Marine Management Organisation

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Marine Management Organisation  
Lancaster House  
Hampshire Court  
Newcastle upon Tyne  
NE4 7YH

Tel: 0300 123 1032  
Email: [info@marinemanagement.org.uk](mailto:info@marinemanagement.org.uk)  
Website: [www.gov.uk/mmo](http://www.gov.uk/mmo)

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# 1. Introduction

## 1.1 This report

The Marine Management Organisation (MMO) has simultaneously prepared marine plans for England's south west, north east and north west inshore and offshore marine plan areas and the south east inshore marine plan area. The marine plans for the [south inshore and offshore](#) and the [east inshore and offshore](#) marine plan areas have already been published.

As part of the marine plan-making process, a Sustainability Appraisal (SA) has been undertaken. The SA process and subsequent report (including this Non-Technical Summary) is a requirement of the Marine and Coastal Access Act 2009 and incorporates the requirements of The Environmental Assessment of Plans and Programmes Regulations 2004.

This SA has been carried out by ClearLead Consulting Ltd, in association with WSP UK Ltd and MarineSpace Ltd. on behalf of the MMO.

This is the Non-Technical Summary (NTS) of the final North West Marine Plan Sustainability Report (SA Report).

The SA Report is split into a number of parts:

- Non-Technical Summary (this report)
- The SA Reports incorporating:
  - Part 1: Introduction and Methodology
  - Part 2: Scoping Information
  - Part 3: Results of the Assessment

## 1.2 What is a sustainability appraisal?

SA is a process, incorporating the requirements of the Strategic Environmental Assessment (SEA) Directive, which considers the economic, social and environmental impacts of an emerging plan (the three dimensions of sustainable development). The aim in undertaking SA is to identify a plan's likely significant effects and take steps to avoid and/or mitigate the negative effects as well as identify opportunities to maximise a plan's contribution to sustainability.

The SA Report and this NTS conform to the requirements of the SEA Directive, and so the layout and feel of both the full Report and this NTS is influenced by these requirements. The SA has been undertaken throughout the development of the North West Marine Plan and has informed the consideration of options as well as assessing the effects of the draft and final plans.

## 2. Background to the North West Marine Plan

### 2.1 Introduction

Marine plans set the direction for decision making to ensure efficient and sustainable use of our marine resources. Once prepared the marine plans will cover a 20 year period and will be reviewed regularly. Marine plans are intended to guide users to the most suitable locations for different activities, assist in managing marine resources to ensure sustainable levels and to ensure that a holistic approach to decision making is taken.

### 2.2 The North West Marine Plan

The UK Government vision for the marine environment is for, “clean, healthy, safe, productive and biologically diverse oceans and seas”. The Marine Policy Statement (MPS)<sup>1</sup> is the framework for preparing Marine Plans and taking decisions affecting the marine environment. The UK high level marine objectives (HLMOs)<sup>2</sup>, which form part of the MPS, set the broad outcomes for the marine areas in achieving this vision, and reflect the principles for sustainable development which are:

- achieving sustainable marine economy
- ensuring a strong, healthy and just society
- living within environmental limits
- promoting good governance
- using sound science responsibly.

The North West Marine Plan has a defined vision which is outlined in section two of the North West Marine Plan SA Report: Part 1: Introduction and Methodology.

### 2.3 Relationship with other plans and programmes

The North West Marine Plan fits into an existing hierarchy of plans, programmes, strategies and environmental protection objectives and these are set out in detail in SA Report: Part 2. The North West Marine Plan has the following relationships with other plans and programmes:

- international legislation and policy which sets a number of targets, objectives and obligations which the North West Marine Plan should seek to contribute to
- national legislation and policy which outlines measures to achieve many of these obligations through setting regional and local targets for public bodies to achieve and by outlining principles which planning policies and decisions need to adhere to
- local and regional policy which sets out more specific local targets and local actions needed to achieve them.

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<sup>1</sup> Marine Policy Statement available at: <https://www.gov.uk/government/publications/uk-marine-policy-statement>

<sup>2</sup> HMG,NIE, WAG, SG (2009) Our Seas A Shared Resource - High Level Marine Objectives (online) available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/182486/ourseas-2009update.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/182486/ourseas-2009update.pdf)

Particularly important for the North West Marine Plan is the following:

- the national MPS and the United Kingdom-wide High Level Marine Objectives which together provide the policy framework for the preparation of marine plans
- the National Planning Policy Framework and associated National Policy Statements
- the EU Maritime Spatial Planning Directive (2014/89/EU) which came into force in July 2014 in support of the Integrated Maritime Policy for the European Union. The Directive introduces a framework for maritime spatial planning and aims to promote the sustainable development of marine areas and marine resources. It also sets out a number of minimum requirements for marine plans.

As well as supporting the HLMOs set out in the MPS, the policies of the North West Marine Plan will support other relevant government aspirations such as those set out in the [25 Year Environment Plan](#), the [Industrial Strategy](#), the [Clean Growth Strategy](#) and sustainable development<sup>3</sup> of the marine area.

Regulations require that the SA considers how environmental protection objectives are taken into account in the development of the plan or programme. For the North West Marine Plan SA, a full review of the key objectives within other plans and policy documents has been undertaken for each topic and is reported in Part 2 of the SA Report. These objectives have then been used to inform the development of an SA framework. The SA framework is then used to test the North West Marine Plan and recommendations are made to strengthen the plan.

## **2.4 Habitats Regulations Assessment (HRA)**

The North West Marine Plan has also been subject to a Habitats Regulations Assessment (HRA), which aims to look at the implications of a proposed plan on one or more European designated sites in view of the sites' conservation objectives. The North West Marine Plan HRA process consists of screening of potential significant effects and a fuller assessment process. Further details can be found in the Appropriate Assessment Information Report.

All Appropriate Assessment reports are available at the following weblink:  
<https://www.gov.uk/topic/planning-development/marine-planning>

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<sup>3</sup> As defined in [United Kingdom Sustainable Development Strategy](#)



## **3. The Sustainability Baseline**

### **3.1 Introduction**

It is important to understand the existing conditions (known as baseline conditions) and the key issues that should be covered as part of the SA process. The sustainability baseline comprises information on aspects of the environment, economy and society that could be affected positively or negatively by the implementation of the North West Marine Plan. Further information relating to the scope of each of the SA topics, background information and baseline issues ubiquitous to all marine plan areas is presented in sections 3-11 within the SA Report Part 2: Scoping Information. The baseline information identified which is specific to the North West Marine Plan, has been summarised in Table 1 below.

**Table 1: Sustainability Baseline Summary: Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas.**

<b>Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas</b>
<b>Cultural Heritage</b>
<ul style="list-style-type: none"> <li>• there are both designated and non-designated heritage assets in the vicinity of the north west marine plan areas</li> <li>• the north west inshore plan area benefits from increased visitor numbers due to the quality and value of the historic environment, however this creates a challenge around managing this in a way that does not negatively impact the environment</li> <li>• the Hadrian’s Wall World Heritage Site also has associated Roman sites such as Bew Castle</li> <li>• Sefton as one of the Borough’s natural and heritage assets together with its landscape character should continue to contribute to the Borough’s sense of place, local distinctiveness and quality of life</li> <li>• designated heritage assets in the vicinity of marine plan areas include World Heritage Sites, Scheduled Monuments, Listed Buildings, Registered Parks and Gardens and Registered Battlefields</li> <li>• various activities in marine plan areas have implications for the conservation of heritage assets but are not subject to licensing or, directly, to public authority decision-making. Depending on circumstances, these may include activities such as anchoring, diving and some forms of fishing. The character and magnitude of effects on the marine historic environment arising from unregulated activities may not have been quantified and there is the need to consider what indirect measures can be taken to conserve heritage assets in respect of activities that are not regulated directly.</li> </ul>
<b>Geology, Substrates and coastal processes</b>
<ul style="list-style-type: none"> <li>• there are opportunities for Underground Coal Gasification overlapping the Dee Estuary and Cumbrian coast. Any future operations would impact on underground coal resources and may have wider environmental implications</li> <li>• an issue exists surrounding the management of potential flooding caused by high tides and surface water pumps not working. This is a challenge in low lying areas such as Fylde, and may be exacerbated by increasing access to the coast</li> <li>• there is a necessity to balance the needs to protect some undeveloped coast in the South Lakeland District with the need to provide for new development including land based maritime uses for coastal recreation and tourism</li> <li>• continually altering channels and sandbanks in the Solway Firth, Morecambe Bay and in part Ribble and Sefton coastline have created uncertainty and risk. There is a changing shoreline, with several areas vulnerable to erosion. Coastal defences are a feature in several locations</li> <li>• Hold the Line is the preferred management option for coastal erosion from the shoreline management plans in the north west marine plan area (19 units), followed by No Active Intervention (11 units), and Managed Realignments (8 units). There are no areas where Advance the Line is the preferred option</li> </ul>

### Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

- physical processes that affect the highly dynamic coastal environment (causing either erosion or deposition) include those derived from wind, waves, currents and tides. However, in the absence of human intervention or activity, rapid changes caused by coastal processes are restricted to shallow areas where wave action is strong. The area of greatest change is in the coastal zone with softer coastlines most at risk from rapid change. Coastal erosion is mainly a local to regional process and erosion is predicted to affect approximately 30% of England's coastline
- geology and coastal processes are affected through the implementation of rock armouring and scour protection of wind farm turbines, cabling and pipeline protection, which in turn can alter subtidal habitats. This altering of coastal processes is likely to increase as coastal defences are further expanded to meet the needs of increasing populations.

### Seascape and Landscape

- the intrinsic qualities of the St Bees Head Heritage Coast require protection in terms of development proposals within, or affecting views from, the designation
- the special qualities of the Lake District National Park should be conserved and enhanced, and proposals which are consistent with National Park purposes and duty should be supported
- the National Policy Statement for Nuclear Power Generation (Department of Energy and Climate Change, 2011) makes specific reference to Sellafield's impact due to its proximity to the Lake District
- views to the Isle of Man could be affected by activities within the north west plan areas
- World Heritage Sites in the vicinity of the marine plan areas include the Frontiers of the Roman Empire (Hadrian's Wall), the settings of which need to be protected
- any potential development in the marine environment which is inter-visible with the coast (or coastal developments themselves) may influence views in different ways depending on structure type, size, number, type of movement and orientation, coastal form, lighting, aspect and scale, settlement pattern and type. Attitudes of people observing the change and the resultant development typically also vary widely
- visual impacts may arise from developments which are built directly at the coast (such as harbours) or at some distance from the coast, such as offshore wind turbines
- several existing and nominated new sites for nuclear power within marine plan areas are under consideration. These include Heysham and Moorside (north west inshore). All nuclear power stations within the United Kingdom are located at marine/estuarine sites and hence have a significant impact on seascape
- seascape encompasses landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other.

## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

### Water

- warming in the north west has been identified to be one of the most pronounced areas at 0.7°C per decade over the last 3 decades
- oil and gas activities within the north west are responsible for carbon dioxide emissions that can result in acidification of the marine environment
- cooling water effluent from Heysham 1 and 2, and the Sellafield nuclear site on Cumbria's Energy Coast increases the temperature of the area in which it is discharged. There is currently a sea bass nursery in this area (Heysham Bass Nursey Area)
- the north west has been identified as having potential for wave, tidal stream and tidal range energy resources
- there are five coastal water bodies and 12 transitional water bodies located within the north west inshore marine plan areas, specifically within the Solway Tweed, North West and Dee River Basin Districts. In terms of overall status, six water bodies (three coastal and three transitional) were classified as good, nine water bodies (two coastal and seven transitional) were classified as moderate, one transitional water body was classified as poor and one transitional water body was classified as bad in 2015, primarily due to ecological parameters failing to achieve good ecological status
- the number of beaches classified as bathing waters in the North West is approximately 25 designated beaches. 16% of the beaches are classified as sufficient. No beaches were classified as poor in 2019. Beaches identified in 2019 as having sufficient water quality were St Annes North, Morecambe South, Morecambe North and Haverigg. Whilst they are classed as sufficient, the aim is to increase the number rated as good or excellent. There are no blue flag beaches currently located with the north west
- in the north west, United Utilities estimate that 30% of the sea pollution is due to Combined Sewer Overflows
- contaminants from historic and current industrialisation of the Mersey catchment have reduced sediment quality, which poses a risk if the sediment is disturbed because this will lead to resuspension and reintroduction of pollutants. Subsequently, removal of bivalve molluscs for commercial food production is prohibited
- although bathing water quality has improved in the plan area, a challenge exists around sewage pollution impacting water quality, which can have subsequent impacts on shellfish harvesting as seen on the Ribble Channel and seasonally on the Lune estuary
- evidence of radioactive particles has been found on the beaches around Sellafield. Harvesting of seafood from the vicinity has been banned
- there is a problem with beach litter. It has social, amenity and biodiversity impacts. Plastics have been found in marine organisms and there is evidence to suggest that the problem is getting worse over time
- higher densities of offshore litter have been found at specific locations. This suggests that these could be areas of accumulation, where litter gathers because of the effects of winds and currents
- most of the north west region has a tidal range of between 5m and 8m

## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

- toxicity of PCBs and other persistent pollutants to invertebrates and fish, sediment-dwelling organisms and bioaccumulation of PCBs in fish, birds and Annex II sea mammals with known sublethal toxicological effects; endocrine disruption in birds and sea mammals posing a hazard to populations of these animals. Evidence suggests particular problems of PCBs to killer whales, bottlenose dolphins and harbour porpoise around inshore waters of the UK
- at present, the United Kingdom does not propose implementing measures to reduce persistent legacy contamination in sediments on the grounds that the actions would be disproportionately costly
- persistent oestrogenic compounds in waters in estuaries have also been indicated as an increasing problem
- there are likely to be effects on commercial fisheries if salinity changes in the future as this will affect the range and distribution of many marine species.

## Air Quality

- there is the potential for negative cumulative ecological effects from air quality as a result of new nuclear power stations, such as the new planned power station Moorside which is located adjacent to the existing Sellafield Nuclear Site
- ongoing challenges with air quality (from transport emissions amongst others) in Air Quality Management Areas at the coast and on land could lead to eutrophication of the marine environment and acid deposition effects.

## Climate

- increase in the magnitude of winter flash floods due to increased winter rainfall and reduced summer rainfall
- more sea defences are likely to be required around low lying areas (e.g. Fylde) because of the predicted effects of climate change, which may cause damage to natural habitats
- seasonal mean and extreme waves are expected to increase
- the impacts of climate change are already being observed, and impacts are predicted to continue
- fisheries may also be impacted by seasonal changes and mismatch in food availability at key times, leading to poor stock
- without any further investment in flood defences, the number of properties in England at medium or high risk could rise from 0.75 million to 1.29 million in 50 years
- any sea level rise will affect intertidal habitats which balance delicately on the basis of tidal inundation. This is noticeable already in the north west inshore marine plan area
- increased storminess as a result of climate change is having negative impacts to the coastal line, for example at Formby Point
- coastal defence against adverse effects of climate change can create opportunities. For example, coastal defence in Morecambe Bay, Fylde Coast can support tourism and public realm works
- climate change is leading to melting of sea ice and opening up of new transport routes. There is an opportunity for the development of northern ports to take advantage of this.

## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

### Communities, health, wellbeing

- coastal communities are suffering from the effects of industrial decline, with high levels of transience and a decline in the availability of skilled employment
- in the north west, fishing appears to be most important in Whitehaven (although it should be noted that this is the port into which catches are taken and not necessarily where boats are registered) and is important to a number of localised coastal communities
- there is potential for the regeneration of sustainable fisheries in the north west, in areas such as Whitehaven. This could bring economic benefits to coastal communities across the north west
- Fleetwood was previously a major fishing port, employing 9,000 people at its height in 1920s. However, from 1960s, following the collapse of the fishing industry, Fleetwood began to decline due to loss of fishing grounds in the North Atlantic. Fishing still remains a large industry in the town, with many employed through processing
- aquaculture is a growing marine activity and is seen as a means to increase seafood supplies and in turn increase employment
- the north west and north east have an above national average proportion of people with a limiting long term illness
- generally, there is often isolation of coastal towns due to lack of infrastructure. There is high tourism employment dependency across all plan areas
- oil and gas decommissioning will lead to an increase in offshore employment. There is currently a disconnect between port and activity and the preferred method for decommissioning of infrastructure
- further tidal energy proposals in the north west include the Mersey barrage (one of the highest tidal ranges in the UK) Morecambe Bay barrage and Wyre barrage. Potential effects of tidal lagoons can include restricted access to fishing grounds/removal of grounds, as well as impacts on intertidal organisms and plankton, affecting different life cycle stages for invertebrate and fish species.

### Economy

- ports play a significant role in domestic freight transport through coastal shipping (including transshipment), and links with Northern Ireland
- the greatest risk of introducing disease comes from the movements of live shellfish. There are movements of live Pacific oysters to aquaculture areas within the marine plan area, where spat are on-grown on frames. If a disease outbreak occurred in an aquaculture area, there could be vast environmental impacts should the disease spread
- fishing activity is sensitive to changes in other sea uses. Marine developments have the potential to prevent, displace or encourage fishing activities

## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

- under climate change scenarios sea temperature rise, ocean acidification, changes in fluvial flows (particularly in estuarine nursery grounds) and ocean currents may lead to a decrease in abundance, survival and growth of some exploitable fish species and an increase in abundance, survival and growth of invasive non-native pest species
- modelling Marine Recreation Potential in England 2014 (MMO1064) showed a high potential for both wildlife watching potential and windsurfing in Morecambe Bay
- the sea can provide a variety of tourism and recreational opportunities. These will vary from area to area but will include visiting the beach, dog walking, and walking, pleasure boating, sailing, recreational diving (including diving on wrecks), sea angling, kayaking and surfing, as well as exploration of underwater and coastal heritage assets
- with regards to industry in the coastal zone, the north west and north east inshore marine plan areas are particularly important
- heavy manufacturing which has a coastal or estuarine location can potentially have a number of impacts on the environment and impacts on the water environment is a key one. Developments can have adverse effects on transitional waters, coastal waters and marine waters. During the construction, operation and decommissioning phases of developments, there can be increased demand for water, discharges to water and adverse ecological effects resulting from physical modifications to the water environment
- defence activities that utilise the marine environment, directly or indirectly, in support of operational capability are diverse but include operational vessels and aircraft, HM Naval bases, surface and sub-surface navigational interests, underwater acoustic ranges, maritime exercises, amphibious exercises, coastal training ranges and coastal test and evaluation ranges
- MOD Eskmeals Range is located in Cumbria and partially overlaps with the north west inshore marine plan area. The Range specialises in large calibre ammunition systems and conducts proof, range and accuracy trials, as well as hard target trials. The five firing locations on site enable over-land equipment proving for short range (up to 1km) and over-sea for long ranges (up to 49km)
- there is one marine aggregate licence area located within the north west marine plan areas, namely Liverpool Bay
- there is a planned subsea cable which will go under Morecambe Bay (and under or around the Duddon Estuary) as part of the North West Coastal Connections project to connect the planned nuclear power plant at Moorside to the National Grid at Heysham
- tidal key resource areas identified within the north west include the following estuaries: Solway Firth, Mersey, Dee, Morecambe Bay
- offshore energy projects can result in effects on fish and cetaceans as well as birds
- there are also plans for an underground coal mine at Whitehaven, as part of the Whitehaven Coking Coal Project. There is potential for subsidence and discharge into the sea around St Bees Head MCZ, however, these impacts should be mitigated, with no significant impacts on the marine environment, nor on marine protected sites or species occurring as a result of the proposed development.

## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

### Biodiversity, Flora and Fauna

- evidence of climate change has been recorded with species previously found further south becoming more common within the north west e.g. Black seabream, John Dory and anchovy. This may affect predator prey interactions, competition, reproduction/timing with population impacts. The magnitude of such impacts is uncertain at present
- disturbance or shift in the range of native species due to habitat loss through sea level rise and coastal squeeze and storm events linked to climate change
- invasive non-native leathery sea squirts and orange sheath tunicates (*Botrylloides violaceus*) are present within the north west. The impacts of the former are currently uncertain, but it is recognised that they can become the dominant species, however they can also provide secondary substrate for others
- the proliferation of invasive non-native species can also prompt unwelcome changes in the wider ecosystem that climate change might further exacerbate. For example, invasive non-native filter feeders can multiply at such a rate that they strip phytoplankton and nutrients from water systems, altering the food web and habitat. They can also block pipes and filters, causing problems that water companies must pay to resolve
- within the north west inshore plan area, the following marine protected areas are designated:
  - Allonby Bay MCZ
  - Cumbria Coast-Zones 1 and 2 MCZ
  - Dee Estuary/Aber Dyfrdwy SAC
  - Drigg Coast SAC
  - Duddon Estuary Ramsar Site
  - Fylde MCZ
  - Liverpool Bay SPA
  - Mersey Estuary Ramsar Site and SPA
  - Mersey Narrows and North Wirral Foreshore Ramsar Site and SPA
  - Morecambe Bay and Duddon Estuary SPAs
  - Morecambe Bay Ramsar Site and SAC
  - Ribble and Alt Estuaries Ramsar Site
  - Shell Flat and Lune Deep SAC
  - Solway Firth SAC
  - Upper Solway Flats and Marshes Ramsar site and SPA
  - West of Walney MCZ
  - Wyre-Lune MCZ (Biodiv\_816)



## Key Sustainability Baseline, Issues and Characteristics of the North West Marine Plan Areas

- Within the north west offshore marine plan area, the following marine protected areas are designated:
  - West of Copeland MCZ
  - West of Walney MCZ (Biodiv\_817)
- there are significant wild shellfish beds and spawning and nursery areas for fish within the marine plan areas and in the Irish Sea as a whole. These should be considered in planning and could be protected or enhanced for important associated industries and for wider biodiversity and ecosystem functions
- the north west marine plan areas have been targeted for further development of offshore wind, and oil and gas activities, with a risk of disturbance and displacement to the movement of species through the area. This is particularly relevant to the movement of wintering and passage waders, seabirds and terns
- potential for tidal lagoon development is being considered for north of Workington in West Cumbria. Impacts may include habitat loss or change, introduction of hard substrate as artificial reefs and localised change in hydrodynamics affecting intertidal organisms
- impacts on subtidal sediments and their inhabitant flora and fauna from human pressures (e.g. aggregate extraction, dredging, and offshore energy production) is an issue for the north east, south east and north west plan areas. At various locations near large ports, subtidal rocky habitat has been lost due to the provision of infrastructure (mainly coastal), other construction or via smothering from dredged deposits
- increasing levels of pollution and nutrient enrichment within benthic and intertidal sediments. Deteriorating intertidal sediment habitats in all inshore plan areas due to cumulative effects associated with historical land claim, presence of coastal structures, the presence of invasive non-native species and beach litter
- in the UK, new fishing opportunities could arise due to increased abundances of warm-water species (e.g. red mullet), while cold adapted species (e.g. cod) may move northward or decline in their abundance within UK waters. Ocean acidification could also damage shellfish stocks
- impulsive sound sources have been observed to cause temporary displacement of small cetaceans (e.g. harbour porpoise), increased physiological stress in some fish species (e.g. European seabass), and developmental abnormalities in invertebrate larvae
- broad-scale changes in habitats and species are increasingly likely, resulting from rising sea temperatures due to climate change
- the UK seabird indicator stands at 22% below the 1986 baseline, with most of this decline occurring since the mid-2000s
- habitat suitability around the UK for seabirds is projected to shift northward over the next century and bird distributions may shift with changing conditions. Declines in European ranges are also predicted.

## 4. How the Assessment was Undertaken

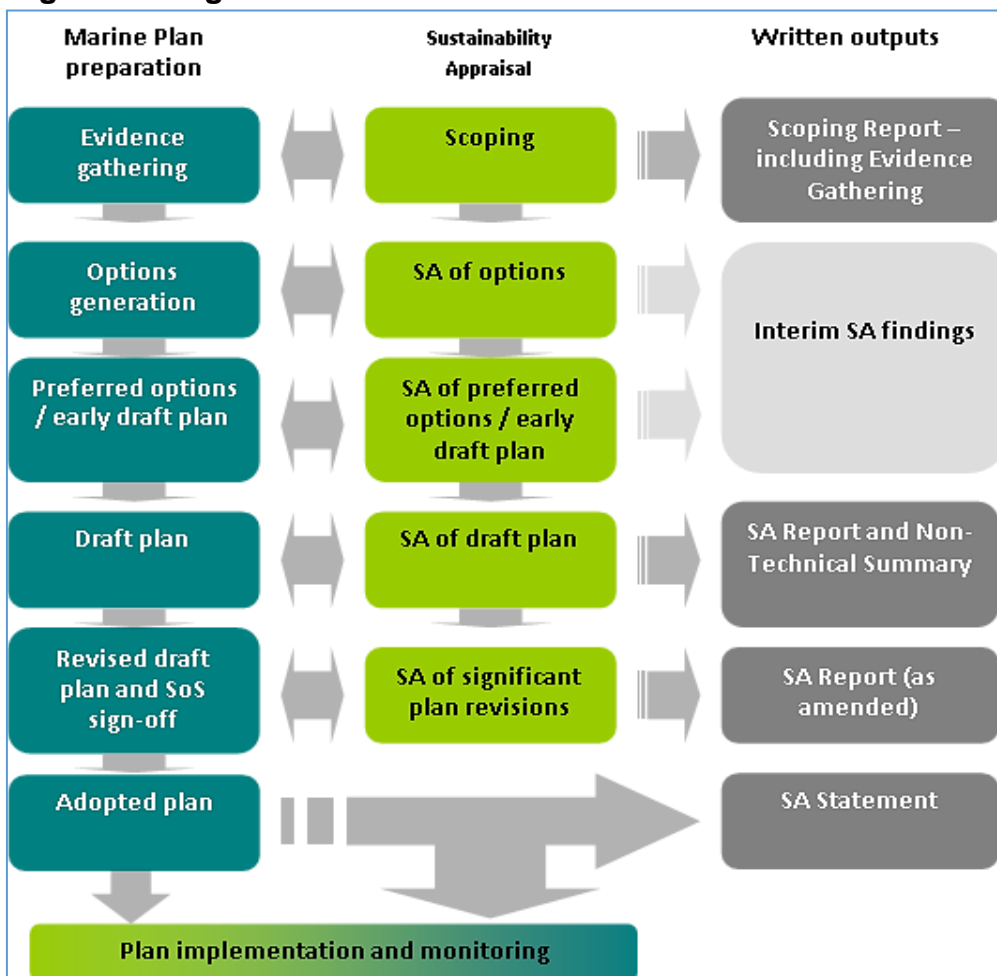
### 4.1 The SA process

The stages in the SA process have been developed to take into account the five procedural stages of SEA:

- Stage A: (scoping) setting the context, establishing the baseline and deciding on the scope of the assessment
- Stage B: developing and refining alternatives and appraising the effects
- Stage C: preparing the SA Report
- Stage D: consulting on the SA Report and the North West Marine Plan and assessing any significant changes
- Stage E: monitoring the significant effects of implementing the North West Marine Plan.

In practice, the SA is an iterative process which has been undertaken in parallel with the development of the North West Marine Plan and has fed into the development of the North West Marine Plan at appropriate intervals – see Figure 1.

**Figure 1: Stages in the SA Process.**



## 4.2 Stage A: Scoping

The purpose of the scoping stage was to decide the coverage (scope) and the level of detail of the SA. The scoping report was produced by a consortium composed of Ramboll Environ, ClearLead Consulting Ltd and Marine Planning Consultants (MPC) Ltd in April 2016. The draft scoping report was engaged on from 11 April 2016 to the 13 May 2016. Following some small factual changes, the final scoping report was published by the MMO. The scoping report forms part of the suite of documents which support this SA Report.

The scoping report outlines an SA framework which the North West Marine Plan and its alternatives are measured against in order to test their sustainability. The SA framework is set out in Table 2.

The scoping process also sets out the geographical and temporal scope of the SA:

**Geographical:** The north west inshore marine plan area covers an area of approximately 1,280 kilometres of coastline stretching from the Solway Firth border with Scotland to the River Dee border with Wales, taking in a total of approximately 4,900 square kilometres of sea. The north west offshore marine plan area includes the marine area from 12 nautical miles extending out to the seaward limit of the Exclusive Economic Zone, a total of approximately 2,200 square kilometres of sea.

**Temporal:** The North West Marine Plan covers a 20 year period, and therefore the SA has considered the effects of the plan over the next 20 years and beyond where possible.

The scoping report was issued to the following statutory bodies:

- Natural England
- Historic England
- The Environment Agency.

In addition to statutory bodies, the scoping report was issued to 20 organisations for comments. The full list is located within section 3 of Part 1 of the SA Report.

**Table 2: SA framework.**

	<b>Overarching SA topic</b>	<b>SA sub-topic</b>
<b>Physical and Chemical Aspects</b>	Cultural Heritage	<ul style="list-style-type: none"> <li>• heritage assets within marine plan areas</li> <li>• heritage assets adjacent to marine plan areas.</li> </ul>
	Geology, Substrates and Coastal Processes	<ul style="list-style-type: none"> <li>• seabed substrates and bathymetry</li> <li>• coastal features and processes.</li> </ul>
	Seascape and Landscape	<ul style="list-style-type: none"> <li>• effects on seascape and landscape.</li> </ul>
	Water	<ul style="list-style-type: none"> <li>• tides and currents</li> <li>• water temperature and salinity</li> <li>• pollution and water quality</li> <li>• marine litter.</li> </ul>
	Air Quality	<ul style="list-style-type: none"> <li>• air pollutants.</li> </ul>
	Climate	<ul style="list-style-type: none"> <li>• greenhouse gas emissions</li> <li>• climate change resilience and adaptation.</li> </ul>
<b>Social and Economic Aspects</b>	Communities, Health and Wellbeing	<ul style="list-style-type: none"> <li>• health and wider determinants of health</li> <li>• effects on communities</li> <li>• effects on protected equality groups.</li> </ul>
	Economy	<ul style="list-style-type: none"> <li>• ports and shipping</li> <li>• fisheries and aquaculture</li> <li>• leisure/recreation</li> <li>• tourism</li> <li>• marine manufacturing</li> <li>• defence</li> <li>• aggregate extraction</li> <li>• energy generation and infrastructure development</li> <li>• seabed assets.</li> </ul>
<b>Ecological Aspects</b>	Biodiversity, Habitats, Flora and Fauna	<ul style="list-style-type: none"> <li>• protected sites and species</li> <li>• benthic and intertidal ecology</li> <li>• fish and shellfish</li> <li>• marine megafauna</li> <li>• plankton</li> <li>• ornithology</li> <li>• invasive non-native species.</li> </ul>

### 4.3 Stage B: Assessing the Options

The SEA Directive requires that the assessment identifies and evaluates reasonable 'alternatives' to what is proposed within the plan.

This stage involved assessment of the alternative options against the SA framework, taking into account the evidence base provided within the SA Database (Technical Appendix A). The key features of the options assessment approach were:

- an approach that assessed each option as a whole and to the same level of detail. 261 policy options were packaged into 29 policy groupings<sup>4</sup>, and the assessment provided a comparison of the options within each grouping
- an evidence-led assessment which referred to the baseline information to provide quality assured evidence as the basis of the assessment
- a focus on identifying key potential significant effects to inform the decision making between options.

The assessment of options was undertaken in two stages:

- **Screening:** a screening process was carried out to determine whether the SA sub-topics were relevant to the specific grouping
- **Assessment of significant effects:** each option was considered against the relevant SA Framework sub-topics. Expert judgement and the updated SA Database (developed at the scoping stage of the SA process and refreshed in August 2017 prior to the assessment) were used as evidence for the assessment.

The options assessment of the North West Marine Plan was reported in an options assessment SA report which can be found [here](#).

### 4.4 Stage B: Assessing the Draft and Final North West Marine Plan

The SA of the North West Marine Plan preferred policies has been undertaken as a 'baseline-led' assessment which considers how the baseline situation will change with the North West Marine Plan in place. This is shown in Part 3 of the North West SA Report.

A qualitative approach has been used, comprising the assessment and description of effects, rather than a quantitative approach which is not considered appropriate or feasible at this strategic level, in view of the form and content of the plan.

The SA of the draft North West Marine Plan focused on the preferred policies completed in July 2019. This consisted of 60 policies arranged within 29 groupings.

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<sup>4</sup> Four groupings (Cumulative Effects, Governance, Evidence Gaps and Implementation) contained options which are not possible to assess through the SA because they are overarching policies and the options were not distinct.

The same approach to assessment has been taken for the assessment of options, preferred policies and final policies:

- options and policies have firstly been screened to identify sub-topics of relevance to the policy grouping
- an assessment of significant effects was performed in relation to the relevant sub-topics only.

The assessment criteria set out within Table 3 have been used to identify the potential effects of the North West Marine Plan.

**Table 3: Policies Assessment Criteria.**

Notation	Description
Degree to which baseline conditions may change (significance of effect) compared with the future baseline situation	
++	<b>Significant Positive Effect:</b> The plan policies are likely to lead to significant improvements in baseline conditions.
+	<b>Minor Positive Effect:</b> The plan policies are likely to lead to some improvements in baseline conditions.
0	<b>Neutral Effect:</b> The plan policies are unlikely to alter baseline conditions significantly.
-	<b>Minor Negative Effect:</b> The plan policies are likely to lead to a deterioration in baseline conditions.
--	<b>Significant Negative Effect:</b> The plan policies are likely to lead to a significant deterioration in baseline conditions.
?	<b>Uncertain Effect:</b> It is not known whether the plan policies would lead to an improvement or deterioration in the baseline conditions <sup>5</sup> .
Direct/Indirect	
Direct	Effects that are a direct result of the plan policies.
Indirect	Effects that are secondary i.e. they occur away from the original effect or as a result of a complex pathway.
Reversibility of effects	
Reversible	It is considered that the effects upon the receptor group could be reversed if activities were to change in the future. The effects could be long-lasting, but the receptor may hence be able to recover or indeed improvements could be diminished.
Irreversible	It is considered that the effects upon the receptor group could not be reversed. This may apply to situations where, for example, features are destroyed forever, or systems/trends are irrevocably changed.
Permanence of effects	
Permanent	Effects could be lasting or intended to last or remaining unchanged indefinitely.
Temporary	Effects are not likely to be lasting or permanent.
Duration	
Short	Within three years of plan adoption – within the reporting period i.e. policy would have an immediate effect.

<sup>5</sup> Please note that for the purpose of this SA, uncertain effects have been treated as potentially significant and mitigation measures suggested

Notation	Description
Medium	Within plan period (up to 20 years from adoption)
Long	Beyond plan period (more than 20 years from adoption)
Spatial Extent	
Beyond both plan boundaries	Effects are predicted to extend beyond the plan boundaries (i.e. transboundary) and could affect the terrestrial environment, neighbouring marine plan areas or other states.
Inshore and offshore plan-wide	Effects are predicted to occur within the inshore and offshore plan areas.
Inshore plan-wide only	Effects are predicted to occur within the inshore plan area only.
Offshore plan-wide only	Effects are predicted to occur within the offshore plan area only.
Localised	Effects are predicted to have a relatively small spatial extent, confined to the local area, typically <5km from source, within the plan boundaries.
Magnitude of effects	
High	Likely total loss of or major alteration to the receptor in question The effects are predicted to be permanent and irreversible.
Medium	Partial loss of/alteration/improvement to one or more key elements/features/characteristics of the receptor in question The effects are predicted to be medium-long term but reversible.
Low	Minor loss/alteration/improvement to one or more key elements/features/characteristics of the receptor in question The effects are predicted to be reversible and short term.

Following consultation on the draft North West Marine Plan between January 2020 and April 2020, the plan and the SA Report have been updated in response to the consultee comments received and residual significant effects have been identified.

## 4.5 Stage C: Preparing the SA report

The SA Report for the North West Marine Plan constitutes three parts:

- Part 1: Introduction and Methodology
- Part 2: Scoping Information
- Part 3: Results of Assessment.

Material and documents generated as part of the SA process are available [here](#).

## **4.6 Stage D: Consulting on the SA report**

The draft North West Marine Plan and accompanying SA Report were consulted on with the public and other key stakeholders between January 2020 and April 2020.

Following consultation, responses relating to the SA have been reviewed and responded to. Amendments to the SA have been undertaken in response to consultees' comments as appropriate.

## **4.7 Stage E: Monitoring**

Monitoring the effects of the plan will be the responsibility of the MMO. Monitoring recommendations will be put forward for integration into the MMO's marine plan monitoring within the SA Adoption Statement. See Part 3 of the SA Report for further details on monitoring.

## **4.8 Difficulties encountered**

The North West Marine Plan is a regional scale plan which is not intended to address site or project-specific details. The large majority of the policies in the plan are generic or criteria-based policies and do not have a clear spatial dimension.

This results in uncertainty when predicting the effects of activities and consequently strategic impacts can be identified with the most certainty, together with the extent to which the marine plan seeks to avoid or offset these impacts. Correspondingly, this SA's predictions and proposed mitigation measures are primarily at a strategic level.



## 5. Potential Significant Effects of the Plan

### 5.1 Introduction

This section presents a summary of the assessment findings of the North West Marine Plan by SA topic, the summaries of which are presented in the Table 4 to

**Table 12**

Table 12. The full assessment of the North West Marine Plan can be found within Technical Appendix B to the full SA report.

**Table 4: Assessment results: Cultural Heritage.**

Cultural Heritage	
Uncertain Effects	?
<ul style="list-style-type: none"> <li>the heritage assets policy grouping aims to protect heritage assets from developments that could result in adverse effects. However, the last clause of policy NW-HER-1 will allow for some harm to heritage assets to occur if harm to such assets cannot be avoided by development. Hence, an uncertain effect has been recorded for assets within and adjacent to the north west marine plan areas, as it will be dependent on implementation</li> <li>policy groupings cables, dredging and disposal, oil and gas and renewables all aim to protect current activity and promote future activity within the north west marine plan areas. The baseline has identified the significant under exploited potential of buried heritage assets in the north west marine plan areas, as well as the potential for adverse effects on those heritage assets that are already uncovered, from cables, dredging and disposal, oil and gas and renewables. Policy NW--HER-1 could provide protection to heritage assets, however, it is uncertain which policy would have precedence</li> <li>an uncertain effect has been recorded as a result of the cables policy grouping, on heritage assets adjacent to marine plan areas. This policy gives preference to buried subsea cables which could result in a negative effect on heritage assets adjacent to the marine plan areas. However, this would be dependent on implementation, therefore an overall uncertain effect has been recorded.</li> </ul>	

**Table 5: Assessment results: Geology, Substrates and Coastal Processes.**

<b>Geology, Substrates and Coastal Processes</b>	
<b>Significant Positive Effects</b>	<b>++</b>
<ul style="list-style-type: none"> <li>the climate change policies seek to increase resilience of geology to the effects of climate change, minimise adverse impacts on coastal change adaptation measures and support proposals which have the potential to increase flood defence and carbon sequestering habitats. A significant positive effect has been identified for the coastal features and processes SA sub-topic.</li> </ul>	
<b>Uncertain Effects</b>	<b>?</b>
<ul style="list-style-type: none"> <li>dredging and disposal activities have the potential to affect areas of seabed altering sediment processes and physical processes and creating sediment plumes. The dredging and disposal policy grouping aims to safeguard dredging activity within the north west marine plan areas, however, as dredging is an enabling activity which is essential to the functioning of ports and marinas, it is assumed that NW-DD-1 and NW-DD-2 will help dredging activity to continue. It is assumed that all new dredging proposals would be subject to an EIA, which would assess the potential effect on seabed substrate and bathymetry. This could help to mitigate potential negative effects. An uncertain effect, depending on implementation is recorded for the seabed substrates and bathymetry SA sub-topic</li> <li>aggregate activity can significantly change the hydrodynamic regime, which in turn could alter coastal processes. There are currently no licensed aggregate extraction areas in the north west marine plan areas, however, there is one site located within the Irish Sea which has been included within Round 4 of The Crown Estates leasing rounds. Policies could help to safeguard this site for future aggregate developments. However, it is assumed that all new aggregate proposals will be subject to an EIA, and The Crown Estate leasing process also ensures that environmental receptors are considered. An uncertain effect, depending on implementation, has therefore been identified for the seabed substrates and bathymetry and coastal processes SA sub-topics</li> <li>the effects of renewable energy installations on potentially sensitive environmental features are unknown at present. The installation of renewable technology and subsequent reduced contributions to climate change may help to appease the impacts of increased storminess such as coastal inundation within the marine environment. However, due to the unknown type and location of future renewable sites, an uncertain effect has been identified, for the coastal features and processes sub-topic.</li> </ul>	

**Table 6: Assessment results: Seascape and Landscape.**

<b>Seascape and Landscape</b>	
<b>Significant Positive Effects</b>	<b>++</b>
<ul style="list-style-type: none"> <li>• there is a close relationship between the presence of heritage assets and the character, value and appreciation of landscape and seascape. Heritage policies aim to protect heritage assets from future proposals, ensuring that the diversity of the marine environment, and its cultural heritage is protected</li> <li>• landscape and seascape policies aim to maintain and improve the seascape and landscape within the north west marine plan areas. Proposals which may harm the current seascape or landscape must demonstrate why this is necessary and mitigate adverse effects.</li> </ul>	
<b>Uncertain Effects</b>	<b>?</b>
<ul style="list-style-type: none"> <li>• oil, gas, and carbon capture, usage and storage (CCUS) developments have potential to negatively affect the seascape and landscape of the inshore marine plan area. Given the importance of the Lake District National Park and Solway Coast and Arnside and Silverdale AONBs, if development were to come forward, there is potential for significant negative effects. Although the oil and gas policies may not directly result in further oil and gas developments within the plan area, there are currently 23 licensed areas and 13 new blocks that have been provisionally awarded as part of the 31st licensing round. The 32nd round is currently in progress and may result in further blocks coming forward. Given that the oil and gas industry in the north west contributes significantly to the UK overall supplies, it is assumed that these policies will ensure that development will continue, which could negatively impact seascape and landscape within the plan area. Whether carbon capture usage and storage developments come forward as a result of the oil and gas policy grouping is currently uncertain.</li> </ul>	

**Table 7: Assessment results: Water.**

<b>Water</b>	
<b>Significant Positive Effects</b>	<b>++</b>
<ul style="list-style-type: none"> <li>• marine litter is transboundary in nature, as litter moves in the marine environment and litter originating from one marine plan area or even country can affect another. The cross-border co-operation policy supporting text states that the alignment of marine planning with other planning, regulation and management bodies is necessary in order to manage pressures and aims to ensure transboundary impacts are minimised across international borders. This policy could therefore result in significant positive effects on the marine litter SA sub-topic</li> <li>• the water quality policy aims to enhance and restore water quality and ensure that new proposals are accountable for their potential negative impact on water quality. For this reason, a significant positive effect has been identified for the pollution and water quality sub-topic</li> </ul>	

<b>Water</b>	
<ul style="list-style-type: none"> <li>a potential significant indirect positive effect has been identified in relation to the renewables policy grouping on the water temperature and salinity SA sub-topic. It is assumed that an increase in renewable energy generation could work to counter the advance of climate change and the associated effects on water temperature and salinity.</li> </ul>	
<b>Uncertain Effects</b>	<b>?</b>
<ul style="list-style-type: none"> <li>there are current conflicts between marine activities and water pollution. Water pollution within the north west plan areas is being affected by mining and nuclear discharges and oil and gas activities. As an economic policy, it is assumed that priority will be given to the economic activities. However, as the quality of bathing waters can play an integral part in tourism and recreation sector, the policy could indirectly result in water quality being protected. As this is not known for certain, an uncertain effect has been identified in relation to the co-existence policy grouping.</li> </ul>	

**Table 8: Assessment results: Air Quality.**

<b>Air Quality</b>	
<b>Significant Positive Effects</b>	<b>++</b>
<ul style="list-style-type: none"> <li>potential significant positive effects have been identified in relation to the air quality policy as developments that contribute to air pollution will need to consider the need to protect air quality.</li> </ul>	

**Table 9: Assessment results: Climate.**

<b>Climate</b>	
<b>Significant Positive Effects</b>	<b>++</b>
<ul style="list-style-type: none"> <li>the air quality policy aims to ensure that developments which contribute to greenhouse gas emissions will need to consider the need to protect air quality, resulting in significant positive effects on the greenhouse gas emissions SA sub-topic</li> <li>the climate change policies have resulted in a potential significant positive effect on climate change resilience and adaptation SA sub-topic, as it seeks to increase resilience and adaptation to the effects of climate change</li> <li>the marine protected areas policies have resulted in a significant positive on the climate change resilience and adaptation SA sub-topic, as the policies directly address the issue of climate change adaption, with clear preference for proposals which enhance the adaptability of marine protected areas to climate change</li> <li>the renewables policies support energy generation by marine renewables which in turn could alleviate demand on greenhouse gas-emitting fossil fuel energy generation, resulting in significant positive effects on the greenhouse gas emissions SA sub-topic.</li> </ul>	

**Table 10: Assessment results: Communities, Health and Wellbeing.**

<b>Communities, Health and Wellbeing</b>	
Significant Positive Effects	++
<ul style="list-style-type: none"> <li>• the baseline has identified income and employment deprivation issues associated with coastal communities across the north west inshore marine plan area. It is assumed that the employment policy grouping will help to provide employment opportunities for all, including those from protected equality groups, therefore significant positive effects have been identified for the effects on communities and effects on protected equality groups SA sub-topics</li> <li>• the infrastructure policy grouping supports the diversification and regeneration of marine based industries. Given the high dependence upon the fishing sector and the declines the industry is now facing, it is assumed that the diversification and regeneration that the policy provides has the potential to result in significant positive effects, for the north west inshore marine plan area</li> <li>• increased access to tourism and recreation activities, as a result of tourism and recreation policies, could provide significant social benefits for communities through, greater social cohesion, improved health and wellbeing (both physical and mental) and job creation. Significant positive effects have therefore been recorded in relation to the health and the wider determinants of health and effect on communities SA sub-topics</li> <li>• the cross-border co-operation policy aims for developments to consider cross-border impacts upon adjacent marine plan areas and the terrestrial environment including economic, social impacts. In order to achieve sustainable development, it is assumed that developments will need to consider their impact on communities (including health and wellbeing). This policy could result in a significant positive effect on health and the wider determinants of health and effects on communities SA sub-topics</li> <li>• the social benefits policy grouping has potential to tackle existing health problems within the north west inshore marine plan area, hence a significant positive effect has been recorded in relation to the health and the wider determinants of health sub-topic.</li> </ul>	

**Table 11: Assessment results: Economy.**

Economy	
Significant Positive Effects	++
<ul style="list-style-type: none"> <li>• an increase in access to the marine environment is predicted to result from the implementation of the access policy on leisure and recreation. This should allow for greater use of the natural environment for leisure and recreation; therefore the access policy has resulted in a significant positive effect on the leisure and recreation policy SA topic</li> <li>• aggregate policies could result in further aggregate extraction in the north west marine plan areas. The baseline has identified the significance of the UK marine aggregates and the importance they could play in the future for meeting housing demands and provision of fill for major coastal infrastructure projects, such as ports, coastal defences, renewable energy and nuclear energy projects, hence a potential significant positive effect has been recorded for the aggregates SA sub-topic</li> <li>• the cables policies will help to enable further cable development within the marine plan areas, and could ensure energy security for the future. Significant positive effects have been identified in relation to the energy generation and infrastructure development and seabed assets SA sub-topics</li> <li>• the implementation of the employment policy grouping could result in significant positive effects on the energy generation and infrastructure; fisheries and aquaculture; leisure and recreation; ports and shipping; and tourism SA sub-topics</li> <li>• the fisheries policies will help to encourage further fisheries and aquaculture development within the north west marine plan areas, resulting in significant positive effects on the fisheries and aquaculture SA sub-topic</li> <li>• the infrastructure policy grouping aims to safeguard existing landing facilities within the north west inshore marine plan area, which are predominantly used for aggregate activity. The policy should therefore result in a significant positive effect on aggregate extraction and the ports and shipping SA sub-topic</li> <li>• oil and gas policies support future oil and gas extraction within the north west marine plan areas. A significant positive effect has been identified in relation to the energy generation and infrastructure development SA sub-topic</li> <li>• a potential significant positive effect has been identified in relation to the ports and shipping policy grouping, as it supports existing shipping infrastructure and could open up new opportunities for short sea shipping</li> <li>• the tourism and recreation and social benefits policy groupings aim to protect existing leisure and recreational activities and could result in expansion and diversification of existing developments as well as new proposals. This has the potential to result in significant positive effects on both the leisure and recreation and tourism SA sub-topics</li> <li>• the renewable energy policies aim to safeguard areas for future renewable development and promote new renewable technologies. Significant positive effects have been identified in relation to the energy generation and infrastructure development SA sub-topic.</li> </ul>	

Economy	
Uncertain Effects	?
<ul style="list-style-type: none"> <li>an uncertain effect has been recorded on the energy generation and infrastructure development and marine manufacturing SA sub-topics, due to the prevalence of both MPAs and existing energy generation and manufacturing industry within the marine plan areas. It is unclear how existing infrastructure, such as the gas terminal at Barrow-in-Furness would be dealt with under this policy. Therefore, an uncertain effect has been recorded.</li> </ul>	

**Table 12: Assessment results: Biodiversity, Flora and Fauna.**

Biodiversity, Habitats, Flora and Fauna	
Significant Positive Effects	++
<ul style="list-style-type: none"> <li>the cumulative effects policy grouping is predicted to have a significant positive effect on the benthic and intertidal environment and protected sites and species SA sub-topics, as it will address adverse cumulative effects from future proposals</li> <li>the invasive non-native species policy grouping directly aims to prevent the introduction and increased spread (or increased distribution) of invasive non-native species throughout the marine plan areas. Transport of invasive non-native species, as well as areas of potential colonisation are addressed within this grouping, which should help to form a well-rounded approach to tackling this issue</li> <li>the implementation of the marine protected areas policies has the potential for significant positive effects on the marine protected areas network, including benthic and intertidal ecology, as it may increase the adaptability of benthic and intertidal environments to the effects of climate change, and make suitable arrangements for the spatial changes in distribution of habitat types</li> <li>the marine protected areas policy grouping has the potential to result in a significant positive effect on birds. There are a high number of bird habitats within the marine plan areas, which should be protected by policy NW-MPA-1, as many are currently designated as MPA sites. For example, Liverpool Bay SPA, which supports around 50,000 wintering birds. Policies NW-MPA-2 and 3 should aid in ensuring changes in current habitats due to climate change are considered, with MPA boundaries adjusted accordingly.</li> </ul>	
Significant Negative Effects	--
<ul style="list-style-type: none"> <li>the aquaculture policies also have potential to have a significant negative effect on the benthic and intertidal ecology SA sub-topic. This policy grouping promotes aquaculture developments, which could lead to an increase in the nutrients and pollutants present within benthic and intertidal sediments, altering species composition</li> <li>ports and shipping activity could increase as a result of the ports and harbours policy grouping. This could result in increased disturbance, hence a potential significant negative effect has been identified in relation to seabirds.</li> </ul>	

## Biodiversity, Habitats, Flora and Fauna

### Uncertain Effects

?

- sub-sea cables have the potential to adversely affect fish species, through disturbance during construction and through electromagnetic fields created during operation. There is potential for electromagnetic fields to alter migration, feeding and navigation in these organisms. However, the impact of electromagnetic fields on fish is not yet fully understood, hence an uncertain effect has been recorded
- fisheries pose a threat to fish and shellfish, particularly vulnerable or rare species. Whilst the fisheries policies seek to protect essential fish habitat, it is unclear whether this would apply only to fish habitat of commercially important species or all fish. Therefore, an uncertain effect has been recorded for the fish and shellfish and protected sites and species sub-topics
- the co-existence policy aims to help protect habitats and species, but it also aims to protect industries that are damaging to benthic and intertidal habitats. There is no indication within the supporting text whether the protection of industries or the protection of habitats take priority. For these reasons, an uncertain effect has been identified, in relation to the co-existence policy grouping and benthic and intertidal ecology
- sewage pollution remains a significant challenge for fish and shellfish within the north west plan areas. It is beyond the jurisdiction of the plan to look at existing issues within the plan area, therefore, it is not clear whether the water quality policy will help to tackle this existing issue. For these reasons, an uncertain effect has been identified on the fish and shellfish SA sub-topic
- the disturbance policy does not protect benthic or intertidal habitats; or sessile species from the effects of disturbance, which could lead to the irreversible loss of benthic and intertidal environments within this plan area. The biodiversity policy grouping may have the potential to mitigate for this. However, it is uncertain whether this would include the effects of disturbance
- the oil and gas policy grouping may not directly result in further oil and gas developments within the north west marine plan areas, however there are currently 23 licensed areas. The oil and gas industry in the north west region contributes significantly to the UK overall supplies, and it is assumed that these policies will ensure that development continues. Whether carbon capture usage and storage developments come forward as a result of the grouping is currently uncertain. The potential effects of carbon capture usage and storage are not fully known, however, the baseline has stated that these are likely to be similar to oil and gas. It is noted that the Liverpool Bay oil and gas fields project has the potential to adversely affect benthic and intertidal ecology; marine megafauna; and protected sites and species. Therefore, an uncertain effect has been recorded
- the implementation of the underwater noise policy grouping could have negative effects on all parts of the food web and ecosystem, including marine megafauna; fish and shellfish; and protected sites and species. Policies in this grouping could lead to the development of proposals which directly alter fish movement patterns, therefore altering energy expenditure. Species which are not "highly mobile" would not be protected by this policy. This could lead to the irreversible loss of populations. The



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populations of species which are “highly mobile”, as well as those which are not could also be affected by activities that occur concurrently in key habitats, or at times or in areas that are crucial to part of their life-cycle e.g. spawning times

- renewable energy policies could result in further renewable developments within the north west marine plan areas, which could indirectly reduce the climate change impacts on benthic intertidal ecology and plankton. Impacts could be dependent upon the type and number of developments, which is not known at this stage and there is also a lack of data concerning how renewable infrastructure could affect plankton.

## 6. Cumulative Effects Assessment

### 6.1 Introduction

The SEA Regulations require an assessment of cumulative effects. Cumulative effects arise where:

- several individual effects of the plan have a combined effect on a single receptor
- several plans and policies each have insignificant effects but together have a significant effect.

The significance of cumulative effects resulting from a range of activities, or multiple incidences of one activity, may vary based on factors such as the nature of the projects proposed and the sensitivity of the receiving communities and environment.

The cumulative effects assessment therefore includes:

- consideration of how different aspects of the North West Marine Plan may interact to cause cumulative effects on a receptor
- how the North West Marine Plan can cause cumulative effects in association with other programmes, plans, policies and projects.

### 6.2 Potential Cumulative Effects of all Policy Groupings

Table 13 below summarises the potential significant positive, significant negative and uncertain cumulative effects identified for each SA Topic from the assessment of policies.

The full details of the cumulative effects identified, as well as mitigation, for each of the SA topics in relation to the policy groupings, is outlined in Table 2 in section 13.2 of the SA Report: Part 3.

**Table 13: Summary of Cumulative Effects.**

<b>SA topic</b>	<b>Associated Policy Groupings</b>	<b>Potential Negative or Uncertain Cumulative Effects</b>	<b>Potential Positive Cumulative Effects</b>
Landscape and Seascape	seascape and landscape heritage assets	N/A	Seascape and landscape policy grouping working in combination with the marine protected areas and heritage assets policy groupings, could result in positive cumulative effects.
Economy	invasive non-native species underwater noise	Economic activity could be restricted by the implementation of a combination of the environmental policy groupings, however the significance of these cumulative effects is not yet known. Environmental policies could inhibit economic activity (e.g. underwater noise restrictions and control of invasive non-native species). However, some of these environmental policies do contain caveats to allow for development at the expense of the environmental receptors, which could help to mitigate adverse impacts on development.	N/A
Biodiversity	biodiversity	N/A	A potential significant cumulative positive effect has been identified in relation to the marine protected areas policy grouping working in combination with the biodiversity grouping to protect and enhance protected sites and species.

### **6.3 Potential Cumulative Effects with other programmes, plans, policies and projects**

Table 3 within Section 13 of the SA Report: Part 3, presents the relevant international, national and regional plans, policies and strategies which could give rise to potential cumulative effects in combination with the North West Marine Plan.

The majority of the policies and plans reviewed will result in positive cumulative effects. This is because they strengthen environmental protection, for example by reducing greenhouse gas emissions, improving air or water quality, protecting designated sites for nature conservation, landscape or the historic environment. However, there is potential for development to cause negative cumulative effects, particularly where development in adjacent terrestrial or marine areas can act in-combination to impact on receptors. There are a number of policies within the North West Marine Plan which do help to mitigate these effects:

- Cumulative Effects Policy NW-CE-1
- Co-existence Policy NW-CO-1
- Cross-border Co-operation Policy NW-CBC-1
- environmental protection policies
- economic development (including fisheries) policies.

In addition, cumulative impact assessments undertaken as part of the consenting and EIA processes would also address and mitigate for potential cumulative effects of projects.

## 7. Mitigation

Mitigation measures are measures suggested to prevent, mitigate, reduce or offset negative, cumulative or uncertain effects. Where significant negative or uncertain effects were identified within the policy assessment, mitigation has been provided via the following (either as standalone or in combination):

- **general mitigation:** this may be provided through other policies within the North West Marine Plan; existing plans and policies (such as local plans, national park management plans) or through other processes, for example, environmental impact assessment (EIA)
- **specific mitigation:** this mitigation type has recommended alterations to either the supporting text or policy wording.

Responses to mitigation for each of the SA topics can be found in sections 14 in SA Report: Part 3, and further detail will be provided within the SA Adoption Statement.

The mitigation proposed falls into the broad categories below:

- in some cases, mitigation would be applied at the planning application stage and would rely on the EIA and/or The Crown Estate leasing processes. Uncertainty remains in the SA but is likely to be mitigated at the project level, therefore no further action is required at the plan level
- in some cases, changes to policy supporting text proposed in the SA to mitigate potential effects has been rejected because discussing potential impacts caused by every sector in the supporting text would lead to an unduly long plan. As stated in section 2.3 of the marine plan, the plan must be taken as a whole and no policy should be taken in isolation. Therefore, no further action will be taken in these cases
- several uncertain cumulative effects are likely to be mitigated by the implementation of one or more policies within the plan. In particular, the cumulative effects policy grouping could help to mitigate such effects. The final outcome may not become clear until the implementation of the plan. Therefore, no further action is required in the SA
- there may be not mitigation for all cumulative effects, particularly those which could restrict development in order to protect the environment (and vice versa). Instead, it may have to be accepted as an effect of implementing policies, specifically those which will protect the environment, hence no further action is required
- spatial and temporal changes to development proposals could help to prevent adverse impacts on marine organisms. However, this level of detail will be decided at planning application stage, thus no further action is required
- an uncertain cumulative effect may have been identified due to a lack of data concerning links between certain SA sub-topics. In such cases, no further action is required. Instead, uncertain effects may be mitigated when further scientific evidence is published to clarify potential interactions.

## 8. Monitoring of Residual Effects

The SEA Regulations require that the significant environmental effects of plans and programmes be monitored. This intends to allow the early identification of unforeseen adverse effects so that appropriate remedial action can be taken. Therefore, monitoring undertaken for the North West Marine Plan as part of the SA, and as part of the implementation and monitoring of the adopted North West Marine Plan, should help to:

- monitor the significant effects of the North West Marine Plan
- track whether the North West Marine Plan has had any unforeseen effects
- ensure that action can be taken to reduce/offset the significant negative effects of the plan.

The requirements of the SEA Regulations focus on monitoring the significant negative and unforeseen effects of the Marine Plan. Therefore, monitoring within these reports is only discussed within the context of residual effects which are significantly negative or uncertain.

The North West Marine Plan process will itself include a comprehensive monitoring programme which is focused on the achievement of the plan's objectives. This monitoring programme will enable the MMO to track the success of policies and also to monitor the baseline environmental, economic and social conditions of the marine plan areas. The monitoring also contributes to the three-yearly reporting to parliament, which in turn provides a mechanism for reviewing and amending the plan or individual policies.

The SA topics and sub-topics for which residual significant negative or uncertain effects have been identified in the assessment of the final policies will be presented in the SA Adoption Statement alongside suggested monitoring indicators. During the development of the Annex of Indicators, these suggestions will, if practicable, be integrated into the monitoring programme or new indicators will be created to assess these impacts. The Annex of Indicators will be developed following the publication of the North East, North West, South East and South West Approach to Monitoring and once completed will be available on request from the Marine Management Organisation.