CELL 1 SMP2 ACTION PLANS, COASTAL STRATEGIES AND 6 YEAR FCERM PROGRAMME STRATEGIC ASSESSMENT

Strategic Assessment Environmental Report

Prepared for

Scarborough Borough Council

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Contents

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Introduction

1.1 Purpose of this report

Scarborough Borough Council has commissioned CH2M to undertake a non-statutory strategic assessment (SA) in line with Strategic Environmental Assessment (SEA) guidance, of the in-combination and cumulative impacts of implementing the actions from both the Northumberland and North Tyneside Shoreline Management Plan SMP2 and the River Tyne to Flamborough Head SMP2, the government's 6 year Flood and Coastal Erosion Risk Management (FCERM) investment programme and the coastal strategies over the whole of Coastal Sediment Cell 1 (herein known as Cell 1). The location and extent of Cell 1 is shown on Figure 1.

This SA considers the Cell 1 SMP2 actions pending construction; those proposed to manage and maintain the development assets present along the coastline, and those to plan new and adapt existing assets. It is not the intention of this project to reconsider the preferred and adopted SMP2 policies.

The SA undertaken for Cell 1 is non-statutory however it has been informed by the Strategic Environmental Assessment Directive, transposed into UK law under The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 1633).

The results of this SA can be used by the Cell 1 Coastal Risk Management Authorities (e.g. Coast Protection Authorities and the Environment Agency) and Statutory Environmental Bodies (e.g. Natural England, Historic England, Environment Agency, Marine Management Organisation) to help consider impacts and seek environmental opportunities related to FCERM actions from the SMP2s, coastal strategies and schemes in the 6 year FCERM investment programme. Additionally, the assessments can assist future planning of additional FCERM actions in Cell 1. It is therefore the intention that this SA should be used as a reference document for future SEAs or Environmental Impact Assessments (EIA) where these may be required for coastal plans and strategies.

1.2 Overall aims of the project

The primary aim of the project was to strategically consider the in-combination and cumulative environmental impacts of coastal risk management activities in Cell 1 in order that the Coastal Risk Management Authorities and Statutory Bodies (e.g Natural England, Historic England, Planning Authorities, Marine Management Organisation) can strategically consider potential impacts and seek environmental opportunities.

The project has also considered interactions and opportunities relating to the EU Water Framework Directive (WFD) in terms of the delivery of the SMP2 actions. An initial assessment of opportunities for environmental enhancements that would be beneficial to the WFD transitional and coastal waterbodies in Cell 1 that could potentially be delivered alongside SMP2 actions is presented in a separate accompanying technical note.

On project start up, it was originally proposed that a statutory SEA, Water Framework Directive (WFD) Assessment and Habitat Regulations Assessment (HRA) would be prepared by the project. An Environmental Scoping Report and HRA Screening Report were prepared and these were consulted on in October 2015. However, on further discussion with the client and project team and taking into account consultation feedback, it was agreed that since the project was non-statutory and was not developing a new plan then a statutory SEA and HRA was not required and a non-statutory SA and WFD would be undertaken instead. The Environmental Scoping Report and responses received continued to inform this SA and although no HRA was prepared the Natura 2000 sites were considered within this SA.

Figure 1 Cell 1 Study Area

Coastal flood and erosion risk management

2.1 Responsible Authorities

There are nine coastal local authorities along the North East coast of England (i.e. Cell 1) as shown on Figure 1. These local authorities have powers to undertake works to manage risks related to coastal erosion under the Coast Protection Act 1949 (CPA), with consent from the Environment Agency (EA) in accordance with the Flood and Water Management Act 2010.

The EA is the primary sea defence authority for England and undertakes a strategic overview of all Flood and Coastal Erosion Risk Management (FCERM) activities undertaken by other risk management authorities (RMAs) on behalf of Department for Environment, Food and Rural Affairs (DEFRA). The coastal local authorities are RMAs and under the CPA they have two main functions: regulating coast protection works undertaken by others (such as landowners); and promoting their own schemes, subject to consent.

The CPA makes no specific provisions for amenity or conservation works and is confined solely to defence structures, however consideration is often given. There are however numerous other regulations, some of which are European Directives that ensure environmental considerations play a major part in the design and construction of any new scheme or maintenance works. Coastal local authorities must also consider the WFD (Directive 2000/60/EC), which has been transposed into UK law through the Water Environment (Water Framework Directive) (England and Wales) Regulations (SI 3242/2003) and the Land Drainage Act (LDA) 2010 at all times.

The RMAs do not have a legal obligation to undertake FCERM activities on their coastline. However, under permissive powers, they routinely carry out works that are both capital funded (i.e. through applications for Grant Aid made to the EA) and revenue funded (i.e. from their annual budgets).

2.2 Shoreline management plans

2.2.1 Overview

Shoreline Management Plans (SMPs) set out a plan for a 100 year period indicating how flood and erosion risks at the coastline should be managed. SMPs consider objectives, policy setting and management requirements for three main epochs; from the present day (0 to 20 years), medium-term (20 to 50 years) and long-term 50 to 100 years) i.e. from the time of SMP2 preparation to 2025 (short term), from 2025 to 2055 (medium term) and from 2055 to 2105 (long term).

SMPs divide the 6,000 mile shoreline of England and Wales into eleven coastal cells and sub cells defined by coastal type and processes such as the movement of beach and seabed sediment (sand, shingle, etc.) within and between them. The north east coast of England lies within Cell 1 and includes the coastline from the Scottish Border to Flamborough Head, which covers approximately 300km.

The Cell 1 study area is currently covered by two SMP2s; the Northumberland and North Tyneside SMP and the River Tyne to Flamborough Head SMP as shown in Figure 1. Further information on SMPs and the two SMPs covering the study area can be found in Appendix B.

2.2.2 SMP policies

The generic shoreline management policies considered in the SMP2s are those defined by Defra (2006); they are represented by the statements:

- No active intervention (NAI): where there is no investment in coastal defences or operations;
- Hold the existing defence line (HTL): maintain or change the standard of protection provided by defences. This would include work or operations carried out in front of the existing defences or

operations to the back of defences (such as secondary flood defences) where they are an essential part of maintaining the current defence system;
- Advance the existing defence line (ATL): build new defences on the seaward side of the original defences; and
- Managed realignment (MR): allow the shoreline to move backwards or forwards, with management to control or limit movement.

In developing policy in the SMP2s, the coast was divided (at the highest level) into "Policy Development Zones" (PDZ). These are further subdivided into Policy Units (PU). Where PUs are inter-dependent they have been grouped into Management Areas (MA). Further explanation is provided in Appendix B.

2.2.3 SMP2 action plans and action plan scoping

Action Plans for Cell 1 were presented in each of the two SMP2 documents. The Action Plans summarise the high-level and strategic actions that are required to implement the policies of the SMP2.

Given the uncertainty in implementation of the actions in future epochs, as they are likely to be less well formulated, subject to funding constraints and have more uncertainty surrounding them, the actions to be undertaken beyond 2020/21 have been scoped out of requiring assessment at the present time. This approach avoids the risk of considering those actions which may be removed or slightly changed as part of any potential future SMP2 review process. It also ensures that the environmental impacts of the actions are assessed based upon the most recent data and current understanding of coastal processes rather than on data that could be out of date by the time the action is implemented.

In addition monitoring actions have been scoped out of this SA since they are ongoing activities and would not require specific ground work actions to implement them. Therefore, the SMP2 actions scoped into this SA are:

- Studies;
- Schemes pending construction;
- Schemes to manage and maintain the development assets present along the coastline; and
- Schemes for planning new and adapting existing development assets (as named in the SMP2s).

2.3 Coastal strategies

The strategies that have been developed for managing coastal flood risk and coastal erosion along the Cell 1 coastline have been identified through a web-based search and consultation with each Coastal Local Authority and are presented in Table 2-1. It has been assumed that any actions within the strategies produced prior to the SMP2s were incorporated into the Action Plans of the two SMP2 and therefore those earlier coastal strategies will not be considered further.

Table 2-1 FCERM Strategies identified for Cell 1.

Coastal Local Authority	Strategy Name	Strategy Date	Included/Excluded from assessment
Northumberland County Council	Alnmouth Bay Strategy	2002	Excluded
North Tyneside Council	Hartley Cove To The River Tyne Coastal Strategy Plan	2007	Excluded
South Tyneside Council	Coastal Management Strategy 2007-	2007	Included

Coastal Local Authority	Strategy Name	Strategy Date	Included/Excluded from assessment
	2012		
Sunderland Council	Whitburn to Ryhope Coast Protection Strategy Study	2001	Excluded
Hartlepool Borough Council	Hartlepool Headland Coastal Strategy Study	2006 (and 2014 review)	Excluded
	Seaton Carew Coastal Strategy Study	2011	Included
Redcar and Cleveland Borough Council	Redcar Coastal Defence Strategy Project Appraisal Report	2004	Excluded
	Redcar to Saltburn Coastal Defence Strategy	Incomplete	Excluded
	Skinningrove Coastal Defences Strategy Plan	2013/14 TBC	Excluded
Durham County Council	Seaham Coastal Strategy	2004	Excluded
Scarborough Borough Council	Runswick Bay Strategy	2015	Included
	Whitby Strategy	2012	Included
	Robin Hoods Bay Strategy	2012	Included
	Scarborough Town Strategy	2009	Included
	Filey Strategy	2002*[1]	Excluded
	Cayton Bay Strategy	2002*[1]	Excluded
East Riding of Yorkshire Council	None identified within Cell 1		Excluded

*1. The Filey and Cayton Coastal Strategy has been updated and is currently being reviewed by the EA (as of March 2017).

2.4 6 year FCERM investment programme

Any additional coastal defence schemes proposed within the government's 6 year FCERM investment programme (2015-2021) within Cell 1, but not already identified in the SMP2 Action Plans have also been included within this SA. The 6 year FCERM investment programme of schemes are listed in Appendix C and summarised below in Table 2-2.

Those already completed or proposed to be completed beyond 2020 have been screened out of further assessment, however any schemes started or proposed to be completed before 2020 have been screened in for further assessment.

Table 2-2 Summary of coastal defence schemes within the 6 year FCERM investment programme (2015-2021).

Project Name	Risk Management Authority	Within the SMP2 Action Plans (Yes/No)
Greatham North	Environment Agency	No – estuary location (not within SMP area). Scheme completed.
Port Clarence and Greatham South Flood Alleviation	Environment Agency	No – estuary location (not within SMP area). Scheme under construction.
Seahouses Main Pier Rehabilitation	Northumberland County Council	No
Little Shore Improvement	Northumberland County Council	Yes
Beadnell North Sea Wall Improvements	Northumberland County Council	Yes
Boulmer Coast Protection	Northumberland County Council	Yes
Craster Coast Protection Scheme	Northumberland County Council	No (SMP2 only had study not scheme)

Project Name	Risk Management Authority	Within the SMP2 Action Plans (Yes/No)
Newbiggin Point Coast Protection Scheme	Northumberland County Council	Yes
Seaton Sluice Harbour Improvements	Northumberland County Council	Yes
Central Promenade Appraisal, Design And Construction, North Tyneside	North Tyneside Council	Yes
Southern Promenade Sea Wall Repair - Whitely Bay	North Tyneside Council	Yes
Marsden Bay Cliff Erosion Study	South Tyneside Council	No (SMP2 only had study, not scheme)
Hendon Foreshore Barrier / Stonehill Wall / Breakwater	Sunderland City Council	Yes
Headland Walls and Blocksands, Hartlepool	Hartlepool Borough Council	Yes (partially completed)
Hartlepool Marina Study and Construction (North Pier)	Hartlepool Borough Council	Yes
Skinningrove Coastal Protection	Redcar and Cleveland Borough Council	Yes (scheme completed – not included in SA).
Sandsend Coast Protection Scheme	North Yorkshire CC	Yes – in SMP2 & Whitby Coastal Strategy
Scarborough Coastal Risk Management Programme 2	Scarborough BC	Yes – continuation of existing project
Runswick Bay Appraisal and Works	Scarborough BC	Yes and in the Runswick Bay Coastal Defence Strategy Study 2002 (approved)
Whitby Strategy 2 - Management Unit 13 West Cliff PAR - Spa	Scarborough BC	Not in SMP2 Action Plan. In the Whitby Strategy 2013 (approved)
Whitby Harbour Works MU17 & MU18	Scarborough BC	Yes and in the Whitby Coastal Strategy Sandsend to Abbey Cliff 2002 (approved)
Whitby Coastal Strategy 2 Management Unit 19 Haggerlythe	Scarborough BC	No but in the Whitby Strategy 2013, (approved)
Robin Hoods Bay PAR & Works	Scarborough BC	Yes - Preventative maintenance listed in SMP2 Action Plan. In Robin Hoods Bay Coastal Strategy Study (estimated completion November 2011)
Scalby Ness PAR & Works	Scarborough BC	Not in SMP2 Action Plan as a scheme. (Scalby PAR works in the Hundale Point to Scalby Ness Strategy Study 2006 (approved)
North bay Urgent Wall Improvement Phase 2	Scarborough BC	Yes
Scarborough South Bay Spa Seawall Works	Scarborough BC	Not in SMP2 Action Plan. In the Scarborough Coastal Defence Strategy Review - Holbeck to Scalby Mills 2009 (approved)
Scarborough South Bay Beach Management Programme	Scarborough BC	Yes as part of monitoring. In the Scarborough Coastal Defence Strategy Review - Holbeck to Scalby Mills 2009 (approved)

Baseline Information

3.1 Introduction

Baseline data from the two SMP2s were collected to identify key environmental issues and trends relevant to the Cell 1 coastline and to provide a baseline against which the significant environmental impacts would be assessed (see Appendix D). The collection of information focused on features that are either designated or considered to have importance at the international, national and regional levels. Information on features of local importance was not collected, unless it was considered to contribute directly to features of regional or greater value or it was identified as a key concern by stakeholders.

The main environmental baseline features of the study area are summarised in Appendix D. This is supported by the Environmental constraints maps shown on Figures SA1 to SA9 in Appendix A which illustrate where designated sites and features are located in proximity with the management Areas of the Cell 1 SMP2s. Specific issues identified per Management Area in each of the SMP2 coastal areas are presented in Appendix D.

3.2 Additional baseline information

3.2.1 Marine Conservation Zones

Since the production of the SMP2s, four Marine Conservation Zones (MCZ) were designated in November 2013 and a further four in January 2016. There are also two recommended sites not yet designated within the English inshore and offshore waters off the Cell 1 coastline. All of these sites require consideration in the SA (in addition to the nature conservation designations already identified in the SMP2s). The location of the MCZ's are shown in Figure 2 and summary information is provided below.

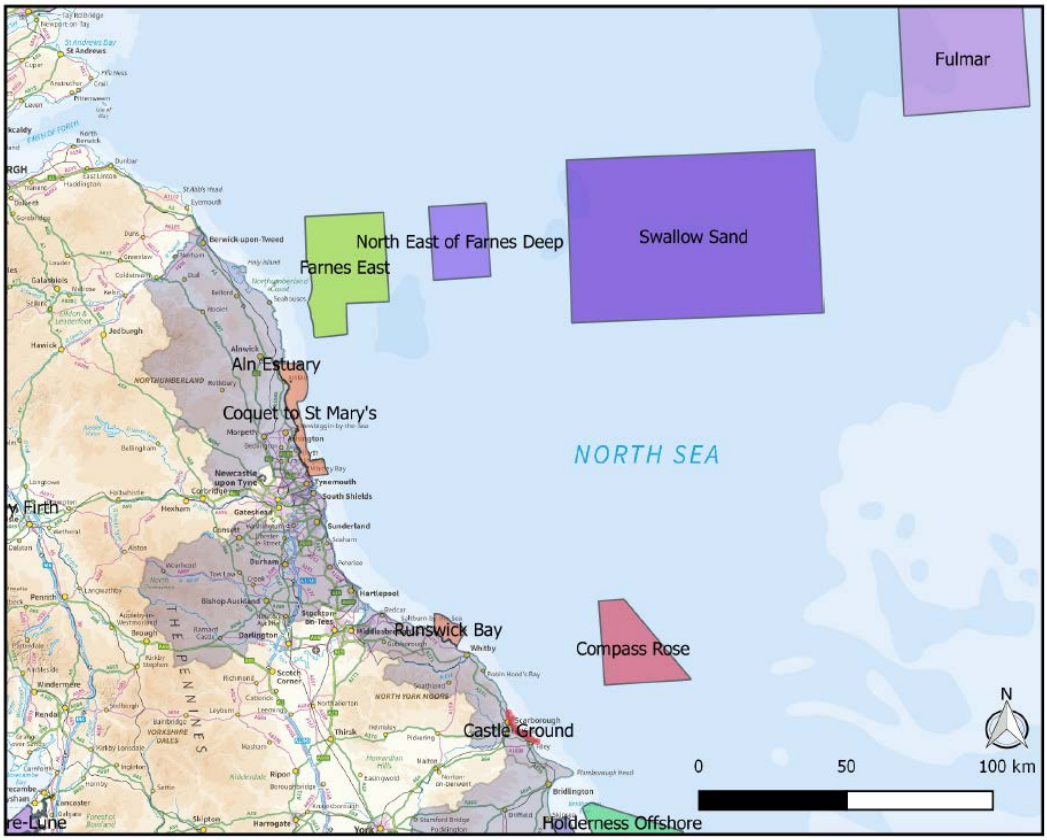

Figure 2 Marine Conservation Zones offshore of Cell 1

The North East of Farnes Deep MCZ is located approximately 55km from North Northumberland and covers 492km^2. Water depth across the site ranges from 50 to 100 metres, making North East of Farnes Deep MCZ a relatively shallow offshore site. North East of Farnes Deep MCZ protects a large area of sediment seabed and a wide range of associated species that live within or on these habitats. Features of the site include subtidal coarse sediment (i.e. coarse sediment, shingle and gravel) which is present in the shallower part of this site. These areas are typically characterised by worms, bivalve molluscs, sea cucumbers and mobile crustaceans, such as the squat lobster, but also support a variety of sponge species. Subtidal Sand is also a feature for which the site is designated. The sandy seabed within the MCZ is not typically disturbed by waves or strong tidal currents so is able to support species such as worms, bivalve molluscs and amphipod crustaceans.

Swallow Sand MCZ is an offshore site in the North Sea, located approximately 100km from the Northumberland coast. It protects an area of about 4,746 km², making it the largest MCZ to date. The MCZ covers one of the deepest areas in the North Sea with depths ranging from 50 to 150m. The site is designated for the following features:

- Subtidal coarse sediment;
- Subtidal sand; and
- North Sea glacial tunnel valleys (Swallow Hole).

Deeper parts of the seabed tend to be dominated by animals as reduced light levels restrict the ability of plant life to grow. The animal communities found on coarse sediments are typically made up of species such as polychaete worms and bivalves which burrow within the sediments or sea urchins and anemones which live on the sediment surface. The sandy areas within the site are typically exposed to moderate wave action and weak tidal currents. This relatively stable environment is able to support large numbers of worms, molluscs and crustaceans.

A North Sea glacial tunnel valley, known as Swallow Hole, is protected within the site. This accounts for the deepest area of the site and as such has a localised environment capable of supporting a range of different species from those found in shallower areas.

Aln Estuary MCZ This is an inshore MCZ which covers an area of 0.39 km^2, extends from the estuary mouth to the upper tidal limit. The Aln estuary contains intertidal mud deposits, saltmarshes and unusual estuarine rocky habitats. The range of sheltered environments, rock pools and lower levels of salinity create a habitat, which supports many different plant and animal species such as kelps, wracks, anemones, barnacles and sea squirts. The site is designated for the following features:

- Coastal saltmarshes and saline reedbeds
- Intertidal mud
- Estuarine rocky habitats
- Sheltered muddy gravels

Fulmar MCZ, designated in 2016, is an offshore site 50-100m deep, located approximately 224km from the Northumberland coast. The seabed in the MCZ is predominantly subtidal mud, with small patches of other sediments. Burrowing tube anemones (*Cerianthus lloydii*), brittlestars (including *Amphuria filiformis* and *Ophiura albida*) and sea potatoes (*Echinocardium cordatum*) are found living on the sediments at Fulmar MCZ. Sea-pens such as the slender sea-pen (*Virgularia mirabilis*) are also present. Fulmar MCZ is also home to a wide variety of worms that live within the sediment, which are an important food source for many other animals, including commercial fish species.

The MCZ currently has four designated features: subtidal mud, subtidal sand, subtidal mixed sediments and ocean quahog (*Arctica islandica*). Ocean quahogs are a feature of conservation importance, and are also included on the OSPAR list of threatened or declining habitats and species. Ocean quahog is a long-lived species (over 500 years) with a very slow growth rate, taking up to 50

years to reach market size. They are thought to reach sexual maturity between 5-7 years, although this is dependent on locality and growth rates. The spawning period can vary also depending on location. Recent studies have found the population of ocean quahog in the North Sea has declined in abundance, which has been linked to the impacts of human activities on the seabed.

Runswick Bay MCZ designated in 2016 is an inshore MCZ located off the Yorkshire Coast, to the north-west of Whitby. The site covers an area of around 68 km², and extends 3 nautical miles out to sea.

The intertidal area, which is below water at high tide, and exposed at low tide, is made up of rocky reefs, boulders and pools, as well as caves and sandy beaches. The rocky seashores are exposed to very strong waves and currents. This is a habitat for mussels, limpets and barnacles, as well as small tufts of seaweeds. The rocks in the shallow waters below the tides are home to large kelps and some smaller red seaweeds. Species such as worms, crabs, sea snails and shrimp-like animals also live amongst the seaweeds.

Deep water (circalittoral) rocks in this site provide a habitat for a range of species. The depth means that there is lack of sunlight, which prevents seaweeds from growing, allowing animal communities to prevail. The rich seabed habitats support a number of crustacean species, including eight species of crab and the common lobster. The site is also a spawning ground for a number of fish species including herring, sprat, cod, whiting and plaice. Ocean quahog, a cockle shaped bivalve, with paired, hinged, shells, is also found within and is a designated feature of the site. The Ocean quahog often lives entirely buried in the sand with a small tube extending to the surface for breathing and feeding. Harbour porpoises are regularly recorded here alongside foraging seabirds, such as the noisy kittiwake, which colonise the surrounding cliffs.

Coquet to St Mary's MCZ, designated in 2016, this MCZ is an inshore site located along the Northumberland coast covering 192 km² of intertidal and offshore waters from near Whitley Bay in the south to near Alnwick in the north. It includes areas around St Mary's Island and Coquet Island.

The seabed protected by this site is made up of rock, sand, mud and sediment and drops to 30 metres in depth. This range of habitats provides a home for a large variety of life. For example, the coarse sediment is home to animals such as bristleworms, sand mason worms, small shrimp-like animals, burrowing anemones, and cockles. Rocks in shallow water (infralittoral rocks) are a habitat for kelp and red seaweed, whilst the deep water (circalittoral) rock is a habitat for cup coral, sea-fans, and anemones, and sponges. These animals thrive in this deeper water where there is not enough sunlight for algal life to grow.

These complex habitats and communities also support mobile species such as starfish, sea urchins, crabs, and lobsters. When this site was surveyed, amongst the species recorded, is the first ever Arctic cushion star, a starfish, on the English coast.

The site also supports a range of intertidal habitats, which are above water at low tide and underwater at high tide. One of these habitats is intertidal underboulder communities. Boulders create shaded areas that provide a refuge to sea squirts, sea mats, and sponges. The undersides of the boulder provide a habitat for animals like sea slugs, long-clawed porcelain crabs and brittlestars, which shelter and feed in the damp shaded conditions. Crabs, fish and young lobsters also scavenge for food and seek shelter amongst the boulders.

The different habitats within this zone support thousands of seabirds and marine mammals, including 90% of the UK's roseate tern population, as well as harbour porpoises, white-beaked dolphins and species of whale such as minke whale. Atlantic cod, ballan wrasse, goldsinny, pollack and octopus also live here. Coquet Island is important for breeding and foraging seabirds and grey seals. St Mary's Island's rocky reefs are vital habitats for crustaceans to live in, and it is an important breeding site for the fish called the lumpsucker.

Farnes East, designated in 2016, is a site off 11km off the coast of Northumberland. It stretches across the inshore and offshore waters, covering 945km^{2}and is one of the deepest patches of the North Sea, reaching to between 30-100 metres in depth. A deep-water area, or glacial element, in

the south called 'Farnes Deep' is associated with the foraging and reproductive behaviours of white-beaked dolphins.

This site is important because it protects moderate energy circalittoral rock: deep water rock in areas with less waves and currents. As this rock is in deep waters, very little sunlight reaches them. This prevents seaweeds from growing, and the marine environment becomes dominated by animals. The animal communities that thrive here include cup coral, sea-fans, anemones, and sponges. Mobile animals in this environment can include starfish, brittlestars, and sea urchins.

The site is one of only a few to include (subtidal) mud which is an important habitat for many animals, like worms, cockles, urchins and sea cucumbers. Other animals (referred to as megafauna) like mud shrimps and even fish burrow into the mud. This creates networks of burrows which shelter smaller creatures like worms and brittlestars. The mud also provides a habitat for sea-pens (a luminous soft coral).

Sediment on the seabed in this site provides protection to a variety of different marine life. These range from burrowing worms, shrimps and mussels to crabs, fish and starfish scavenging on the seabed surface. Ocean quahog is also found within the site.

Coastlines around the Farne Islands are home to one of the largest colonies of grey seals. Twenty different species of seabirds live on the cliffs including guillemots, razorbill, shags, puffins, cormorants, fulmar, eider, oystercatcher, black-headed gull, herring gull, greater black-headed gull, kittiwake, Arctic tern, common tern and sandwich tern. Harbour porpoise, various dolphin species, and the lion's mane and moon jellyfish can be found here too.

Compass Rose, is a recommended MCZ located 30km off the Yorkshire coast. The area is 552km square and is approximately 50 metres deep throughout. Located within the site are approximately 6.5km sq of hard, rocky ground - this is known as ‘Heartbreak Ridge’. During the summer months the area captures the most northerly section of the Flamborough Front. This is an upwelling of nutrients where the cooler northern and warmer southern waters of the North Sea mix.

The seafloor consists of sand, coarse sediment and rock, and is home to several species of crustacean. Compass Rose provides spawning and nursery grounds for fish including plaice, herring, lemon sole, sandeel and sprat.The nutrients disturbed by the combining waters give rise to an important food source for marine mammals.

Castle Ground is a recommended MCZ extending from Scalby, north of Scarborough to Filey Brigg, some 14.5km in length. This area is characterised by intertidal rock and sediment habitats, including unique underboulder communities.

Benthic life here is extremely rich, with over 225 creatures belonging to 10 different families recorded on Filey Brigg itself. This area provides a window into the world beneath the waves: home to seaweeds, sea hares, crabs and molluscs such as blue-rayed limpets. Dotted underneath rocks are anemones and sponges, alongside common starfish and brittlestars.

During the winter Filey Brigg supports 50% of the English purple sandpiper population, and, due to its close location to the Flamborough Headland, is important for foraging seabirds, such as kittiwakes.

3.2.2 Biodiversity Action Plan Species

Whilst the two SMP2s identified BAP habitat that could be affected by SMP policies it did not identify BAP species. There are a number of UK BAP Marine species that occur within the study area. Of particular note and relevance to the study area are cetaceans such as White-beaked dolphin, Bottlenose dolphin, Minke whale and the occasional Humpback whale, all of which occur within inshore waters. Harbour Porpoise occur throughout the Cell 1 coastline in transitional and coastal waters. Otter, another BAP species, also occur in both transitional and coastal waters. There is

potential for all these species to be impacted by noise and disturbance during construction and disruption to habitat and seafloor morphology.

BAP habitat mapping along the Cell 1 coastline has been undertaken as part of a separate study and is available from the Channel Coastal Observatory accessible via http://www.channelcoast.org/habitats/. These Maps have been downloaded and are included in Appendix E.

3.3 Scoping of Environmental Receptors

Table 5.1 summarises the environmental receptors that are proposed to be addressed within this SA of the in-combination and cumulative impacts of implementing the two SMP2 Action Plans, the government's 6 year FCERM investment programme and the coastal strategies over the whole of Coastal Sediment Cell 1. This is based upon the receptors considered in the SEAs of both SMP2s and additional baseline information in section 4. For example, both SMP2s scoped out impacts related to noise and therefore it was not considered that this would be a cell-wide issue either.

This SA does not address any site specific impacts likely to result during the implementation of any built solution, for example construction impacts that might arise during the building or raising of coastal defences. These issues are more appropriately considered during project level EIAs undertaken for specific schemes.

Table 5.1. Scoping of SA Receptors

Receptor	Scoped In/Out of SA	Comment	Summary of SMP2 Scoping of Receptors
Population (includes Human Health and vulnerable communities)	In	A primary purpose of the SMP2 is to manage the flood and erosion risk to the population along the coastline and to address the impacts that flooding events and coastal erosion can have upon human health. Where the SMP policy is HTL and ATL the actions associated with these policies are likely to maintain or improve the existing level of protection and it is not anticipated there will be any negative effects upon population where this policy applies. Where the SMP policy is NAI or MR the associated action for implementation of the policy can have consequences, particularly where adaptation is necessary, therefore this receptor is scoped in where this is the preferred SMP policy.	The Northumberland SMP2 identified that for the preferred policy there were no impacts upon population during all three epochs. The Tyne and Flamborough Head SMP2 identified a loss of hard assets at several locations, including properties around Runswick Bay, Robin Hoods Bay, Cayton Bay and in communities to the south of Filey Bay.
Material Assets (includes any man-made physical structures with a focus upon transport, infrastructure, critical	In	Material assets have the potential to be affected by the actions in the Action Plans.	The Northumberland SMP identified that for the preferred policy there were no impacts upon material assets during all three epochs. Tyne and Flamborough Head SMP

Receptor	Scoped In/Out of SA	Comment	Summary of SMP2 Scoping of Receptors
services, major industry, landfills and assets associated with tourism – i.e. caravan parks)			identified that the main centres of development are maintained and locally some roads are likely to require realignment. For major industries, the policies generally work to sustain their activities, however, there are impacts for some of the more softer commercial activities along much of the frontage (the golf courses at Seaton Carew, at Whitby and Filey and the caravan parks to the north of Hartlepool, at Coatham, south of Whitby and again at Filey).
Climatic factors	Out	As actions will not significantly affect the impacts of climate change (they will only facilitate to accommodate them), climate change is not considered further as an individual receptor. It is recognised that salt marsh and seaweed for example locks in carbon and therefore has a role to play in combating climate change. Activities that adversely affect salt marsh therefore will also have negative impacts upon climate change. At this high level, it is not considered appropriate (and the detail will not be available) to adequately consider the role that saltmarshes and seaweed has in terms of climate change. However, this impact should be considered further at scheme level (e.g. project appraisal carbon calculator) where specific actions have the potential to adversely affect saltmarsh habitat. The effects of any specific FCERM activities will also be assessed at scheme level using the carbon calculator.	Scoped out of both SMP2 assessments as SMPs will not affect climate change.
Air Quality	Out	It is considered that the actions will not lead to an improvement or reduction in air quality. The effects of any specific FCERM activities, such as schemes that may have temporary localised impacts, would be considered further at project EIA stage.	Scoped out of both SMP2s as it was considered that the SMP2s will not lead to an improvement or reduction in air quality at a regional or cell-wide level.

Receptor	Scoped In/Out of SA	Comment	Summary of SMP2 Scoping of Receptors
Noise	Out	The actions will not have a significant effect on noise at a regional level and has been scoped out. The effects of any specific FCERM activities, such as schemes that may have temporary localised impacts would be considered further at project EIA stage.	The SMP2s did not identify significant effects on noise at a cell-wide level
Water and hydromorphology (includes water quality, quantity i.e. Flood risk and use as a resource)	In	Actions have the potential to affect the coastal and estuarine waterbodies within the Cell 1 area e.g. changes in the water quality of shellfish waters and bathing waters, and changes in water resources. Any potential changes to the waterbodies will be assessed through a WFD Assessment.	Although the Northumberland SMP2 identified that for the preferred policy there were no negative impacts upon water during all three epochs, the WFD assessment identified that there are some MAs, where the SMP2 policies have the potential to contribute to failure of Environmental Objectives. The most significant of these is the potential failure to meet Environmental Objective WFD1 (no changes affecting high status sites). The Tyne and Flamborough Head SMP2 did not specifically consider impacts upon the water environment, however impacts were considered in a retrospective WFD assessment of the SMP. This identified several MAs where the SMP2 policies have the potential to contribute to failure of Environmental Objectives. As the assessment was retrospective mitigations were not included in the SMP Actions. The SMP and WFD also identified a risk to water from the erosion of contaminated land and of saline intrusion into groundwater bodies.
Biodiversity (includes flora and fauna both terrestrial and marine)	In	There are a number of international, national and local designated conservation sites within the SMP boundaries, which have potential to be affected (both positively and negatively) by the actions.	The Northumberland SMP2 identified that for the preferred policy there are negative impacts upon biodiversity for MA2 from the first epoch onwards. Impacts of the preferred policy in the other MAs were positive for all three epochs. The Tyne and Flamborough Head SMP2 identified negative impacts due to natural processes, resulting in the partial loss of designated sites. In addition, potential failures of WFD objectives have the potential to impact upon the biological and ecological elements of WFD waterbodies.
Soil & Geology	In	Where the actions are to implement an SMP policy of NAI	The Northumberland SMP2 identified that for the preferred policy there were

Receptor	Scoped In/Out of SA	Comment	Summary of SMP2 Scoping of Receptors
(includes earth system processes)		or MR there will be a change in the nature of soils but this will enable natural geological processes to continue. Where the actions are to facilitate implementing an SMP policy of HTL (or ATL), there may be impacts upon earth processes.	no negative impacts upon soils during all three epochs. The Tyne and Flamborough Head SMP2 did not specifically consider impacts upon soils. However any impacts upon geology and soils are likely to be due to natural processes.
Land Use	Out	Residential properties will be considered under the 'Population and Human Health' receptor heading and areas of landfills (or known contamination) will be dealt with under the Material Assets heading. Agricultural land is likely to be lost where actions are required to implement a policy of NAI or MR however this facilitates natural processes. Actions to implement a policy of HTL (or ATL) have potential for land uses to remain unchanged and agricultural land to be protected.	Land use was scoped out of assessment in the Northumberland SMP2. The Tyne and Flamborough Head SMP2 identified a loss to agriculture along much of the frontage. Agricultural land is likely to be lost where there are policies of NAI or MR, however this facilitates natural processes. Areas where the policy is HTL (or ATL), there is the potential for land uses to remain unchanged and agricultural land to be protected.
Cultural Heritage	In	There is potential for cultural heritage features to be affected by the actions.	The Northumberland SMP2 identified no negative impacts upon cultural heritage during all three epochs. The Tyne and Flamborough Head SMP2 identified that there are several areas where features will suffer loss through erosion. The SMP attempts to identify where there are risks, which will allow prioritisation of recording prior to loss of the feature.
Landscape	In	There is potential for the actions to have positive or negative effects on key landscape features, including designated sites (National Parks, AONBs and Heritage Coasts). Visual amenity has been scoped out as any visual changes will be subject to the nature and location of localised implementation of policies and actions, which will be assessed further at project EIA stage.	The Northumberland SMP2 identified that for the preferred policy there were no negative impacts upon landscape during all three epochs; all impacts upon landscape were positive. The Tyne and Flamborough Head SMP2 does not identify any significant impacts upon landscape, rather more localised impacts based upon the type of material used for structures. The Plan aims to restrict further encroachment of defence over undefended areas. Where defences are in place, the plan aims to offer opportunity for less intrusive approaches to defence.

Strategic Objectives and Assessment Criteria

4.1 Key Environmental Features and Strategic Objectives

The baseline information and relevant key environmental issues identified within both the SMP2 documents have been used to define a series of objectives and assessment criteria for this SA of the Action Plans, FCRM programme and coastal strategies. These objectives and assessment criteria have been developed in order to assess the environmental impacts across the Cell 1 area.

The development of objectives is an iterative process. The objectives were proposed in the Scoping Consultation Report initially and these were reviewed by Natural England. These objectives were updated in light of any comments received (CH2M, 2015).

4.2 Strategic Assessment Objectives

The Cell 1 SA objectives and assessment criteria are the same as those used to assess the environmental impacts of the Northumberland to North Tyneside SMP2 and the River Tyne to Flamborough SMP2 Action Plans are described in Table 4.1.

Table 4.1. SMP2 SEA Objectives and assessment criteria used for assessing Action Plans

SA Receptor	**SA Objective**	**Assessment Criteria (Indicators)** **Would the Action plan…..**
Population and Material Assets	Minimise significant adverse impacts upon people and communities	Result in a deterioration of the quality of life for people and communities?
Material Assets	Minimise significant adverse impacts upon material assets.	Result in the loss, degradation, or function of material assets? Protect material assets?
Water	Manage and minimise the risk of pollution to the water environment.	Lead to an increased risk in pollution to the water environment?
Biodiversity, flora, fauna	To use natural processes to support and facilitate ecosystem functions and the integrity of designations.	Result in damage to, fragmentation or loss of existing designated wildlife sites, habitats and species? Enable natural coastal processes to continue?
Soil & Geology	To use natural geological processes to support and facilitate the integrity of geological designation	Enable natural coastal geological processes to continue? Result in a detrimental impact on designated geological site features?
Cultural Heritage	Manage and minimise significant adverse impacts upon designated cultural heritage assets and their setting.	Cause the loss of or damage to heritage assets? Have a detrimental impact upon the setting of heritage assets?
Landscape	Minimise significant adverse impacts upon the landscape and seascape, particularly in relation to protected landscapes.	Cause significant adverse impact to the setting or fabric of a protected landscape?

Impact Assessment Methodology

5.1 Introduction

This section describes the appraisal process that we have used for predicting and assessing the environmental impacts of implementing the SMP2 Action Plans, coastal strategies and 6 year FCERM programme.

We undertook a staged process of assessment, firstly considering the SMP2 Action Plans, coastal strategies and 6 year FCERM programme for their impacts alone on the receptors within Cell 1 and then their in-combination and cumulative impacts on the receptors within Cell 1. The methodologies for both assessments are discussed further below.

5.2 Assessment of the Proposed Action Plans, Coastal Strategies and FCERM Programme

The Action Plans, coastal strategies and 6 year FCERM programme have been evaluated with consideration of their potential for significant environmental impacts on the 'scoped in' receptors (refer to Table 5.1) using the assessment criteria in Table 6.1. The assessment of these environmental impacts is informed by professional judgement and experience from other FCERM strategic assessments. Where beneficial, this assessment uses mapping data and GIS to identify areas of potential pressure, for example due to the presence of environmental designations.

A table is used to evaluate how the environment would be affected, positively or negatively, from the implementation of the Actions Plans, coastal strategies and 6 year FCERM programme in relation to the objectives. The impacts are assessed based on their likely impact magnitude (ie high, medium, low), and described in terms of their nature (i.e. positive or negative) and value (ie high medium, low) depending on their spatial scale (i.e. local, regional or national).

The significance of impacts in terms of each of the objectives is then evaluated using the criteria outlined in Table 5.1. Impacts can be positive, negative or neutral. Positive and negative impacts can be minor, moderate or major. When carrying out the assessment we have also used professional judgement and considered aspects such as duration of impact, sensitivity of receptor and spatial extent.

Table 5.1 Impact Significance Matrix

		Value of Receptor/Importance of Objective		
		High (e.g. international /national value)	**Medium (e.g. regional value)**	**Low (e.g. local or no value)**
Magnitude of Effect	High Negative Serious consequences and / or large area	Major Adverse (- - -)	Major Adverse (- - -)	Moderate Adverse (- -)
	Medium Negative Undesirable consequences	Major Adverse (- - -)	Moderate Adverse (- -)	Minor Adverse (-)
	Low Negative Discernable negative impact and / or on a small scale	Moderate Adverse (- -)	Minor Adverse (-)	Minor Adverse (-)
	Negligible No impact or discernable impact	Neutral (0)	Neutral (0)	Neutral (0)
	Low Positive Discernable positive impact and / or on a small area	Moderate Beneficial (+ +)	Minor Beneficial (+)	Minor Beneficial (+)
	Medium Positive Favourable consequences	Major Beneficial (+ + +)	Moderate Beneficial (+ +)	Minor Beneficial (+)
	High Positive Substantial gains and / or on a large area	Major Beneficial (+ + +)	Major Beneficial (+ + +)	Moderate Beneficial (+ +)

5.3 Assessing In-combination and Cumulative Impacts

5.3.1 Cumulative impact

For the purposes of this assessment an in-combination impact is considered to be where two or more actions have a minor, moderate or major, positive or negative impact on the same receptor, as identified from the assessment of individual actions e.g. the same designated site, or the same material asset.

Cumulative impacts can also occur where one or more management actions may impact on receptors that also lie in more than one management areas e.g. Berwickshire and North Northumberland Coast SAC and Northumberland Coast AONB.

5.3.2 In-combination impact

For the purposes of this assessment a cumulative impact could potentially occur where more than one action is proposed in the same MA and that affects the same receptor.

The action does not have to be in the same MA to have an impact on the same receptors e.g. designated sites for ecology within Cell 1 extend along the coastline and could be impacted by several actions e.g. coastal processes.

If there is an impact on a receptor from a management action then it is taken forward for consideration of its timing. If there is no impact on a receptor from action then it is not taken forward for consideration for its timing.

For the purposes of the in-combination impact assessment only we have screened out population and material assets as the actions generally all benefit the public and material assets by providing or upgrading coastal defences.

5.3.3 Cumulative and In-Combination Assessment Methodology

The methodology used for assessing the cumulative and in-combination impacts is outlined below.

1. Spatial extent of action
For each SMP2 action, coastal strategy and 6 year FCERM programme scheme we have considered whether more than one management action is proposed within each management area, and whether the action will impact on receptors that also lie in other management areas. Should the answer be yes to either of these considerations then the action should be taken forward for further consideration for cumulative and in-combination impacts by consideration of the timing of delivery of each action.
Should the answer be no to either of the aforementioned considerations then it was concluded that there would be no in-combination and cumulative effect.

All actions that apply on a Cell 1 wide basis have been screened in to the cumulative and in-combination assessment e.g. Development Action plans. All actions that are likely to have an impact that may be felt beyond a single MA have been screened in for further assessment.

All receptors that have been recorded in the SA assessment table that are exposed to moderate adverse (--) or major adverse (---) significant negative impact and are noted as present in more than one Management Area are screened in.

2. Timing of the action
For each action taken forward from point 1 above, we have continued the assessment by considering whether the action will impact on the same receptor during the same delivery time (i.e. the same year). If this is likely to happen then we have concluded that there would be a cumulative impact.

The proposed timings of the works have been taken from consultation with the local coastal authorities undertaken in 2015. Most of the timings are either unknown or indicative and so the cumulative impacts are dependent on when the works would be undertaken during these indicative period, or with further clarity on unknown timings. To manage this risk we have made recommendations on what times there may be potential negative cumulative impacts between management actions.

Consultation

6.1 Introduction

The Environmental Scoping Report for this assessment was issued for comment to the Statutory Environmental Bodies as listed in Table 6.1 in October 2015. Scarborough Borough Council also made the document available to local communities by placing the document on their website.

Table 6.1 Key stakeholders

Statutory Environmental Bodies	**Other stakeholders**
Natural England	Marine Management Organisation
Historic England	National Trust
Environment Agency	RSPB
Local Authorities	Northumbrian Water
Northumberland County Council (NCC)	Yorkshire Water
North Tyneside Council (NYC)	Hartlepool Water (Part of Anglian Water)
South Tyneside council (STC)	Northumberland Rivers Trust
Sunderland City Council (SCC)	Tyne Rivers Trust
Durham County Council (DCC)	Wear Rivers Trust
Redcar and Cleveland Borough Council (RCBC)	Tees Rivers Trust
Hartlepool Borough Council (HBC)	East Yorkshire Rivers Trust
Scarborough Borough Council (SBC)	Northumberland Wildlife Trust
East Ridings of Yorkshire Council (ERYC)	Durham Wildlife Trust
North York Moors National Park Authority	Tees Valley Wildlife Trust
	Yorkshire Wildlife Trust

Between August and September 2015 each local protection authority was contacted to gain more information on their management actions and proposed timings to inform the Cell 1 assessment.

In addition we consulted with Natural England on the HRA Screening in January 2016. However, as a project team it was decided that since the strategic assessment was non-statutory and would not result in a new plan or programme then no formal HRA was required but that the SA would consider the Natura 2000 sites in the assessment.

Table 6.2 contains a summary of the comments received on the Scoping Consultation Document and highlights how we have responded and developed the SA ER to take account of the comments raised.

Table 6.2 Comments received on the Scoping Consultation Document.

Consultee	Comment	Response
Environment Agency	1. Note that the RBMP is moving from cycle 1 to cycle 2 and that some water body names have changed and some smaller water bodies are no longer included under cycle 2. However, the fact that these smaller water bodies is no longer included does not mean that we mustn't have due regard for their water quality, hydrology and ecology.	Noted. Of relevance to the WFD screening report and Table C2 of this SEA Environmental Scoping Report.
Environment Agency	2. I have not seen reference to the Marine Strategy Framework Directive in this document.	Noted. The Marine Strategy Framework Directive will be considered as parts of the planning review during the next stage of the SEA.
Environment Agency	3. The SEA report must consider impact upon all water bodies – including those surface water bodies draining to the north sea and likely to be impacted by the SMP and other relevant policies.	All waterbodies will be considered in the SEA ER.
Environment Agency	4. Note that in cycle 2, Yorkshire North was split into 2 water bodies. Under cycle 1 it went from Hartlepool Headland to Flamborough Head. In cycle 2 it goes as far as Staithes Beck.	Noted. The current assessments have been based upon Cycle 1 as this information is in the public domain.
Environment Agency	5. It's important to consider Yorkshire North in this report. However, consideration must also be given to any likely impact upon adjoining water bodies and that would include Yorkshire South too. Activities in Yorkshire North have the potential to impact upon the ecology, hydrology, water quality and natural processes in Yorkshire South.	Noted – of relevance to the WFD assessment, which will be updated accordingly.
Environment Agency	6. Climate change should be ruled in as a receptor in section 5.1. There is research and scientific opinion to suggest that salt marsh and seaweed for example (of which there is small amount of the former on the Esk and larger amounts on the Tees and Tyne) locks in carbon and therefore has role to play combating climate change. Activities that adversely affect salt marsh therefore will also have negative impacts upon climate change.	Noted. At this high level, it is not considered appropriate (and the detail will not be available) to adequately consider the role that saltmarshes and seaweed has in terms of climate change and therefore this receptor will remain scoped out. However, it will be noted that this should be considered further at scheme level where specific actions have the potential to adversely affect saltmarsh habitat.
Environment Agency	7. In section 5.1 please note that WFD also includes a biological and ecological component (it's not just about water quality) and is therefore relevant to both water quality and biodiversity.	Noted and sentence added to biodiversity receptor in Table 5.1.
Environment Agency	8. SEA objectives in table 6.1 does not have an objective to protect and enhance either water quality or biology and diversity. I am wary that use of an objective "to use natural processes to support and facilitate ecosystem functions and the integrity of	For the water objective we have not used the wording "protect and enhance" however through managing pollution risks the water environment will be indirectly protected.

Consultee	Comment	Response
	designations" does not do this.	
Environment Agency	9. There are a number of UK BAP Marine species that occur within the study area but are not listed in table C2 and should be. Of particular note and relevance to the study area are cetaceans such as White-beaked dolphin, Bottlenose dolphin, Minke whale and Humpback whale – all of which occur within inshore waters. Harbour Porpoise occur throughout the entire SMP area in transitional and coastal waters. Otter, another BAP species, also occur in both transitional and coastal waters. There is potential for all the aforementioned to be impacted by noise and disturbance during construction and disruption to habitat and seafloor morphology.	Noted. Table C2 refers to environmental constraints identified in the two SMPs. BAP species have been added to section 5.2.2.
Northumberland Wildlife Trust	10. the report omits a designated MCZ, namely Alnmouth Estuary	Noted and added to Section 5.2.1.
Yorkshire Wildlife Trust	11. No specific comments.	
Natural England	12. Table 5.1. Landscape. In the comment column mention that there a number of designated landscapes in the cell 1 area (National Parks, AONBs and Heritage Coasts).	Noted. Reference to designated sites included in comment column in Table 5.1.
Natural England	13. Table 6.1. Landscape (suggest alternative wording to place emphasis on the protected landscapes.) SEA Objectives: *Minimise significant adverse impacts upon the landscape and seascape in particular in relation to protected landscapes*. SEA criteria: ….*cause significant adverse visual impact or damage to the setting or fabric of a protected landscape?*	Have used wording for SEA objectives as suggested and incorporated wording for SEA criteria and have amended original wording to now be: *Cause significant adverse impact to the setting or fabric of a protected landscape?*

SECTION 7

Assessment of the Proposed Action Plans, Coastal Strategies and 6 Year Scheme Programme

7.1 Assessment

The impact assessment of each of the proposed SMP2 action plans, 6 year FCERM programme and the coastal strategies is shown in Appendix F and G respectively. These results are shown on Figures SA1 to SA9 in Appendix A to illustrate the geographic spread of the impacts to inform the cumulative and in-combination assessment as discussed in Section 8.

The results of impact assessment is shown in Table 7.1 using the traffic light system as outlined in our methodology (see section 5).

Table 7.1 – Summary of Assessment of the SMP2 Action Plans, coastal strategies and 6 year FCERM programme

SMP2 actions, coastal strategies & 6 year FCERM programme	**People**	**Material Assets**	**Water and Geohydromorphology**	**Soil & Geology**	**Biodiversity**	**Landscape**	**Heritage**
SMP2 actions & 6 year FCERM programme (see Appendix E for detailed results and explanations)							
Sandstell Point							
Marsden Bay Cliff Erosion Study							
Repairs to North Sunderland Harbour Breakwaters							
Beadnell North Sea Wall Improvements							
Craster Coast Protection Scheme							
Boulmer							
Little Shore Wave Basin							
Beacon to Creswell management and Bondi Carrs							
Beacon Hill to Creswell Management Realignment							
Newbiggin Point							
St Marys Island Causeway Improvements							
Seaton Sluice to Curry's Point Maintenance							
Curry's Point to Brown's Point Maintenance							
Whitley Bay Southern Promenade Improvements							
Outdoor Pool							
Tynemouth Longsands Bear's Back Seawall Improvements							
Central Promenade Appraisal							

SMP2 actions, coastal strategies & 6 year FCERM programme	**People**	**Material Assets**	**Water and Geohydromorphology**	**Soil & Geology**	**Biodiversity**	**Landscape**	**Heritage**
Seabank Seawall Improvements							
Tynemouth North Pier to Fish Quay							
Potential schemes to South Sunderland							
Harbour East Bay							
Crimdon Valley							
Headland Walls Blocksands							
North Sands development strategy							
Hartlepool Bay – Marina							
Middleton Bay							
Management for Seaton Carew							
Management plan for Seaton Dunes							
Redcar eastern extension							
Marske and Saltburn strategy							
Skinningrove scheme development							
Relocated Cowbar lane							
Runswick Bay Appraisal and works							
Whitby Strategy 2. West Cliff Par							
Whitby Harbour Improvements							
Robin Hood's Bay							
Brown's Point to Tynemouth North Pier – Maintenance							
Scalby New PAR and works							
Tynemouth North Pier to Fish Quay							
North Bay, Urgent wall improvements. Phase 2							
Scarborough South Bay – Foreshore Road and St Nicholas Cliff							
Scarborough South Bay – South Bay Pool							
Scarborough South Bay – South Cliff Gardens							
Scarborough South Bay – Rose Gardens							
Cayton Bay Management Plan for Managed Re-alignment							
Filey – Cliff stabilization							
Filey – Outstanding defence at Filey							
Filey – Defence scheme appraisal							
Strategies (see Appendix F for detailed results and explanations)							

SMP2 actions, coastal strategies & 6 year FCERM programme	**People**	**Material Assets**	**Water and Geohydromorphology**	**Soil & Geology**	**Biodiversity**	**Landscape**	**Heritage**
South Tyneside Council Coastal Management Strategy 2007-2012							
Hartlepool Borough Council Seaton Carew Coastal Strategy							
Scarborough Borough Council Whitby Strategy							
Scarborough Borough Council Runswick Bay Strategy							
Scarborough Borough Council Robin Hoods Bay Strategy							
Scarborough Borough Council Scarborough Town Strategy							

In summary the majority of moderate or major negative impacts are on biodiversity and landscape receptors present along the coastline. This is mainly because the actions would be undertaken within ecologically designated sites and therefore cause coastal squeeze or would require working within a designated area for landscape and result in the deterioration in landscape quality. Where there are positive impacts on biodiversity this is mainly due to managed realignment opportunities and the creation of new habitats along the coastline.

Positive impacts on soil and geology were anticipated through the increased exposure of geological features, usually within cliff faces along the coastline.

With regards to water there was a mix of positive and negative impacts with major negative impacts in MA14 from the Redcar extension and MA15 Marske and Saltburn.

The impacts on population and material assets were mainly positive since the objectives of the actions are primarily focussed to protect and reduce risks to the public and material assets.

SECTION 8

Cumulative and In-combination Impacts

8.1 Introduction

The cumulative and in-combination impacts of implementing the management actions of the two SMP2s, coastal strategies and 6 year FCERM programme across Cell 1 have been identified and assessed.

The key outcome of the combined assessment is to identify where it may be appropriate to reconsider the preferred timing of the SMP2 policies, coastal strategies and 6 year FCERM programme if they contribute to adverse environmental impacts on a cell wide basis.

8.2 Assessment of Spatial Extent of Action

The full cumulative and in-combination assessment is shown in Appendices H and I and illustrated on Figures SA1.A to SA9.A in Appendix A.

Table 8.1 summarises the results of the assessment of the spatial extent of the SMP2 Actions, coastal strategies and 6 year FCERM programme. Most of the SMP2 Actions and 6 year FCERM Programme schemes have either an in-combination or cross management area cumulative impact. These impacts were taken forward to consider potential cumulative impacts from delivery of actions at the same time. The results of this assessment is discussed further in section 8.3.

Table 8.1 Summary of Assessment of Spatial Extent of SMP2 Actions, coastal strategies and 6 year FCERM programme

SMP2 actions & 6 year FCERM programme (see Appendix H for details)	**In-combination impact?**	**Cross MA cumulative impact?**
Sandstell Point	No	Yes
Marsden Bay Cliff Erosion Study	No	No
Repairs to North Sunderland Harbour Breakwaters	No	Yes
Beadnell North Sea Wall Improvements	Yes	Yes
Craster Coast Protection Scheme	No	Yes
Boulmer	No	Yes
Little Shore Wave Basin	No	Yes
Beacon to Creswell management and Bondi Carrs	Yes	Yes
Beacon Hill to Creswell Management Realignment	Yes	Yes
Newbiggin Point	No	Yes
St Marys Island Causeway Improvements	Yes	Yes
Seaton Sluice to Curry's Point Maintenance	Yes	Yes
Curry's Point to Brown's Point Maintenance	Yes	Yes
Whitley Bay Southern Promenade Improvements	Yes	Yes
Outdoor Pool	Yes	Yes
Tynemouth Longsands Bear's Back Seawall Improvements	Yes	Yes

SMP2 actions & 6 year FCERM programme (see Appendix H for details)	**In-combination impact?**	**Cross MA cumulative impact?**
Central Promenade Appraisal	Yes	Yes
Seabank Seawall Improvements	Yes	Yes
Tynemouth North Pier to Fish Quay	No	Yes
Potential schemes to South Sunderland	Yes	Yes
Harbour East Bay	Yes	Yes
Crimdon Valley	Yes	Yes
Headland Walls Blocksands	Yes	Yes
North Sands development strategy	Yes	Yes
Hartlepool Bay – Marina	Yes	Yes
Middleton Bay	Yes	Yes
Management for Seaton Carew	Yes	Yes
Management plan for Seaton Dunes	Yes	Yes
Redcar eastern extension	No	Yes
Marske and Saltburn strategy	No	Yes
Skinningrove scheme development	No	No
Relocated Cowbar lane	No	Yes
Runswick Bay Appraisal and works	No	Yes
Whitby Strategy 2. West Cliff Par	Yes	Yes
Whitby Harbour Improvements	Yes	Yes
Robin Hood's Bay	No	No
Brown's Point to Tynemouth North Pier – Maintenance	No	No
Scalby New PAR and works	Yes	Yes
Tynemouth North Pier to Fish Quay	Yes	Yes
North Bay, Urgent wall improvements. Phase 2	No	No
Scarborough South Bay – Foreshore Road and St Nicholas Cliff	Yes	Yes
Scarborough South Bay – South Bay Pool	Yes	Yes
Scarborough South Bay – South Cliff Gardens	Yes	Yes
Scarborough South Bay – Rose Gardens	Yes	Yes
Cayton Bay Management Plan for Managed Re-alignment	No	Yes
Filey – Cliff stabilization	Yes	Yes
Filey – Outstanding defence at Filey	Yes	Yes
Filey – Defence scheme appraisal	Yes	Yes
Strategies (See I for details)*		
South Tyneside Council Coastal Management Strategy 2007-2012	No	No
Hartlepool Borough Council Seaton Carew Coastal Strategy	No	No

SMP2 actions & 6 year FCERM programme (see Appendix H for details)	In-combination impact?	Cross MA cumulative impact?
Scarborough Borough Council Whitby Strategy	No	Yes
Scarborough Borough Council Runswick Bay Strategy	No	Yes
Scarborough Borough Council Robin Hoods Bay Strategy	No	No
Scarborough Borough Council Scarborough Town Strategy	No	No

Note: * the actions within the coastal strategies generally replicate SMP actions and so are not described in detail

8.3 Assessment of Timing of Actions

The full cumulative and in-combination assessment is presented in Appendices H and I and illustrated on Figures SA1.A to SA9.A in Appendix A.

To summarise consideration should be given during programming of works to reduce the cumulative impact as much as practically possible however it is acknowledged that scheme programming is subject to many competing factors such as staff resource and budget availability. The appendices provide further details regarding the recommendations where the timing of schemes should be considered to avoid cumulative impacts across the Cell 1 SMP2 management Areas.

SECTION 9

Conclusions

The project has strategically considered the in-combination and cumulative environmental impacts of coastal risk management activities in Cell 1 in order to consider potential impacts and enable the RMAs to seek mitigation or environmental opportunities. It is therefore the intention that this SA should be used as a reference document for future SEAs or EIAs where these may be required for coastal plans and strategies.

In order to inform the project the implementation status of the action plan items in the two Cell 1 SMP2s was been reviewed in consultation with the Cell 1 RMAs.

A number of Marine Conservation Zones (MCZ) that have been designated or are being considered for designation on the coast and offshore of Cell 1 since the production of the SMP2s have been considered in the assessments in addition to the nationally and internationally designated sites that were considered in the SMP2s.

The two SMPs included retrospective WFD compliance assessments but due to the timing WFD related mitigation or enhancements were not included in the SMP action plans. In addition to the assessments presented in this report a review of environmental mitigation measures for the WFD water bodies has been undertaken and recommendations for possible mitigations or environmental enhancements are presented in separate technical note.

The assessment of the SMP and strategy actions and 6-year programme schemes (see Appendix F) generally found that the majority of moderate or major negative impacts are on biodiversity and landscape receptors present along the coastline. Biodiversity issues feature significantly because many of the actions would be undertaken within ecologically designated sites and therefore potentially cause loss of or damage to coastal habitats through coastal squeeze. Similarly many actions would require working within a designated area for landscape and could potentially result in the deterioration in landscape quality. Where there are positive impacts on biodiversity this is mainly due to managed realignment opportunities and the creation of new habitats along the coastline.

The tables in Appendix H and I identify the receptors and designated sites that could be impacted cumulatively or in-combination by the actions. These are mostly biodiversity receptors/sites but also include landscape and cultural heritage receptors in some locations. This can be used to guide future work and cumulative assessments in terms of SEAs for coastal strategies and EIAs at scheme level. It also provides an early indication of where specialist surveys (i.e. bird surveys, archaeological surveys) may be required to inform more detailed scheme or strategy level assessments. Requirements for consultation with stakeholders (i.e. the County Archaeologist and Natural England) can also be determined from this information.

It is the intention that this report can be used as a reference document when producing scope of works and project planning of the actions to ensure programme and budgets include for the necessary level of environmental assessment, ecological and environmental surveys and stakeholder consultation, focussing on the impacts identified for each action. This will help Project Managers to identify where efforts should be focussed in terms of resources, budgets and programming to address the environmental issues identified for each action, both alone and in-combination.

SECTION 9

Acronyms and Abbreviations

AONB	Area of Outstanding Natural Beauty
ATL	Advance the Line
CPA	Coast Protection Act 1949
FCERM	Flood and Coastal Erosion Risk Management
HRA	Habitat Regulations Assessment
HTL	Hold the Line
LDA	Land Drainage Act
MA	Management Area
MCZ	Marine Conservation Zone
MR	Managed Realignment
NAI	No Active Intervention
NECAG	North East Coastal Authorities Group
PDZ	Policy Development Zones
PU	Policy Units
RMA	Risk Management Authority
SA	Strategic Assessment (Non-statutory)
SAC	Special Area of Conservation
SINC	Site of Importance for Nature Conservation
SMP2	Shoreline Management Plan 2
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
WFD	Water Framework Directive

SECTION 10

Appendices

Appendix A

Figures

Northumberland County Council (NCC)

North Tyneside Council (NYC)

South Tyneside Council (STC)

Sunderland City Council (SCC)

Durham County Council (DCC)

Hartlepool Borough Council (HBC)

Redcar and Cleveland Borough Council (RCBC)

Scarborough Borough Council (SBC)

East Riding of Yorkshire Council (ERYC)

Legend

- Coastline Extent
- District Borough Unitary Authorities

N

0 25 50 Km

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Project :
Cell 1 WFD and SEA

Drawing :
Local Authority Areas

Drawn By :	Tom Barker	Date: 30/07/2015
Checked By :	Caroline Frost	Date: 30/07/2015
Approved By :	Andy Parsons	Date: 30/07/2015

Drawing No. : Figure 1.1
Revision : -
Drawing Scale : 1:800,000

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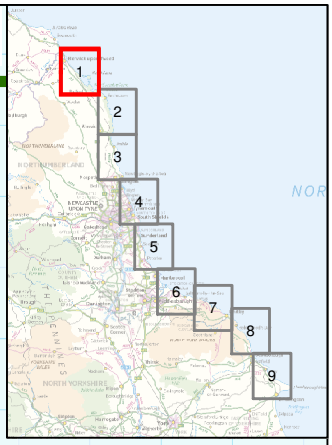

MA 1

MA 2

MA 3

MA 4

MA 4

MA 5

Sandstell Point

P	MA	W	S & G	B	L	H

Northumberland to North Tyneside SMP2

Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	Major Beneficial
L	Landscape	
H	Heritage	

Legend

Management Units

Unit_Type

- Management Area (MA) Boundary
- Policy Development Zone (PDZ) Boundary
- Shoreline Management Plan (SMP) Boundary
- Offshore Windfarms
- Nuclear Power Stations
- Protected Wreck Sites
- Scheduled Monument
- North York Moors National Park
- Special Protection Areas (SPA)
- Northumberland Coast Area of Outstanding Natural Beauty (AONB)
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- World Heritage Site
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Project :
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0 2.25 4.5 Km

Drawing :
Environmental Assessment Results

Drawn By :	Ruby Simmons	Date: 23/01/2017
Checked By :	Helen Jones	Date: 23/01/2017
Approved By :	Andy Parsons	Date: 23/01/2017

Drawing No. :
Figure SA1

Revision
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Drawing Scale : 1:75,000

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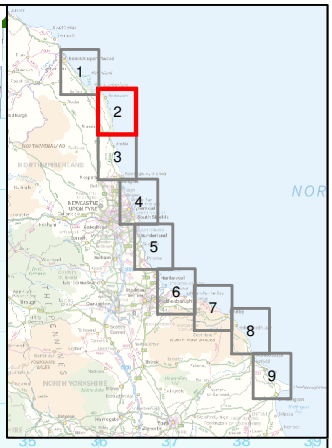

N

MA 6

Repairs to North Sunderland Harbour Breakwaters

P	MA	W	S & G	B	L	H

MA 7

MA 8

Beadnell North Sea Wall Improvements

P	MA	W	S & G	B	L	H

PDZ 2

MA 9

Northumberland to North Tyneside SMP2

MA 10

Craster Coast Protection Scheme

P	MA	W	S & G	B	L	H

MA 11

Boulmer

P	MA	W	S & G	B	L	H

MA 12

Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	Major Beneficial
L	Landscape	
H	Heritage	

Legend

Management Units

Unit_Type

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Approved By :	Andy Parsons	Date: 14/11/2016

Drawing No. :
Figure SA2

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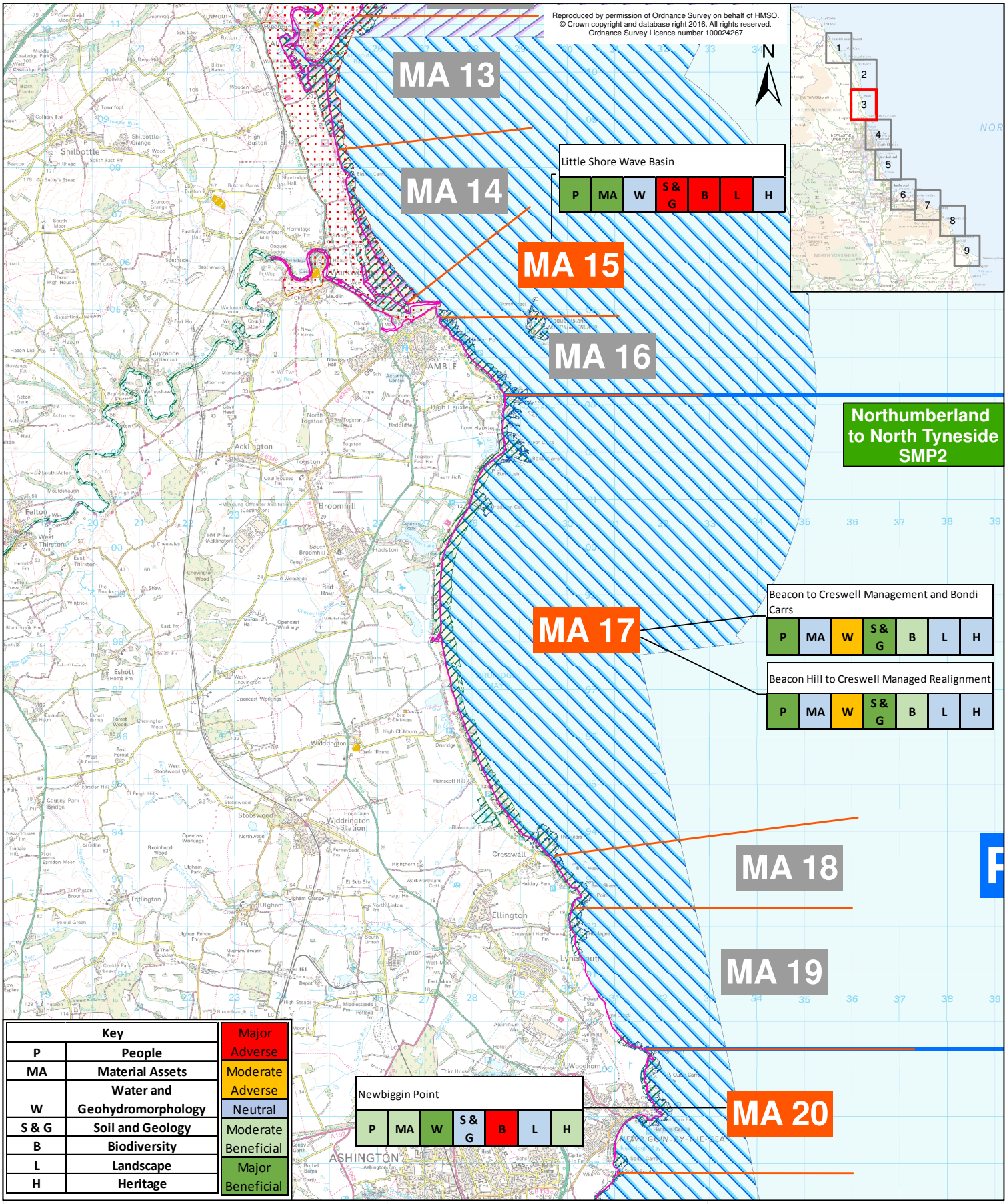

Key	
P	People
MA	Material Assets
W	Water and Geohydromorphology
S & G	Soil and Geology
B	Biodiversity
L	Landscape
H	Heritage

Major Adverse
Moderate Adverse
Neutral
Moderate Beneficial
Major Beneficial

Legend

Management Units

Unit_Type

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Checked By :	Helen Jones	Date: 14/11/2016
Approved By :	Andy Parsons	Date: 14/11/2016

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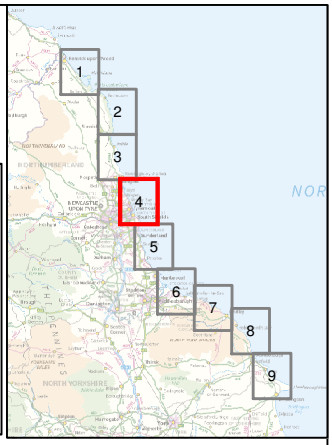
Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	Major Beneficial
L	Landscape	
H	Heritage	



Northumberland to North Tyneside SMP2

MA 21
MA 22
MA 23
MA 24
MA 25
MA 26
MA 27
MA 1
MA 2
MA 3
MA 4
MA 5

PDZ 6
PDZ 1
PDZ 2

St Marys Island Causeway Improvements

P	MA	W	S & G	B	L	H

Seaton Sluice to Curry's Point Maintenance

P	MA	W	S & G	B	L	H

Curry's Point to Brown's Point Maintenance

P	MA	W	S & G	B	L	H

Whitley Bay Southern Promenade Improvements

P	MA	W	S & G	B	L	H

Outdoor Pool

P	MA	W	S & G	B	L	H

Tynemouth Longsands Bear's Back Seawall Improvements

P	MA	W	S & G	B	L	H

Central Promenade Appraisal

P	MA	W	S & G	B	L	H

Tynemouth North Pier to Fish Quay

P	MA	W	S & G	B	L	H

Seabank Seawall Improvements

P	MA	W	S & G	B	L	H

Brown's Point to Tynemouth North Pier - Maintenance

P	MA	W	S & G	B	L	H

Marsden Bay Cliff Erosion Study

P	MA	W	S & G	B	L	H

South Tyneside Council Coastal Management Strategy 2007-2012

P	MA	W	S & G	B	L	H

Legend

Management Units

Unit_Type

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Checked By :	Helen Jones	Date: 23/01/2017
Approved By :	Andy Parsons	Date: 23/01/2017

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Figure SA4

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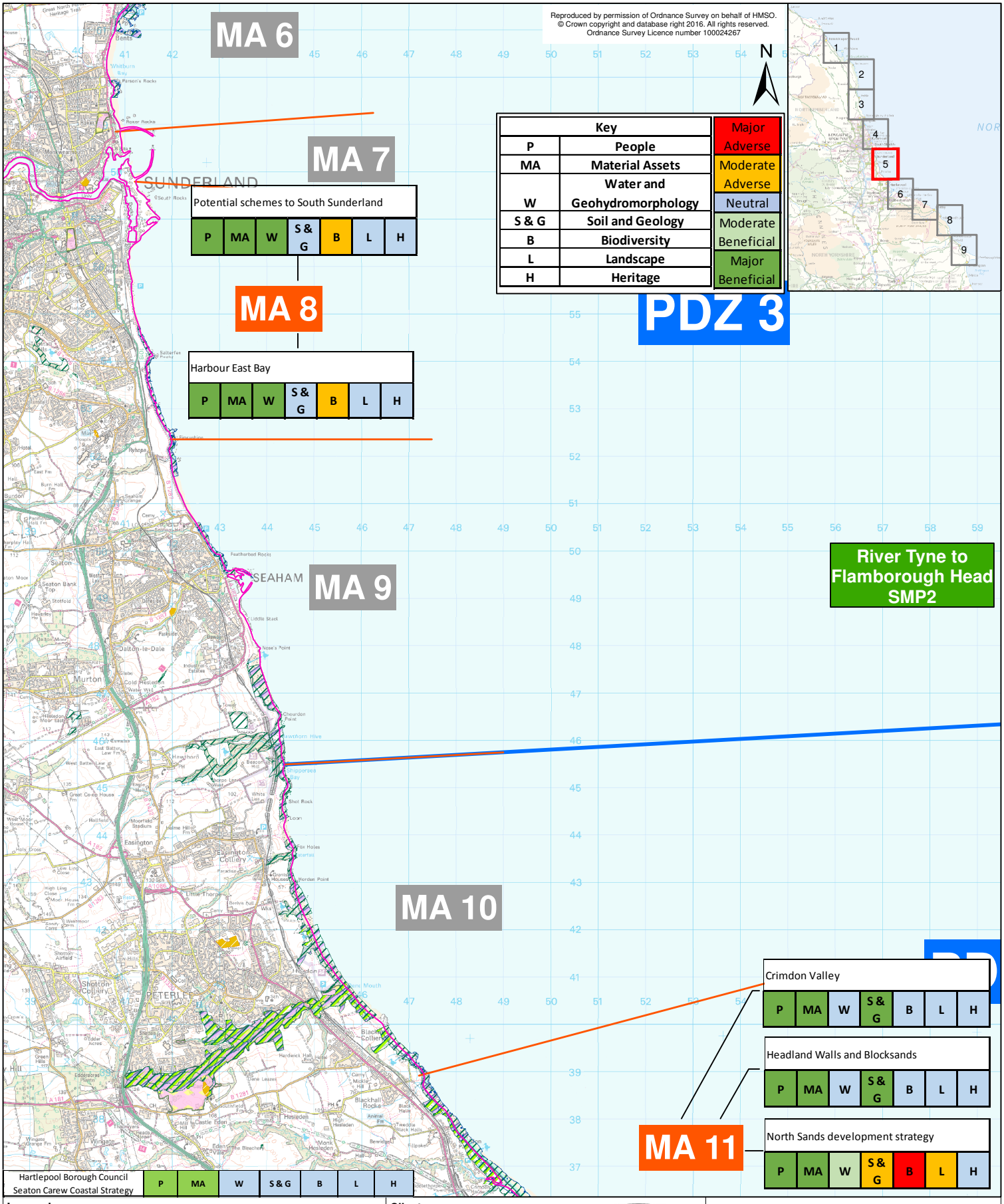

Legend

Management Units

Unit_Type

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Approved By :	Andy Parsons	Date: 10/11/2016

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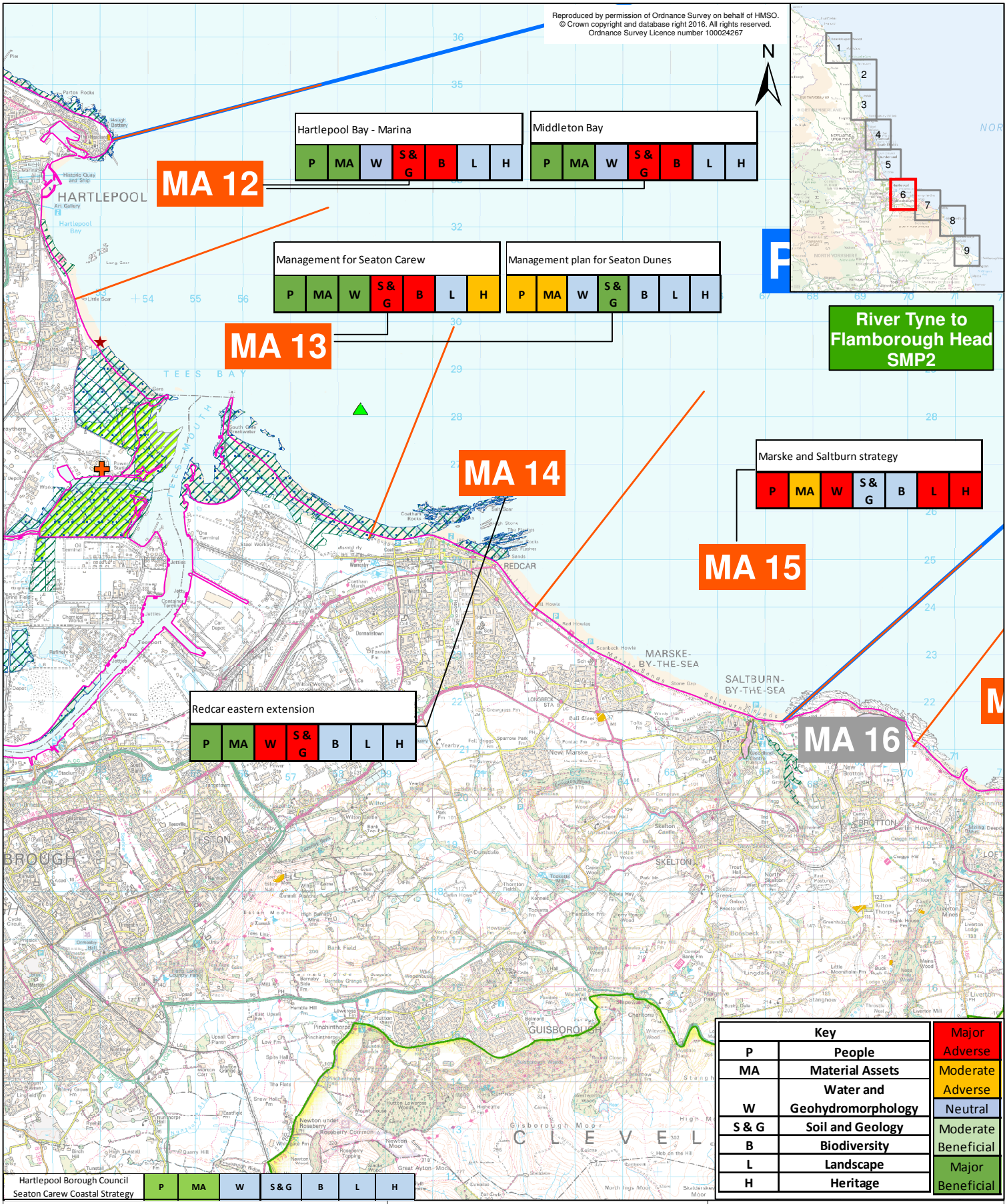

Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	Major Beneficial
L	Landscape	
H	Heritage	

Legend

Management Units

Unit_Type

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Drawing :
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Drawn By :	Ruby Simmons	Date: 14/11/2016
Checked By :	Helen Jones	Date: 14/11/2016
Approved By :	Andy Parsons	Date: 14/11/2016

Drawing No. :
Figure SA6

Revision
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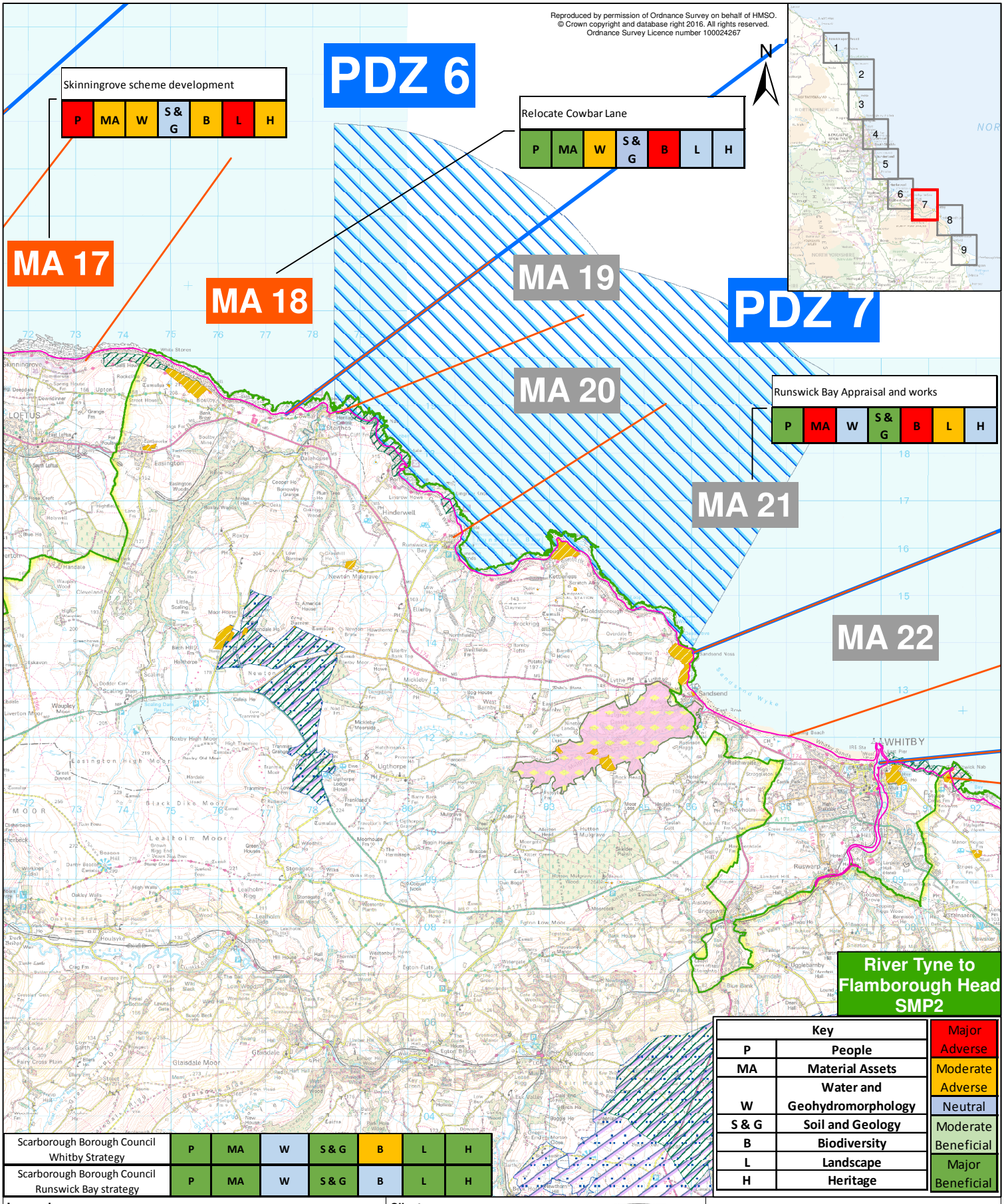

Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	Major Beneficial
L	Landscape	
H	Heritage	

Legend

Management Units

Unit_Type

- Management Area (MA) Boundary
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Project :
Cell 1 Strategic Assessment

0 2.25 4.5 Km

Drawing :
Environmental Assessment Results

Drawn By :	Ruby Simmons	Date: 07/11/2016
Checked By :	Helen Jones	Date: 07/11/2016
Approved By :	Andy Parsons	Date: 07/11/2016

Drawing No. :
Figure SA7

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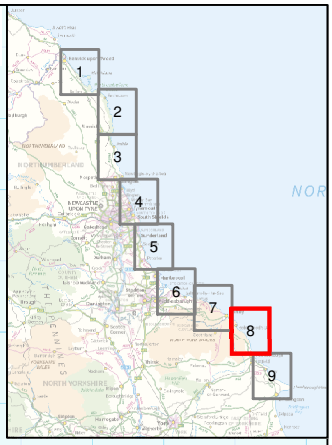

MA 23

Whitby Strategy 2. West Cliff Par

P	MA	W	S & G	B	L	H

MA 24

Whitby Harbour Improvements

P	MA	W	S & G	B	L	H

Key		
P	People	Major Adverse
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	
L	Landscape	
H	Heritage	Major Beneficial

Robin Hood's Bay

P	MA	W	S & G	B	L	H

MA 25

PDZ 9

River Tyne to Flamborough Head SMP2

Scalby New PAR and works

P	MA	W	S & G	B	L	H

MA 26

North Bay, Urgent wall improvements. Phase 2

P	MA	W	S & G	B	L	H

MA 27

Scarborough Borough Council Robin Hoods Bay Strategy

P	MA	W	S & G	B	L	H

Legend

Management Units

Unit_Type

- Management Area (MA) Boundary
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Project :
Cell 1 Strategic Assessment

0 2.25 4.5 Km

Drawing :
Environmental Assessment Results

Drawn By :	Ruby Simmons	Date: 23/01/2017
Checked By :	Helen Jones	Date: 23/01/2017
Approved By :	Andy Parsons	Date: 23/01/2017

Drawing No. :
Figure SA8

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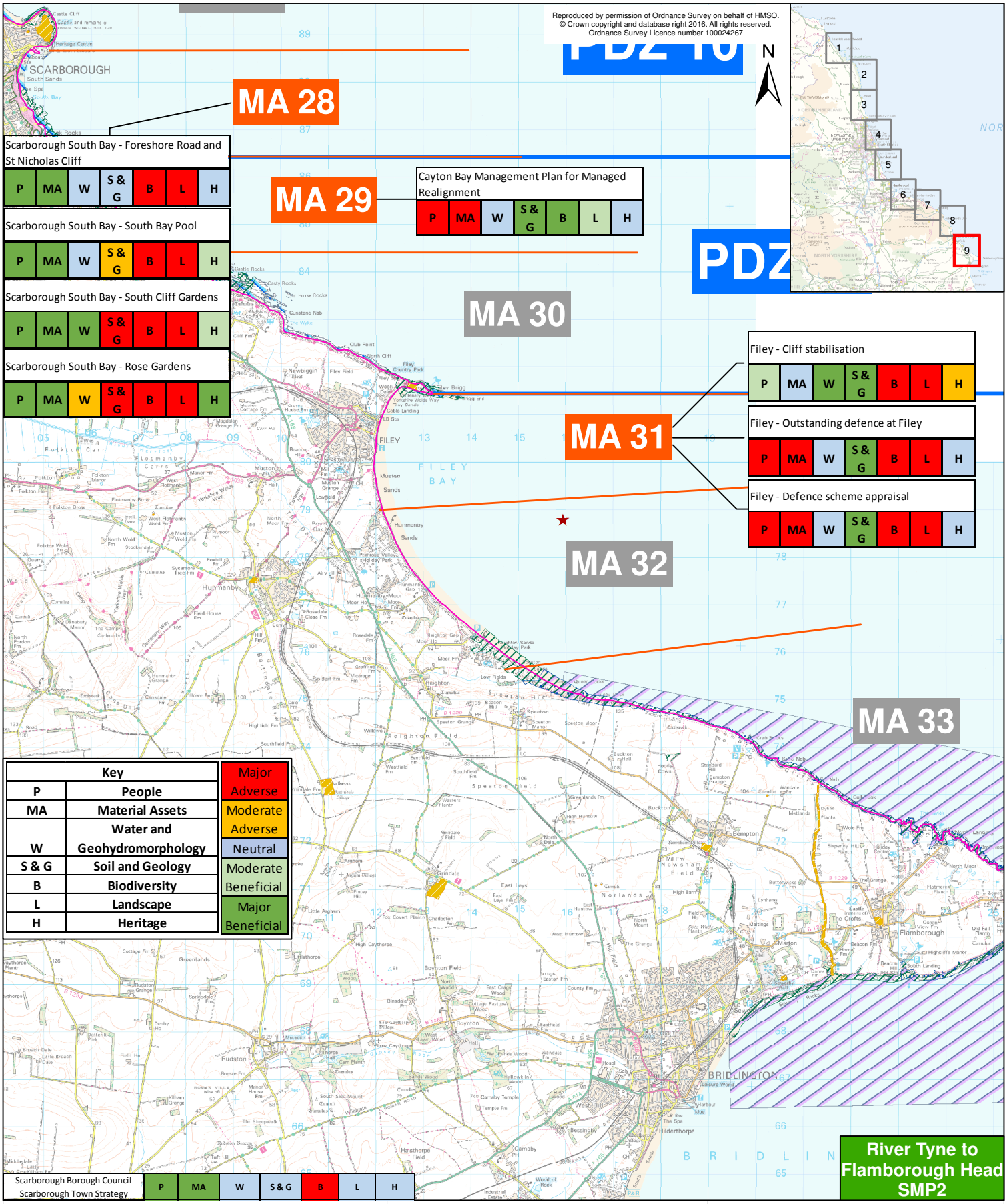

Key		Major Adverse
P	People	
MA	Material Assets	Moderate Adverse
W	Water and Geohydromorphology	Neutral
S & G	Soil and Geology	Moderate Beneficial
B	Biodiversity	
L	Landscape	
H	Heritage	Major Beneficial

River Tyne to Flamborough Head SMP2

Legend

Management Units

Unit_Type

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Project :
Cell 1 Strategic Assessment

0 2.25 4.5 Km

Drawing :
Environmental Assessment Results

Drawn By :	Ruby Simmons	Date: 14/11/2016
Checked By :	Helen Jones	Date: 14/11/2016
Approved By :	Andy Parsons	Date: 14/11/2016

Drawing No. :
Figure SA9

Revision
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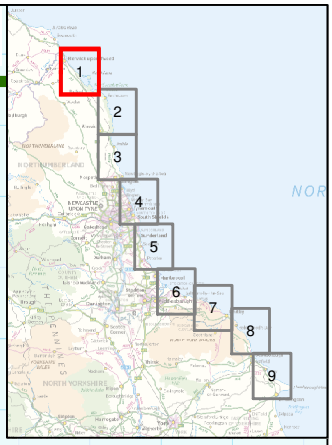

MA 1

MA 2

MA 3

MA 4

MA 4

MA 5

Northumberland to North Tyneside SMP2

Sandstell Point	Timing of Delivery
	2015. Assumed delayed

Key			
	Berwickshire and North Northumberland Coast SAC	CW	County Wildlife Site
	Northumbria Coast SPA/Ramsar	MCZ (or rMCZ)	Marine Conservation Zone (or recommended MCZ)
	Northumbria Coast AONB	L	Listed Building
	Chourdon Point to Castle Eden Dene SAC	SM	Scheduled Monument
	Blackhall Colliery to Crindon SAC	RPG	Registered Parks and Gardens
	Durham Coast SAC/NNR	CA	Conservation Area
	Teesmouth and Cleveland SPA	G	Registered Important Geological and
	SSSI	DB	Designated bathing beach
	SNCI		

Legend

Management Units

Unit_Type

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Project :
Cell 1 Strategic Assessment

0 2.25 4.5 Km

Drawing :
Cumulative Assessment Results

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Checked By :	Helen Jones	Date: 23/01/2017
Approved By :	Andy Parsons	Date: 23/01/2017

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Revision : -

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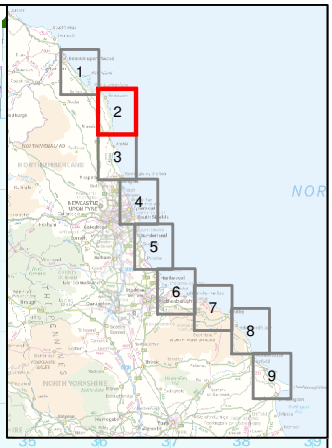

MA 6

Repairs to Sunderland Harbour Breakwaters	Timing of Delivery
	2021

MA 7

MA 8

Beadnell North Sea Wall Improvements	Timing of Delivery
	2015 - 2021

PDZ 2

MA 9

Northumberland to North Tyneside SMP2

Craster Coast Protection Scheme	Timing of Delivery
	2021

MA 10

MA 11

Boulmer to Seaton Point	Timing of Delivery
	2009-2013. Assumed delayed

MA 12

Key			
	Berwickshire and North Northumberland Coast SAC	CW	County Wildlife Site
	Northumbria Coast SPA/Ramsar	MCZ (or rMCZ)	Marine Conservation Zone (or recommended MCZ)
	Northumbria Coast AONB	L	Listed Building
	Chourdon Point to Castle Eden Dene SAC	SM	Scheduled Monument
	Blackhall Colliery to Crindon SAC	RPG	Registered Parks and Gardens
	Durham Coast SAC/NNR	CA	Conservation Area
	Teesmouth and Cleveland SPA	G	Registered Important Geological and
	SSSI	DB	Designated bathing beach
	SNCI		

Legend

Management Units

Unit_Type

- Management Area (MA) Boundary
- Policy Development Zone (PDZ) Boundary
- Shoreline Management Plan (SMP) Boundary
- Offshore Windfarms
- Nuclear Power Stations
- Protected Wreck Sites
- Scheduled Monument
- North York Moors National Park
- Special Protection Areas (SPA)
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- Special Areas of Conservation (SAC)
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- World Heritage Site
- Marine Conservation Zones
- National Nature Reserve (NNR)
- Ramsar Sites
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- Coastline

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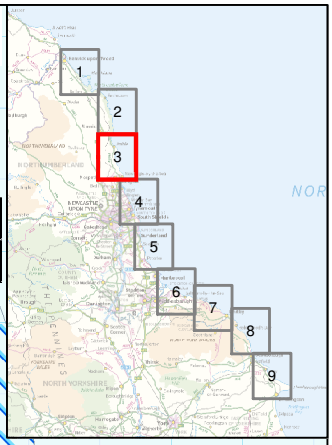

MA 13

MA 14

MA 15

MA 16

MA 17

MA 18

MA 19

MA 20

Little Shore Wave Basin	Timing of Delivery
rMCZ	2011. On hold

Northumberland to North Tyneside SMP2

Beacon to Creswell Management and Bondi Carrs	Timing of Delivery
	Ongoing

Beacon Hill to Creswell Managed Realignment	Timing of Delivery
	Ongoing

Newbiggin Point	Timing of Delivery
	Assume Delayed

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	SSSI	DB	Designated bathing beach
	SNCI		

Legend

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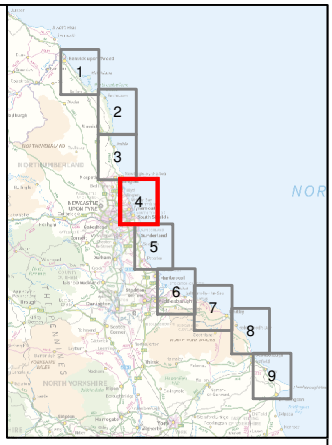

PDZ 5

MA 21

MA 22

MA 23

MA 24

MA 25

MA 26

MA 27

MA 1

MA 2

MA 4

MA 5

PDZ 6

PDZ 1

PDZ 2

Northumberland to North Tyneside SMP2

St Marys Island Causeway Improvements	Timing of Delivery
	Assume Delayed

Seaton Sluice to Curry's Point Maintenance	Timing of Delivery
	When required

Curry's Point to Brown's Point Maintenance	Timing of Delivery
	Ongoing

Whitley Bay Southern Promenade Improvements	Timing of Delivery
	Assume Delayed

Outdoor Pool	Timing of Delivery
	2019-2022

Tynemouth Longsands Bear's Back Seawall Improvements	Timing of Delivery
	Medium term

Central Promenade Appraisal	Timing of Delivery
	2021

Seabank Seawall Improvements	Timing of Delivery
	2019 - 2022

Tynemouth North Pier to Fish Quay	Timing of Delivery
	2020 - 2022

Brown's Point to Tynemouth North Pier - Maintenance	Timing of Delivery
	When required

Marsden Bay Cliff Erosion Study	Timing of Delivery
	No cumulative effect

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	Teesmouth and Cleveland SPA	G	Registered Important Geological and
	SSSI	DB	Designated bathing beach
	SNCI		

South Tyneside Council Coastal Management Strategy 2007-2012	**No Cumulative Effect**

Legend

Management Units

Unit_Type

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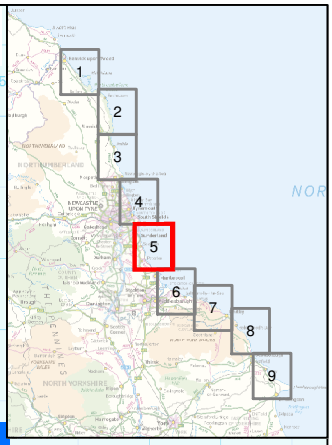

MA 6

MA 7

SUNDERLAND

Potential Schemes to South Sunderland	Timing of Delivery
	Unknown

MA 8

PDZ 3

Harbour East Bay	Timing of Delivery
	Unknown

River Tyne to Flamborough Head SMP2

SEAHAM

MA 9

MA 10

North Sands Development Strategy	Timing of Delivery
	In progress

PD

Headland Walls and Blocksands	Timing of Delivery
	Partially completed

Crimdon Valley	Timing of Delivery
No cumulative effect	N/A

MA 11

Key		
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Teesmouth and Cleveland SPA	G	Registered Important Geological and
SSSI	DB	Designated bathing beach
SNCI		

Hartlepool Borough Council Seaton Carew Coastal Strategy	No Cumulative Effect

Legend

Management Units

Unit_Type

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- Policy Development Zone (PDZ) Boundary
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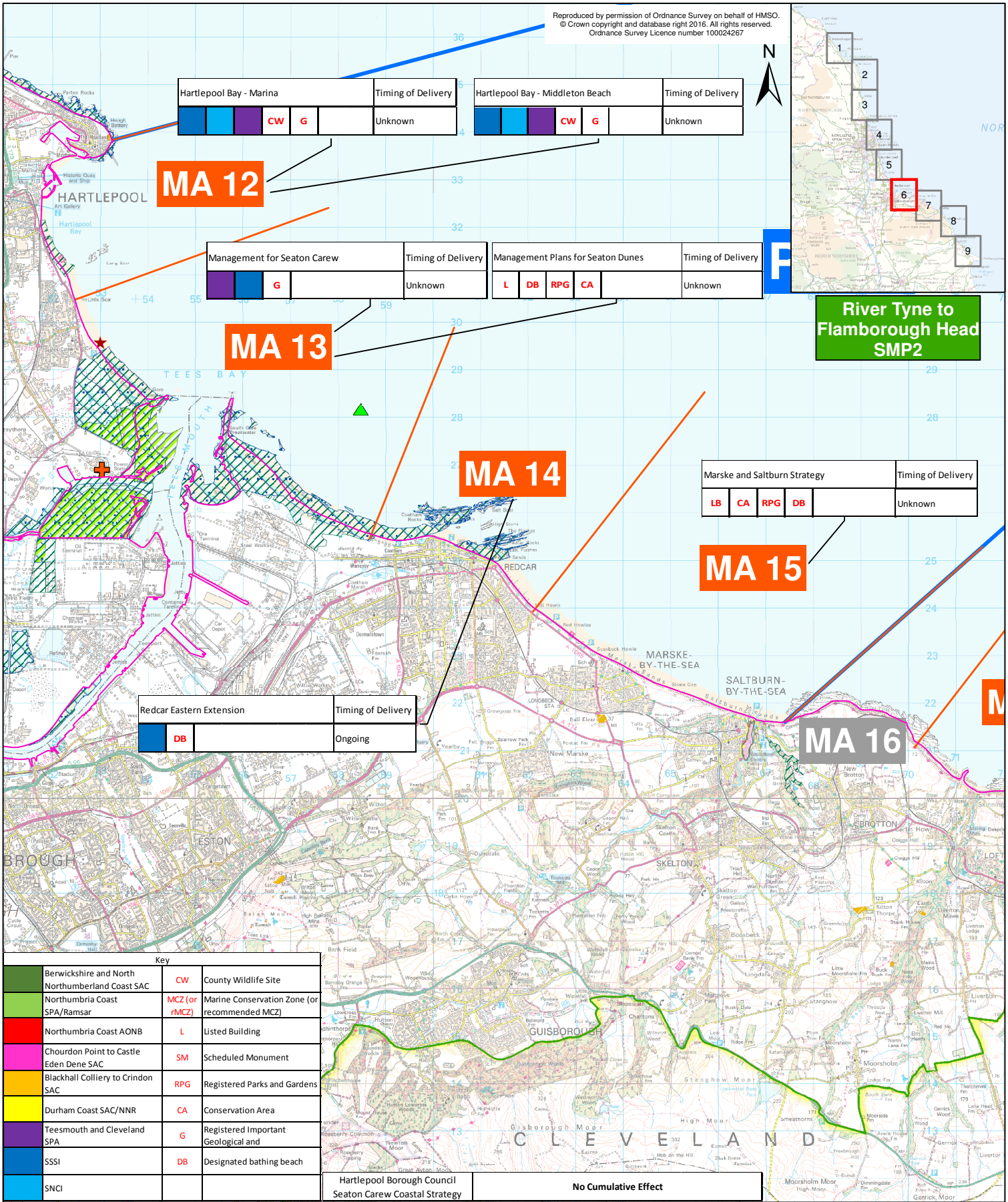

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Legend

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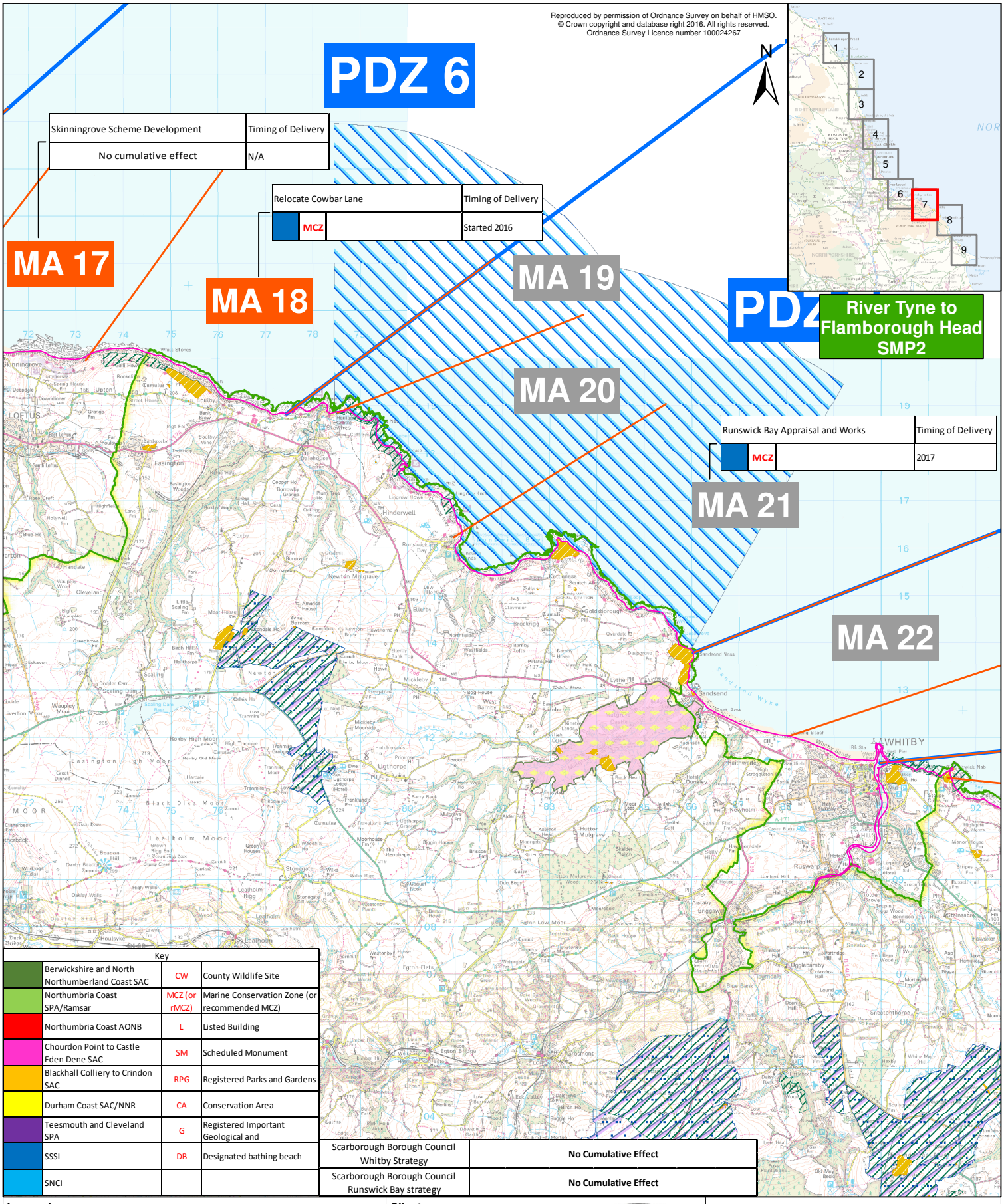

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Legend

Management Units

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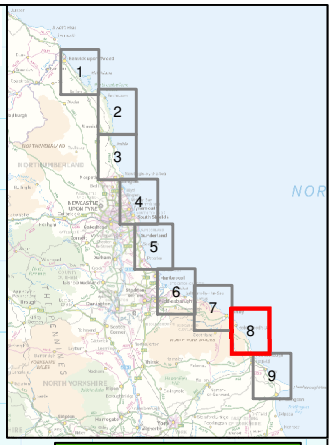

River Tyne to Flamborough Head SMP2

MA 23

Whitby Strategy 2. West Cliff Par	Timing of Delivery
	2022

MA 24

Whitby Harbour Improvements	Timing of Delivery
	Progressing

MA 25

Robin Hood's Bay	Timing of Delivery
No cumulative effect	Assumed ongoing

PDZ 9

MA 26

Scalby New PAR Works	Timing of Delivery
No cumulative effect	Assumed ongoing

MA 27

North Bay, Urgent Wall Improvements. Phase 2	Timing of Delivery
	2020

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Scarborough Borough Council Robin Hoods Bay Strategy	No Cumulative Effect

Legend

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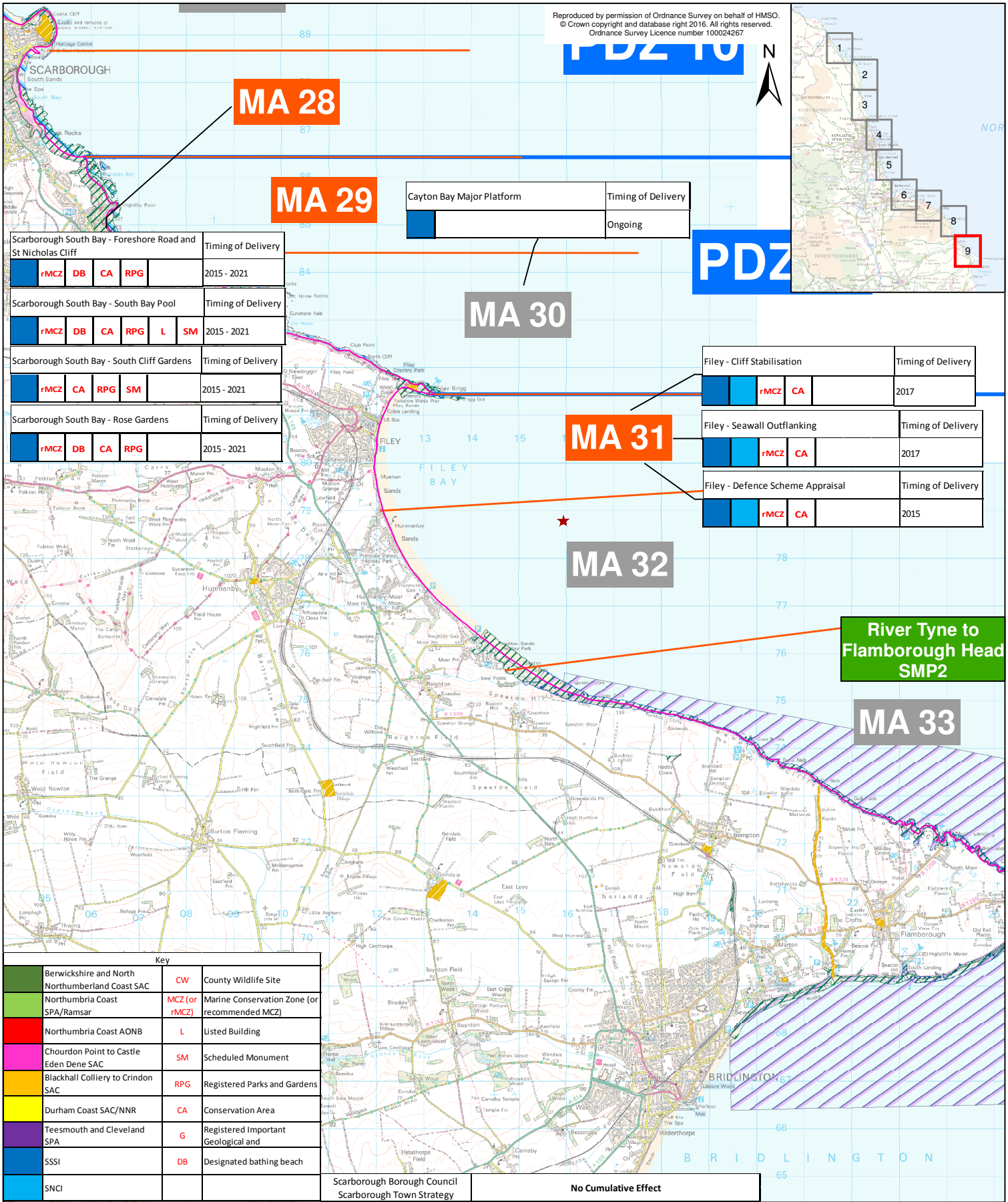

Scarborough South Bay - Foreshore Road and St Nicholas Cliff						Timing of Delivery
	rMCZ	DB	CA	RPG		2015 - 2021

Scarborough South Bay - South Bay Pool							Timing of Delivery
	rMCZ	DB	CA	RPG	L	SM	2015 - 2021

Scarborough South Bay - South Cliff Gardens						Timing of Delivery
	rMCZ	CA	RPG	SM		2015 - 2021

Scarborough South Bay - Rose Gardens						Timing of Delivery
	rMCZ	DB	CA	RPG		2015 - 2021

Cayton Bay Major Platform	Timing of Delivery
	Ongoing

Filey - Cliff Stabilisation					Timing of Delivery
		rMCZ	CA		2017

Filey - Seawall Outflanking					Timing of Delivery
		rMCZ	CA		2017

Filey - Defence Scheme Appraisal					Timing of Delivery
		rMCZ	CA		2015

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Scarborough Borough Council Scarborough Town Strategy	No Cumulative Effect

Legend

Management Units

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Appendix B

SMP Background Information

Appendix B SMP Background Information

Introduction

SMPs set out a plan for a 100 year period indicating how flood and erosion risks at the coastline should be managed, taking into account the wider implications on the neighbouring coastline and the environment. The plans provide a broad scale assessment of the risks associated with coastal evolution and climate change and specific advice to risk management authorities in their management of the coast.

SMPs divide the 6,000 mile shoreline of England and Wales into eleven coastal cells and sub cells defined by coastal type and processes such as the movement of beach and seabed sediment (sand, shingle, etc.) within and between them. The north east coast of England lies within Cell 1 and includes the coastline from the Scottish Border to Flamborough Head, which covers approximately 300km.

Northumberland and North Tyneside SMP

The original SMP for this area, Northumberland (known as SMP1) was completed in 1998. The second SMP, known as Northumberland and North Tyneside SMP2 was completed in May 2009. Whilst SMP1 covered the coastline from St. Abb's Head to the River Tyne, SMP2 now extends from the Scottish Border to the River Tyne. The section of coastline between St. Abb's Head and the Scottish Border does not display significant coastal process interactions with the coastline further south and therefore this separation is now appropriate given the devolved powers of the Scottish Parliament since the completion of SMP1.

The SMP2 document was developed on behalf of the Northumbria Coastal Authorities Group (NCAG) and sets out the results of the first revision to the original SMP for the area of Northumberland and North Tyneside coast extending from the Scottish Border south to the River Tyne. NCAG comprised representatives from Berwick-upon-Tweed Borough Council[1], Alnwick District Council[1], Castle Morpeth Borough Council[1], Wansbeck District Council[1], Blyth Valley Borough Council[1], North Tyneside Council, the Environment Agency, Natural England, Defra, the Northumberland Coastal Area of Outstanding Natural Beauty, and other interested parties such as the Port of Tyne, Port of Blyth, North East Sea Fisheries, and Scottish Borders Council.

River Tyne to Flamborough Head SMP

The three original SMPs for this area were completed in 1998, 1999, and 1997 working from north to south along the coast. The River Tyne to Flamborough Head SMP2 was completed in October 2007. The SMP2 was developed on behalf of the North East Coastal Authorities Group (NECAG) and sets out the results of the first revision to the original SMPs for the area of coast extending from the River Tyne south to Flamborough Head.

At the time of the development of the SMP2 NECAG comprised representatives from Scarborough Borough Council (Lead Authority), Redcar and Cleveland Borough Council, South Tyneside Municipal Borough Council, East Riding of Yorkshire Council, Easington District Council, Hartlepool Borough Council, Sunderland City Council, Natural England, Environment Agency and Defra.

Development of SMP policies

Figure B.1 below presents the approach to subdivision of the coastal frontage that was used for developing and presenting coastal management policies in both of the Cell 1 SMP2s.

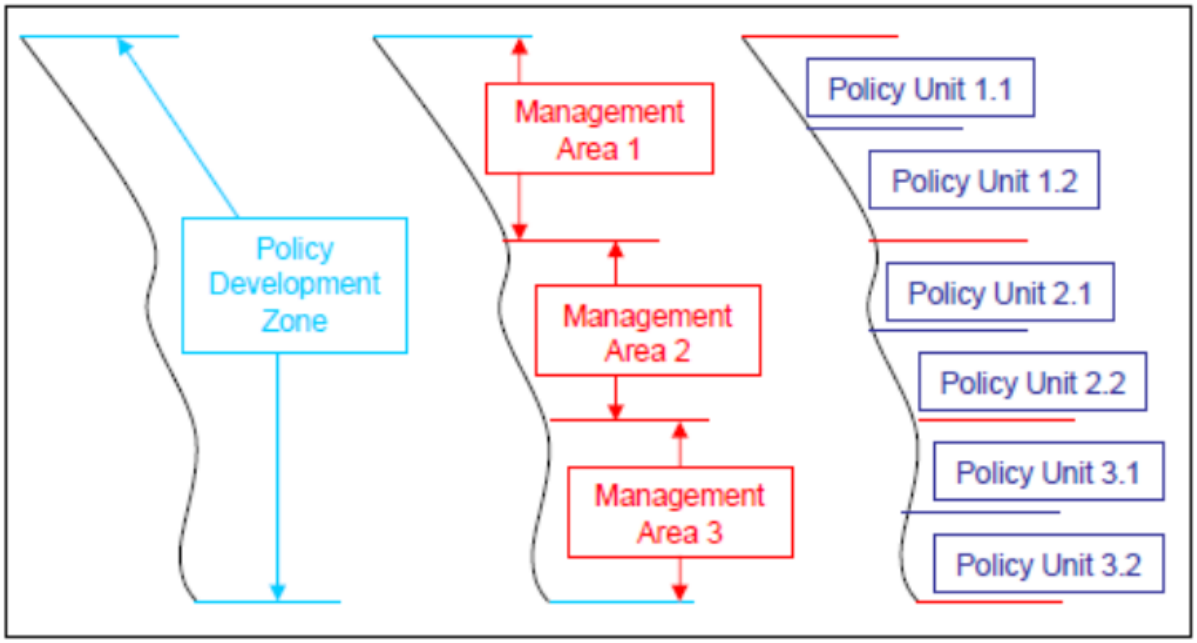
In developing policy in the SMP2s, the coast was divided (at the highest level) into "Policy Development Zones" (PDZ). The coast along Northumberland is split into six PDZs: and the Tyne to Flamborough Head is split into 12 PDZs, as shown on Figures SA1 to SA9 in Appendix A. Within each of these PDZs, the principal management issues needing to be addressed were identified.

[1] It should be noted that from the 1st April 2009, the five District Councils in Northumberland (Berwick, Alnwick, Castle Morpeth, Wansbeck and Blyth Valley) became part of one single unitary authority for Northumberland

Within each PDZ, different SMP policies were considered; always starting with the NAI policy for all locations within the PDZ. A preferred defence management policy (referred to as the preferred policy) was subsequently identified for smaller sections of the coast - Policy Units (PU). This policy defines how that section of coast should be managed over the life time of the SMP.

Due to some inter-dependencies between Policy Units (to justify a policy of retreat in one area may rely on an assumption that an adjacent section of coast is held), policy units were grouped. Such groups of policy units are defined as "Management Areas" in the SMP2s. The definition of the management areas was made at the end of the policy development process and the SMP2s include statements providing the understanding of why each specific Management Area is to be managed in the way proposed and how the chosen policies for individual policy units work together to deliver that intent.

Figure B.1 Schematic Representation of the Frontage Subdivisions (taken from Figure 3.1 in the Northumberland SMP2, 2009).



SMP2 Action Plans

The SMP2 Action Plans are intended to:

- Establish processes for finalisation, dissemination and review of the SMP2;
- Enable linkages with relevant related flood and erosion risk management initiatives;
- Enable delivery of a prioritised programme of Strategy Plan development or reviews, studies and investigations;
- Enable delivery of a prioritised programme of possible future schemes that are likely to be required given the preferred policies that have been identified;
- Identify actions that will be required to resolve uncertainties;
- Identify actions that are necessary to deal with the consequences of the SMP policies; and
- Establish processes for informing stakeholders of progress with ongoing actions.

The Action Plans include the following categories of actions which would need to be carried out or developed in order to implement the policies for each PU:

- Studies and investigations;
- Schemes to manage and maintain the development assets present along the coastline;
- Schemes for planning new and adapting existing development assets (as named in the SMP2s); and

- Monitoring.

Monitoring is an important aspect of the Action Plans in order to gain a better understanding of coastal processes, so as to perform coastal management in an effective manner and to feedback into the shoreline management process. In general it is the Risk Management Authorities who, even if not actually managing specific actions, will be promoting or ensuring actions are undertaken in a timely manner.

The Action Plans of both the Cell 1 SMP2s are presented in Section 7 of each of the SMP2 documents along with an indicative cost and an indicative timescale by when the action is proposed to be undertaken (it should be noted that some actions have been completed since the SMPs were published). This information has been used to consult with the local coastal authorities to confirm the status of each action and the timeframe for delivery to inform this SA.

Appendix C FCRM 6 year investment programme

Appendix C FCRM 6 year investment programme

January RFCC consented programme (updated February 2015)										Pre-Construction FCERM GIA			Pre-Construction Other funding					Estimated funding for construction by March 2021 dependent on full business case approval and securing required contributions				Households with a better level of protection by March 2021		Total households with a better level of protection when schemes are complete		
Add into Stage 2 Cell 1 study?	Comments	Was it scoped in during Stage 1?	Project Name	Risk Management Authority	Regional Flood and Coastal Committee (RFCC)	Environment Agency Area	ONS Region	Constituency of project location	Location	Allocated in 2015/ 2016 (£k)	Indicative up to 2021 (£k)	Indicative from 2021 (£k)	RFCC Local levy (£k)	Public/ Private identified (incl. Internal Drainage Board Precept,	Further Required (£k)	Estimated Total Project Cost (£k)	Estimated earliest construction start	GiA (£k)	RFCC local levy (£k)	Public/ Private (incl. Internal Drainage Board Precept, £k)	Other funding contributions Required (£k)	from flooding	from coastal erosion	from flooding	from coastal erosion	Economic benefits (Net Present Value, £k)
No (already included)	Hartlepool Marina and N Pier	Yes, in PU12.1	Hartlepool Marina Study and Construction (North Pier)	Hartlepool Borough Council	Northumbria	Northumberland Durham and Tees	North East	Hartlepool	Hartlepool Marina	0.0	0.0	0.0	0.0	0.0	0.0	3,618.0	2018 to 2021	1,171.2	0.0	0.0	0.0	0	360	0	360	25,986.0
No (already included)	Small coastal scheme at Amble	Yes, in PU15.4	Little Shore Improvement	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Berwick-upon-Tweed Co Const	Amble	0.0	0.0	0.0	20.0	0.0	0.0	240.0	2018 to 2021	220.0	0.0	0.0	0.0	0	40	0	40	1,788.3
Yes	Whitely Bay scheme	Yes, PU26.5	Central Promenade Appraisal, Design And Construction, North Tyneside	North Tyneside Council	Northumbria	Northumberland Durham and Tees	North East	Tynemouth	Whitely Bay, Tyne & Wear	0.0	0.0	0.0	50.0	44.0	0.0	3,086.2	2016 to 2018	839.2	100.0	1,700.0	0.0	0	60	0	60	3,608.0
No (already included)	Whitley bay	Yes, PU26.6	Southern Promenade Sea Wall Repair - Whitely Bay	North Tyneside Council	Northumbria	Northumberland Durham and Tees	North East	Tynemouth	Whitely Bay, Tyne & Wear	0.0	0.0	0.0	0.0	0.0	0.0	616.2	2016 to 2018	281.2	65.0	270.0	0.0	0	40	0	40	665.2
No (already included)	Harbour Rd Seawall repairs	Yes, in MA08, PU8.3	Beadnell North Sea Wall Improvements	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Berwick-upon-Tweed Co Const	Harbour Rd, Beadnell, Northumberland	0.0	0.0	0.0	0.0	0.0	0.0	3,593.0	2018 to 2021	1,410.0	0.0	2,093.0	0.0	0	70	0	70	7,446.7
No (already included)	Small coast protection scheme	Yes, PU11.1	Boulmer Coast Protection	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Berwick-upon-Tweed Co Const	Boulmer, Northumberland	0.0	0.0	0.0	30.0	0.0	0.0	235.9	2016 to 2018	178.9	0.0	27.0	0.0	0	25	0	25	686.7
Yes	Coast protection scheme	No, in PU10.1, Action plan only had study, but 6-yr prog shows possible scheme	Craster Coast Protection Scheme	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Berwick-upon-Tweed Co Const	Craster Harbour	0.0	0.0	0.0	60.0	0.0	0.0	2,560.0	2018 to 2021	700.0	0.0	1,800.0	0.0	0	50	0	50	3,119.3
No (already included)	Small coast protection scheme	Yes	Newbiggin Point Coast Protection Scheme	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Wansbeck Co Const	Newbiggin Point, Northumberland	0.0	0.0	0.0	0.0	0.0	0.0	177.8	2018 to 2021	92.3	42.0	43.5	0.0	0	0	0	0	1,250.3
No (already included)	Seaton Sluice scheme	No, needs adding in PU23.4 was not included as Scheme had been noted to be on hold	Seaton Sluice Harbour Improvements	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Blyth Valley Boro Const	Seaton Sluice	0.0	0.0	0.0	25.0	25.0	0.0	1,549.9	2018 to 2021	499.9	0.0	1,000.0	0.0	0	60	0	60	1,707.0
Yes	Marsden bay scheme	No, needs adding in PU4.2 as was previously just identified as a study.	Marsden Bay Cliff Erosion Study	South Tyneside Council	Northumbria	Northumberland Durham and Tees	North East	South Shields	Marsden Bay, Whitburn	0.0	0.0	0.0	50.0	67.0	0.0	923.1	2018 to 2021	310.5	0.0	250.0	0.0	0	0	0	0	9,187.0
No (already included)	Sunderland scheme	Yes, in PU8.1	Hendon Foreshore Barrier / Stonehill Wall / Breakwater	Sunderland City Council	Northumbria	Northumberland Durham and Tees	North East	Hendon	Sunderland	0.0	0.0	0.0	150.0	1,500.0	0.0	11,111.8	2016 to 2018	631.9	700.0	4,650.0	0.0	0	0	0	0	66,210.5

Include in Stage 2 Cell 1 study?	Comments		Project Name	Risk Management Authority	Regional Flood and Coastal Committee (RFCC)	Environment Agency Area	ONS Region	Constituency of project location	Location	Estimated Total Project Cost (£k)	Required in 2015/16 (£k)	Indicative to 2021 (£k)	RFCC local levy (£k)	Public (incl. Internal Drainage Board Precept) (£k)	Private (£k)	Further Required (£k)	Estimated earliest construction start	from flooding	from coastal erosion	from flooding	from coastal erosion	Economic benefits (Net Present Value, £k)
Yes	repairs to North Sunderland harbour breakwaters	No, needs adding in PU6.3, was not identified in SMP action plan	Seahouses Main Pier Rehabilitation	Northumberland County Council	Northumbria	Northumberland Durham and Tees	North East	Berwick-upon-Tweed Co Const	Seahouses Harbour, Northumberland	5,188.6	0.0	2,472.6	0.0	0.0	0.0	1,025.0	2016 to 2018	0	140	0	140	31,902.3

										Flood and Coastal Erosion Risk Management Grant in Aid Funding			roject Total				Households with a better level of protection by March 2021		Total households with a better level of protection when schemes are complete		
Include in Stage 2 Cell 1 study?	Comments	Was it scoped in during Stage 1?	Project Name	Risk Management Authority	Regional Flood and Coastal Committee (RFCC)	Environment Agency Area	ONS Region	Constituency of project location	Location	Estimated Total Project Cost (£k)	Funding allocated for 2015/16 (£k)	INDICATIVE to 2021 (£k)	INDICATIVE from 2021 (£k)	Local Levy (£k)	Public (incl. Internal Drainage Board Precept, £k)	Private (£k)	Further Required (£k)	from flooding	from coastal erosion	from flooding	from coastal erosion	Economic benefits (Net Present Value, £k)
N	This is a MR habitat scheme on Tees, complete on site, not actually in the SMP area but is relevant so we should mention if possible	No, not rqd	Greatham North	Environment Agency	Northumbria	Northumberland Durham and Tees	North East	Hartlepool	Hartlepool	6,034.2	51.7	191.2	39.5	0.0	0.0	0.0	0.0	0	0	0	0	
N	This is a Scheme already underway - tidal defence on Tees and MR on gretham Creek off Tees estuary. Although not in the SMP area it is relevant to the overall SA	No, not rqd	Port Clarence and Greatham South Flood Alleviation	Environment Agency	Northumbria	Northumberland Durham and Tees	North East	Hartlepool and Stockton on Tees	Middlesborough	15,589.9	5,200.0	3,169.5	0.0	0.0	0.0	0.0	5,930.0	350	0	350	0	504,277.6
y	Note this is partly completed	Yes, in PU11.3	Headland Walls and Blocksands, Hartlepool	Hartlepool Borough Council	Northumbria	Northumberland Durham and Tees	North East	Hartlepool	Hartlepool Headland	11,792.8	4,458.6	1,032.9	0.0	300.0	2,454.4	528.9	0.0	0	195	0	195	39,442.1
N	This should be complete, so just needs mention under completed schemes in the overall SA	No (recognised as completed, PU17.2)	Skinningrove Coastal Protection	Redcar and Cleveland Borough Council	Northumbria	Northumberland Durham and Tees	North East	Middlesbrough South and East Cleveland	Skinningrove	3,097.8	2,450.8	0.0	0.0	0.0	59.7	0.0	0.0	0	175	0	300	3,909.0

REFERENCE				ORGANISATION					FLAGS				LOCATION					DESCRIPTIVE DETAILS							PARTNERSHIP FUNDING SUMMARY (Values to be taken from PF Calculator)							ADDITIONAL DETAILS		GATEWAY DATES			
National Project Number	Project Name	LRMA Project Reference or EA 1B1S no.	LDW/ CPW/ IDB Number	RFCC	EA Area	Lead Risk Management Authority - Name	Lead Risk Management Authority - Type	Coastal Group	Project Type	Risk Source	Moderation Code	Packages	National Grid Reference	Project Location (Town, River, SSSI etc)	County	Parliamentary Constituencies - Project Location	Parliamentary Constituencies - Benefit Area	Agreed Strategy	Brief Description of Problem and Proposed Solution	Environmental Considerations including Designated Sites	Flooding Schemes Standard of Protection - before Construction %	Flooding Schemes Standard of Protection - after Construction %	Coastal Erosion Schemes Standard of Protection - before Construction Yrs	Coastal Erosion Schemes Standard of Protection - after Construction Yrs	New Builds %	Is evidence available that a Strategic Approach has been taken, and that double counting of avoided ? Y or N. Benefits has been	Raw Partnership Funding Score %	Adjusted Partnership Funding Score (PF) %	PV Whole Life Costs £	PV Whole Life Benefits £	PV Whole Life Benefits/ PV Whole Life Costs (Benefit / Cost Ratio)	Duration of Benefits Yrs	Scheme comments	Earliest date funding profile could be accelerated to (first year of TPE spend)	Gateway 1 (Business Case)	Gateway 3 (Contract Award)	Start of construction	Gateway 4 (Readiness for Service)
YOC500E/000A/002A	Scarborough Coastal Risk Management Programme 2			Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion	0		TA03639068	North Yorkshire Coast	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Y	The Shoreline Management Plan 2 as well as other strategies and studies risk management along the North Yorkshire coastline. By undertaking risk management monitoring and analysis, the authority will be able to manage coastal risk more effectively as well as being able to discharge its legal duty of care to residents by informing the public of potential risks along defended and undefended complex cliff coastal frontages. The Scarborough Coastal Risk Management Programme will allow the authority to record, analyse and interpret data to allow the accurate gauging of current and potential risks associated with coastal slope ground movements. This in turn will allow a series of early warning signs and trigger levels to be developed and be used to warn of risk to property and potentially to human life. This focus stems from the National Flood and Coastal Erosion Risk Management Strategy for England, which notes that: "risk to life should be of primary importance alongside other factor such as damage to property." Providing residents with information on coastal slope risk allows them time to adapt to coastal change and manage their own risk effectively. The data collected also better aids the CPA's understanding of coastal processes and aids more effective coastal zone management. The risk management programme will be undertaken at the following ten key coastal slope sites: Runswick Bay, Whitby West Cliff, Robin Hoods Bay, Scalby Ness, Scarborough North Bay, Scarborough South Cliff, Knipe Point, Filey town and Filey flat cliffs. Grant aid was successfully secured for an earlier version of this project in 2009 for a 3 year project to collect and analysis coastal risk monitoring data another bid was approved in 2012 and awarded grant aid. This project is a continuation of the previous project, which will allow us to build up our knowledge banks and better inform of risk to life. Continue the current risk management programme for a futher 5 years.	Many SSSI's, SAC's, SPA's, RAMSAR sites fall within the areas that are monitored as part of this programme	0%	0%	0%	0%		NO	245%	265%	225,000	122,903	5.44	5		01/04/2017	15/05/2017	15/07/2017	15/07/2017	15/08/2017
YOS351C/000A/086A	Whitby Harbour Works MU17 & MU18	SBC13	CPW3004	Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion			NZ89901120	Whitby, North Yorkshire, YO21	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Whitby Coastal Strategy Sandsend to Abbey Cliff 2002 (approved)	Coast protection works. Works arising from Whitby strategy review and prioritised PARs	Whitby - Saltwick SSSI (geological) and SINC at mouth of River Esk.			1000%	10000%		Yes	76%	120%	8,887,000	52,370,000	5.89	100			30/09/2014	31/03/2015	01/08/2016	31/03/2017
YOS351C/000A/100A	Whitby Coastal Strategy 2 Management Unit 19 Haggerlythe	SBC2013		Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion			NZ89901120	Whitby, North Yorkshire, YO21	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Whitby Strategy 2013: approved	PAR for a new reventment & slope Stabilisation built to replace the present informal revetment comprised ofloosely placed rocks	Whitby - Saltwick SSSI (geological) and SINC at mouth of River Esk.	3%	1%				Yes	59%	104%	1,232,000	2,439,000	1.98	100			01/06/2020	01/09/2021		31/03/2022
YOS351C/001A/020A	Scalby Ness PAR & Works	SBC20		Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion	0		TA03669088	Scalby Mills, North Yorkshire, YO12	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Hundale Point to Scalby Ness Strategy Study 2006 (approved)	Undertake a re-evaluation of the risk to properties and the viability of Scalby Ness as recommended by the study in 5 yearly intervals. Bring to account monitoring information. The Hundale Point to Scalby Ness strategy review 2006 recommended that coastal slope monitoring be undertaken at Scalby Ness to monitor risk to property. It also recommends that this data should be re-evaluated five years from the completion of the strategy to reassess the risk of slope failure. Produce a PAR and works.	Iron Scar and Hundale Point to Scalby Ness SSSI (geological)			500%	10000%		Yes	108%	108%	900,000	2,154,000	2.39	100			01/04/2017	01/09/2017		01/09/2018
YOS351C/000A/068A	Robin Hoods Bay PAR & Works	SBC56		Yorkshire	Yorkshire	Scarborough BC	LA	North East	CM	Coastal Erosion			NZ95380535	Robin Hoods Bay, North Yorkshire, YO22	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Robin Hoods Bay Coastal Strategy Study (estimated completion November 2011)	Two staged project: 1st stage to prepare the PAR; 2nd stage works as recommended by the PAR. (Northern section of village: The Robin Hoods Bay strategy Study has recommened that drainage works should be carried out in the undefended northern flank of the village of Robin Hoods bay; to slow down the rate of coastal cliff erosion and reduce water pressure on the coastal slopes that contribute to land instability. Southern Section of the village: Sustain capital upgrading works as identified in the coastal defence strategy study.)	Maw Wyke to Beast Cliff SSSI			1000%	3000%		Yes	46%	100%	1,820,000	8,813,000	4.84	30			01/06/2013	01/04/2016		01/01/2018
YOS351C/001A/012A	Runswick Bay Appraisal and Works	SBC9		Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion	0		NZ80561614	Runswick Bay Village, North Yorkshire TS13	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Runswick Bay Coastal Defence Strategy Study 2002 (approved)	WORKS REQUIRED AS IDENTIFIED IN RUNSWICK BAY STRATEGY Following a review of the 2002 strategy an options appraisal for new capital coast protection works is required for Runswick Bay. This project falls within the SMP2 Action plan for the coastal management of Runswick Bay.	Staithes - Port of Mulgrave SSSI (geological)			500%	10000%		Yes	111%	111%	1,500,000	17,700,000	11.80	100			01/04/2016	01/06/2017		31/03/2017
YOS351C/000A/084A	Scarborough South Bay Spa Seawall Works	SBC74		Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion			TA04228739	Scarborough North Yorkshire, YO11	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Scarborough Coastal Defence Strategy Review - Holbeck to Scalby Mills 2009 (approved)	Spa sea wall improvements and slope stabilisation works.	CAYTON, CORNELIAN AND SOUTH BAY SSSI. CAYTON AND CORNELIAN SINC.			500%	10000%		Yes	60%	100%	14,309,000	115,113,000	8.04	100			01/08/2015	01/04/2016	01/05/2016	30/08/2018
YOS351C/000A/095A	Whitby Strategy 2 - Management Unit 13 West Cliff PAR - Spa	SBC2011		Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion	0		NZ89901120	Whitby, North Yorkshire, YO21	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Whitby Strategy 2013: approved	PAR for refurbishment of coastal defence assets due to assets coming to end of their design lives	Whitby - Saltwick SSSI (geological) and SINC at mouth of River Esk.			1000%	5000%		Yes	26%	26%	938,000	4,387,000	4.68	80			01/04/2021	01/04/2021	01/05/2021	31/03/2022
YOS351C/000A/007A	Scarborough South Bay Beach Management Programme	SBC5	LDW/41055	Yorkshire	Yorkshire	Scarborough BC	LA		CM	Sea Flooding			TA04558825	Scarborough North Yorkshire, YO11	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	Scarborough Coastal Defence Strategy Review - Holbeck to Scalby Mills 2009 (approved)	SMP2 Monitoring recommendation to counteract the effect of longshore drift. Removal of excess sand accumulated at the toe of the defences. Excess sand creates a freeboarading effect allowing waves at hightide to run over existing low level seawall and flood properties. Sand is removed annually and deposited at the base of the Spa seawall providieing additional defence to the seawall toe. Beach in equilibrium due to longshore drift.	CAYTON, CORNELIAN AND SOUTH BAY SSSI. CAYTON AND CORNELIAN SINC.	50%	10%				No	209%	209%	50,000	10,000,000	200.00	50			28/01/2010	31/03/2010		
YOC500E/000A/007A	North bay Urgent Wall Improvement Phase 2			Yorkshire	Yorkshire	Scarborough BC	LA	North East	DEF	Coastal Erosion	0		TA03639068	North Yorkshire Coast	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	y	To provide protection to 382 properties that are at risk of loss. Sections of Rock amour defence are required as well as wave walls and slope stabilisation.	Scarborough castle cliffs SSSI	0%	0%	3%	30%		Yes	495%	495%	400,000	1,979,261	4.95	22		01/04/2019	15/05/2019	15/07/2019	15/07/2019	15/08/2020
YOS351F/000A/012A	Sandsend Coast Protection Scheme			Yorkshire	Yorkshire	North Yorkshire CC	LA	North East	DEF	Coastal Erosion			NZ86761232	Sandsend	North Yorkshire	Scarborough and Whitby Co Const	Scarborough and Whitby Co Const	SMP2 & Whitby Coastal Strategy	Problem - Unstable boulder clay and life expired revetment. Solution - Concrete stepped revetment and slope stabilisation	No significant issues identified			1000%	10000%		Yes	51%	100%	9,334,000	84,810,000	9.09	100			01/12/2012	31/12/2014	01/03/2015	31/07/2016

Appendix D Baseline Data and Environmental Constraints

Table D1. Baseline Data Signposting Table.

Issues and Objectives	Thematic review	SEA Receptor	Northumberland and North Tyneside SMP2 Action Plan		River Tyne To Flamborough Head SMP2	
			Natural and Built environment Baseline	Defining features and Issues	Natural and Built environment Baseline	Defining features and Issues
			Within the SMP2 study area		Within the SMP2 study area	
Environment	***Natural Environment***	***Biodiversity, Flora and Fauna***	***Appendix D*** **Natural Environment:** section D2 **Nature Conservation:** section D2.2 D2.2.2 International Designations: Special Areas of Conservation Special Protection Areas Ramsar sites (SUPPLEMENT A - boundary Maps) D2.2.3 National Designations: Sites of Special Scientific Interest (SUPPLEMENT A - boundary Maps) National Nature Reserves (NNRs) Areas of Outstanding Natural Beauty D2.2.4 Regionally and locally: important classifications Natural Areas Local Biodiversity Action Plans Local Nature Reserves Heritage Coast D2.2.5 Other conservation areas and habitats Sites of Nature Conservation Importance	***Appendix E*** Over all issues defined by PDZ area: 1 Scottish Border to Holy Island 2 Bamburgh to Boulmer 3 Seaton Point to Beacon Hill 4 Beacon Hill to Beacon Point 5 Newbiggin moor to Seaton Sluice 6 Seaton Sluice to River Tyne	***Appendix D*** **Natural Environment:** section D2 D2.2.2 **Nature Conservation:** section D2.2 D2.2.2 Designated sites International Designations: Special Areas of Conservation Special Protection Areas (Section 2: boundary maps, includes Ramsar sites) National Designations: Sites of Special Scientific Interest National Nature Reserves (NNRs) Areas of Outstanding Natural Beauty Regionally and locally important sites: Sites of Importance for Nature Conservation (SINCs) Local Nature Reserves (Section 1: MAGIC general search boundary maps) Other Conservation Areas and habitats: National Trust sites RSPB Reserves Natural Areas (areas 99 and 100) Maritime areas Coastal Dune Habitat National Parks Heritage Coast (Section 1: MAGIC general search boundary maps) Designated sites boundary maps: **Earth Heritage:** section D2.3 Littoral sediments Maritime cliffs and slopes Natural Area 100: Saltburn to Bridlington Littoral and sub-littoral chalk Littoral rock Maritime cliff and slopes Coastal vegetated shingle Inshore sublittoral sediments Littoral sediment	***Appendix E*** Issues and Objectives Over all issues defined by MU area **South Tyneside Area Non-Technical Summary** 4.4.1 Overview **Sunderland City Area Non-Technical Summary** 4.4.1 Overview **Easington Area Non-Technical Summary** 4.4.1 Overview (County Durham council) **Hartlepool Borough area Non-Technical Summary** 4.4.1 Overview **Redcar and Cleveland area Non-Technical Summary** 4.4.1 Overview **Scarborough area Non-Technical Summary** 4.4.1 Overview
	Earth Heritage	***Geology***	Earth Heritage: section D2.3 D2.3.2 Geological Conservation Review (GCR) Sites D2.3.3 Geological Interest of Natural Areas		***Appendix D*** Geological Sites (RIGS) list of Sites not presented	

		Coastal processes	Appendix C Baseline Process Understanding – Section 1 C1 Assessment of Shoreline Dynamics C1.1 Introduction (The local coastal process units) C1.2 General Overview Bedrock Geology Pleistocene Geology Coastal Geomorphology Impact of Colliery Waste on the Coastal Geomorphology Beaches Offshore Coastal Erosion Sediment Transport Relative Sea Level Change Mining Subsidence C1.3 Localised Coastal Process Understanding Unit 1 - Scottish Border to Saltpan How Unit 2 - Saltpan How to Harkess Rocks (including Holy Island) Unit 3 - Harkess Rocks to Castle Point Unit 4 - Castle Point to Seaton Point Unit 5 - Seaton Point to Beacon Hill Unit 6 - Beacon Hill to Snab Point Unit 7 - Snab Point to Beacon Point Unit 8 - Beacon Point to Seaton Sluice Unit 7 - Seaton Sluice to River Tyne **C2 Defence Assessment** Database information tables PDZ/MA/PU Maps - maps and defence locations Baseline Process Understanding - Section 2 **C3 Climate Change and Sea Level Rise** C3.2 Sea Level Rise C3.3 Storminess C3.4 Precipitation **C4 Baseline Scenarios** (present implications with NAI) over the three epochs (Years: 0 - 20 (2025), 20 - 50 (2055), 50 - 100 (2105)) for each Coastal Process Unit. Shoreline position maps. ***Appendix H*** **Estuary Assessment** H2.2 Open Coast – Estuary Interactions H3 Assessment of the River Tweed Estuary H4 Assessment of the River Aln Estuary H5 Assessment of the River Coquet Estuary H6 Assessment of the River Wansbeck Estuary H7 Assessment of the River Blyth Estuary H8 Assessment of the River Tyne Estuary H9 Summary		***Appendix C* Baseline Process Understanding** C1 Assessment of Shoreline Dynamics C1.3 Localised Coastal Process Understanding Units 1 – 43 C2 Defence Assessment C3 Climate Change and Sea Level Rise	

Issues and Objectives	Thematic review	SEA Receptor	Northumberland and North Tyneside SMP2 Action Plan		River Tyne To Flamborough Head SMP2	
			Natural and Built environment Baseline	Defining features and Issues	Natural and Built environment Baseline	Defining features and Issues
			Within the SMP2 study area		Within the SMP2 study area	
		Water	***Appendix K*** **Water Framework Directive Assessment** K3.1 Scoping the SMP2 – Data Collation K3.1.1 Transitional and Coastal water bodies (TraC) K3.1.2 Freshwater bodies (FWBs) K3.1.3 Groundwater bodies (GWBs) K3.1.4 Boundary issues K3.2 Defining Features and Issues K3.3 Assessment of the SMP2 Policy against the SMP2 Environmental Objectives K3.3.1 Environmental Objective WFD1 K3.3.2 Environmental Objective WFD2 K3.3.3 Environmental Objective WFD3 K3.3.4 Environmental Objective WFD4 K3.3.5 Water Framework Directive Summary Statements K4 Discussion and conclusions		***Appendix F*** **Water Framework Directive Assessment**	
		Air quality and climate factors				
	Contaminated land	***Soil***	***Appendix D*** **Contaminated Land:** Section D6 D6.2 Features			
	Landscape and character	***Landscape***	***Appendix D*** **Landscape and character:** section D3 D3.2 Landscape and Visual Features		***Appendix D*** **Landscape & Character**: section D3 D3.2 **Landscape and Visual Features:** D3.2.1 Area 14 - Tyne and Wear Lowlands D3.2.2 Area 15 - Durham Magnesian Limestone Plateau D3.2.3 Area 23 - Tees Lowlands D3.2.4 Area 25 - North Yorkshire Moors and Cleveland Hills D3.2.5 Area 26 - Vale of Pickering D3.2.5 Area 27 - Yorkshire Wolds	

Issues and Objectives	Thematic review	SEA Receptor	Northumberland and North Tyneside SMP2 Action Plan		River Tyne To Flamborough Head SMP2	
			Natural and Built environment Baseline	Defining features and Issues	Natural and Built environment Baseline	Defining features and Issues
			Within the SMP2 study area		Within the SMP2 study area	
Heritage	***Historic environment***	***Cultural heritage***	***Appendix D*** **Historic Environment**: section D4 D4.2 **Terrestrial:** D4.2.1 Scheduled Ancient Monuments (SAMs) D4.2.2 Listed Buildings D4.2.3 Registered Battlefields D4.2.4 Registered Parks and Gardens D4.2.5 Heritage Coast D4.2.6 North East Rapid Coastal Zone Assessment **SUPPLEMENT B** - complete list of all artefacts, buildings and structures of archaeological interest within 100m of the Northumberland Coastline D4.3 **Marine** no protected wrecks	Erosion / flood risk threatening heritage asset	***Appendix D*** **Historic Environment**: section D4 D4.2 **Terrestrial** - Scheduled Ancient Monuments (SAMs)National Parks, archaeological sites and listed buildings: D4.2.2 1 River Tyne to Souter Point (Management Units 1 -5) D4.2.3 2 Souter Point to Pincushion (Management Units 6 – 8) D4.2.4 3 Hartlepool Bay (Management Unit 12) D4.2.5 4 Tees Bay (Management Unit 13) D4.2.6 5 Coatham to Redcar (Management Unit 14) D4.2.7 6 Marske & Saltburn Sands (Management Unit 15) D4.2.8 7 Huntcliffe to Boulby (Management Units 16 – 18) D4.2.9 8 Cowbar to Sandsend Wyke (Management Units 19 - 22) D4.2.10 9 Whitby to Hundale Point (Management Units 23 – 25) D4.2.11 10 Hundale Point to Filey Brigg (Management Units 26 – 29) D4.2.12 11 Filey to Flamborough Head (Management Units 30 – 32) D4.3 **Marine** - Protected wreck sites D4.3.1 Seaton Carew Filey Bay wreck not included	
Commercial	***Current and future land use***	***Population***	***Appendix D*** **Current and Future Land Use:** section D5 D5.3 Features D5.4 Future Land Use/Planning Targets set by Local Authority Development Plans		***Appendix D*** **Current & Future Land Use:** section D5 D5.3 Features D5.3.1 South Tyneside District Council D5.3.2 Sunderland City Council D5.3.3 Former District of Easington Council (now Durham County Council) D5.3.4 Hartlepool Borough Council D5.3.5 Redcar & Cleveland Borough Council D5.3.6 Scarborough Borough Council D5.3.7 East Riding of Yorkshire Council D5.4 Future land use /planning targets as set by local plans	

Issues and Objectives	Thematic review	SEA Receptor	Northumberland and North Tyneside SMP2 Action Plan		River Tyne To Flamborough Head SMP2	
			Natural and Built environment Baseline	Defining features and Issues	Natural and Built environment Baseline	Defining features and Issues
			Within the SMP2 study area		Within the SMP2 study area	
Recreational		***Population***	***Appendix D*** **Current and Future Land Use**: section D5 D5.3 Features D5.4 Future Land Use/Planning Targets set by Local Authority Development Plans	Erosion / flood risk of recreational assets (e.g. beach, golf course) Erosion / flood risk for coastal access		
Hard assets		***Material assets***	***Appendix D*** **Current and Future Land Use**: section D5 D5.3 Features D5.4 Future Land Use/Planning Targets set by Local Authority Development Plans	Erosion / flood risk threatening development zones and material assets Redevelopment plans within the coastal zone	***Appendix C* Baseline Process Understanding** **C2 Defence Assessment** Details the condition of the hard defences along the SMP coast between the River Tyne and Flamborough Head.	

Table D2. Key Environmental Constraints and Issues

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	Environmental Issues, Constraints and Opportunities	Natural and Built environment Baseline	Environmental Issues, Constraints and Opportunities
Biodiversity, Flora and Fauna	A large proportion of the coast is designated as sites of international or national nature conservation importance. The coastline provides a wide diversity of species and habitat, including low-lying sandy beaches, sand dunes, intertidal mud/sand flats and rocky shorelines, cliff and sea caves	Threat of invasive species Loss of habitat, particularly salt marsh and rocky shore and opportunities for habitat creation Recreational disturbance of protected habitats Inadequate management of designated sites Coastal squeeze	Vegetated sea cliffs, Vegetated cliffs of the Atlantic and Baltic coast, *Taxus baccata* (yew) woods of the British Isles, Reefs, Sea caves	
	Special Areas of Conservation: Berwick and North Northumberland Coast Tweed Estuary North Northumberland Dunes		**Special Areas of Conservation:** Durham Coast Castle Eden Dene Beast Cliff – Whitby (Robin Hood's Bay) Flamborough Head	ensure enhancement of the natural ecological features Intrusion of saline water to Castle Eden Dene SAC/SSSI/NNR Coastal Sand Dunes - habitat loss by coastal squeeze
	Special Protection Areas / Ramsar Sites Northumbria Coast Lindisfarne Farne Islands Coquet Island		**Special Protection Areas / Ramsar Sites** The Northumbria Coast SPA and Ramsar Teesmouth and Cleveland Coast SPA and Ramsar Flamborough Head and Bempton Cliffs SPA	
	Sites of Special Scientific Interest x 18 Northumberland Shore Tweed Catchment Rivers - England: Lower Tweed and Whiteadder Lindisfarne Bamburgh Coast and Hills Bamburgh Dunes The Farne Islands Newton Links Castle Point to Cullernose Point Howick to Seaton Point Alnmouth Saltmarsh and Dunes		**Sites of Special Scientific Interest** x 32 BOLDON PASTURES BOULBY QUARRIES CASTLE EDEN DENE CAYTON, CORNELIAN & SOUTH BAYS CLEADON HILL COWPEN MARSH DURHAM COAST FILEY BRIGG FLAMBOROUGH HEAD GRISTHORPE BAY & RED CLIFF HARTLEPOOL SUBMERGED FOREST	

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	**Environmental Issues, Constraints and Opportunities**	**Natural and Built environment Baseline**	**Environmental Issues, Constraints and Opportunities**
	Warkworth Dunes and Saltmarsh Coquet Island Hadston Links Cresswell Ponds Cresswell and Newbiggin Shores Low Hauxley Shore Tynemouth to Seaton Sluice		HARTON DOWN HILL HAWTHORN DENE HAWTHORN QUARRY HAYBURN WYKE HODDY COWS SPRING IRON SCAR & HUNDALE POINT TO SCALBY NESS NORTH BAY TO SOUTH TOLL HOUSE CLIFF NORTH YORK MOORS NORTHUMBERLAND SHORE REDCAR ROCKS ROBIN HOODS BAY: MAW WYKE TO BEAST CLIFF RUNSWICK BAY SALTBURN GILL SEAL SANDS SEATON DUNES & COMMON SOUTH GARE & COATHAM SANDS STAITHES-PORT MULGRAVE TEES & HARTLEPOOL FORESHORE & WETLANDS TYNEMOUTH TO SEATON SLUICE WHITBY-SALTWICK WEAR RIVER BANK	
	National Nature Reserves x 2 Lindisfarne Farne Islands		**National Nature Reserves** x 3 DURHAM COAST CASTLE EDEN DENE TEESMOUTH	
	Biodiversity Action Plans Saline lagoons Coastal saltmarsh and mudflat Coastal sand dune Whin grassland Rocky shore, reefs and islands Native woodlands Reedbeds Coastal heathland Maritime cliff and slope Lowland heathland Coastal birds Common seal	Saline lagoons issues: pollution; erosion; drying-out; rising sea levels; altering of the natural salinity profile and coastal defence works. The target for this habitat is to maintain the current extent of these lagoons by 2010. Coastal saltmarsh and mudflat issues: threat from land reclamation; disruption of coastal processes through coastal development causing erosion and drowning; pollution; invasive species and overgrazing and disturbance from recreational and military activity to birds. 2010 conservation targets to increase the extent of coastal saltmarsh to 326 ha, mudflat to 3,082 ha and increase extent of coastal saltmarsh extent in Northumberland by 2020. Coastal sand dunes issues: under threat from inappropriate management through over or under grazing; erosion from trampling and recreation and also from increased waved action brought about by the deflection of waves by hard sea defences. Coastal squeeze, coastal development, sand extraction, non-native and native invasive species. Target was to maintain extent by 2010 Whin Grassland issues: greatest threats include quarrying and intensification of agriculture. Also grazing, trampling, scrub invasion, woodland planting, golf course management and fragmentation. Targets: maintain the extent of 19 sites by 2010 and achieve favourable or recovering condition; Restore Whin grassland to offset historical losses by 2015 Rocky Shore, Reefs and Islands issues: under threat from oil spills and aggregate extraction, fishing (of particular treat to S. spinulosa reefs), mooring of vessels, both commercial and recreational. Native Woodland issues: regeneration of non-native tree species, lack of appropriate management, resulting in lack of regeneration and no control over grazing, invasive species, fragmentation. Species action plans are in place for red squirrel, dormouse, black grouse and farmland birds. 2015 Targets to achieve favourable condition of 70% of ancient and semi-natural woodland and 30% of plantation on ancient woodland sites have been restored or are under gradual restoration.	Habitats within the SMP boundaries of particular concern Coastal Sand Dunes Biodiversity Action Plans - not identified within the SMP2	coastal squeeze (including potential threat to little tern habitat) Ensure that shoreline management does not have a detrimental impact on saltmarsh habitat. Coastal Sand Dunes - habitat loss by coastal squeeze

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	**Environmental Issues, Constraints and Opportunities**	**Natural and Built environment Baseline**	**Environmental Issues, Constraints and Opportunities**
		Reedbed issues: Pollution (including nutrient enrichment (eutrophication), water runoff and mine water, fly tipping, land drainage and abstraction; inappropriate management, causing dying out and subsequent scrub encroachment, and succession to woodland; habitat loss due to development, grazing and agriculture; recreational activities; lack of data on quality and extent; 2010 targets to maintain habitat Coastal Heathland issues: Overgrazing, scrub and bracken encroachment and inappropriate cutting regimes. targets: Offset historical losses by restoring 1ha of heathland by 2015, increase extent of heathland in Northumberland by 0.5ha by 2020. Maritime Cliff and Slope issues: Erosion is a significant threat through agricultural drains discharging from cliff faces, heavy trampling from recreational pressure, and through increased storm frequency from climate change and sea level rise. Invasive species from agricultural runoff out competing natural cliff top vegetation and over/ under-grazing or cutting regimes. 2010 targets were to maintain habitat. No species actions plans in place Lowland Heathland issues: Lack of management and habitat fragmentation, agricultural fertilizer and intensive livestock grazing. Species action plans are in place for farmland birds. targets: Lowland heathland to be restored to offset historical losses by 2015, increase the extent of this habitat by 2020		
	Local Nature Reserves x 3 **Heritage Coast** x 1 The Northumberland Heritage Coast and AONB (Berwick to the Coquet estuary) Renown for its long sandy beaches, dunes, high rocky cliffs, isolated islands and shortage of visitors: Cocklawburn - for its ancient fossil beds; Warkworth - for its large expanse of sand dunes; Low Newton - for its rare marine species; and Bamburgh - for its coastal sand dunes protected behind a row of reefs. Also designated for its bird life: **RSPB Reserve** x 1 (at Coquet Island) **National Trust** x 6 owned sections of the coast **Sites of Nature Conservation Importance** x 20 **Natural Profile Area** Natural Area Profile 98: Northumberland Coast Natural Area Profile 1: North Northumberland Coastal Plain Natural Area Profile 5: Northumbria Coal Measures The Mid North Sea Marine Natural Area		**Local Nature Reserves** x 18 **Heritage Coast** x 3 areas Durham North Yorkshire and Cleveland Flamborough Head **RSPB Reserves** x 1 (Bempton Cliffs) **National Trust** x 15 owned sections of the coast **National Parks** x 1 North York Moors National Park - designated in 1952 to conserve the areas of heather moorland, traditional farmland, attractive villages, woodlands and 25 miles of the coastline, characterised by rugged cliffscapes and picturesque fishing villages. **Natural Profile Area** x 1 Natural Area Profile 99: Tyne to Tees Coast	
Soil, Geology and Geomorphology	The Northumberland coastline is of high geological and geomorphological interest. which are reflected in the designation of SSSIs with geological interest features, and number designated Geological Conservation Review (GCR) sites		Geomorphologically, the coast can be divided into three distinct units: The Tyne and Wear/Durham coast comprises Magnesian Limestone overlain by glacial till and importantly, has been heavily modified by anthropogenic coal mining activity. The northern part of the Yorkshire coast is dominated by Jurassic sandstones and mudstones overlain by glacial till and has been sculpted into a headland-bay form. Many of the bays are deeply incised into the general trend of the coast. The southern part of the Yorkshire coast comprises high chalk cliffs ending in the promontory of Flamborough Head.	
	Sites of Special Scientific Interest with geological features x 6 Lindisfarne		**Sites of Special Scientific Interest with geological features** x Geological Conservation Review (GCR) sites	

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	**Environmental Issues, Constraints and Opportunities**	**Natural and Built environment Baseline**	**Environmental Issues, Constraints and Opportunities**
	Bamburgh Coast and Hills Castle Point to Cullernose Point Howick to Seaton Point Cresswell and Newbiggin Shores Low Hauxley Shore **Geological Conservation Review (GCR) Sites** x 11 **Geological Interest of Natural Areas**		The Tyne to Tees Coast contains several nationally important geological sites, most of which have been designated as SSSIs, GCR sites which is a reflection of the geological or geomorphological value of the coast. Features support a wealth of flora and fauna. Key features associated with flora and fauna include: In particular Littoral sediments and Maritime cliffs and slopes. **Natural Area 100: Saltburn to Bridlington**: Littoral and sub-littoral chalk, Littoral rock, Maritime cliff and slopes, Coastal vegetated shingle, Inshore sublittoral sediments, Littoral sediment associated with flora and fauna.	
	The underlying geology provides a strong influence on the behaviour of the Northumberland coastline and is formed in general by two distinct series: the harder Carboniferous Limestone and Millstone Grits, of the Lower and Upper Carboniferous periods respectively, dominating the northern section of the coast from the Scottish border down to Alnmouth, and the less resistant Middle, Upper Carboniferous, Coal Measures extending down to the River Tyne. Erosion of the shoreline is mainly influenced by the geomorphology and exposure to wave and tidal action. Other factors include general weathering, chemical and bio-chemical deterioration and ground water. Erosion is slow in comparison to other areas of the English coastline. The most significant changes could arise from sea level rise, in effect swamping key rock outcrops, such as at Boulmer, Marden Rocks at Alnmouth, the Bondi and Hadston Carrs to the north of Druridge Bay, and the rocks fronting Cresswell.			
Coastal processes	The typical pattern of wave climate offshore records a dominant wave approach from the north and north east with significant but reduced frequency of exposure from directions south of east. The general pattern of drift is north to south. The only significant influence on this nearshore drift system is in the area of Holy Island and the Farne Islands where the whole coastal and nearshore platform has developed in line with the prevailing wave direction. Movement of material is anticipated to be onshore-offshore with little direct interaction between bays. Overall many of the bays are thought to have reached a relatively stable condition but still subject to movement longshore depending on wave conditions. Druridge and Newbiggin in particular have not demonstrated such stability. Druridge shows continued loss of the backshore and associated with this erosion. Newbiggin a lack of sediment supply, associated with defences forward of the natural shoreline and exacerbated by mining subsidence has resulted in considerable pressure for erosion. A scheme is now in place that aims to address these issues by artificially drawing forward the shoreline creating conditions for a sustainable recharge of the foreshore.			
Water and Hydromorphology	**Transitional and Coastal (TraC) water bodies** x 12 Not designated: Northumberland North - Good Ecological Status Holy Island and Budle Bay - Poor Ecological Status Farne Islands to Newton Haven - High Ecological Status	**SMP2 WFD** Discussion and conclusions Farne Islands to Newton Haven water body (MA06, MA08, MA07 and MA09): Potential to fail to meet Environmental Objective WFD1 (no changes affecting high status sites).	**2 Coastal water bodies** 4 **Transitional water bodies** **Freshwater bodies** (scoped out)	Potential deterioration in respect to WFD were highlighted in 2009 as MA13, MA19, and MA20. Groundwater investigation for Tees Bay (MA13) Avoid disruption to existing ecological interests (NAI advised to be considered) at Cowbar Cottages (MA19)

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	**Environmental Issues, Constraints and Opportunities**	**Natural and Built environment Baseline**	**Environmental Issues, Constraints and Opportunities**
	Northumberland South - Good Ecological Status Hadston Links and Cresswell Ponds - Not assessed Tyne and Wear - Moderate Ecological Status Tweed - Good Ecological Status Aln - Not assessed Heavily modified waterbodies: Coquet - Not assessed Wansbeck - Not assessed Blyth - Good Ecological Potential Tyne - Moderate Ecological Potential **Freshwater bodies** x 12 **Groundwater bodies** x 4	HTL for the defence of property and assets of Beadnell village (MA08) could result in the loss of highly valuable rocky outcrop and sand foreshores. (maintenance identified as HRA IROPI and compensation of loss/deterioration of habitats identified) Annual topographic surveys required at Holy Island (MA04) and monitoring of erosion rates around the outfall of Meggie's Burn (MA23). Investigations will be needed into the management options for the mouth of the Wansbeck estuary (MA21): ecological impacts of the option of removing the weir. next SMP recommendations: Boundary issues: Boundary between MA04 and MA05 adjusted to align with the water body boundary between the Holy Island & Budle Bay and Northumberland North water bodies. Unless current boundary is most representative of coastal processes in the area. MA19 and MA20, could align with the Northumberland South and Tyne & Wear water bodies ground water bodies may be impacted by SMP	**8 Groundwater bodies**	Investigations at Port Mulgrave (MA20) to investigate maintenance of the old harbour walls. Potential deterioration in Ecological Status from contamination and erosion rates of the coastline: monitoring advised within MA05, MA08, MA09, and MA10 potential saline intrusion into the Wear Magnesian Limestone GWB at MA05. Monitoring advised. Boundary issues MA11 and MA12 is advised to align with the water body boundary between the Yorkshire North and Tyne and Wear water bodies
Landscape	**The Northumberland Coast Area of Outstanding Natural Beauty (AONB)** was designated in 1958 and covers 39 miles of coast from Berwick to the Coquet estuary. some of the most dramatic coastal scenery in the country with a multitude of special features. sweeping sandy beaches, rolling dunes, high rocky cliffs and isolated islands area steeped in history, covering 7000 years of human activity the host of conservation sites testify to the great variety of wildlife and habitats found within the AONB, and highlight its importance in nature conservation			
	Landscape Character Areas Area 1 North Northumberland Coastal Plain Area 13 South East Northumberland Coastal Plain Area 14 Tyne and Wear Lowlands **Natural Profile Areas** see flora and fauna section		**Landscape Character areas** Area 14 Tyne and Wear Lowlands Area 15 Durham Magnesian Limestone Plateau Area 23 Tees Lowlands Area 25 North Yorkshire Moors and Cleveland Hills Area 26 Vale of Pickering Area 27 Yorkshire Wolds **Natural Profile Areas** see flora and fauna section	
Material assets	There are many material assets along the SMP coastline including urban centres, ports, roads, railways and power stations. All material assets of importance that could be at risk from coastal erosion are currently being defended.	Erosion / flood risk threatening material assets Erosion / flood risk threatening development zones and material assets Redevelopment plans within the coastal zone		
Population and Land use	The majority of urban population is within 30 km of the coastline. The north coastline is characterised by rural areas and smaller towns and villages. In the south lies the major conurbation of Newcastle. The major areas of urban form running from north to south are: Berwick-upon-Tweed; Seahouses; Amble; Newbiggin-by-the-Sea; Blyth; North Tyneside. The urban areas include major areas of port and tourism development alongside residential uses. Industrial areas along the coast include shipbuilding, heavy engineering, chemical engineering and mining. The region has been severely affected by changes in the national and international economy and shifting employment patterns.	Recreation - Erosion / flood risk of recreational assets (e.g. beach, golf course). Erosion / flood risk for coastal access	The majority of urban form in the study area is located in the 30km wide strip of the coastal zone. Dominated by residential uses it also includes port development and tourism development. Major conurbations are Newcastle and Sunderland with the coastline moving southward characterised by rural coastline and smaller towns and villages. Major areas of urban form North to South are Tyneside; Sunderland Seaham, Hartlepool, Recar, Marske by the Sea, Saltburn by the Sea, Whitby, Scarborough, Filey. The region has been severely affected by changes in the national and international economy and shifting employment patterns,	

SEA Receptor	Northumberland and North Tyneside SMP2 action Plan		River Tyne To Flamborough Head SMP2	
	Natural and Built environment Baseline	**Environmental Issues, Constraints and Opportunities**	**Natural and Built environment Baseline**	**Environmental Issues, Constraints and Opportunities**
	Large areas of the coast, particularly in the south of the study area, contain pockets of severe social deprivation and qualify for various levels of European Assisted Area Status. Tourism development occurs where the coast is generally more rural and there are important historical and natural attractions. Tourism does occur throughout the area but is specifically concentrated to the north, towards Lindisfarne and Bamburgh. Councils Northumberland County Council North Tyneside Council		however there are residual areas of coast are associated with shipbuilding; heavy Engineering; chemical engineering. Tourism development occurs at intervals from the River tyne to Flamborough Head, but is specifically concentrated in the south, where the coast is generally more rural in character. **Councils** South Tyneside District Council Sunderland City Council County Durham Council Hartlepool Borough Council Redcar & Cleveland Borough Council Scarborough Borough Council East Riding of Yorkshire Council Future land use /planning targets:	
Historic Environment	The heritage features along the Northumberland coast portray a long, and often bloody, legacy. This is especially true for the north as a result of the ongoing border disputes between England and Scotland, which has resulted in the construction of numerous castles. The history of the area dates back to the Neolithic times, whilst many of the scheduled monuments have a religious theme due to the areas close association with early Christianity in England. The history to the south is illustrated by its industrial heritage, which is mainly linked to fishing and coal mining.	Erosion / flood risk threatening heritage asset	From the south of the River Tyne to Flamborough Head, the strong industrial heritage of this area of the coastline, is coupled with the rural legacy of the more southern areas providing a diverse range of terrestrial heritage. It is home to some of the country's most outstanding national monuments (such as Whitby Abbey) and a wealth of archaeological features.	
	Designations located within 1 km of the Northumberland coastline: 35 Scheduled Monuments 43 Registered Battlefields 3 Registered Parks and Gardens The North Northumberland Heritage Coast There are no marine heritage features Several features of heritage interest have been identified as being at high risk from coastal erosion (reported in the North East Rapid Coastal Zone Assessment: Phase 1 and Phase 2 (2008, 2010)		Designations located within 1 km of the coastline from the River Tyne to Flamborough head : 36 Scheduled Monuments 1 Protected wreck (Seaton Carew) Heritage Coast:Durham, North Yorkshire and Cleveland, and Flamborough Head	
Air quality and climate factors	The north-east coast is believed to be still responding to changes during the last 10,000 years when sea levels rose rapidly, flooding the North Sea Basin, but there is now concern over human-induced acceleration in sea level rise due to climate change. Relative sea level change depends upon changes in global sea level (eustatic change) and in land-level (isostatic change). Isotstatic change is the change in land level as the crust slowly readjusts to unloading of the weight of the ice since the last Ice Age. Therefore, areas which were covered by ice, i.e. northern England and Scotland, have been experiencing a rise in land levels over the last few thousand years, whereas the southern areas of England has been subsiding. Tees Bay is approximately at the fulcrum of the see-saw and therefore remains relatively stable			

Table D3. Issues and Objectives by Coastal Protection Authority (taken from the Chapter 7 of each SMP2 Main Document)

SMP2 overview of approach and main issues going forward within each Council Area (a full list of objectives for each zone is presented in Appendix E of the Northumberland to North Tyneside SMP2 and River Tyne to Flamborough Head SMP2)
Northumberland County Council and North Tyneside Council PDZ 1: *Scottish Border to Budle Point, including Holy Island.* Maintain the naturalness of the undefended areas of coast. Protect areas of high economic and socio-economic value from sea flooding and coastal erosion. Maintain and enhance ecological interest and amenity benefits. Adapt planned and existing land uses to accommodate ongoing coastal change, including erosion and sea level rise. Relocate sections of car parks and caravan parks where necessary. PDZ 2: *Bamburgh to Seaton Point* Allow natural evolution over the majority of the frontage to maintain and enhance its landscape, tourism and environmental value. To protect major commercial or residential areas such as Seahouses Harbour, Beadnell Village and Beadnell Harbour. Local defences to protect the overall integrity of coastal communities where sustainable to do so, although not necessarily using linear defence structures. Realignment of sections of highway Maintenance of defence to coastal communities, such as at Boulmer. PDZ 3: *Seaton Point to Beacon Hill* Allow natural evolution over the majority of the frontage to maintain and enhance its landscape, tourism and environmental value. To protect commercial centres and regeneration opportunities. To enhance the natural environment through managed realignment of flood defences within the River Aln and River Coquet estuaries. Adapt planned and existing land uses to accommodate ongoing coastal change, including erosion and sea level rise. Re-location of foreshore access points. Re-location of sections of caravan parks, golf courses and car parks where necessary. Maintenance of defences around Warkworth Harbour. Erosion risk at Amble Cemetery. PDZ:4 *Beacon Hill to Beacon Point* Manage evolution over the majority of the frontage to maintain and enhance its landscape, tourism and environmental value. To protect industrial areas and regeneration opportunities. Managing the response of dunes under rising sea levels and storm attack. Managing the erosion of colliery spoil beaches and coastal slopes. Realignment of sections of highway, especially near Snab Point. Realignment of sections of car park, especially in northern Druridge Bay and near Snab Point. Delivering a balanced and affordable approach to sustainable long term management at Low Hauxley. PDZ: 5 *Newbiggin Moor to Seaton Sluice* Maintain defence to urban and industrial areas such as Newbiggin-by-the-Sea and Blyth Harbour. Manage evolution over undefended frontages to maintain and enhance landscape, tourism and environmental value. Re-location of sections of caravan parks and golf courses where necessary. Management of the risk of sea flooding to the town of Blyth and dune erosion along Blyth South Beach. PDZ: 6 *Seaton Sluice to River Tyne (North Shields Fish Quay)* Maintain protection to property and infrastructure against erosion and sea flooding. Allow the natural development of undefended sections of frontage. Maintaining largely Victorian era defences along North Tyneside. Managing the transition between defended and undefended sections of coast.
South Tyneside Council <u>Northern section of coast (developed area)</u>

Ensuring good integrated management of the frontage in relation to current activities and regeneration plans.
The need to ensure enhancement of the natural ecological features.

Southern section of coast (more natural frontage)
the main issues are the management of potential pollution issues and the management of the retreating coastline.
planned relocation of car parks and possibly the coastal road associated with the retreating coastline

Sunderland City Council

Maintenance and major refurbishment of the linear defences developments of defence actions need to be integrated with the proposed regeneration plan. Southern extent major refurbishment work and reconstruction is to be undertaken on-going investigation into the Halliwell Banks quarry. Potential contamination.
Long term steepening of nearshore area.
Stability of cliffs
Risk at the Bents
Erosion of area south of Sunderland and potential impact on transport infrastructure.
Potential loss of beaches
Defence condition and vulnerability to loss of material at the toe.

County Durham Council

Potential contamination from erosion of the cliff line to the south of the harbour
Regeneration of the area
Critical to management of the coast is the change occurring on the shore as mining waste continues to erode
Likely behaviour of the beaches to change over the next 20 years.

Hartlepool Borough Council

Recent detailed management to the north of Hartlepool and the Headland through to the marina.
Specific schemes identified at the Headland, in front of the Town walls and the marina defences.
Detailed proposals are being developed for North Sands.
Concern over condition of defences in front of Seaton Carew. Management and maintenance required to development of the Seaton Carew sea front.
Management plan required for Seaton Dunes. Managed realignment requires taking forward in an appropriate manner.
Action plan and monitoring requirements at three general areas: North Hartlepool, Hartlepool Bay and Seaton Carew.

Redcar and Cleveland Borough Council

Potential flood risks associated with the policies for natural realignment of the dunes at Coatham and within the Tees
Uncertainty associated with cliff erosion rates, coupled to foreshore evolution for Marske to Saltburn frontages
Uncertainties will determine the timing for intervention at Marske and are critical to the management at Saltburn.
Develop a strategy for Saltburn to include longer term development management at Marske
Recently concluded strategy at Skinningrove sets out a plan for refurbishment of defences
Rates of erosion cliff remains uncertain and requires long term monitoring (area of coast to the east). Most critical at Cowbar and links to the management of Staithes.

Scarborough Borough Council

Common to each area is the need to better understand and monitor erosion and instability of the coastal cliffs.
On-going concern over condition of defences at Staithes, Runswick Bay and Robin Hood's Bay
At Whitby the condition of the piers, the management of beach levels and the future management at Sandsend all require prompt action.
Strategies have been developed over the Scarborough frontages
Further south the principle issues relate to cliff instability and erosion rates, particularly at Cayton Bay, Filey and the smaller communities in Filey Bay.
Specific concerns at Osgodby Point and Flat Cliffs where the policy is for managed realignment. Need for a co-ordinated plan to address loss of properties
General erosion of the cliff line which may have long term implications for land management.

Section C1 - Habitat Studies

In addition to the mapping exercises identified above two habitat studies have been undertaken specifically to address and consider further the outcomes of implementing the preferred policies of the Northumberland to North Tyneside SMP2.

The first of these studies published in October 2010 is the Northumberland and North Tyneside Rocky Foreshore 'Coastal Squeeze' Study (Royal Haskoning, 2010). The aim of which was to provide a quantitative assessment of the gains and losses of inter-tidal rocky reef and foreshore habitat associated with implementation of the preferred policies of the second generation Shoreline Management Plan (or 'SMP2'). The final study report stated that in terms of baseline conditions, the present-day extent of rocky foreshore calculated within each of the PDZs (within the Northumberland to North Tyneside SMP area) is presented below. In total there is some 657.1ha of rocky foreshore within the SMP2 area, with approximately two-thirds located within PDZ2 (40%) and PDZ1 (26%). The conclusions of the study can be summarised as follows:

- With sea level rise, it has been calculated that all PDZs will lose rocky foreshore area due to submergence under rising sea levels between the baseline and the three future epochs. Considering the SMP2 area as a whole, the loss due to submergence is 13.2ha by 2025, 48.0ha by 2055 and 117.2ha by 2105.
- Based upon the SMP2 erosion lines, it has been calculated that all PDZs will gain rocky foreshore area due to emergence as cliffs and dune erode landwards between the baseline and the three future epochs. Considering the SMP2 area as a whole, the gain due to erosion is 8.8ha by 2025, 25.2ha by 2055 and 81.3ha by 2105.
- Considering the SMP2 area as a whole, there will be a net loss of rocky foreshore of 4.5ha by 2025. This represents 0.7% of the baseline area. By 2055, the loss is projected to have increased to 22.8 ha, representing 3.5% of the baseline, and by 2105 some 35.9ha, or 5.5% of the baseline, will have been lost.
- The gains in habitat will occur where policies of 'No Active Intervention' or 'Management Realignment' are applicable. Where 'Hold the Line' is the preferred option, no new rocky foreshore will emerge as the cliffs or dunes will be stabilised in position, generally by coastal defence structures.

The study also considered whether there are any other areas of opportunities for rocky foreshore creation, beyond that provided by 'NAI' or 'MR' policies. This only arises if there is an existing 'Hold the Line' policy which could be overturned on the basis of providing compensatory habitat for the losses observed elsewhere. The study considered the Policy Units where HTL line is the preferred policy and concluded that no further opportunities for rocky foreshore creation beyond those delivered by NAI or MR policies from the SMP2 were identifiable.

The second study is the Northumberland County Council Cell 1 Intertidal Habitats Study (Martin Wright Associates, 2014). The study considers the future evolution of intertidal[1] Biodiversity Action Plan (BAP) habitats[2] along the Cell 1 coastal frontage based upon two scenarios; the first assesses the potential habitat change, both losses and gains, associated with rising sea levels (i.e. current situation); and, the second scenario assesses the impact of coastal defence policies identified in the current Shoreline Management Plans (SMPS). The study divided the Cell 1 coastline into 19 areas, principally based upon geology.

The most dominant BAP habitat type along the coastline was found to be sand and mudflats, followed in scale by coastal sand dunes and maritime cliffs and slopes. No shingle and gravel

[1] Intertidal habitats are those that fall between limits of the tidal rise and fall.

[2] Biodiversity Action Plan habitats are those identified as being the most threatened and require conservation action. Although initially identified under the UK Biodiversity Action Plan, the UK Post-2010 Biodiversity Framework retains these as a measure of biodiversity conservation requirements.

beaches were identified in any of the 19 Cell 1 sub-units. Many of the supra-tidal[3] features (with the exception of Maritime cliffs and slopes) are to be found in the northern section of Cell 1. This reflects the generally less rugged nature of the coast and flatter hinterland. Maritime cliffs and slopes occur in the mid to southern sections of Cell 1, which is reflected in the shaping of the coastline in this section.

The Lindisfarne area contains the largest and most diverse range of BAP habitat. It contains the vast majority of sand and mudflat BAP habitat and all of the coastal and floodplain grazing marsh habitat which has been identified along Cell 1. Druridge Bay and Alnmouth are also important areas for the rarer habitat, namely saltmarsh, saline lagoons and reedbed.

The study identified the following key points:

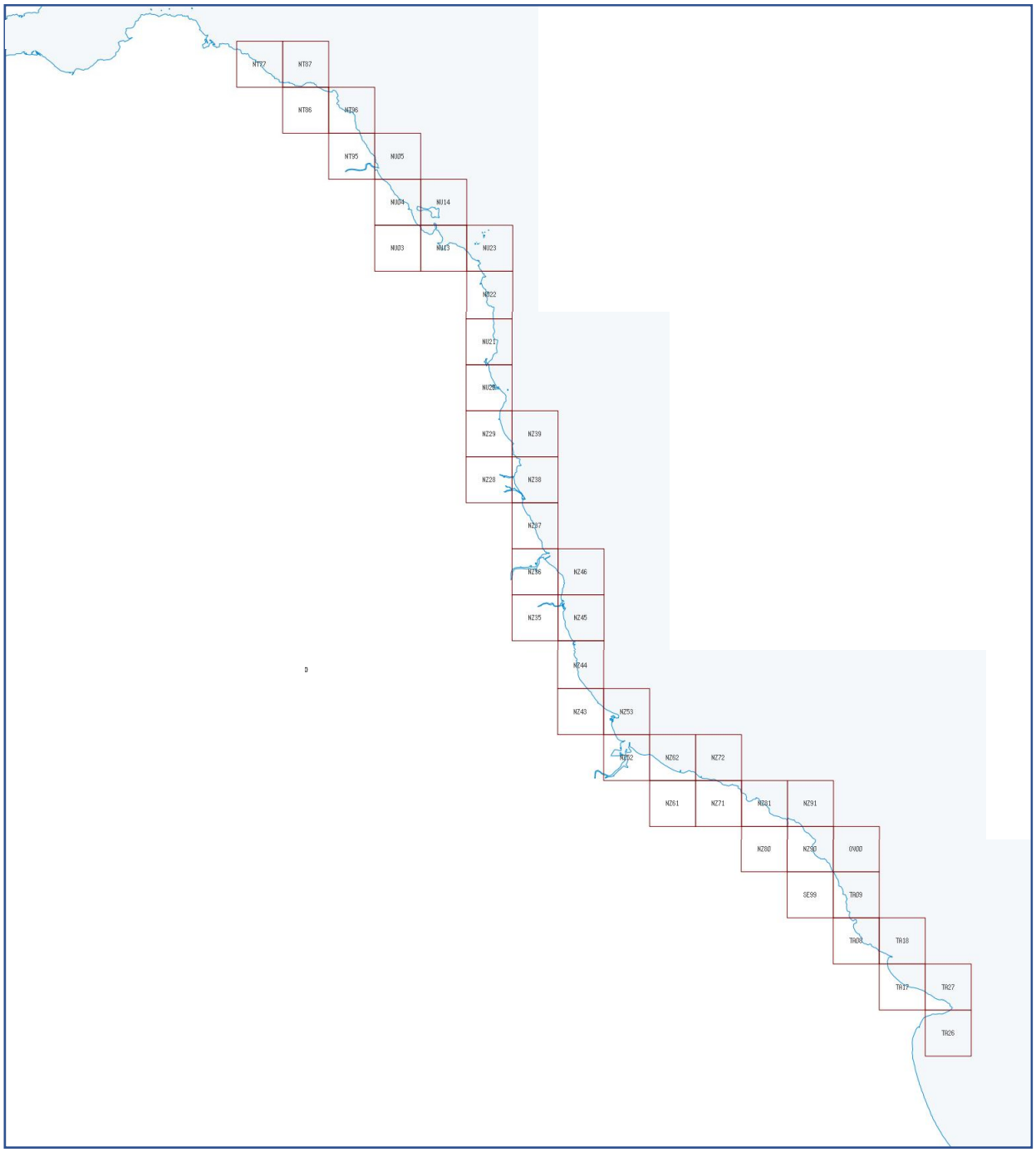
- The habitat change under the baseline scenario identifies a loss of 4ha of saltmarsh habitat over the study period, which, whilst small in cumulative extent, comprises over a tenth of the available resource within the Cell 1 study area. The loss of habitat is principally likely to occur in the Lindisfarne and Alnmouth subunits.
- Over the study period, under the baseline scenario, the extent of sand and mudflat habitat increases with a cumulative change of 215ha over the study period, although the gain is relatively small in comparison to the extent in the study area, despite a minor loss in the first epoch (i.e. over the first 20 years). The gain of habitat principally is likely to occur in the Lindisfarne and Durham Coast sub-units with additional gains identified in the Seahouses, Alnmouth, Druridge Bay, Whitley Bay, Hartlepool, Staithes, Whitby and Scarborough sub-units.
- Over the study period under Scenario 2 (i.e. implementation if SMP2 policy), the saltmarsh habitat sees gains in habitat extent in each epoch (although very small in the second epoch (i.e. 20 to 50 years)), with a gain of approximately 6ha cumulatively up to 2113. The majority of the habitat gain is achieved in the Alnmouth sub-unit, with additional gains in the Lindisfarne area.
- The habitat changes for intertidal sand and mudflat is similar to that identified under the baseline scenario, with a cumulative gain of 95ha over the study period despite a loss in the first epoch. The Lindisfarne area comprises the main area of habitat change with changes also identified in the Alnmouth, Druridge Bay, Seahouses, Whitley Bay, Durham Coast, Staithes and Scarborough sub-units.
- Although the extent of sand and mudflat habitat increases over the study period under Scenario 2, the implementation of coastal defence policies will inhibit the natural development of the intertidal habitat identified in Scenario 1. As a result, a loss in each epoch with a cumulative loss of 120ha up to 2113 is attributable to the policies in the Shoreline Management Plans.
- With regards to saltmarsh habitat, the habitat gains identified in Scenario 2 are greater due to the losses identified in Scenario 1. Whilst there is a comparative loss in the third epoch, a gain of 10ha is attributable to the Shoreline Management Plans over the study period.

The study also considered, at a high-level, habitat creation opportunities and identified a total of 18 prospective and potential sites, comprising 16 intertidal areas (saltmarsh and sand and mudflats) and 2 supra-tidal (sand dunes) with a maximum area of 1,300ha. The compensatory areas identified in Cell 1 are located in areas where SMP2 policies are "Managed Realignment" or "No Active Intervention", where landward regression in response to sea level rise will occur naturally as land is of relatively low value – this occurs generally in floodplains and/or on agricultural land. At these locations, sand and mudflats and saltmarsh will develop naturally. Most of the habitat creation

[3] Supra-tidal habitats are those that fall above the limit of the tidal influence.

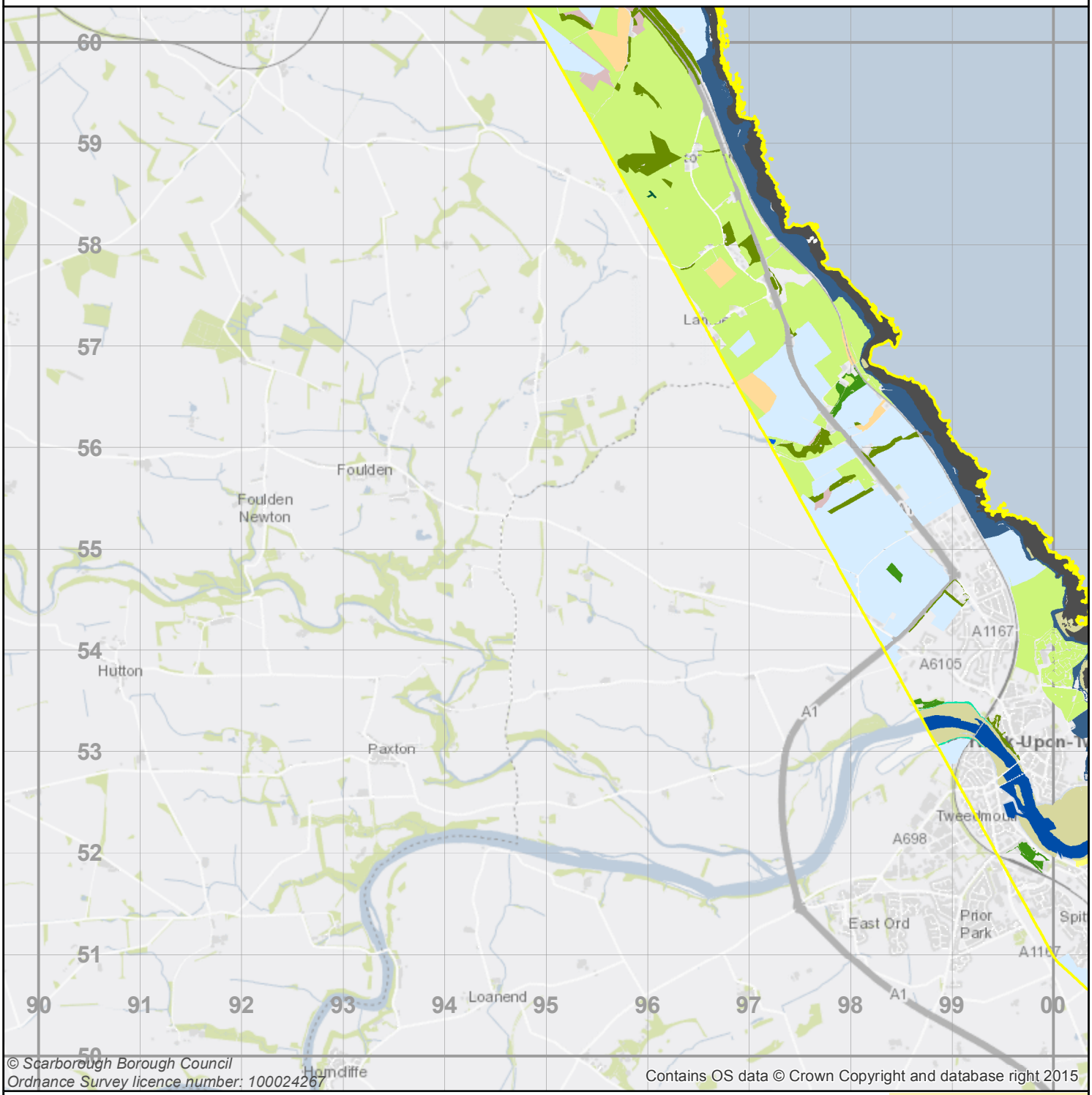
opportunities are located in areas where habitat loss is the greatest however this is not always possible, for example around Scarborough. The report concluded that it is anticipated that sufficient opportunities exist within the Cell 1 study area for the development of compensatory inter-tidal habitat to offset the losses identified.

Appendix E BAP Habitat mapping

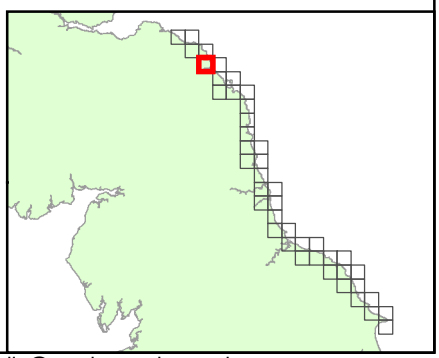


Key for location of BAP habitat mapping tiles

NT95



- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS0 - Littoral sediment
- LS3 - Coastal saltmarsh
- LS6 - Intertidal shingle
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland
- WC0 - Coniferous woodland



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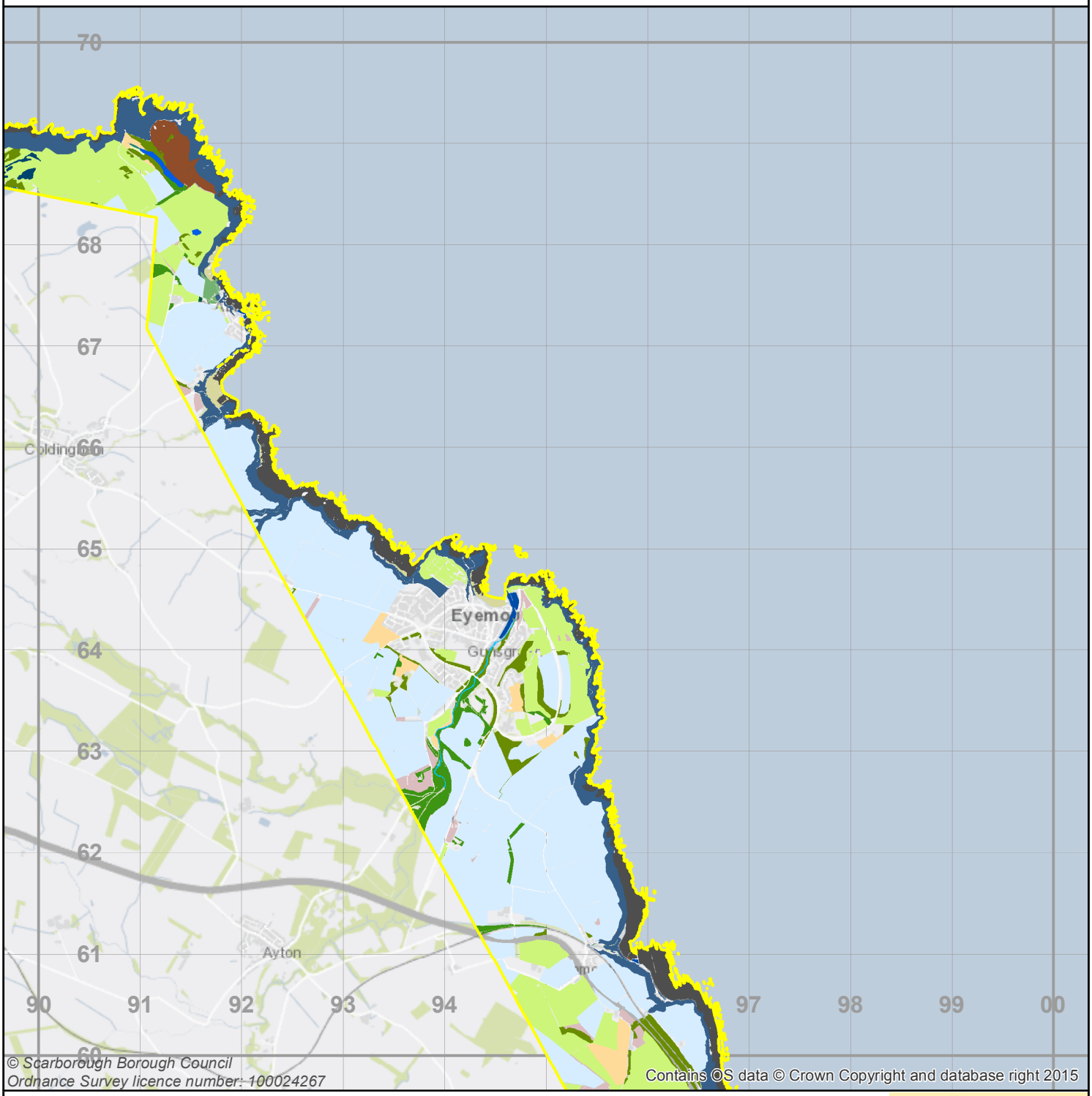
NT96



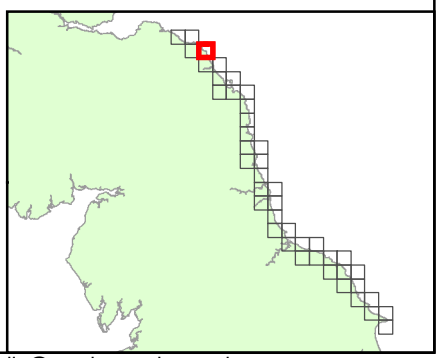
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- EM11 - Reedbeds
- GI0 - Improved grassland
- GM1 - Festuca rubra maritime grassland
- GN1Z - Other lowland meadows
- GN3 - Coarse neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS4 - Intertidal mudflats
- LS6 - Intertidal shingle
- LSZ - Other littoral sediment
- RE1 - Natural rock exposure features
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland
- WC0 - Coniferous woodland



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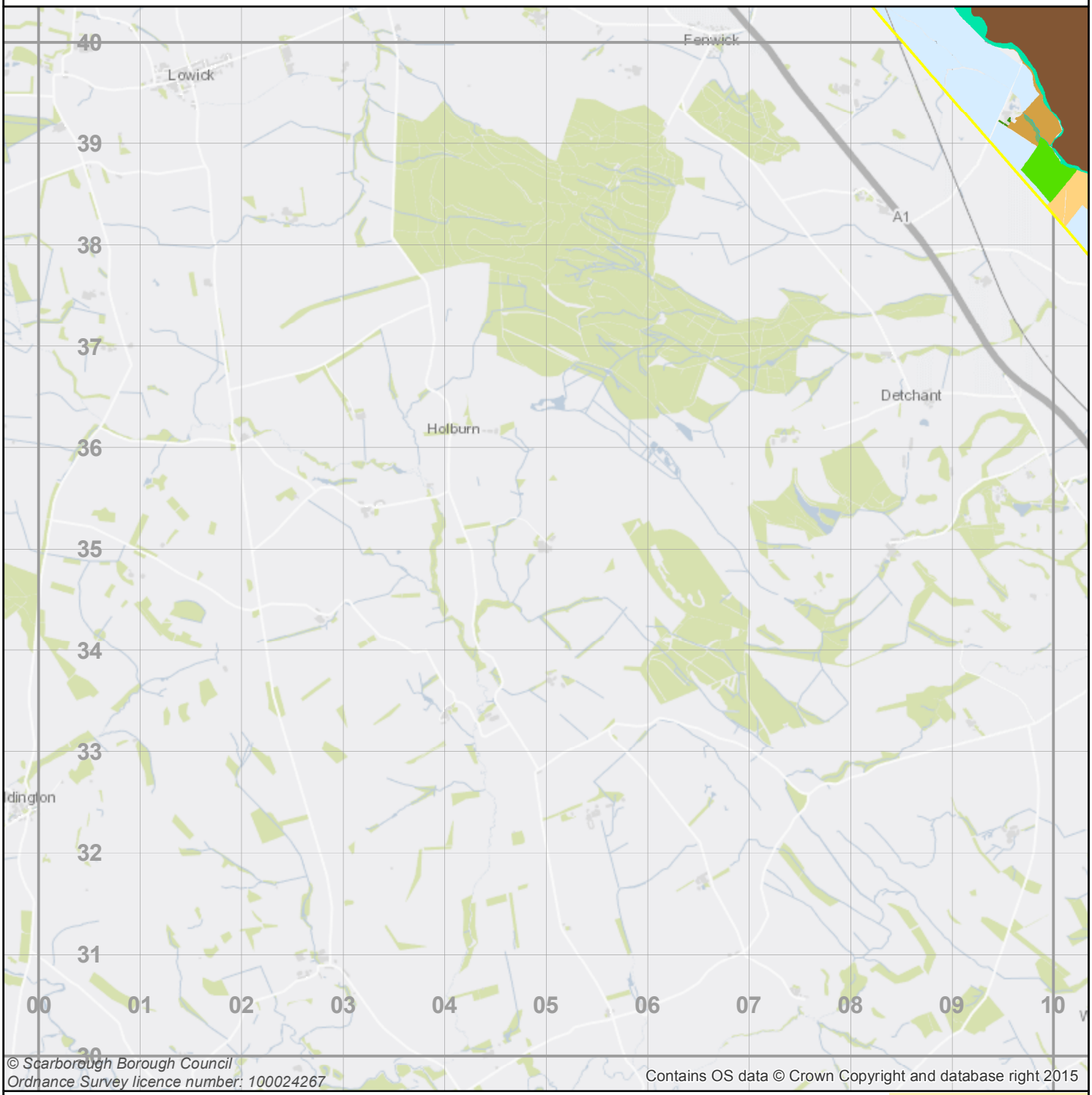
NU03



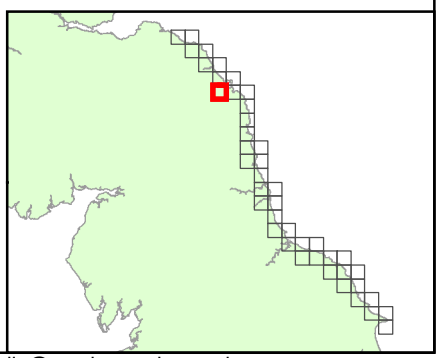
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- GN4 - Grazing marsh pasture
- GNZ - Other neutral grassland
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland



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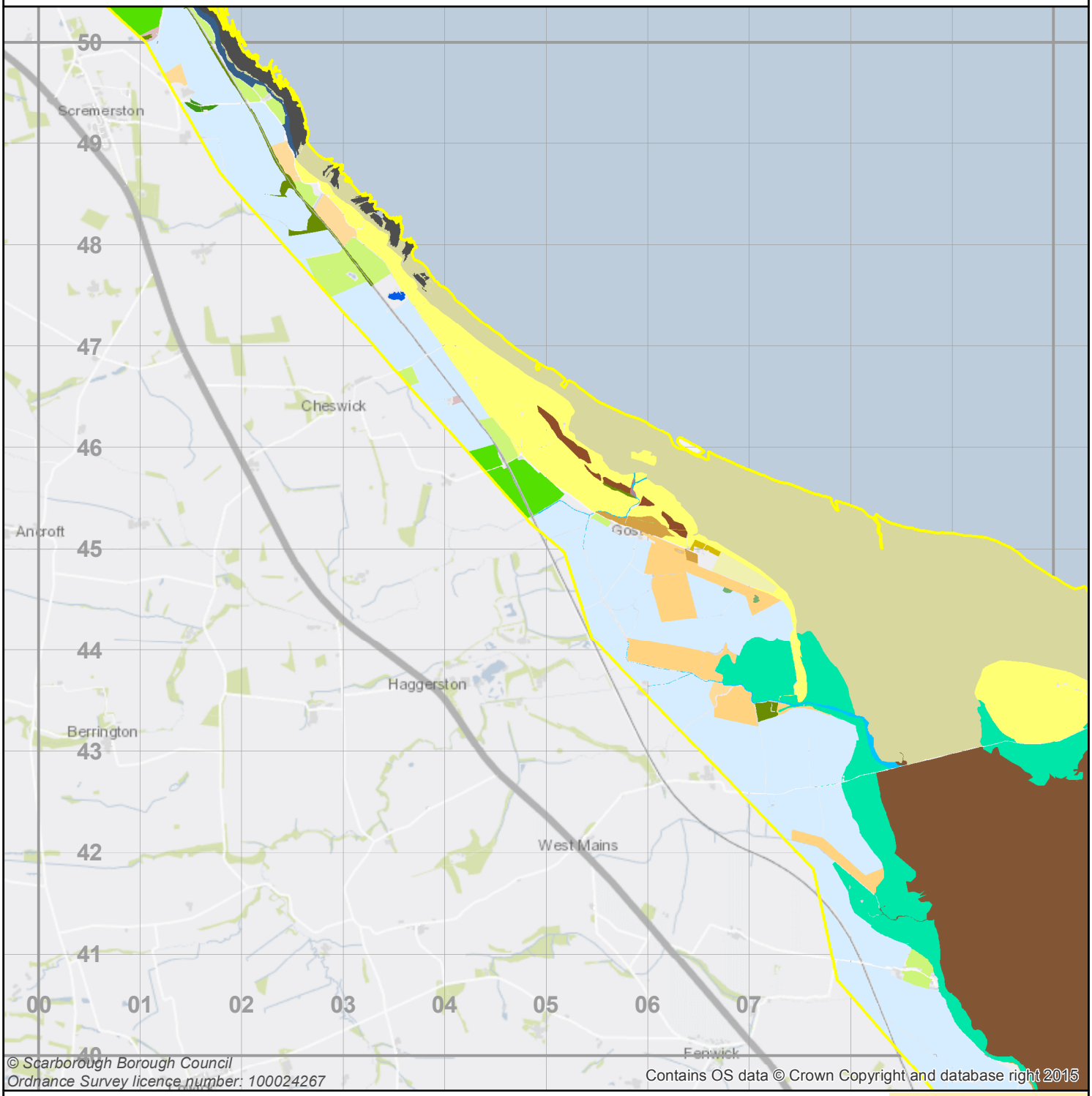
NU04



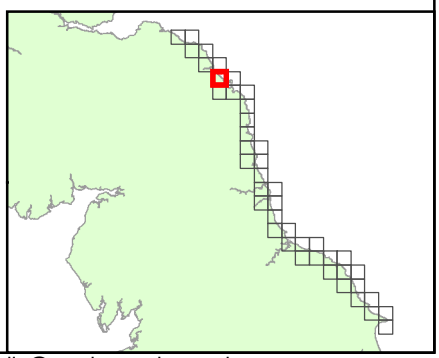
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- EM214 - Marginal vegetation of brackish tidal watercourses
- GI0 - Improved grassland
- GM1 - Festuca rubra maritime grassland
- GMZ - Other maritime grasslands
- GN3 - Coarse neutral grassland
- GN3Z - Other coarse neutral grassland
- GN4 - Grazing marsh pasture
- GN5 - Inundation grassland
- GNZ - Other neutral grassland
- GP0 - Grassland, probably improved
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- SS13 - Fixed dunes with herbaceous vegetation ["grey dunes"]
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland



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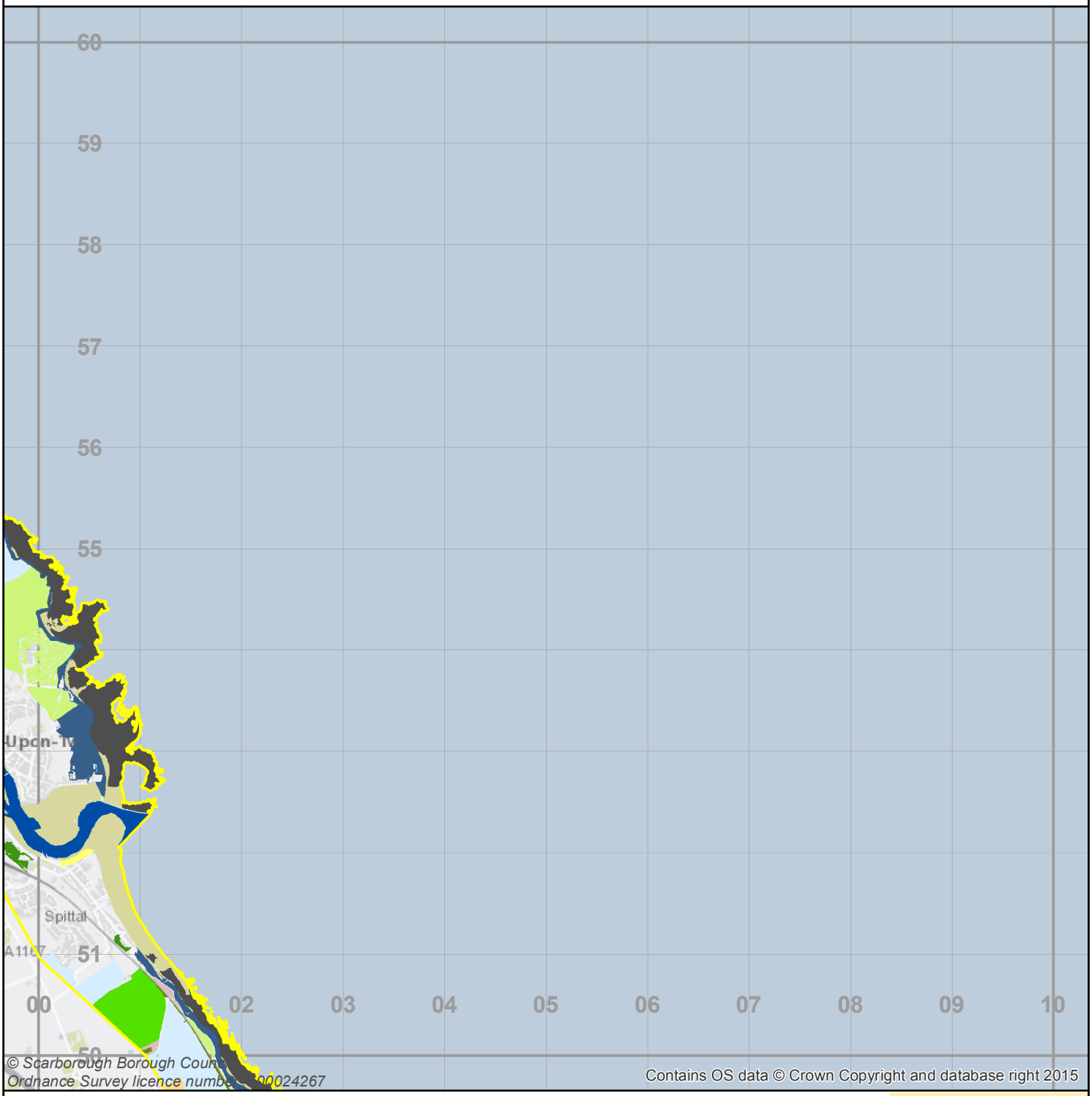
NU05



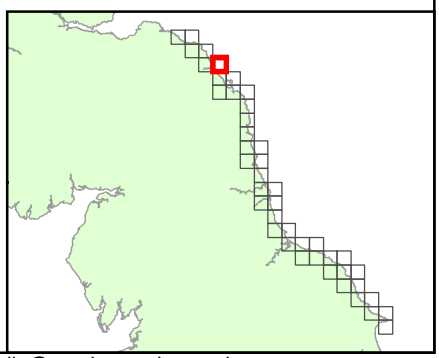
Extent of mapping

N

0 1 2 Km

NECO

- AR5 - Estuary saline water or sea
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS0 - Littoral sediment
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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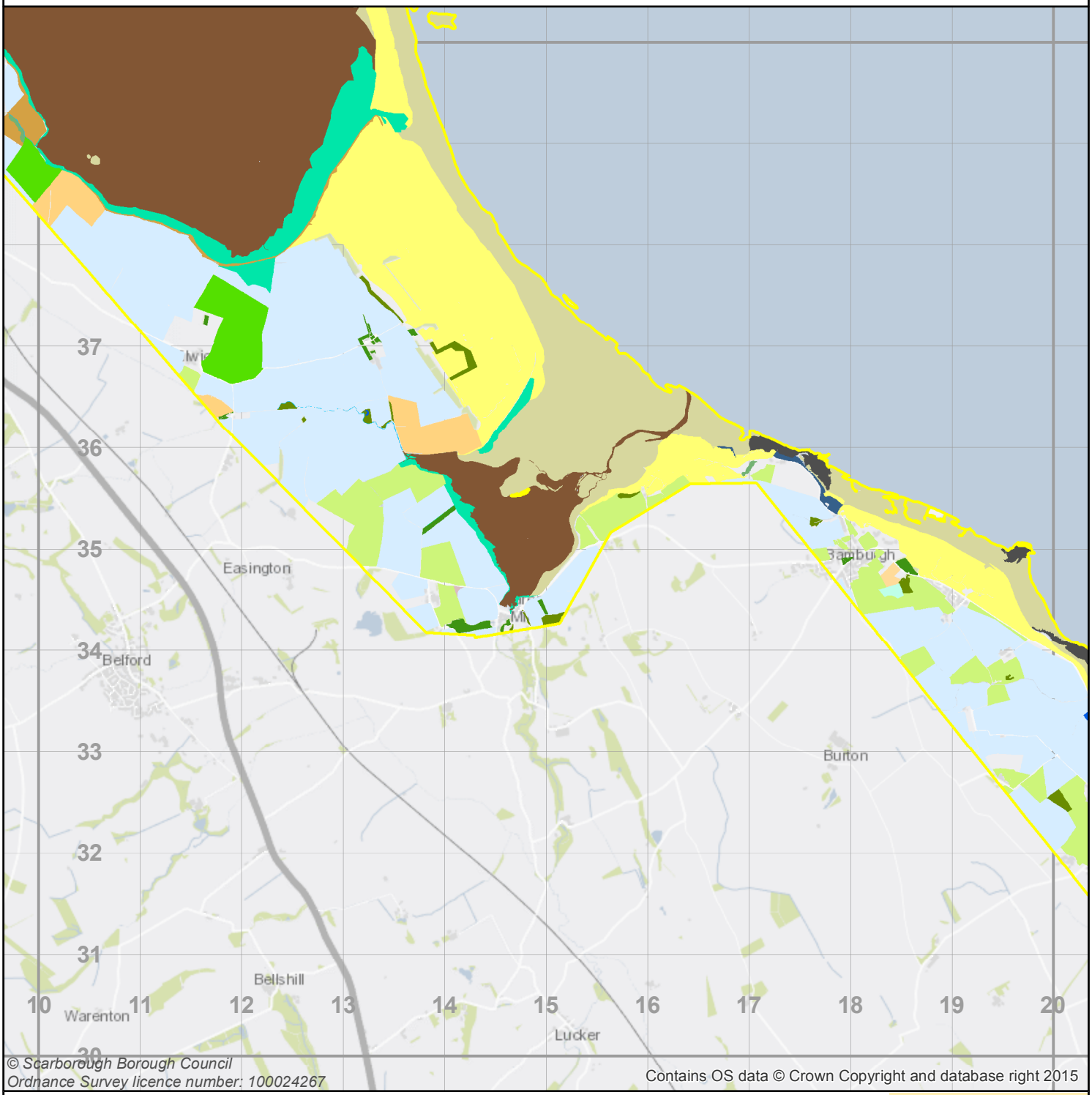
NU13



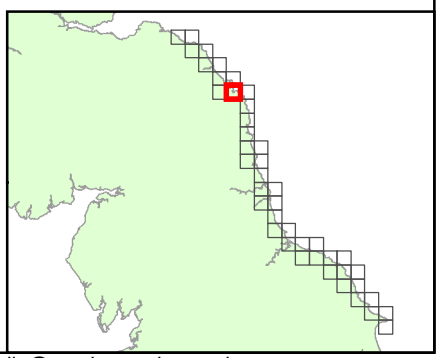
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- EM4 - Purple moor grass and rush pastures
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN4 - Grazing marsh pasture
- GNZ - Other neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland



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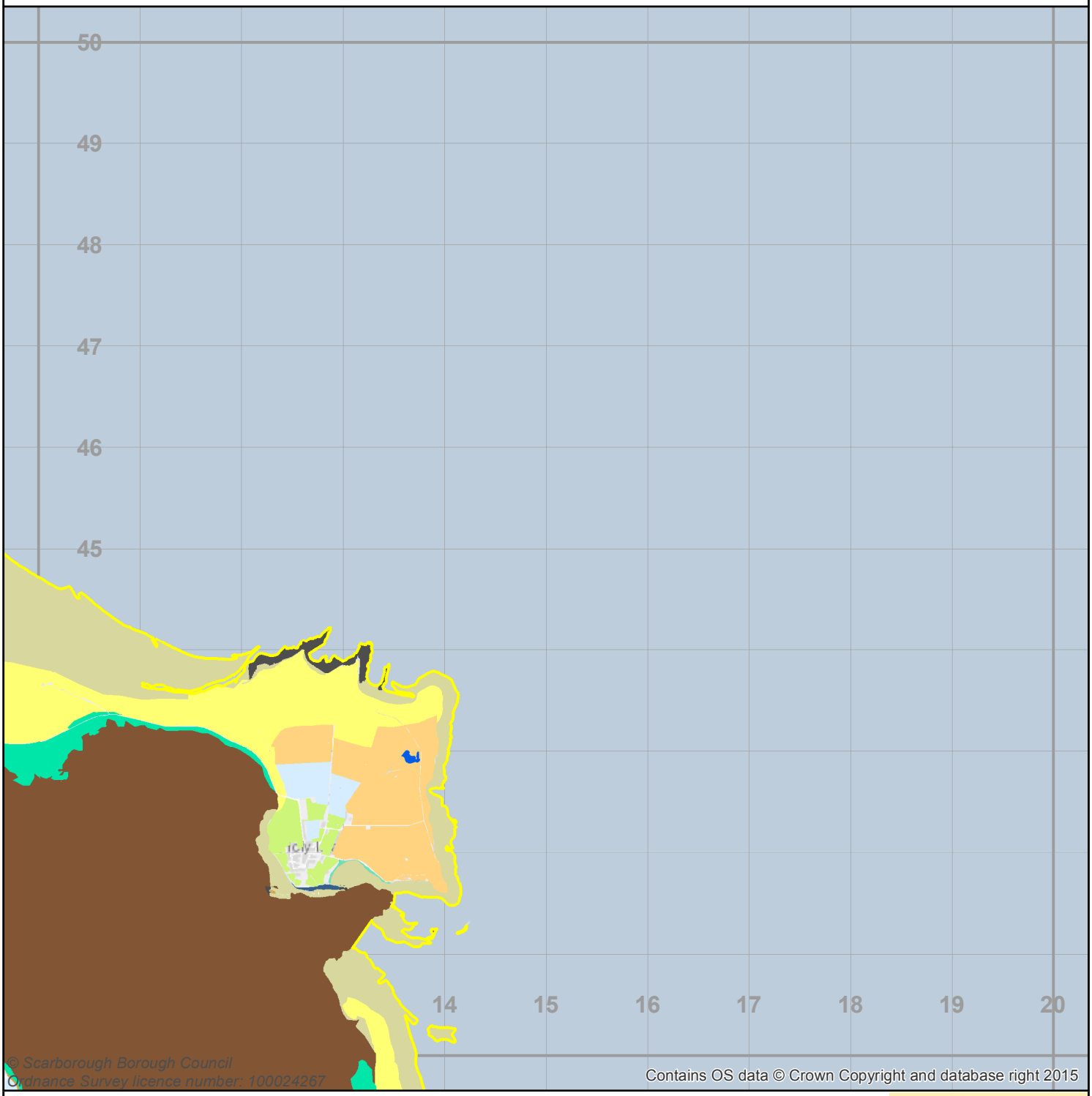
NU14



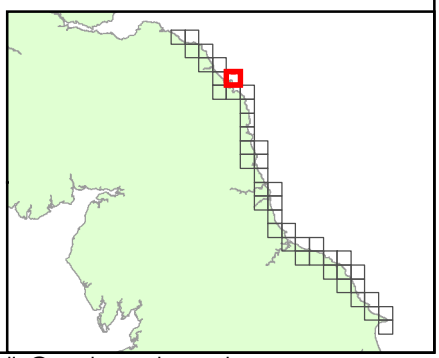
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- SS31 - Coastal vegetated shingle



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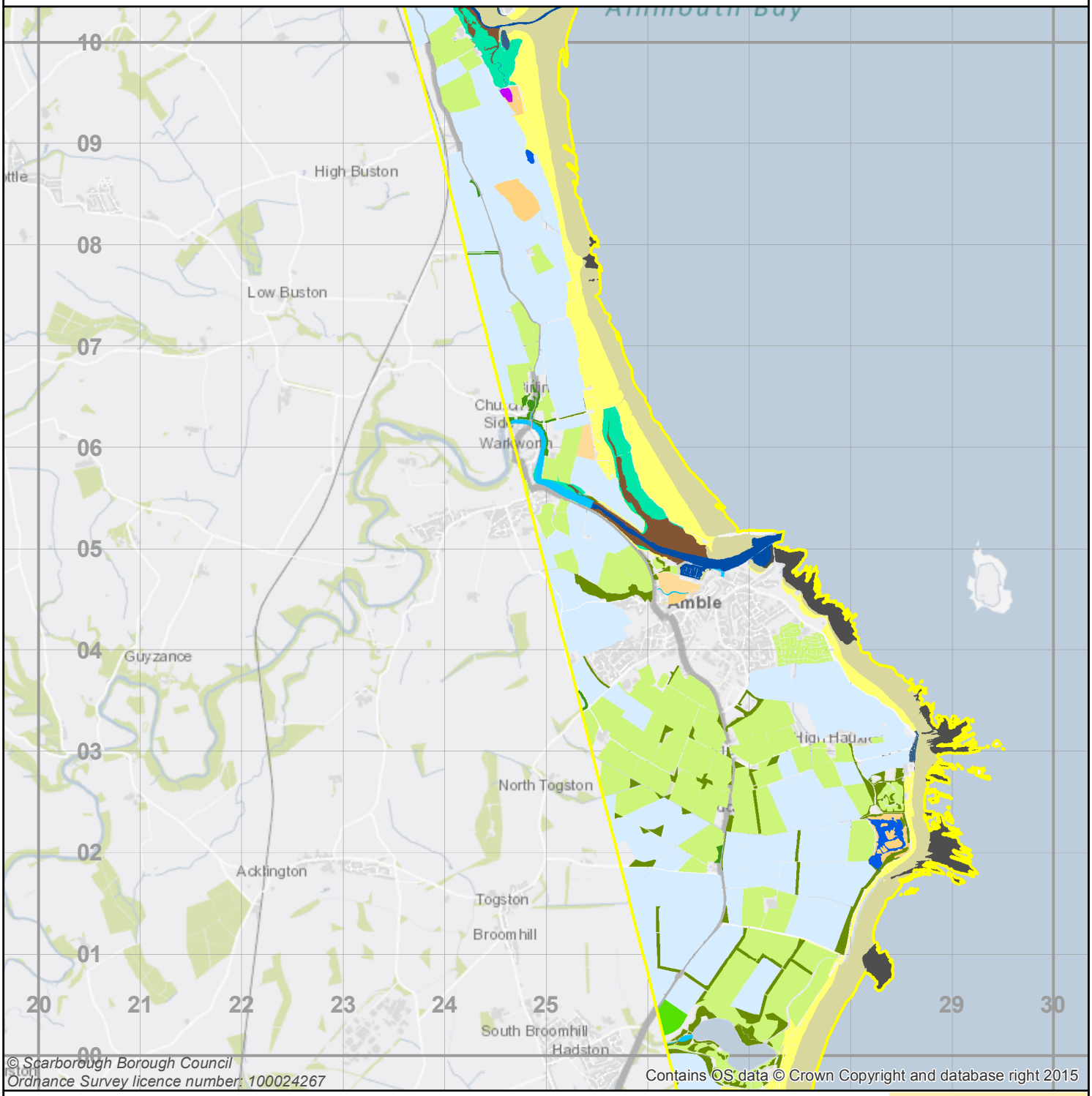
NU20



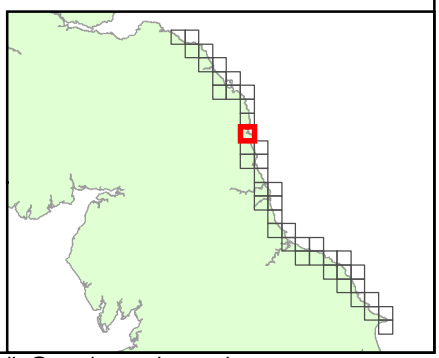
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- EM31 - Fens (and flushes - lowland)
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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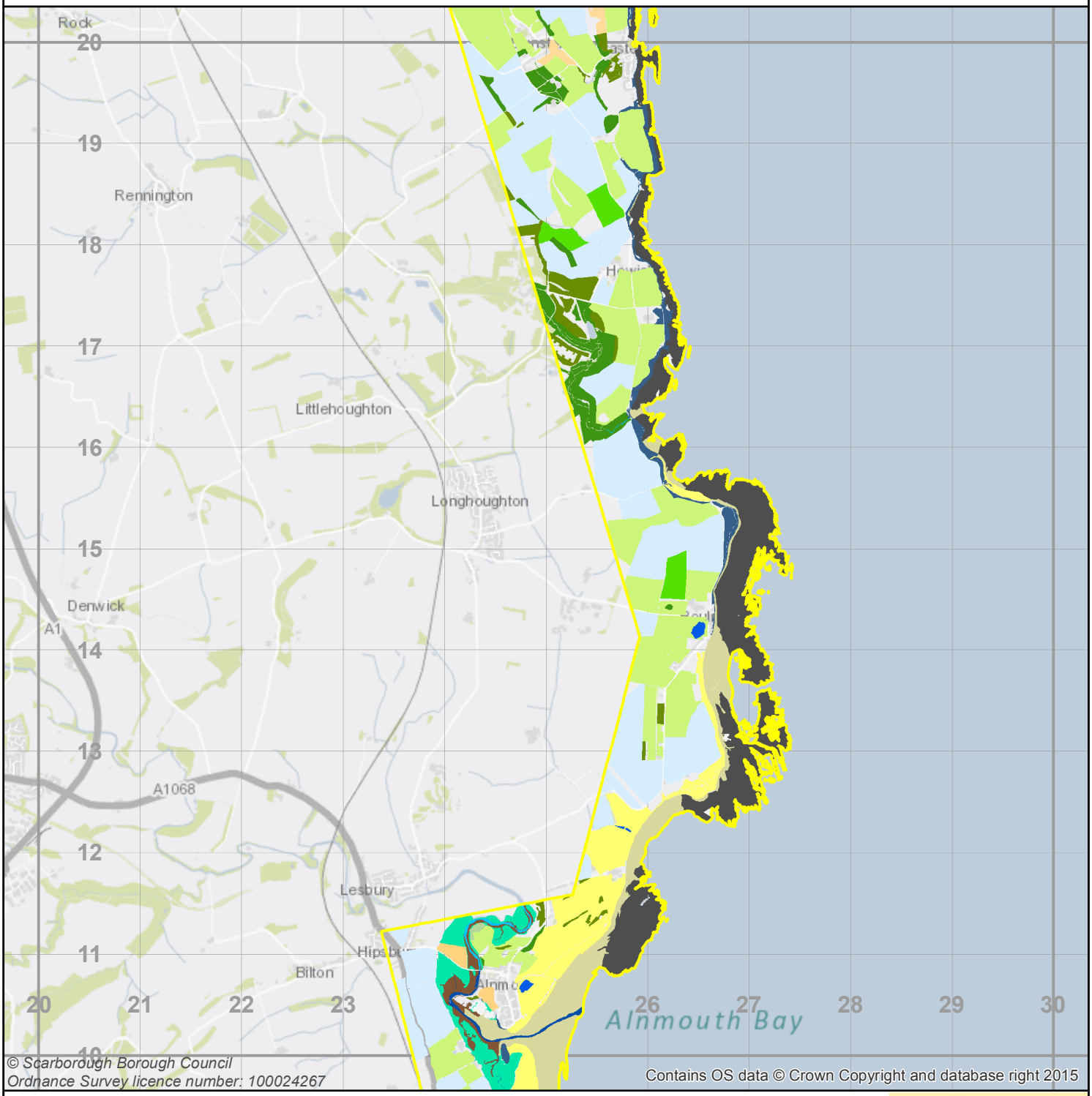
NU21



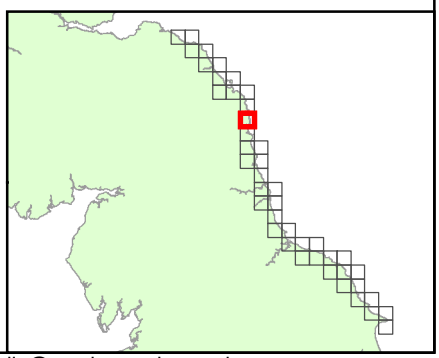
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB34 - Wet woodland
- WB3Z - Other broadleaved woodland



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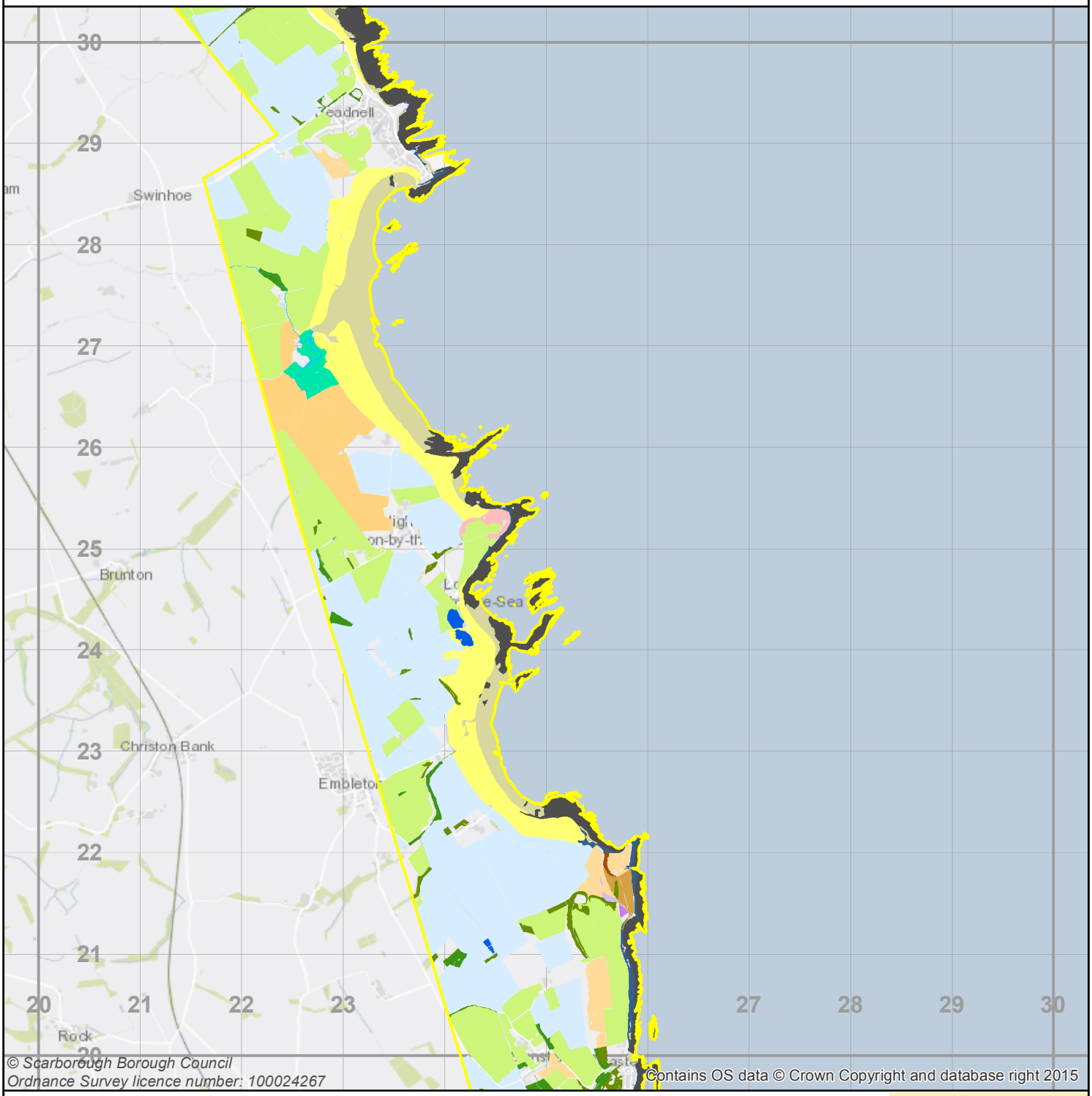
NU22



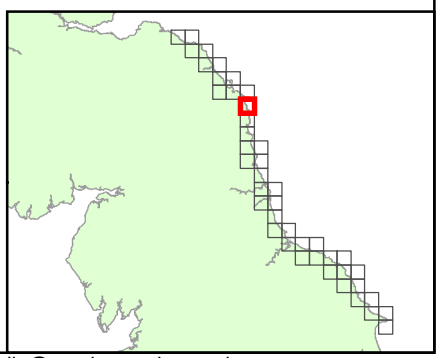
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- BRZ - Other continuous bracken
- CR0 - Arable and horticulture
- EM183 - Typha spp. Swamp
- EM1Z - Other swamp vegetation
- GA1 - Lowland dry acid grassland
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN31 - Rank neutral grassland
- GN32 - Tussocky neutral grassland
- GN4 - Grazing marsh pasture
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- SS11 - Embryonic shifting dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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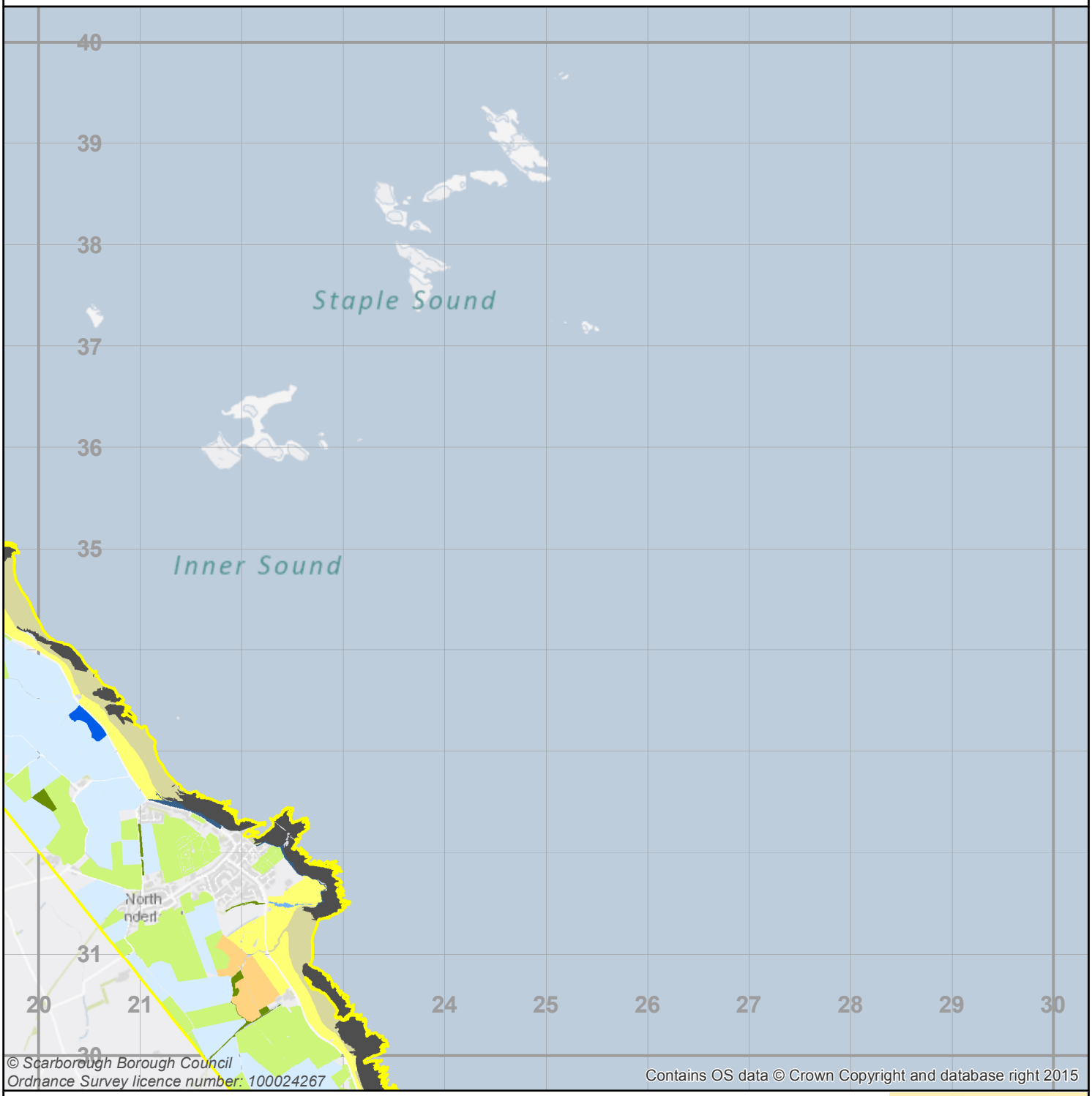
NU23



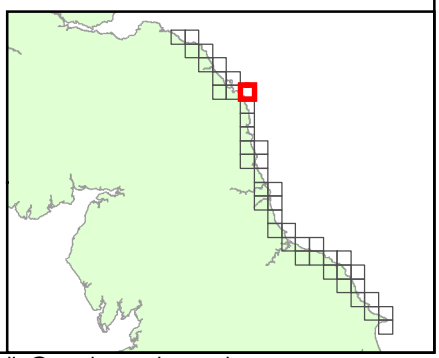
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- AS3 - Mesotrophic standing waters
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland



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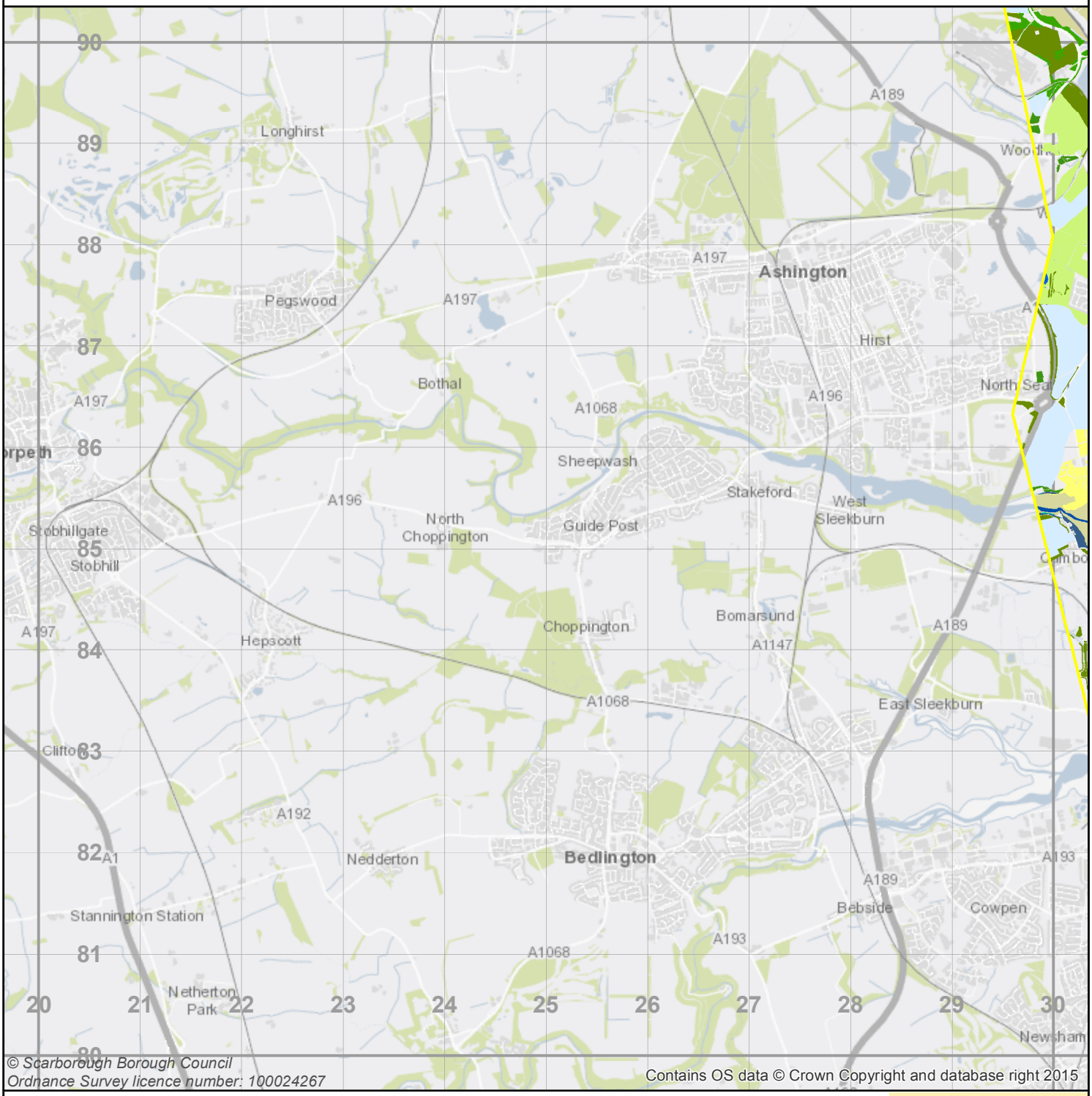
NZ28



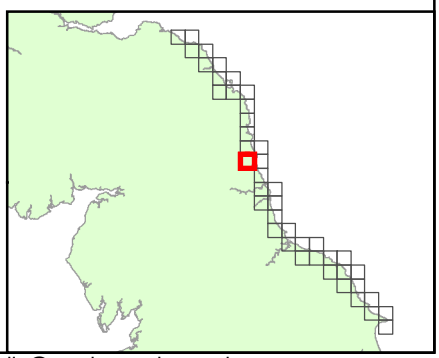
Extent of mapping

N

0 1 2 Km

NECO

- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- LS3 - Coastal saltmarsh
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB1 - Mixed woodland
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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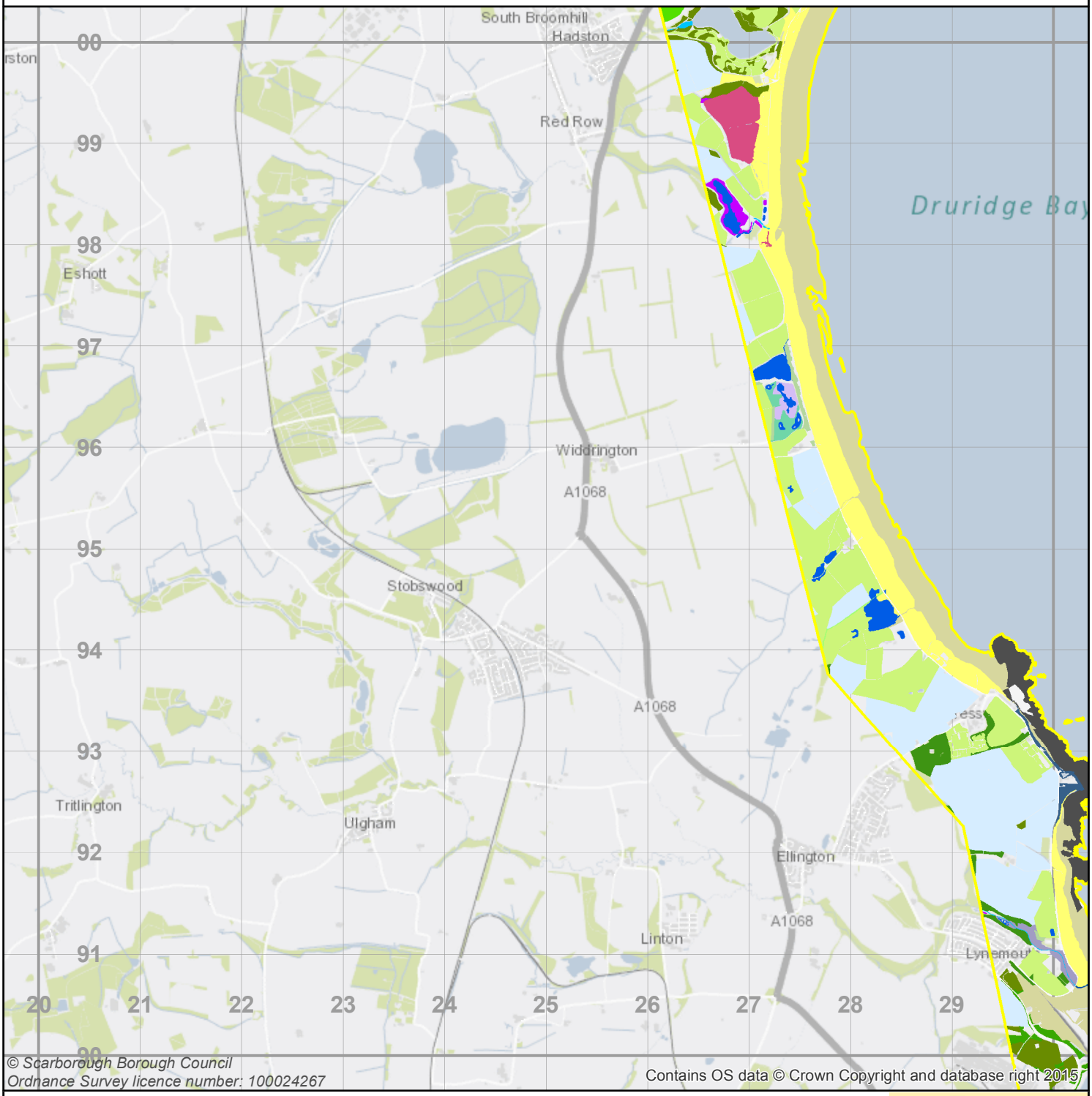
NZ29



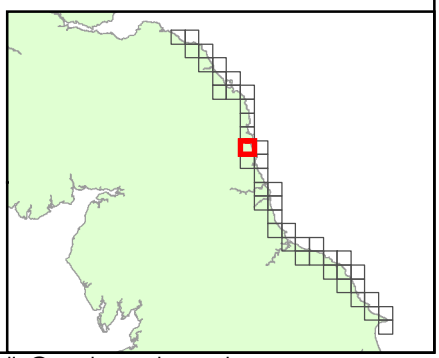
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- AS61 - Saline lagoons with no sea connection
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- EM183 - Typha spp. Swamp
- EM212 - Marginal vegetation of tidal granite block structures
- EM31 - Fens (and flushes - lowland)
- EM422 - Juncus effusus/acutiflorus - Galium palustre rush-pasture
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- LF11 - Hedgerows
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB1 - Mixed woodland
- WB2 - Scrub woodland
- WB34 - Wet woodland
- WB3Z - Other broadleaved woodland



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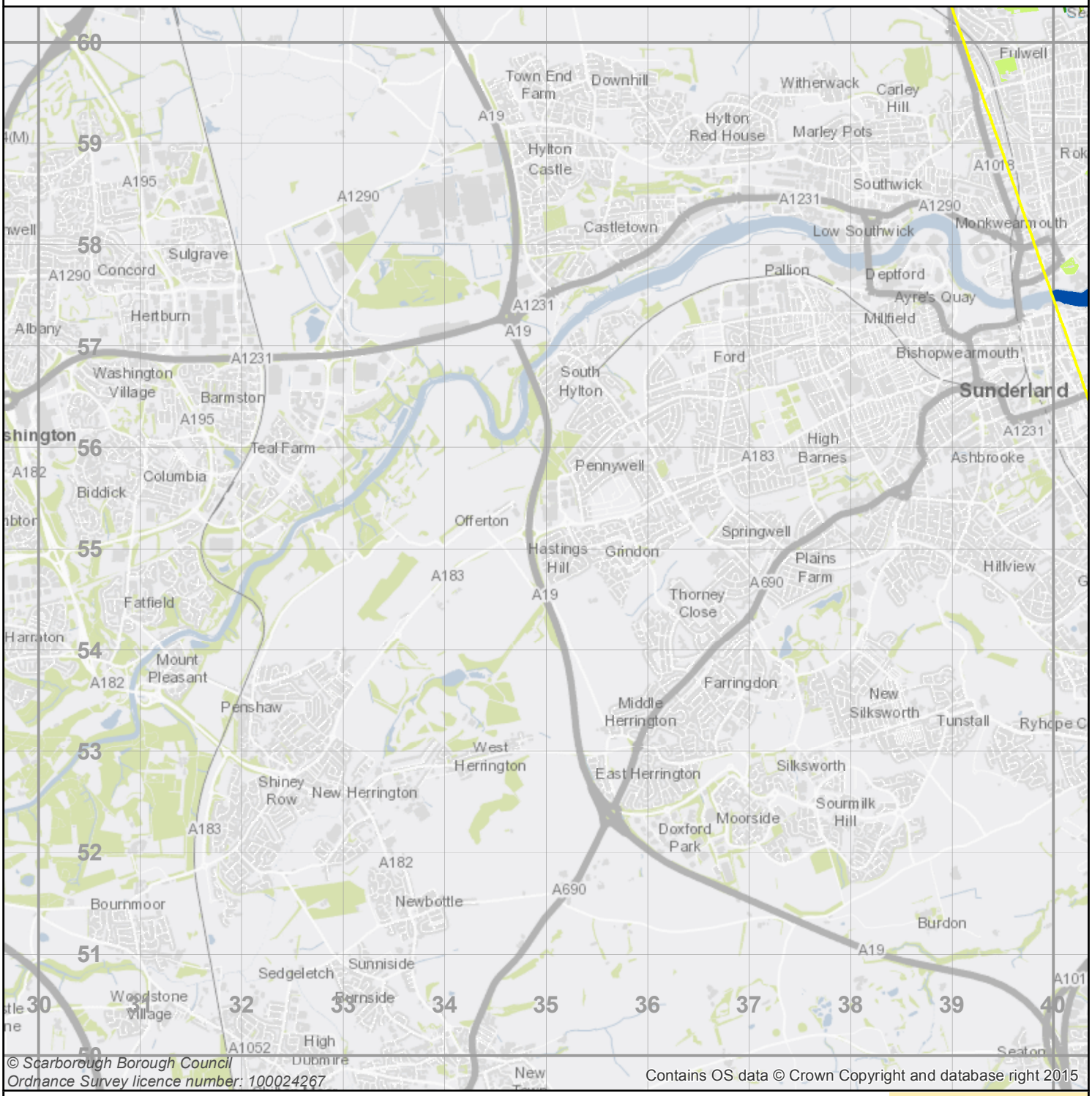
NZ35



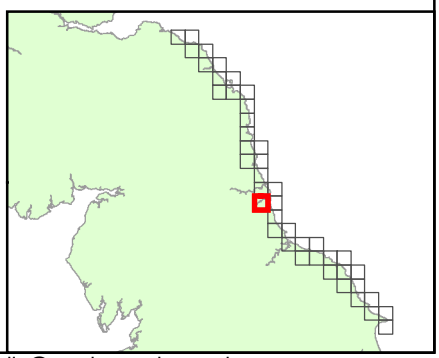
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- GI0 - Improved grassland
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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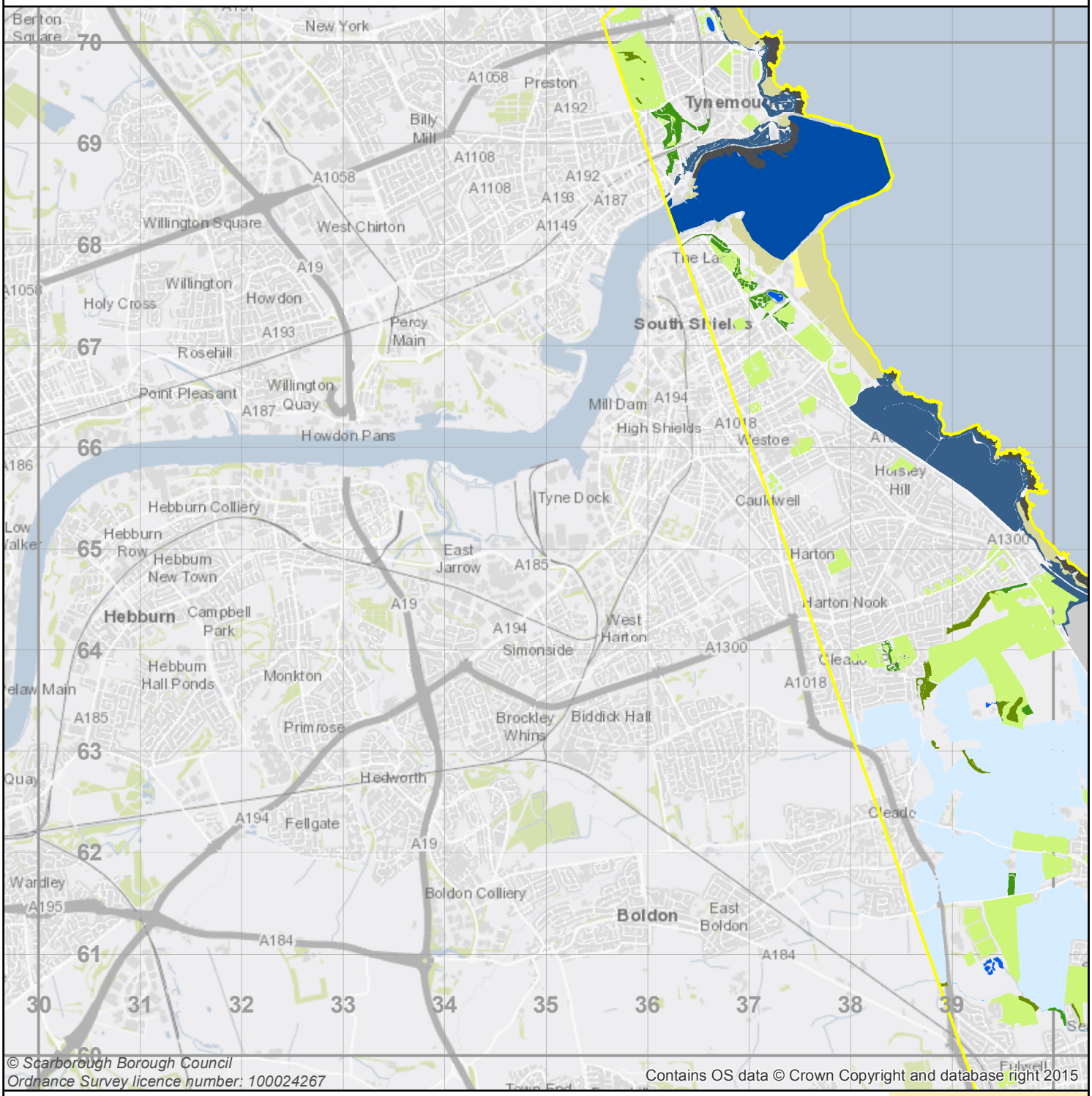
NZ36



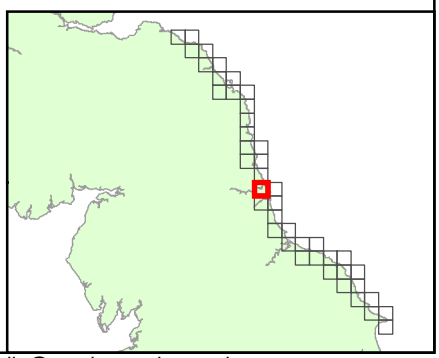
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- RE21 - Quarry
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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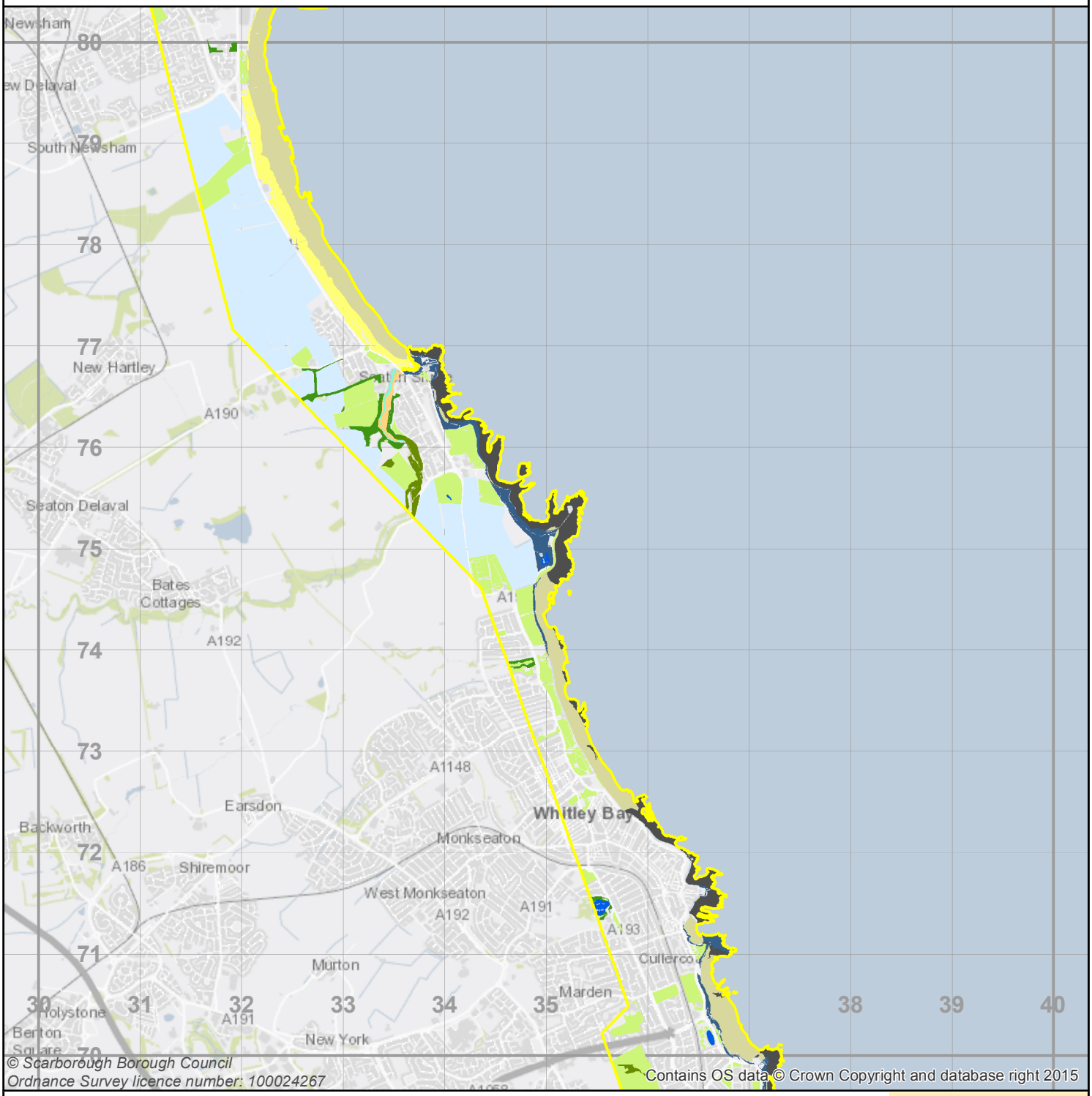
NZ37



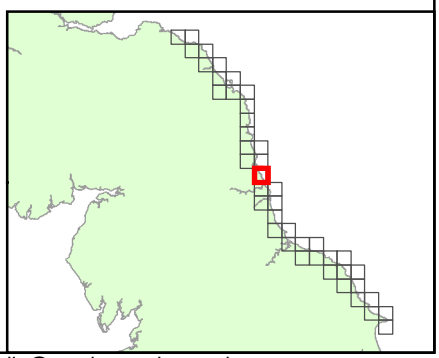
Extent of mapping

N

0 1 2 Km

NECO

- AR4 - Tidal rivers upstream of estuary
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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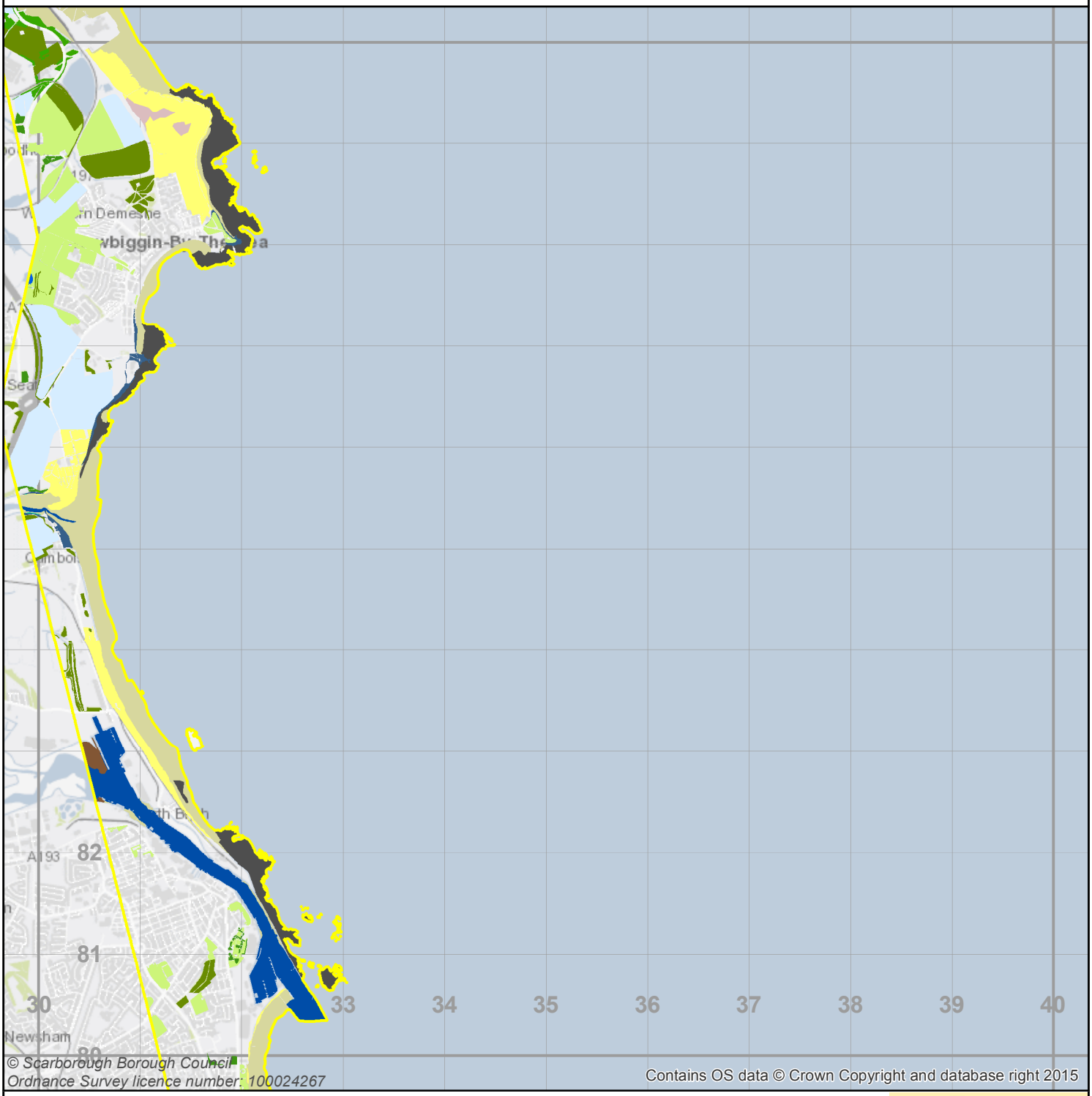
NZ38



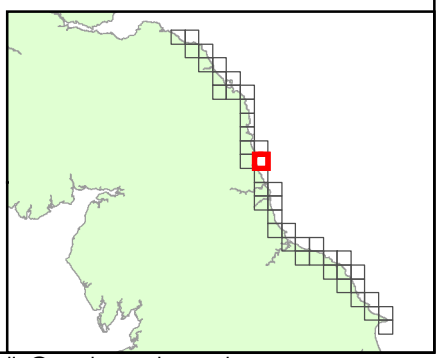
Extent of mapping

N

0 1 2 Km

NECO

- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB1 - Mixed woodland
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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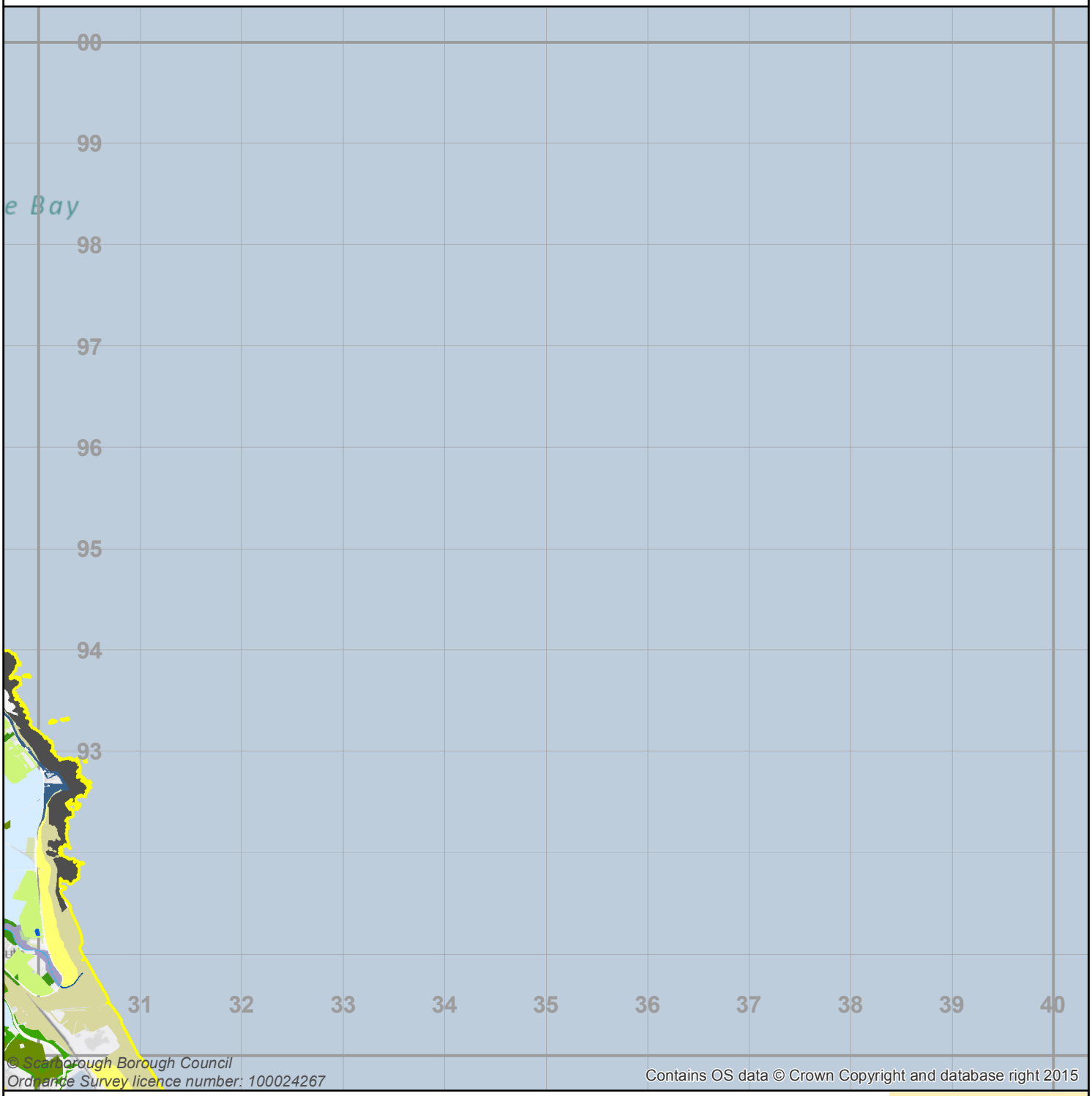
NZ39



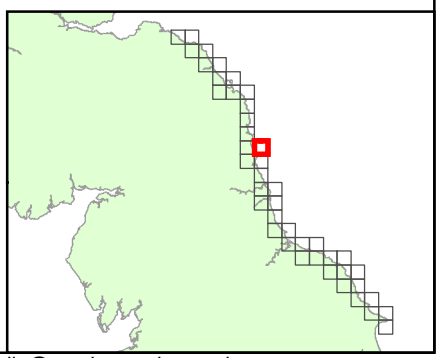
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- EM212 - Marginal vegetation of tidal granite block structures
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB1 - Mixed woodland
- WB2 - Scrub woodland
- WB34 - Wet woodland
- WB3Z - Other broadleaved woodland



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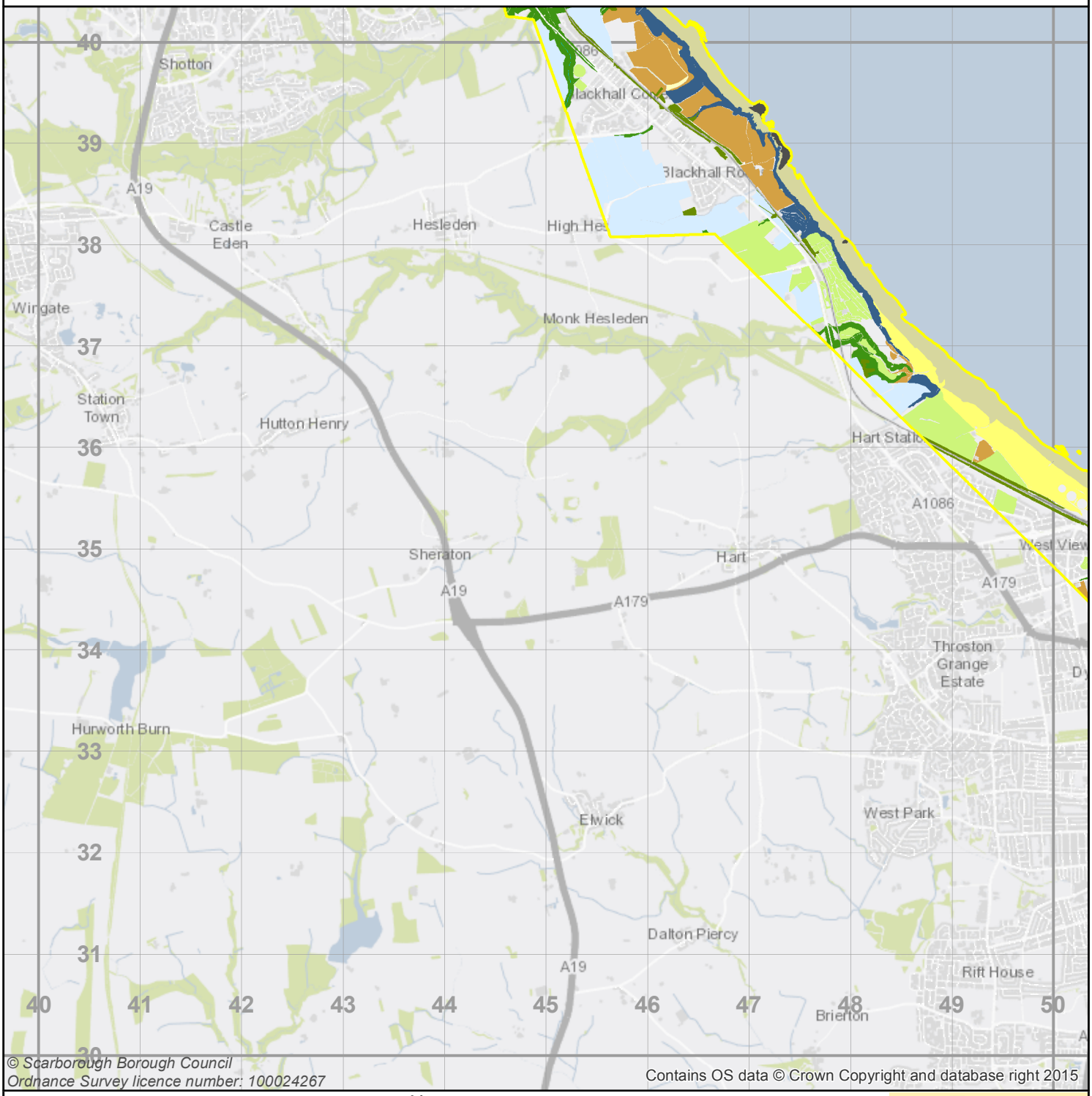
NZ43



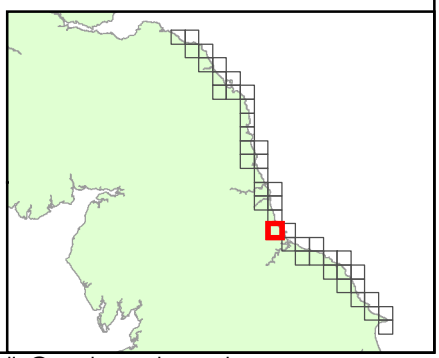
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- CR0 - Arable and horticulture
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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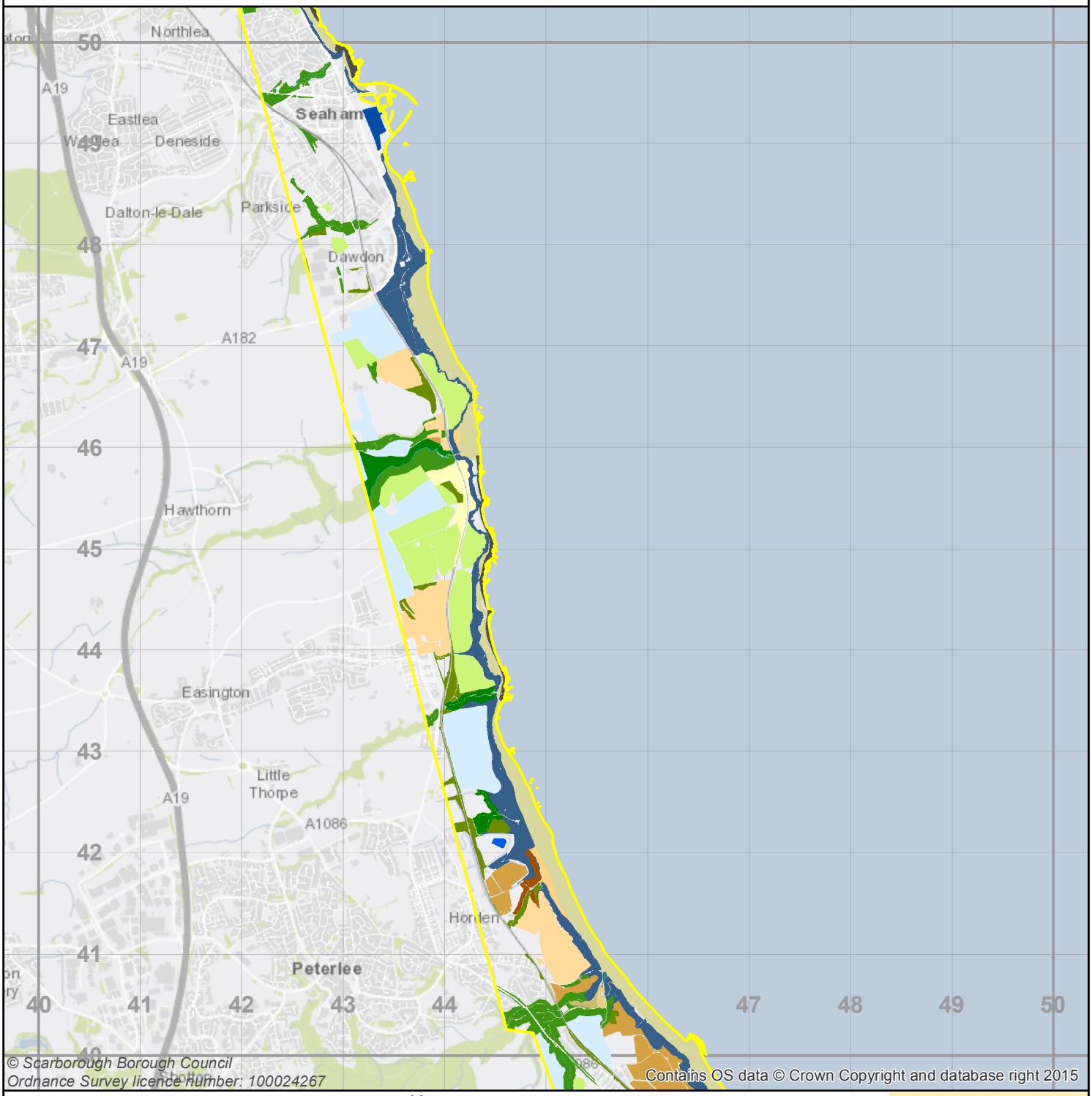
NZ44



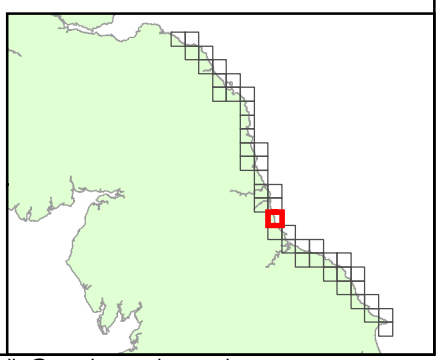
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- BRZ - Other continuous bracken
- CR0 - Arable and horticulture
- EM11 - Reedbeds
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN31 - Rank neutral grassland
- GN4 - Grazing marsh pasture
- GN51 - Inundation grassland [brackish]
- GN52 - Inundation grassland [fresh]
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB36 - Lowland mixed deciduous woodland
- WB3Z - Other broadleaved woodland



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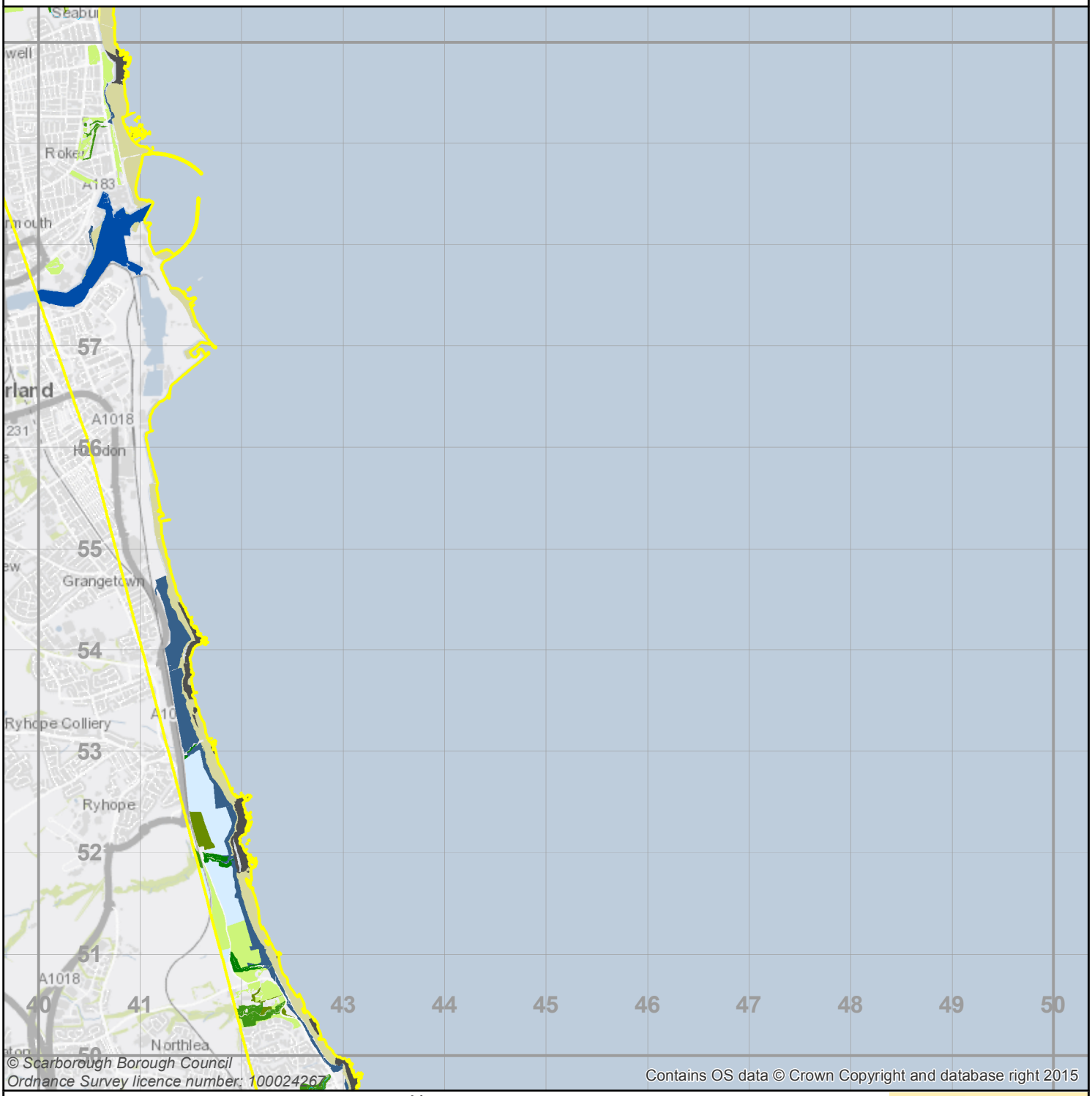
NZ45



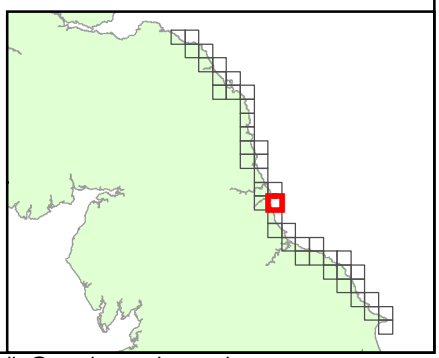
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SR11 - Maritime soft cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB36 - Lowland mixed deciduous woodland
- WB3Z - Other broadleaved woodland



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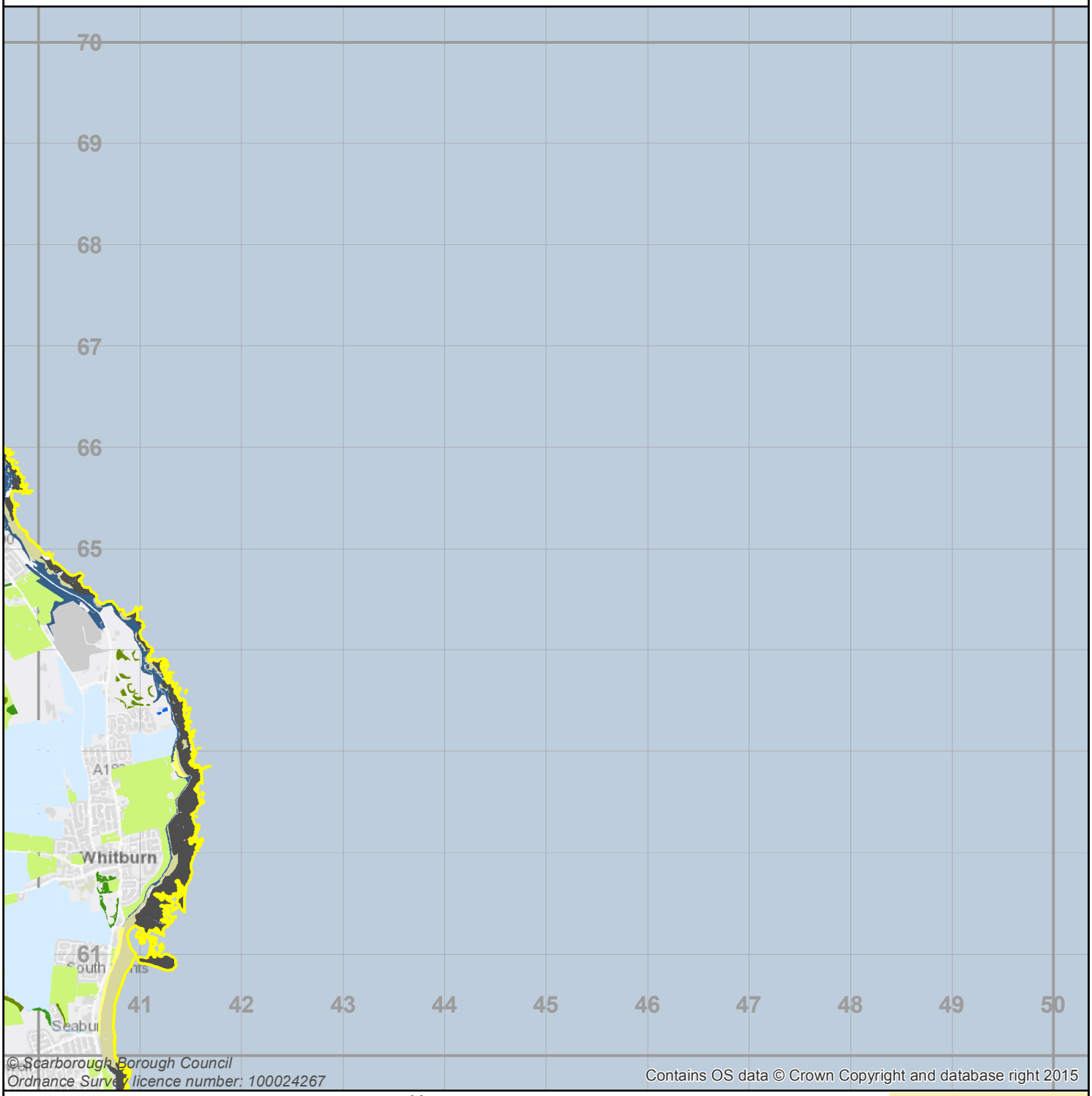
NZ46



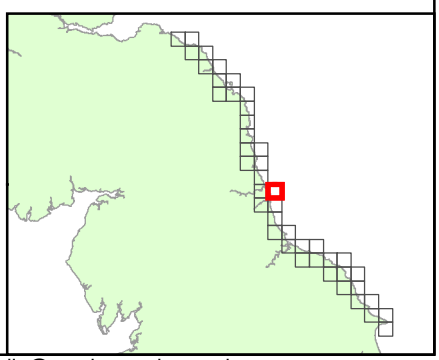
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- RE21 - Quarry
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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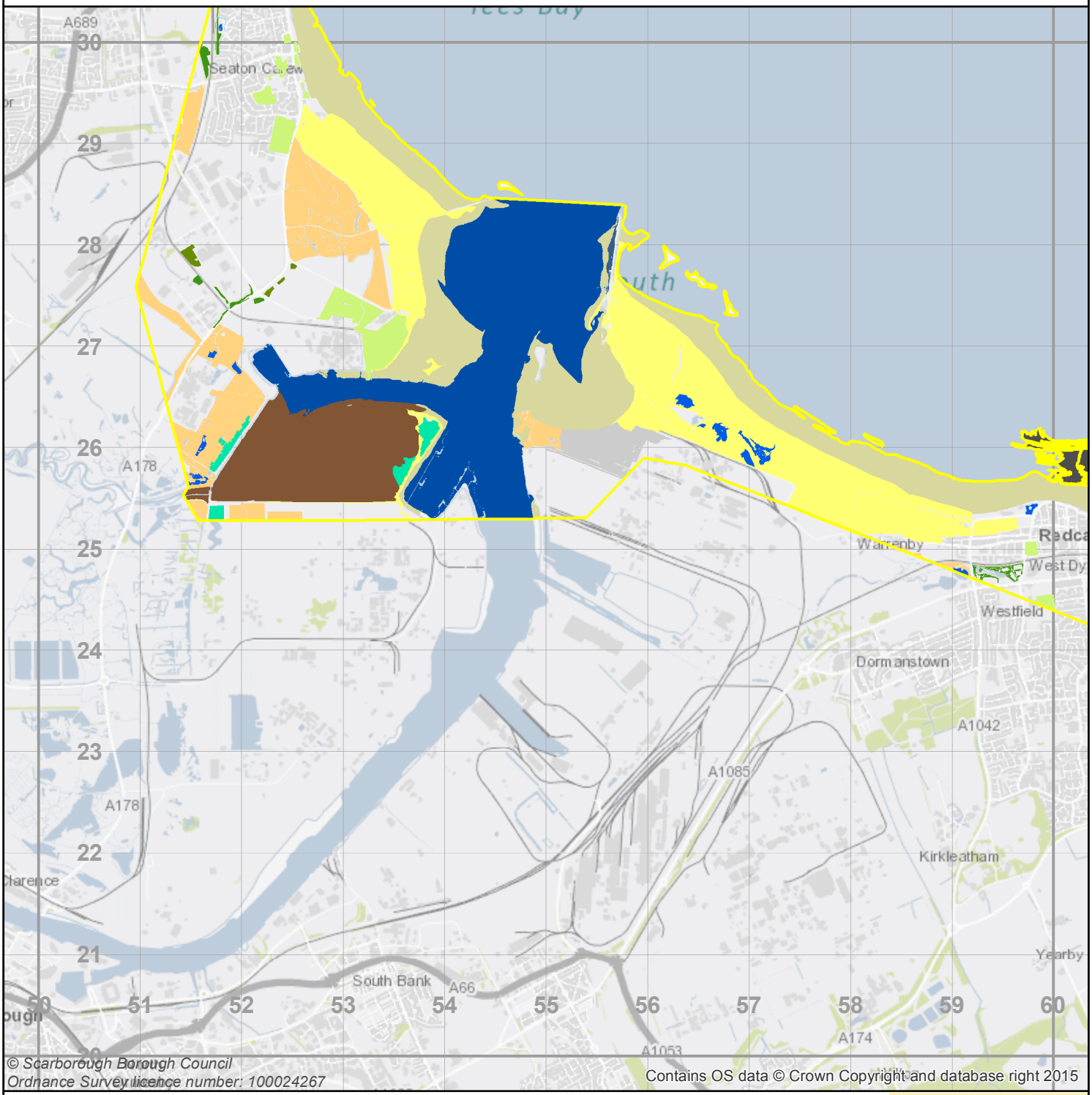
NZ52



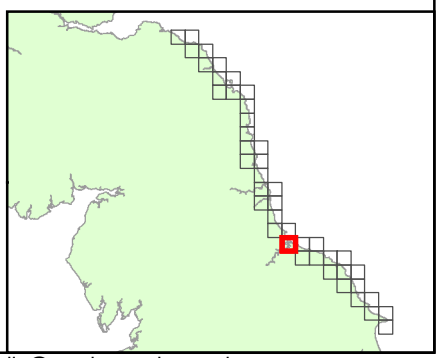
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- GI0 - Improved grassland
- GN4 - Grazing marsh pasture
- LRZ - Other littoral rock
- LS3 - Coastal saltmarsh
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- RE22 - Spoil heap
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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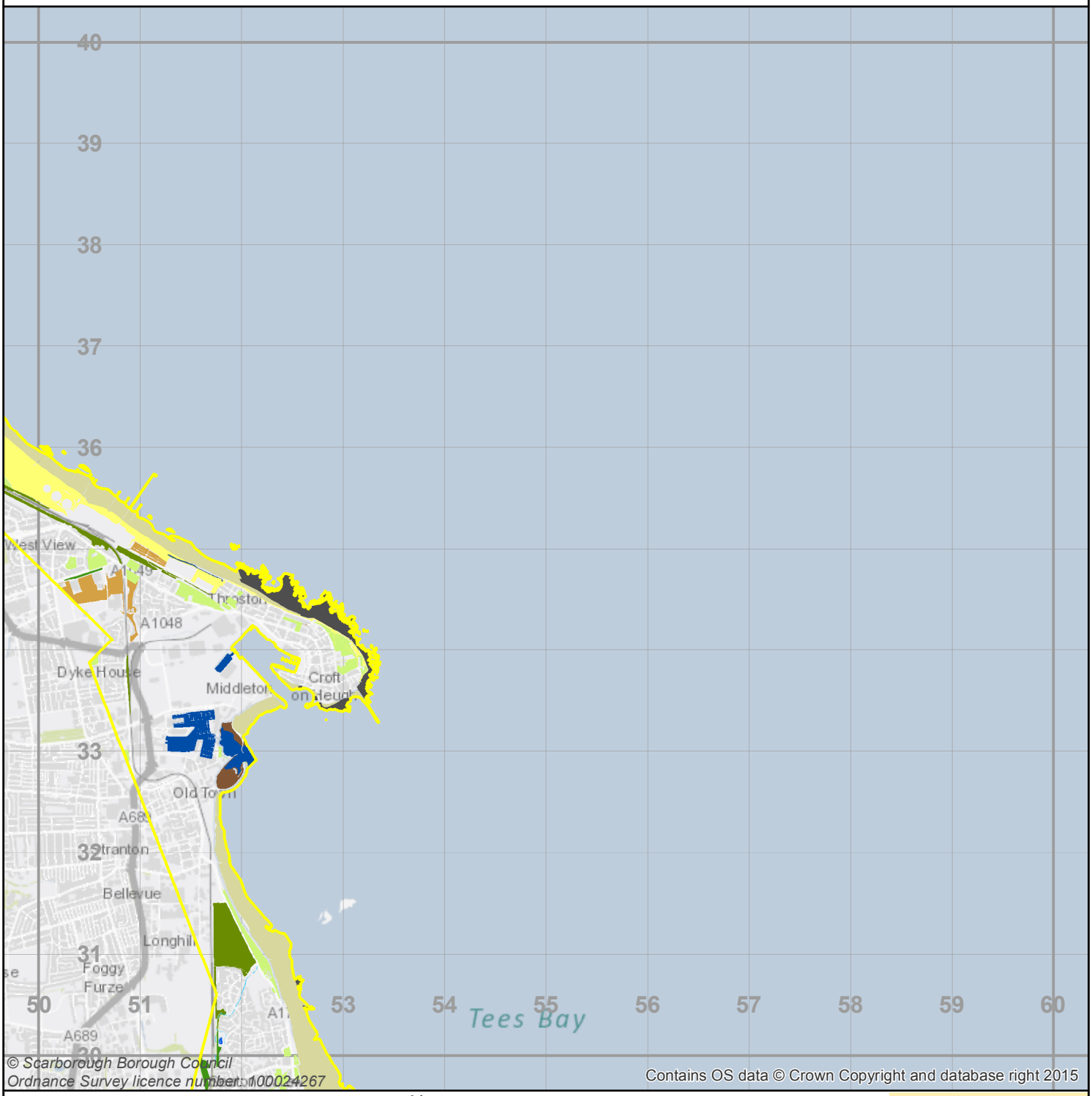
NZ53



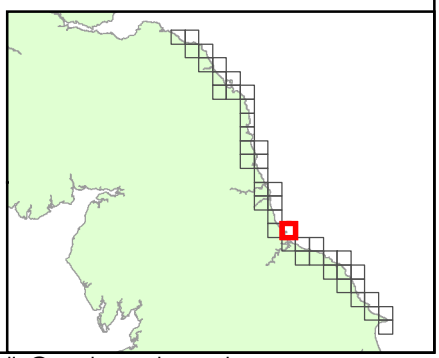
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LS4 - Intertidal mudflats
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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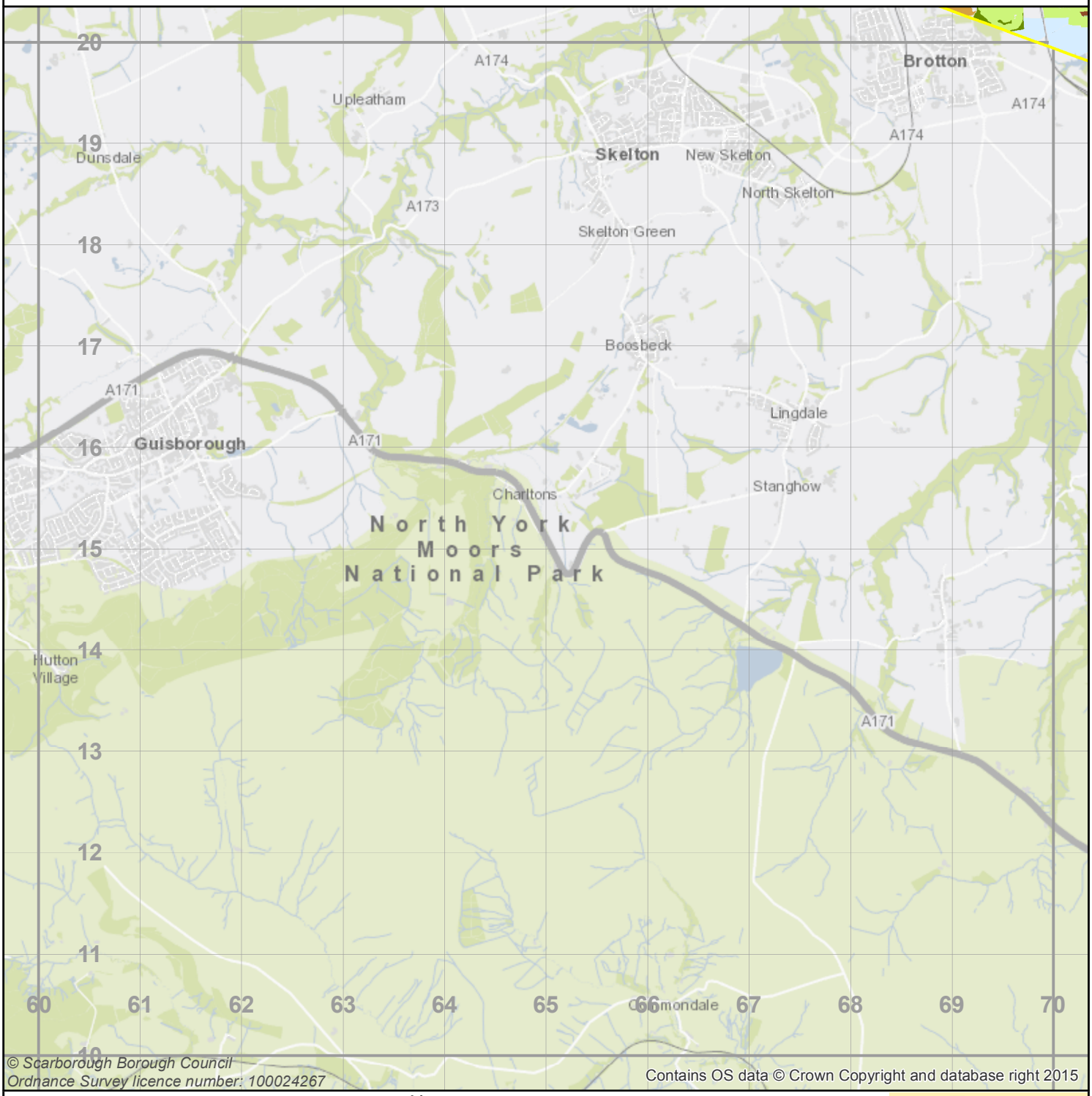
NZ61



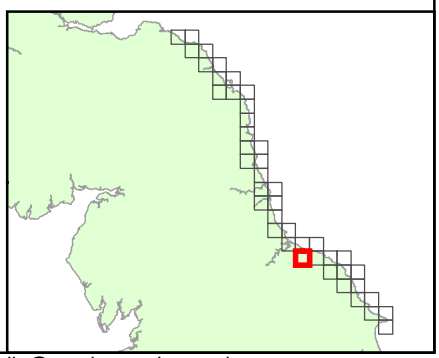
Extent of mapping

N

0 1 2 Km

NECO

- CR0 - Arable and horticulture
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GM14 - Festuca rubra - Daucus carota spp. Sub-community
- GNZ - Other neutral grassland
- WB2 - Scrub woodland
- WB3431 - Willow carr of lakes and watercourses



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NZ62

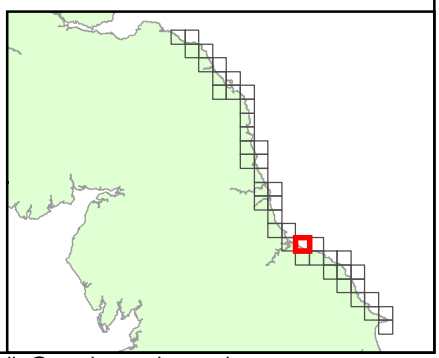
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR1 - Headwaters
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GM14 - Festuca rubra - Daucus carota spp. Sub-community
- GN1 - Lowland meadows
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SR11 - Maritime soft cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3431 - Willow carr of lakes and watercourses
- WB3Z - Other broadleaved woodland



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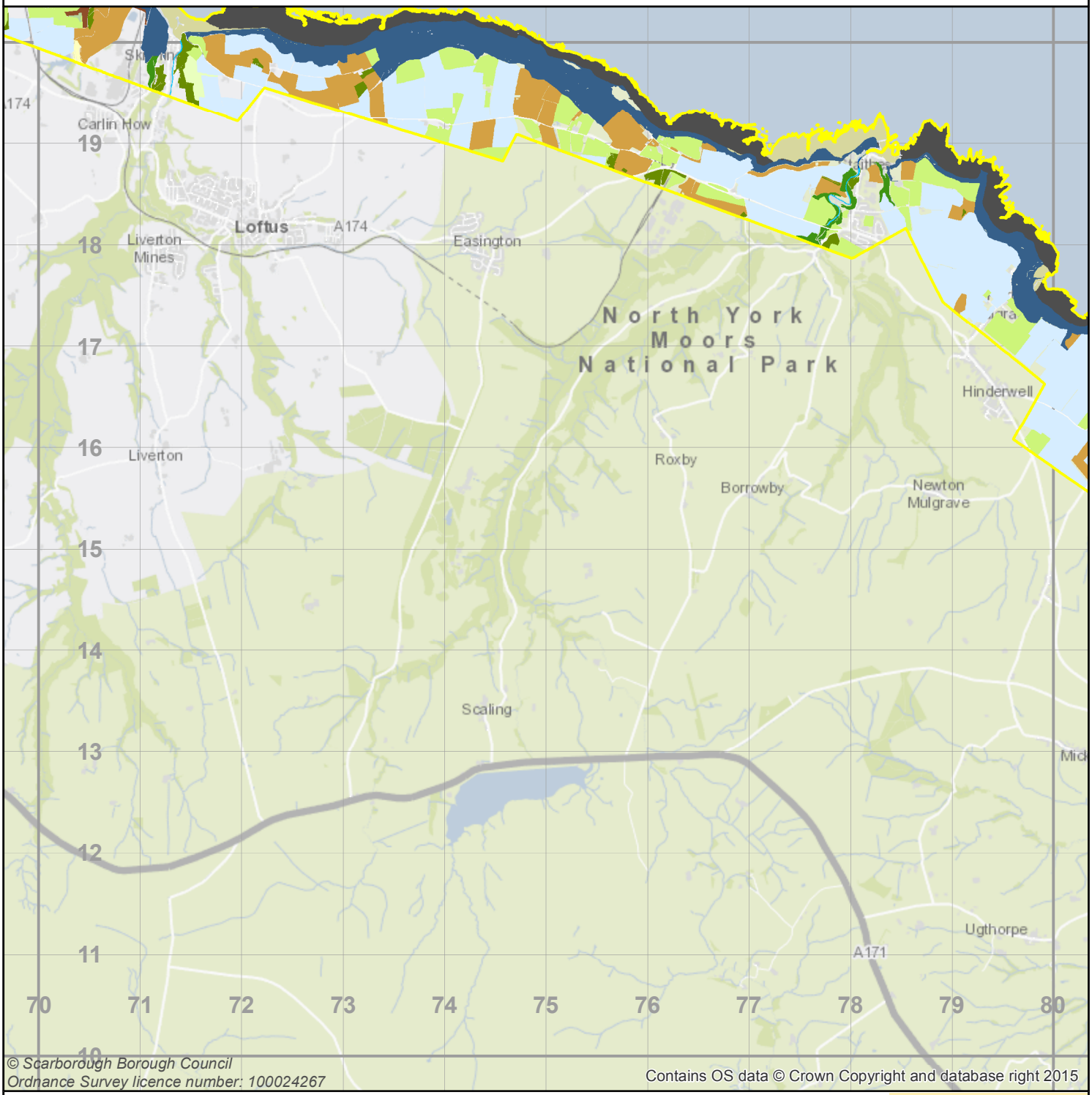
NZ71



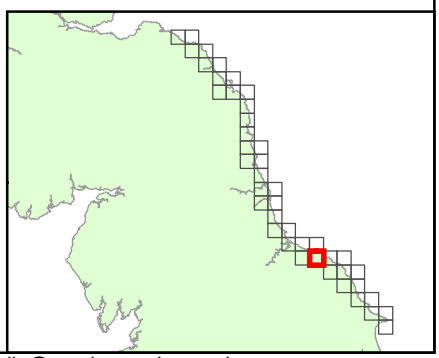
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- CR0 - Arable and horticulture
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GM14 - Festuca rubra - Daucus carota spp. Sub-community
- GN1 - Lowland meadows
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3431 - Willow carr of lakes and watercourses
- WB3Z - Other broadleaved woodland



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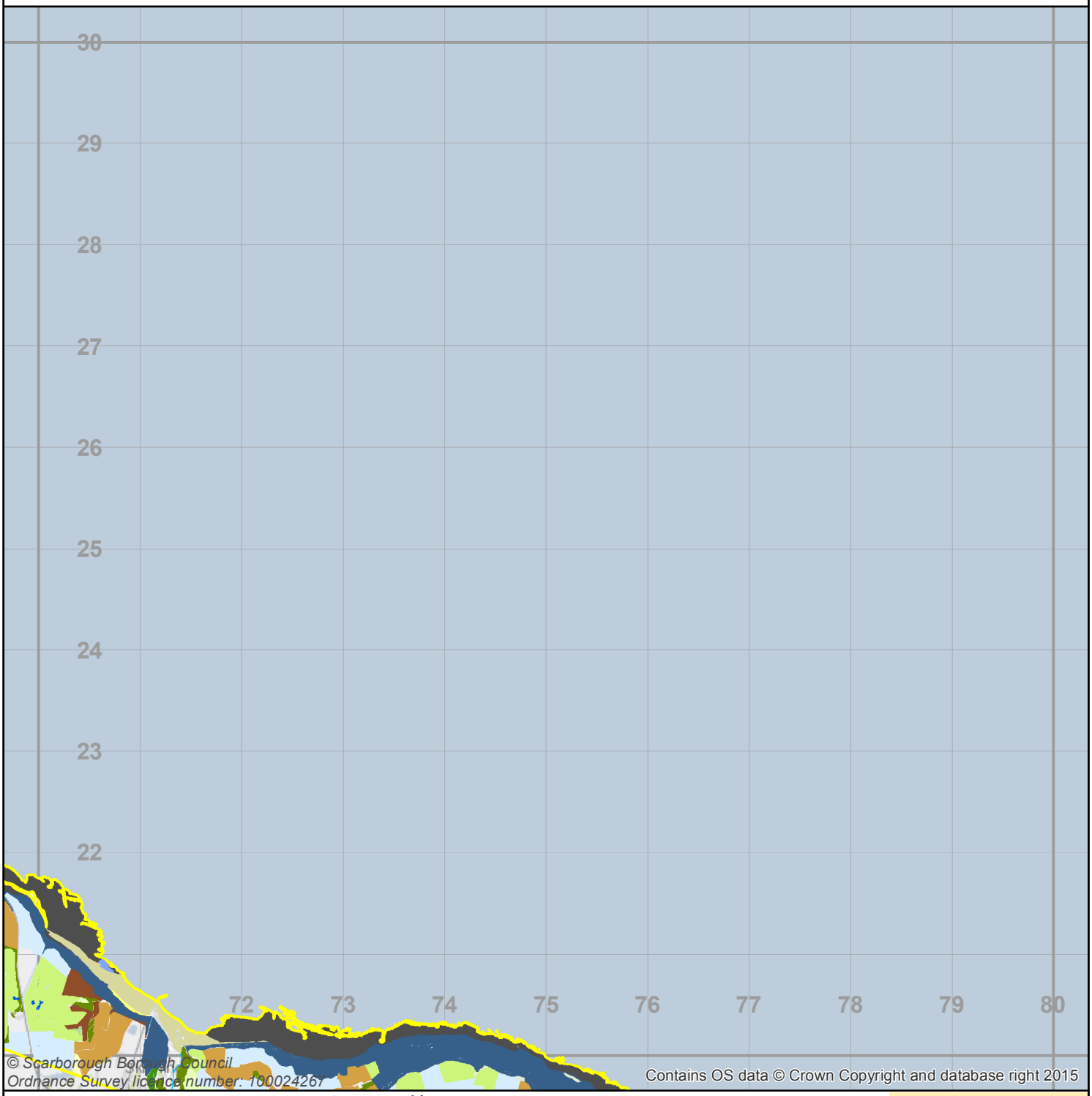
NZ72



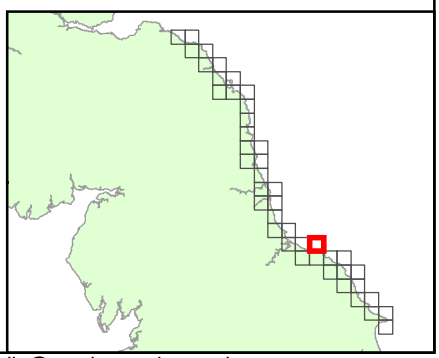
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GC1 - Lowland calcareous grassland
- GI0 - Improved grassland
- GM14 - Festuca rubra - Daucus carota spp. Sub-community
- GN1 - Lowland meadows
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LS8 - Ostrea edulis beds
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- SS1 - Coastal sand dunes
- WB2 - Scrub woodland
- WB3431 - Willow carr of lakes and watercourses
- WB3Z - Other broadleaved woodland



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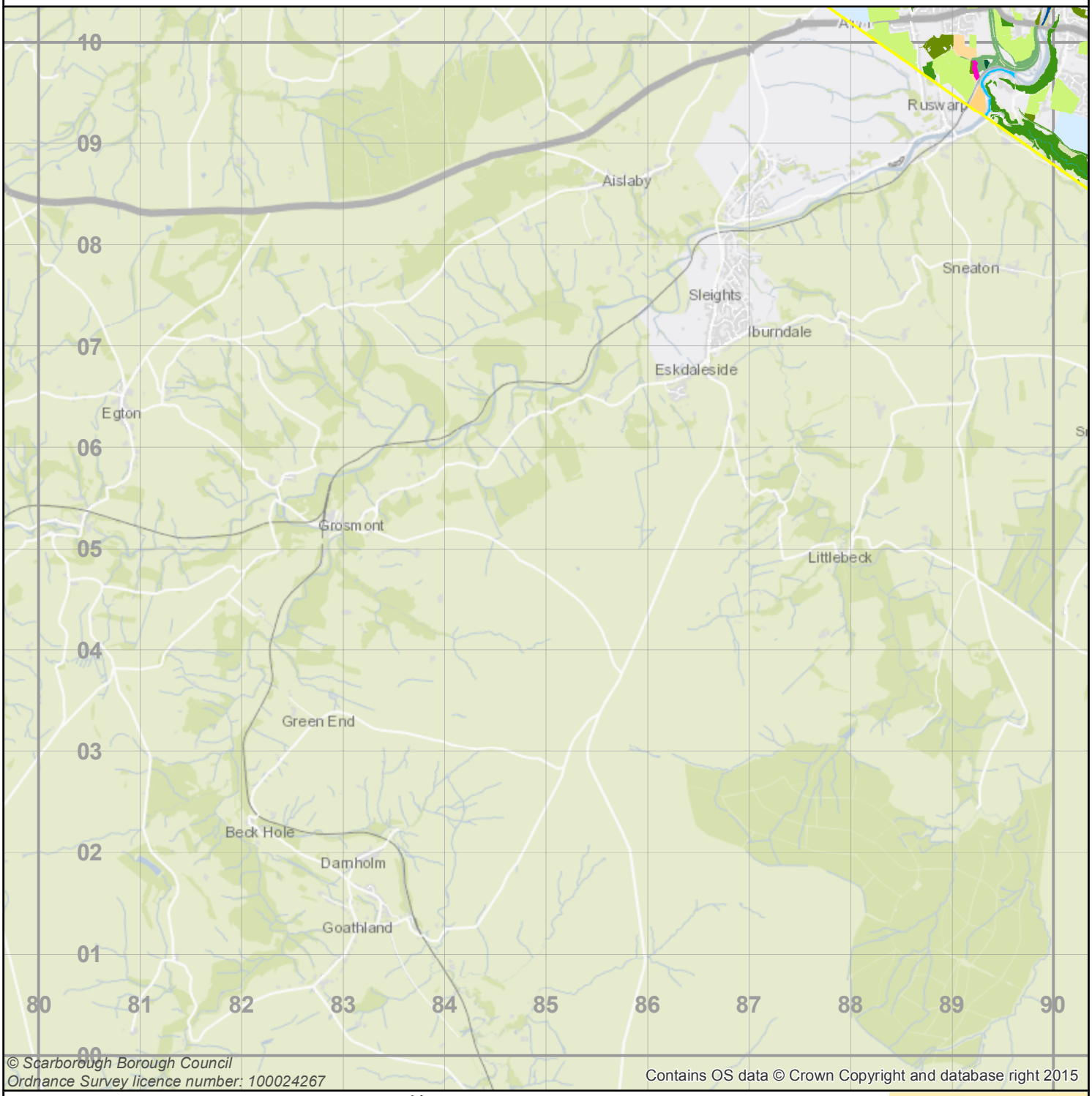
NZ80



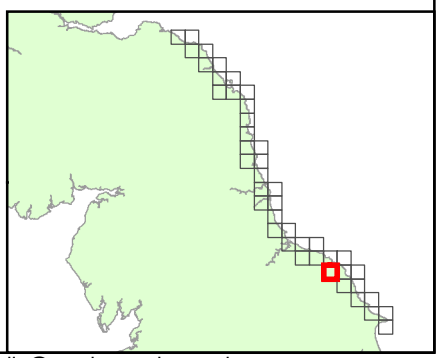
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- CR0 - Arable and horticulture
- EM1 - Swamp
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN31 - Rank neutral grassland
- GN4 - Grazing marsh pasture
- LSZ - Other littoral sediment
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland
- WC0 - Coniferous woodland



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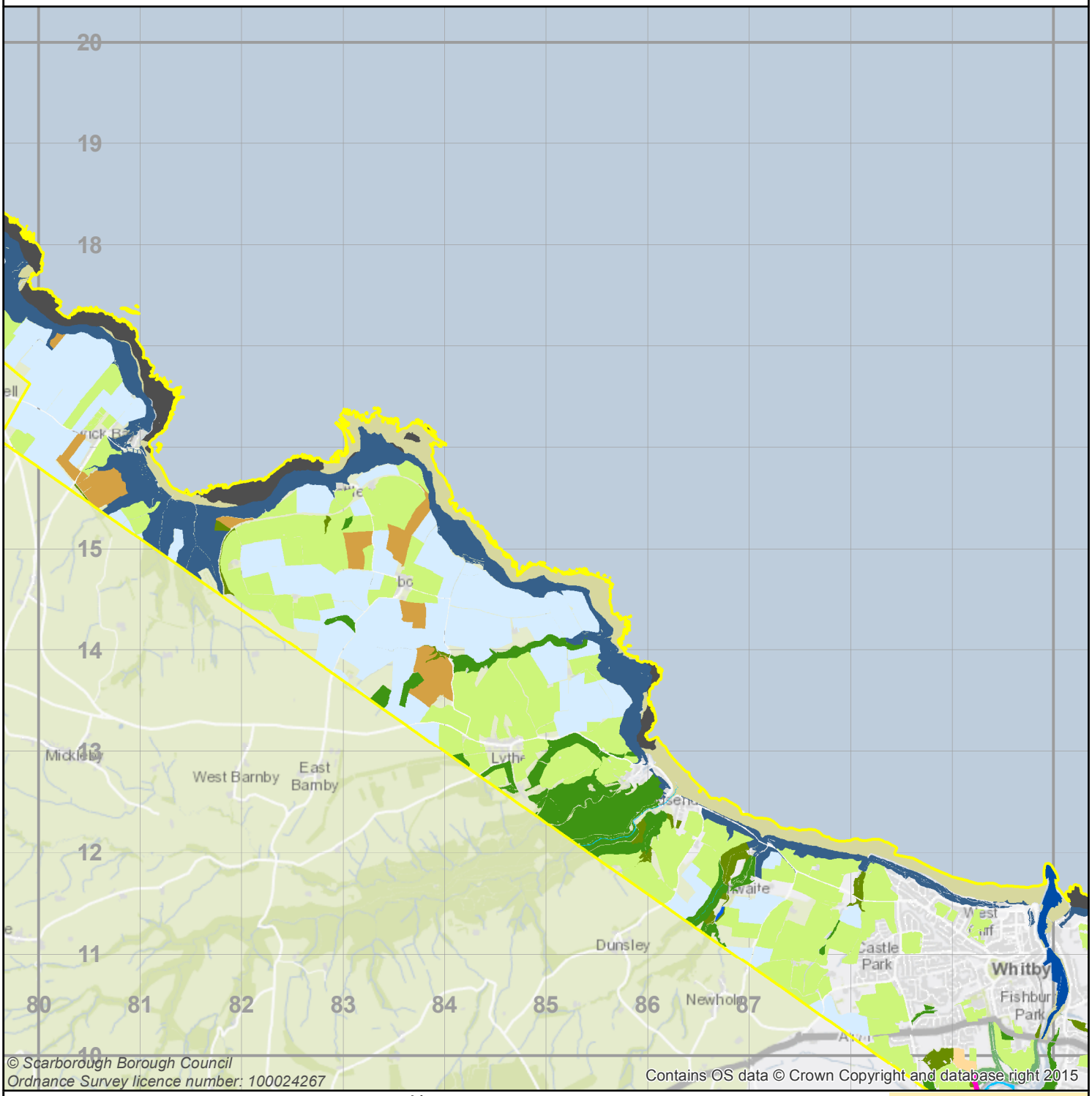
NZ81



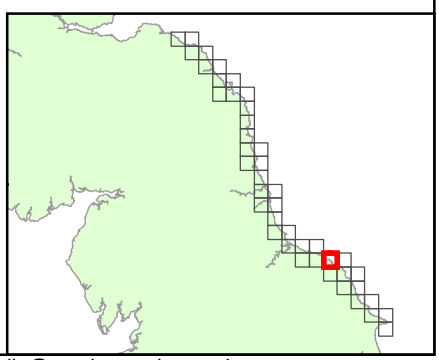
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- EM1 - Swamp
- GI0 - Improved grassland
- GN3 - Coarse neutral grassland
- GN31 - Rank neutral grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland
- WC0 - Coniferous woodland



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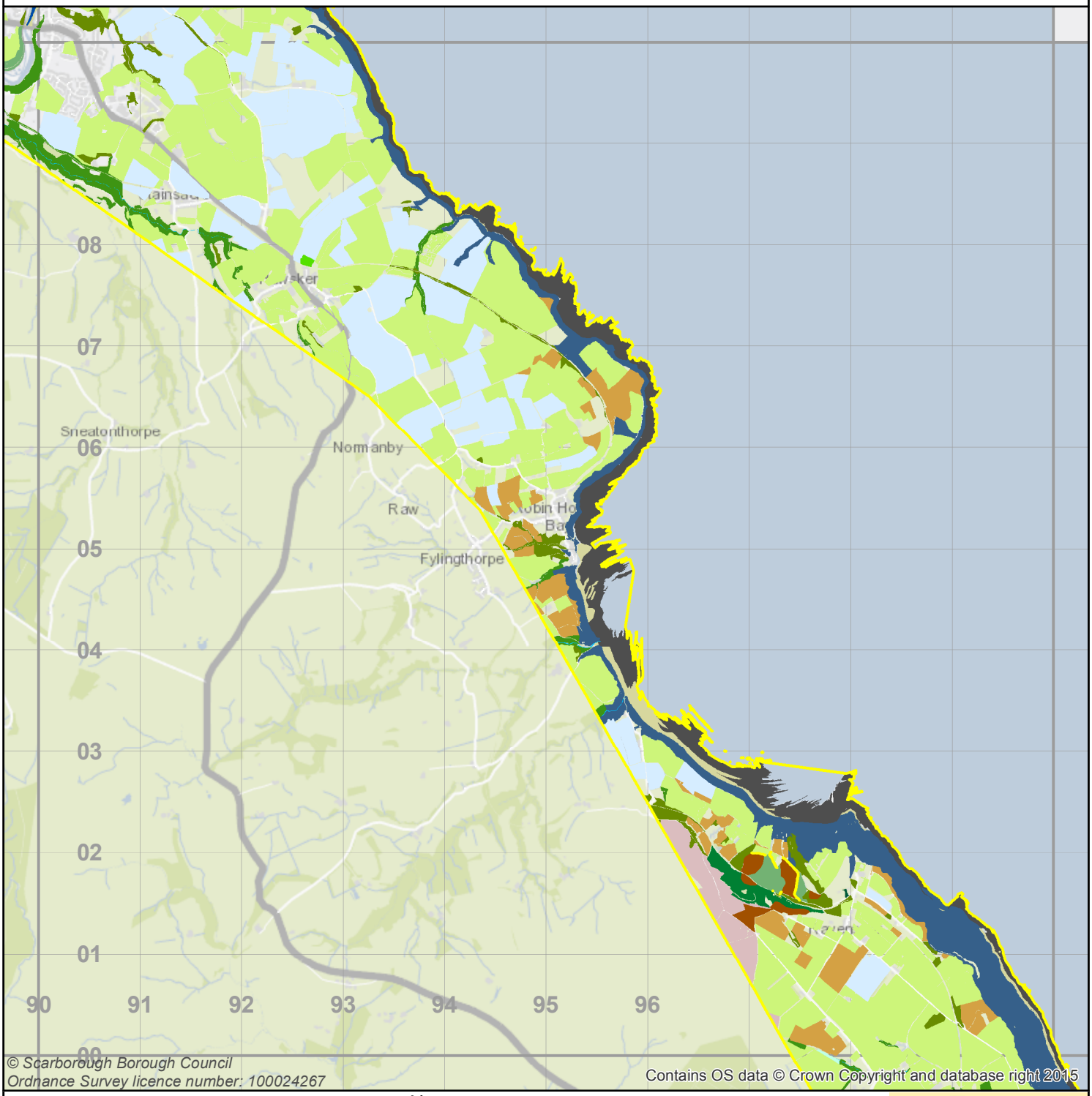
NZ90



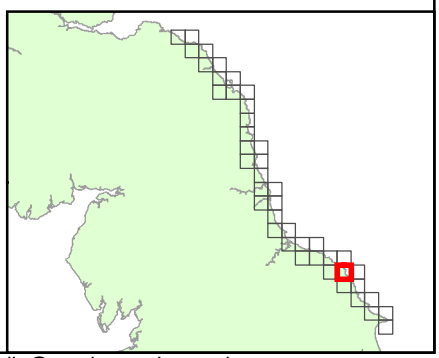
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AR5 - Estuary saline water or sea
- BRZ - Other continuous bracken
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- EM4 - Purple moor grass and rush pastures
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB36Z - Other lowland mixed deciduous woodland
- WB3Z - Other broadleaved woodland
- WC0 - Coniferous woodland



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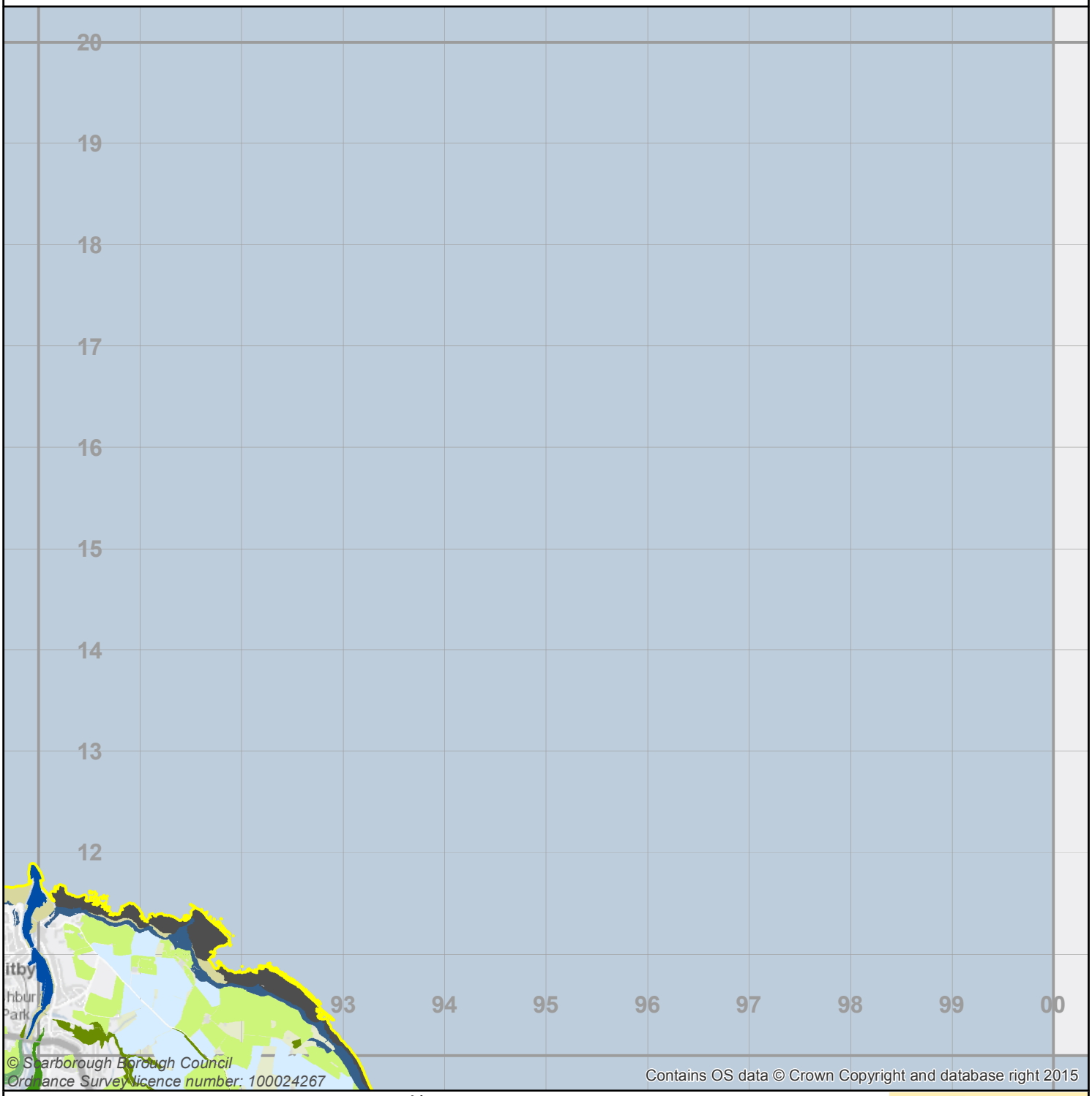


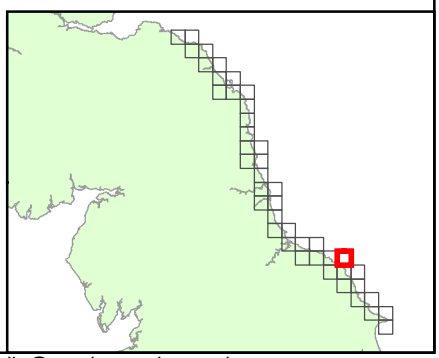
Extent of mapping

N

0 1 2 Km

NECO

- AR5 - Estuary saline water or sea
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3 - Broadleaved woodland
- WB3Z - Other broadleaved woodland



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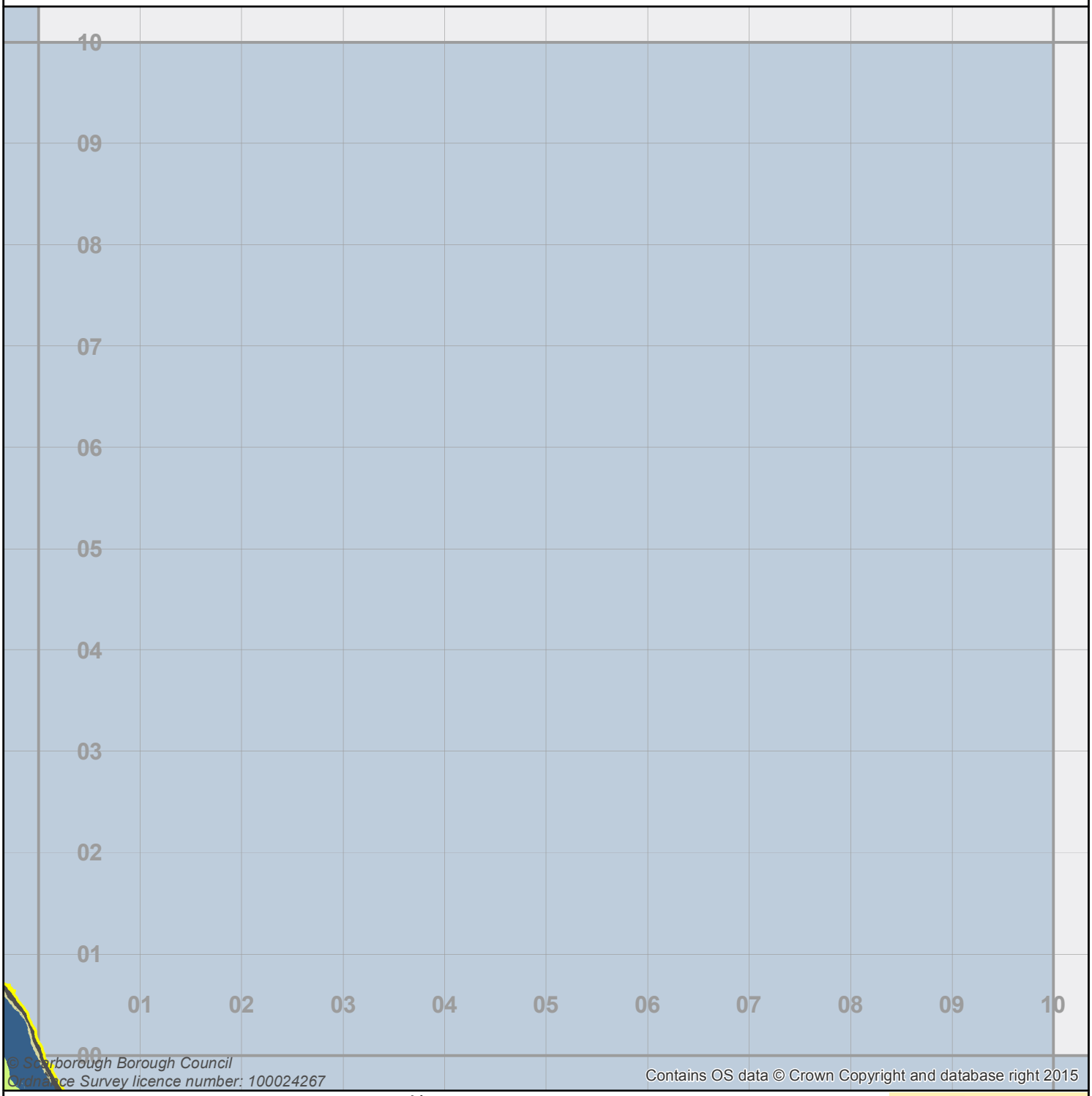
OV00



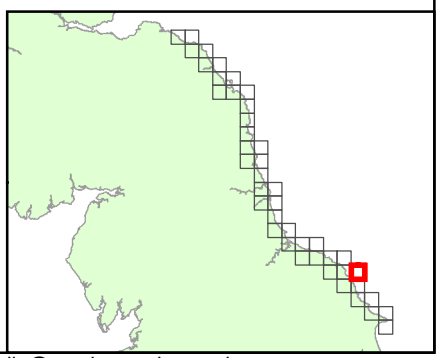
Extent of mapping

N

0 1 2 Km

NECO

- GI0 - Improved grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes



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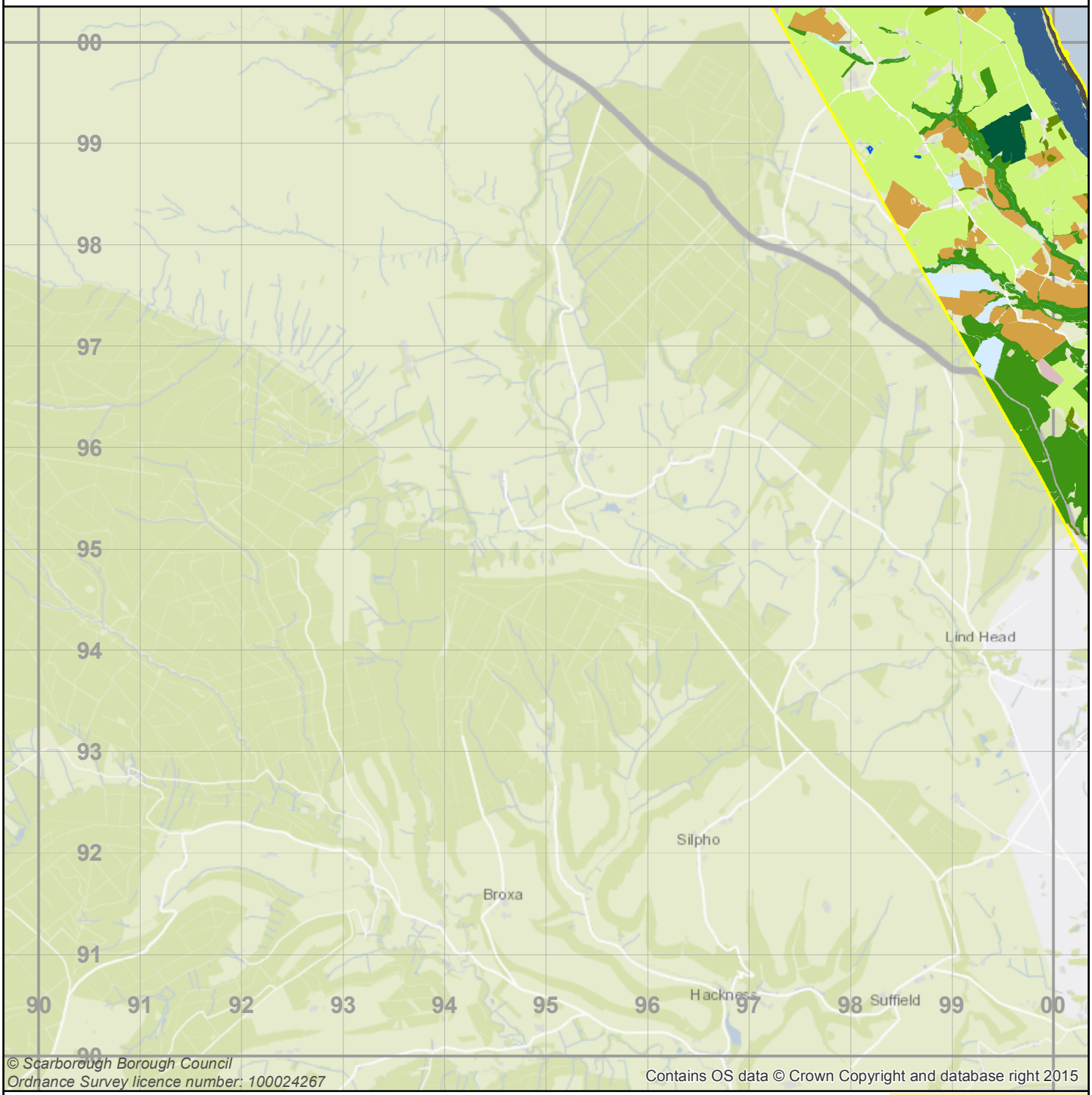


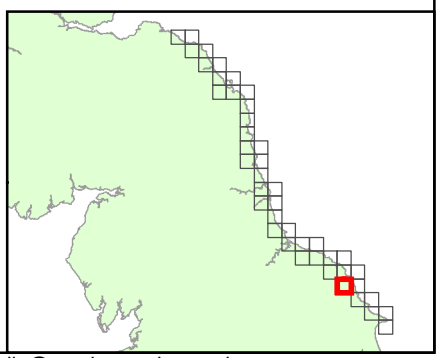
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- EM4 - Purple moor grass and rush pastures
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- HE0 - Dwarf shrub heath
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland
- WCZ - Other coniferous woodland



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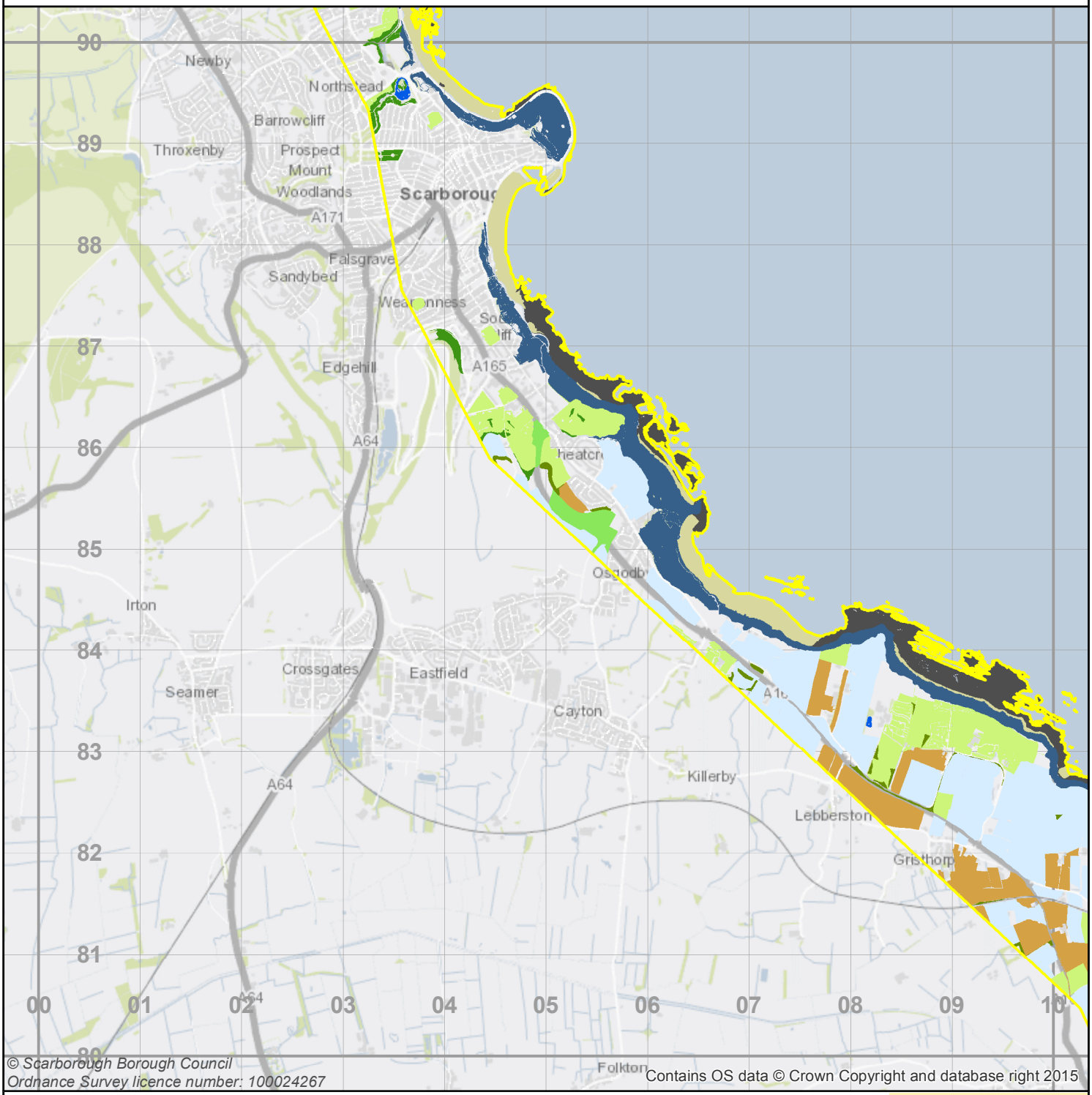
TA08



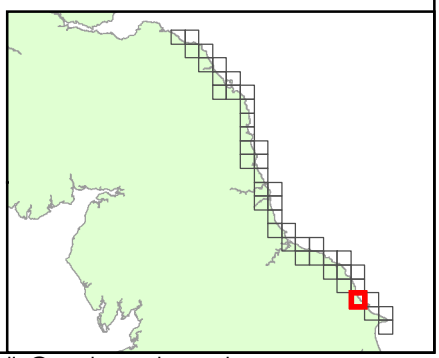
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LF27 - Transport corridors
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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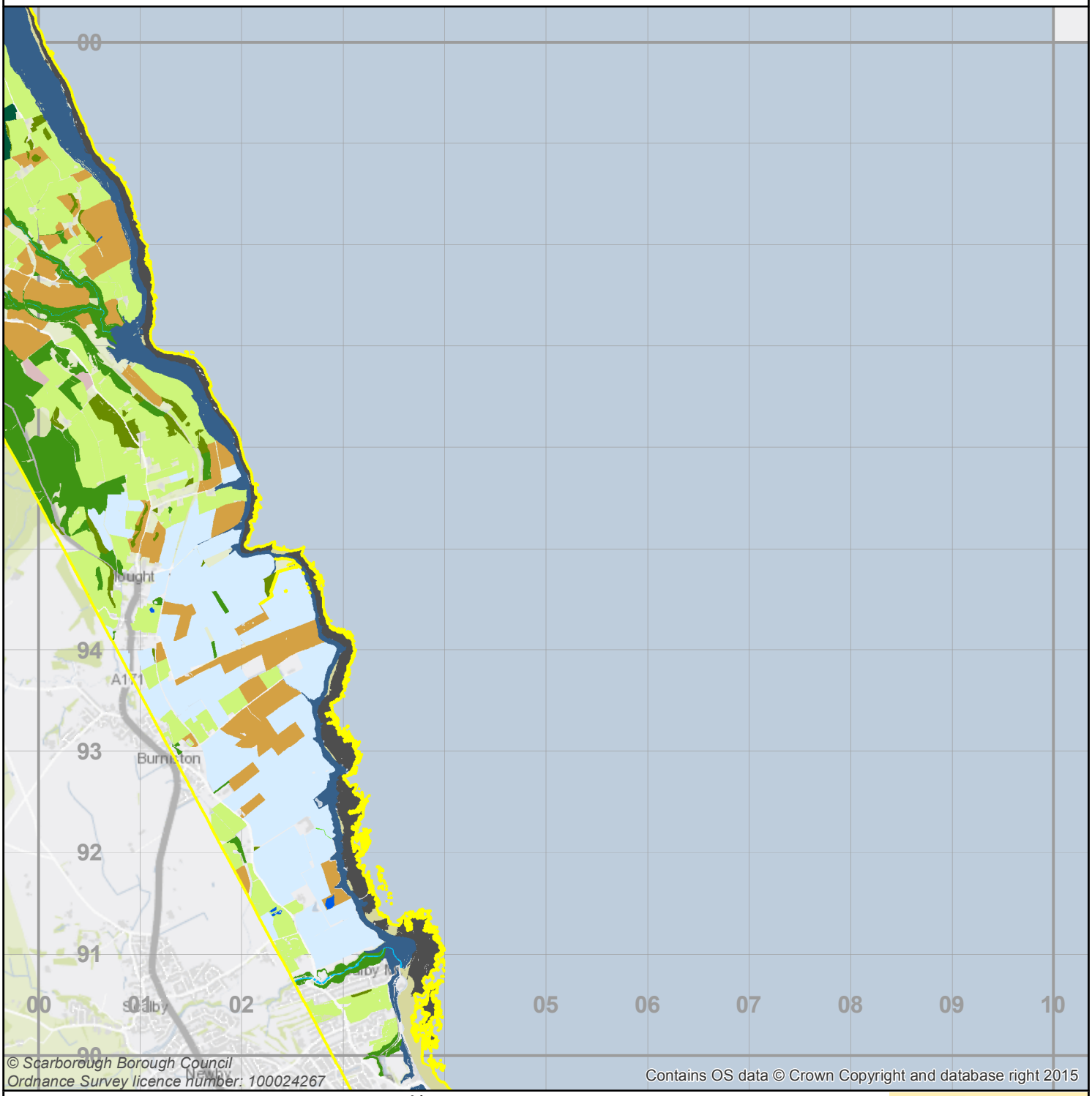
TA09



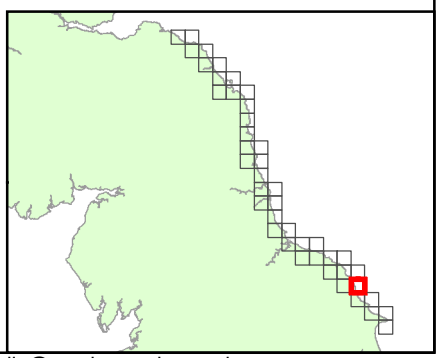
Extent of mapping

N

0 1 2 Km

NECO

- AR0 - Rivers and streams
- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- CR1 - Grass and grass covered leys
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- HE0 - Dwarf shrub heath
- LF11 - Hedgerows
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland
- WCZ - Other coniferous woodland



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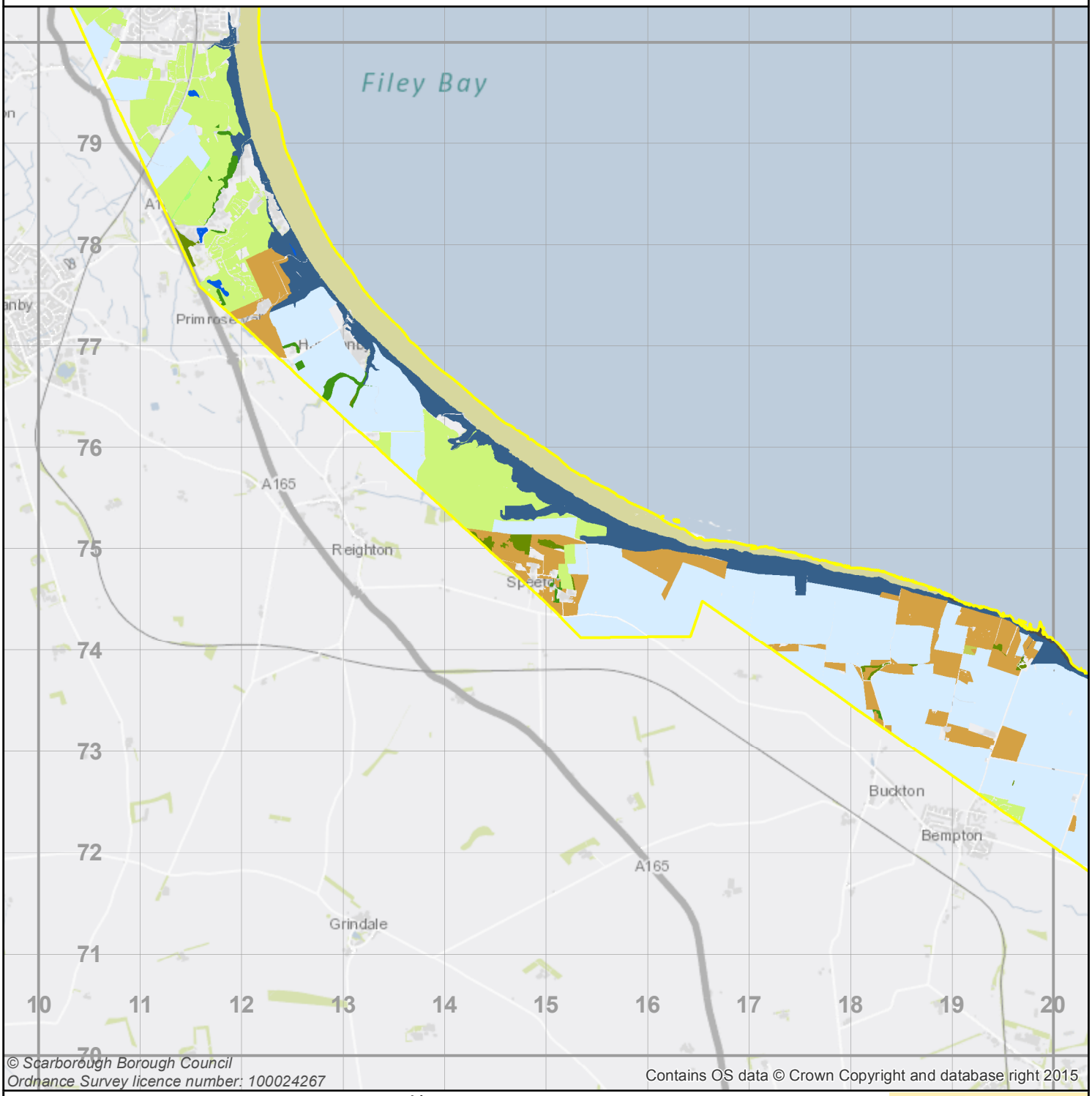


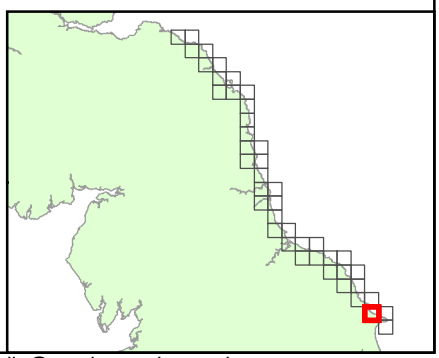
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GN0 - Neutral grassland
- GNZ - Other neutral grassland
- LF11 - Hedgerows
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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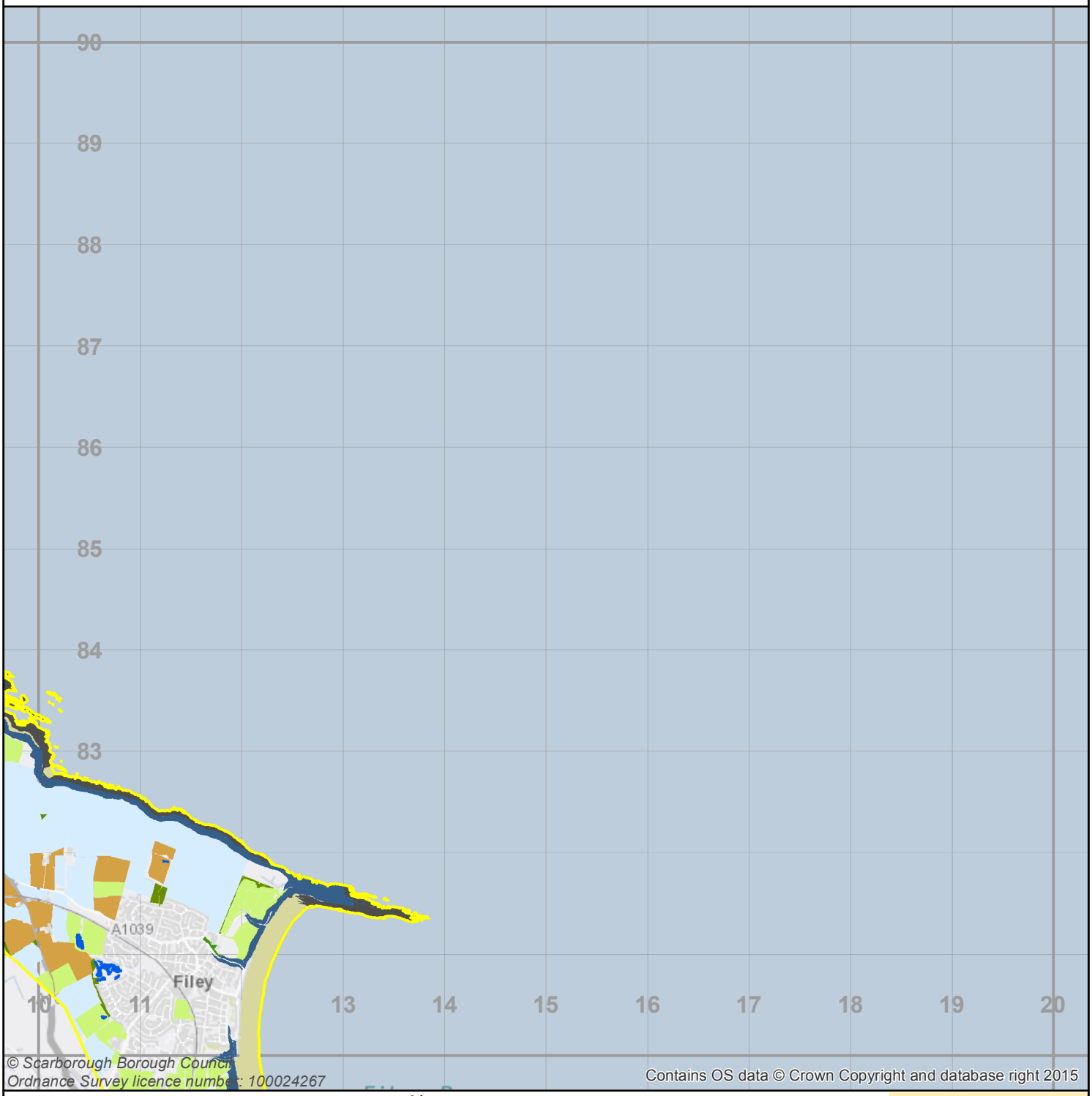


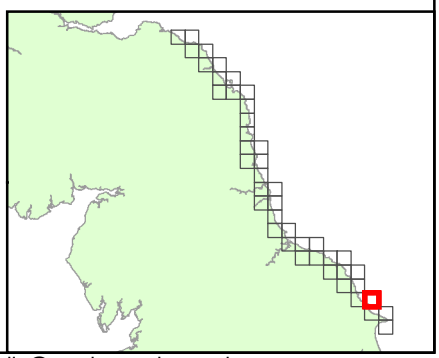
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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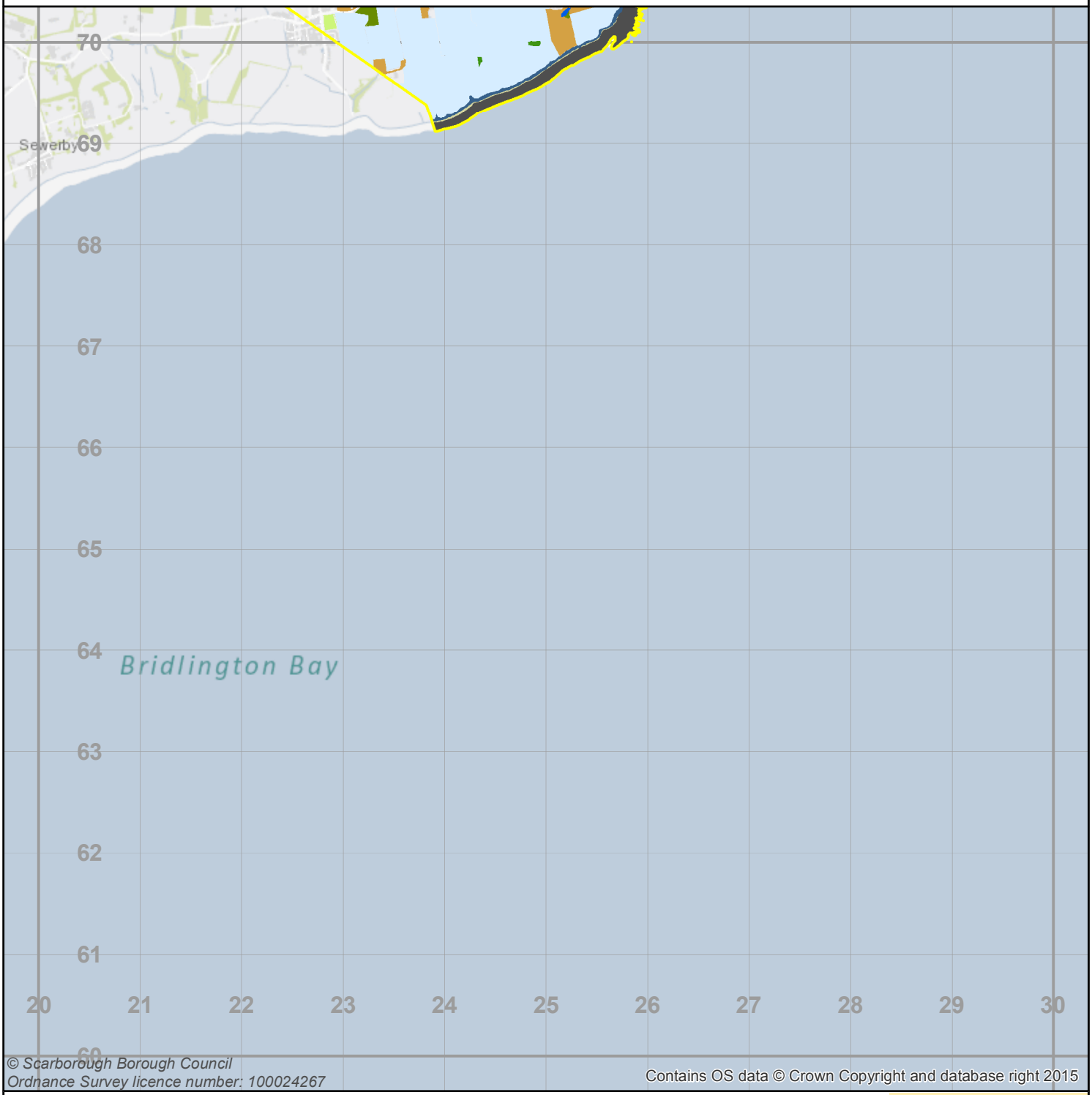


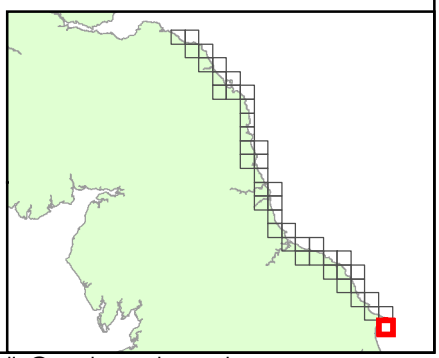
Extent of mapping

N

0 1 2 Km

NECO

- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB3Z - Other broadleaved woodland



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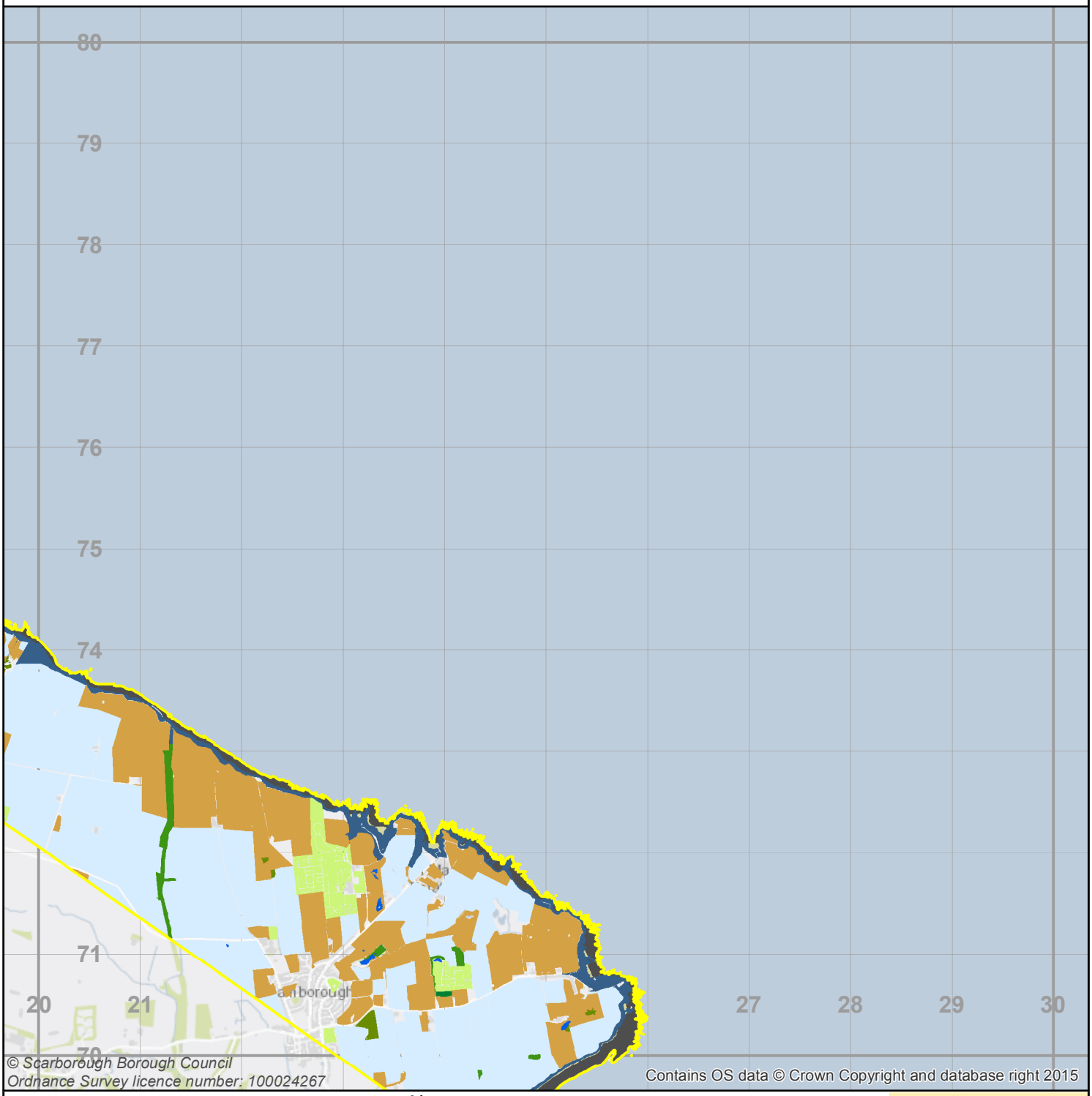
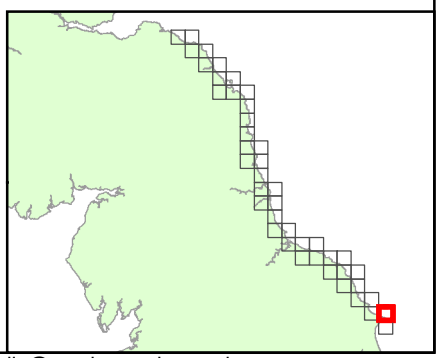


- AS0 - Standing open water and canals
- CR0 - Arable and horticulture
- GI0 - Improved grassland
- GNZ - Other neutral grassland
- LRZ - Other littoral rock
- LSZ - Other littoral sediment
- SR1 - Maritime cliffs and slopes
- WB2 - Scrub woodland
- WB36Z - Other lowland mixed deciduous woodland
- WB3Z - Other broadleaved woodland



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Appendix F SMP Action Plans and FCERM 6 year Programme strategic assessment

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
SA Objective				Minimise significant adverse impacts upon people and communities.	Minimise significant adverse impacts upon material assets.	Manage and minimise the risk of pollution to the water environment.	To use natural geological processes to support and facilitate the integrity of geological designations.	To use natural processes to support and facilitate ecosystem functions and the integrity of designations.	Minimise significant adverse impacts upon the landscape and seascape, particularly in relation to protected landscapes.	Manage and minimise significant adverse impacts upon designated cultural heritage assets and their setting.	
Assessment Criteria (Indicators) **Would the Action plan…..**				Result in a deterioration of the quality of life for people and communities?	Result in the loss, degradation, or function of material assets? Protect material assets?	Lead to an increased risk in pollution to the water environment?	Enable natural coastal geological processes to continue? Result in a detrimental impact on designated geological site features?	Result in damage to, fragmentation or loss of existing designated wildlife sites, habitats and species? Enable natural coastal processes to continue?	Cause significant adverse impact to the setting or fabric of a protected landscape?	Cause the loss of or damage to heritage assets? Have a detrimental impact upon the setting of heritage assets?	
Category of action	**MA NAME**	**MA**	**SMP Policies and ACTION**								
Scheme	Beadnell and Beadnell Bay (Northumberland and North Tyneside SMP2)	MA08	NAI Beadnell North Sea Wall Improvements.	+ +	+ +	0	0	-	0	0	People: High value receptor present (properties). Assume protection and positive impact from action. Footpath and bridleway along frontage would be impacted during construction. Material Assets: High value infrastructure receptors present (Road, properties).. Assume protection and positive impact from action Water: Protection from potential pollution on high value Biodiversity and designated Bathing Water Beach. Therefore assume water conditions remain at neutral impact Soil and geology: Action should not change the geological processes. Biodiversity: Maintenance action will not impact biodiversity but since SAC, SPA, Ramsar, SSSI are present there may be a small loss of habitat through coastal squeeze with provision of new rock armour.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Landscape: Action within regional area of high value (AONB, Heritage Coast). As action is maintenance and replacement then we assume that impact is neutral. Heritage: Scheduled Monuments are not located near to the area of action therefore no significant effect is anticipated.
Scheme	Boulmer to Seaton Point (Northumberland and North Tyneside SMP2)	MA11	HTL, HTL, MR Boulmer	+ +	+ +	+ +	+	-	-	+	People: Receptors present (properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present. Assume protection and positive impact from action Water: Assume that contaminated coastal soil from coastal slope would be protected through HTL, resulting in a positive impact. Soil and geology: Action will prevent natural geological processes of the foreshore and may impact on high value designated geological features (SSSI). May also impact on natural processes within high value biodiversity areas (see below). Biodiversity: Action within area of international/national high value (SAC, SPA, Ramsar, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action within area of high value (AONB). Action proposed will negatively impact on the landscape/seascape value. Heritage: No Scheduled Monuments but a listed building will be protected indirectly from the action.
Scheme	Newbiggin (Northumberland and North Tyneside SMP2)	MA20	NAI Newbiggin moor	+	+	+ +	0	- -	0	+	People: High value receptor present (golf course). Assume protection and positive impact from action Material Assets: Infrastructure receptors are located inland. No coastal road therefore critical infrastructure is not at immediate risk of flooding or erosion. Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will improve natural geological processes of the foreshore which

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											may positively contribute to the geological SSSI and to natural processes within high value biodiversity areas. Biodiversity: Action within area of international/national high value (SPA, Ramsar, MCZ, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value listed buildings nearby and local heritage assets. Positive likely effect from action.
Scheme	Newbiggin (Northumberland and North Tyneside SMP2)	MA20	HTL Newbiggin Point Local intervention between Newbiggin Point and Church Point to safeguard St. Bartholomew's Church and graveyard.	+	+	+ +	0	- -	0	+	People: Receptors present (caravan park, church etc). Assume protection and positive impact from action Material Assets: Infrastructure receptors present (Beach, industrial estate, caravan site). Assume protection and positive impact from action Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will allow natural geological processes of the rocky foreshore and improve exposure of the designated geological features (SSSI). Biodiversity: Action within area of international/national high value (SPA, Ramsar, MCZ, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value listed buildings nearby and local heritage assets. Positive likely effect from action.
Scheme	Newbiggin (Northumberland and North	MA20	HTL Newbiggin Bay to south	+ +	+ +	- -	0	- -	0	+	People: High value receptor present (village centre including commercial and residential

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
	Tyneside SMP2)										properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (promenade, beach, commercial and residential properties). Assume protection and positive impact from action. Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will prevent natural roll back of the beach and geological processes of the foreshore but will not impact on high value designated geological features (SSSI). Assumed netural impact. Biodiversity: Action within area of international/national high value (SPA, Ramsar, MCZ, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value listed buildings nearby and local heritage assets. Positive likely effect from action.
Scheme	Seaton Sluice to Curry's Point (Northumberland and North Tyneside SMP2)	MA24	NAI, NAI, NAI St. Mary's Island Causeway improvements	+ +	+ +	0	0	- -	0	+ +	People: High value receptor present (property). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (St Mary's Island and causeway). Assume protection and positive impact from action Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will improve access to view geological features while still allowing geological processes to continue. Biodiversity: Action within area of international/national high value (SPA, Ramsar, MCZ, SSSI) and local/low value (LNR) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: High value listed buildings on St Mary's Island. Positive likely effect from protection via action.
Scheme	Curry's Point to Brown's Point (Northumberland and North Tyneside SMP2)	MA25	HTL, HTL, HTL Whitley Bay Southern Promenade – improvements	+ +	+ +	0	0	- -	0	+ +	People: High value receptor present (promenade, town properties, tourism etc). Provide pedestrian coastal access along a reinstated promenade. Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (Coastal road, beach, promenade, seafront etc). Assume protection and positive impact from action Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will prevent natural roll back of the beach and geological processes of the foreshore but will not impact on high value designated geological features (SSSI). Assumed neutral impact. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value listed buildings present, in particular near coastal edge. Presume positive likely effect from protection via action.
Scheme	Brown's Point to Tynemouth North Pier (Northumberland and North Tyneside SMP2)	MA26	NAI, NAI, NAI Tynemouth Longsands Bear's Back Seawall - improvements	+	+	+	+	- -	0	+	People: There is pedestrian access along the north pier. Assume protection and positive impact from action. Material Assets: North Pier provides coastal protection for the material assets along Tynemouth. Assume protection of these material assets and positive impact from action Water: North Pier provides coastal protection to Tynemouth and reduces risk of pollution of water. Assume protection and positive impact from action. Soil and geology: Action will allow natural geological processes of the foreshore.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale) and contribute to coastal squeeze. Dune present (BAP habitat, coastal protection). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value listed buildings present, in particular near coastal edge. Presume positive likely effect from protection via action.
Scheme	Brown's Point to Tynemouth North Pier (Northumberland and North Tyneside SMP2)	MA26	NAI, NAI, NAI Outdoor Pool	-	0	0	++	--	0	0	People: The outdoor pool is no longer in use however, there are plans for its regeneration. If NAI is in place then regeneration can not go ahead as it would be at risk of flooding/erosion. This would have a negative impact on the public as they would not have access to this amenity and have indirect impacts on health and wellbeing. Material Assets: Grand Parade Road and beach are not at risk as a result of NAI. No direct impact assumed. Water: No anticipated change. No direct impact assumed. Soil and geology: Action will improve natural geological processes of the foreshore which may positively contribute to the geological SSSI and to natural processes within high value biodiversity areas. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No listed buildings or Scheduled Monuments located near the Outdoor Pool. No impact assumed.
Scheme	Brown's Point to Tynemouth North Pier (Northumberland and North	MA26	HTL, HTL, HTL Sea Banks Seawall - improvements	+ +	+ +	0	- -	- -	0	0	People: High value receptor present (residential and commercial properties (town centre), Percy Gardens. Positive impact anticipated from action.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
	Tyneside SMP2)										Material Assets: Infrastructure receptors present (Sea Banks Road). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Soil and geology: Action will continue to prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No listed buildings or Scheduled Monuments located along Sea Banks. No impact assumed.
Scheme	Tynemouth North Pier to Fish Quay (Northumberland and North Tyneside SMP2)	MA27	HTL, HTL, HTL Fish Quay – improvements	+	+ +	0	-	- -	0	+ +	People: Promenade along the coastline present. Assume positive impact from action Material Assets: Regeneration and development opportunities would be maintained with HTL action. Water: No anticipated change. No direct impact assumed. Soil and geology: Action will prevent natural geological processes of the foreshore. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value Scheduled monuments and listed buildings present, in particular near coastal edge. Presume positive likely effect from protection via action.
Scheme	Sunderland Harbour to Pincushion Point	MA08	HTL, HTL, HTL Scheme under review for Harbour East Bay	+ +	+ +	-	0	0	+	0	People: High value employment centres present (industry e.g. docks) with plans for regeneration with HTL action. Assume protection and positive impact from action.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
	(River Tyne to Flamborough Head SMP2)										Material Assets: High value industry (e.g. port/docks railway, sewage treatment works and outfall infrastructure, beach, commercial assets etc). Assume protection and positive impact from action Water: Potential for pollution of waterbodies with HTL action along industrial land. Soil and geology: Coastline is already heavily modified and natural geological processes are limited. Action will continue this therefore a neutral impact is assumed. Biodiversity: Action not within area of international/national high value (SPA, Ramsar, SSSI) area therefore neutral impact assumed. Landscape: Action to assist with the regeneration of the ports/docks will have a positive impact on the landscape. Heritage: No Scheduled monuments and Listed Buildings present on the coastline. No direct impact assumed.
Scheme	Tees Bay (River Tyne to Flamborough Head SMP2)	MA13	HTL, HTL, HTL Management for Seaton Carew defences determined from strategy.	+ +	+ +	++	- -	- -	0	-	People: High value receptor present (residential and commercial properties, including a golf course and public gardens). Assume protection and positive impact from action Material Assets: Infrastructure receptors present (Tees Road, golf course, commercial properties). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Soil and geology: Action will prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI). Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI, NNR) and low value (LNR) and may result in loss (small spatial scale). Dunes present. Action will contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: Protected wreck site present but no Listed Buildings are present along the coastline.
Scheme	Boulby (River Tyne to Flamborough Head SMP2)	MA18	NAI, NAI, NAI Potential need to relocate Cowbar Lane (not coast protection)	+ +	+ +	-	0	- -	0	0	People: High value receptor present (residential properties). Potential impact from action Material Assets: Residential properties and lifeboat station present present. Water: Road will be located closer to Staithes Beck and may impact on its water quality. Soil and geology: No anticipated change. No direct impact assumed. Biodiversity: Action within area of international/national high value (MCZ, SSSI) area and may result in loss (small spatial scale). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No Scheduled monuments or Listed Buildings are present within the vicinity of the road. Assume no direct impact.
Scheme	Upgang Beck to Whitby Abbey (River Tyne to Flamborough Head SMP2)	MA23	HTL, HTL, HTL Whitby Harbour Pier improvements	+ +	+ +	0	0	-	-	- -	People: High value receptor present (residential and commercial properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (Harbour, Yorkshire water assets, commercial fishing pier, beach etc). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed Soil and geology: No anticipated change. No direct impact assumed Biodiversity: Action within area of medium/low regional value (BAP, SINC) area and may result in loss (small spatial scale). Landscape: Action within area of high value (landscape/seascape, Heritage Coast, Conservation Area, Registered Parks & Gardens). Action may impact on the landscape/seascape value Heritage: High value Scheduled monument, Conservation Area, Listed buildings (including the piers), registered Parks & Gardens nearby. Positive likely effect from action to majority of

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											heritage features, however potential negative impact to the piers (listed buildings)
Scheme	Castle Cliff to White Nab (River Tyne to Flamborough Head SMP2)	MA28	HTL, HTL, HTL Scarborough South Bay: Rose Gardens - Rock revetment in front of existing seawall, seawall repairs and slope stabilisation	+ +	+ +	-	- -	- -	- -	+ +	People: High value receptor present (residential and commercial properties etc). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (Esplanade with residential and commercial properties lying to the west). Assume protection and positive impact from action Water: Potential for pollution of high value MCZ and designated Bathing Water Beach in the short term with action. Soil and geology: Action will prevent natural geological processes of the foreshore which may impact on high value designated geological features nearby (SSSI). Biodiversity: High value MCZ designation present. Potential adverse impact from action. Landscape: Action within area of high value townscape (Conservation Area, Registered Parks & Gardens). Action may impact on the townscape value Heritage: High value Scheduled monument, Conservation Area, Listed buildings, registered Parks & Gardens nearby. Presume positive likely impact from protection via action.
Scheme	Castle Cliff to White Nab (River Tyne to Flamborough Head SMP2)	MA28	HTL, HTL, HTL Scarborough South Bay: Foreshore Road and St Nicholas Cliff – Raise height of existing wall, drainage improvement Foreshore Road and slope stabilisation	+ +	+ +	0	0	- -	- -	0	People: Promenade and coastal road present. Assume protection and positive impact from action. Material Assets: Coastal road and pavilions present on the coastline. Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed Soil and geology: Action will maintain current conditions so assume neutral impact. Biodiversity: High value MCZ designation present. Potential adverse impact from action. Landscape: Action within area of high value townscape (Conservation Area, Registered

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Parks & Gardens). Action may impact on the townscape value Heritage: Scheduled monument, Conservation Area, Listed buildings, registered Parks & Gardens nearby as present within the area of action. Therefore assume a neutral impact.
Scheme	Castle Cliff to White Nab (River Tyne to Flamborough Head SMP2)	MA28	HTL, HTL, HTL Scarborough South Bay: South Bay Pool – Rock revetment in front of existing seawall, seawall repairs and slope stabilisation	+ +	+ +	0	-	- -	- -	+	People: Sea front footpath. Assume protection and positive impact from action Material Assets: Car access and parking along Cleveland Road. Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Soil and geology: Action will prevent natural geological processes of the foreshore occurring. Biodiversity: High value MCZ designation present. Potential adverse impact from action. Landscape: Action within area of high value townscape (Conservation Area, Registered Parks & Gardens). Action may impact on the townscape value Heritage: No Scheduled monuments, Conservation Area, Listed buildings, registered Parks & Gardens are at the vicinity of the action. Presume positive likely impact from protection via action.
Scheme	Castle Cliff to White Nab (River Tyne to Flamborough Head SMP2)	MA28	NAI, NAI, NAI Scarborough South Bay: South Cliff Gardens – Rock revetment in front of existing seawall, seawall repairs and slope stabilisation	+ +	+ +	+ +	- -	- -	- -	+	People: Residential and commercial properties present. Assume protection and positive impact from action Material Assets: Cleveland Road providing coastal access and vehicle parking. Water: No anticipated change. No direct impact assumed. Biodiversity: Biodiversity: High value MCZ designation present. Potential adverse impact from action. Landscape: Action within area of high value townscape (Conservation Area, Registered Parks & Gardens). Action may impact on the townscape value Heritage: No Scheduled monuments, Conservation Area, Listed buildings, registered

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Parks & Gardens are at the vicinity of the action. Presume positive likely impact from protection via action.
Scheme	Filey Brigg to Muston Sands (River Tyne to Flamborough Head SMP2)	MA31	NAI, NAI, NAI Filey – Cliff Stabilisation scheme	+	0	+ +	+ +	- -	- -	-	People: Pathway (Cleveland Way) present along the cliffs. Assume path could be realigned inland to accommodate the action. Material Assets: No material assets along cliff top. Water: No anticipated change. No direct impact assumed Soil and geology: Action will allow natural geological processes of the cliff face showing further high value designated geological features (SSSI). Biodiversity: High value designations (SSSI) present. Potential adverse impact from action. Landscape: Action within area of high value landscape (Conservation Area). Heritage: High value Scheduled monument, nearby action. Potential negative impact from action.
Scheme	Filey Brigg to Muston Sands (River Tyne to Flamborough Head SMP2)	MA31	NAI, NAI, NAI Filey - Outflanking defence at Filey	- -	- -	0	+ +	- -	- -	0	People: Commercial and residential properties are at risk and therefore action may have a negative impact. Material Assets: Cobble Landing and commercial properties also present. Assume a negative impact. Water: No anticipated change. No direct impact assumed Soil and geology: Action will allow natural geological processes of the foreshore which may allow designated geological features to be more visible (SSSI). Biodiversity: Action within area of national high value (MCZ, SSSI). Action may result in loss (small spatial scale). Landscape: Action within area of high value landscape (Conservation Area). May have a negative impact on the designated area.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: Scheduled monument, Conservation Area, Listed buildings no located near the action. Presume neutral effect.
Scheme (from 6 year programme)	(River Tyne to Flamborough Head SMP2)	MA26	Scalby Ness PAR & Works	0	0	+	0	0	0	0	People: No residential properties present. Coastal path may need realignment with coastal protection action. Material Assets: No material assets present apart from coastal path which would need realignment with coastal protection action. Water: No coastal erosion which could impact Sea Cut. Soil and geology: Geology of the coastline would not be impacted. Biodiversity: Coastal habitats would not be eroded however coastal squeeze could result in coastal habitat loss. Landscape: No change in landscape. Heritage: No heritage assets located close to the coastline.
Scheme (from 6 year programme)	(River Tyne to Flamborough Head SMP2)	MA21	Runswick Bay Appraisal and Works	+ +	- -	0	+ +	- -	-	0	People: Residential properties will be protected. Material Assets: Commercial properties and access into the sea is present. Assume a positive impact with access into the sea to be maintained. Water: No anticipated change. No direct impact assumed Soil and geology: Action will reduce the natural geological processes of the foreshore. Action should not negatively impact on the geology therefore a neutral impact is assumed. Biodiversity: Action within area of national high value (SSSI). Action may result in loss (small spatial scale). Landscape: Action within area of high value landscape (Conservation Area). May have a negative impact on the designated area. Heritage: Scheduled monument, Conservation Area, Listed buildings no located near the action. Presume neutral effect.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
Scheme (from 6 year programme)	(River Tyne to Flamborough Head SMP2)	MA23	Whitby Strategy 2 - Management Unit 13 West Cliff PAR - Spa	+ +	+ +	0	0	-	0	0	People: Protection of Cleveland Way and associated promenade. Material Assets: Protection of Whitby Pavilion, car parking and infrastructure. Water: No impact envisaged. Soil and geology: No impact on soil and geology. Biodiversity: Some loss of coastal habitats through coastal squeeze. Landscape: No change in the landscape. Heritage: Scheduled monument, Conservation Area, Listed Building not located near the strategy area.
Scheme (from 6 year programme)	(River Tyne to Flamborough Head SMP2)	MA27	North bay (Scarborough) Urgent Wall Improvement Phase 2	+ +	+ +	0	0	-	0	0	People: 392 residential properties at risk and would be protected from improvement defence works. Material Assets: Coastal road, associated promenade and commercial properties. Water: No anticipated change. No direct impact assumed Soil and geology: Action will reduce the natural geological processes of the foreshore. Action should not negatively impact on the geology therefore a neutral impact is assumed. Biodiversity: Action within area of national high value (Scarborough Castle Cliffs SSSI). Action may result in loss (small spatial scale). Landscape: Small change in landscape from stabilization slopes but this is minor since there is already an existing sea defence along the coastline. Heritage: No nearby heritage assets which will be impacted by the action.
Scheme (from 6 year programme)	(River Tyne to Flamborough Head SMP2)	MA11	Headland Walls and Blocksands, Hartlepool	+ +	+ +	+ +	0	- -	0	+	People: Residential properties are present along the coastline and will be protected by the new sea defences. Material Assets: Coastal road (Sea View Terrace), wastewater facilities and a cemetery. Water: Wastewater treatment facilities will be protected with improved sea defences.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Soil and geology: No significant impact Biodiversity: Some coastal squeeze from the provision of hard defences. Landscape: No significant change in the landscape as defences will be replacing those that currently exist. Heritage: Heugh Gen Battery located on the headland will be protected from new sea defences.
Scheme (from 6 year programme)	(Northumberland and North Tyneside SMP2)	MA26	Central Promenade Appraisal, Design And Construction, North Tyneside	0	+ +	0	0	-	0	0	People: Residential properties are located further inland of the promenade and therefore no direct impact is anticipated. Material Assets: A surf café, aquarium, promenade and car parking facilities are all present along the seafront adjacent to the promenade. Water: No significant impact on water is anticipated therefore no direct impact. Soil and geology: Biodiversity: Improvements to the promenade could result in the loss of coastal habitat. Landscape: No significant change in the landscape is anticipated therefore no direct impact. Heritage: No heritage assets are present along the coastline so no significant impacts are anticipated.
Scheme (from 6 year programme)	(Northumberland and North Tyneside SMP2)	MA10	Craster Coast Protection Scheme	+ +	+ +	0	0	-	-	0	People: Protection of residential properties. Material Assets: Protection of commercial properties. Water: No impacts are anticipated therefore no direct impact. . Soil and geology: New coastal protection will not impact geological formation therefore no direct impact. Biodiversity: Potential loss of coastal habitat through coastal squeeze. Landscape: AONB will be impacted on a minor scale with the provision of coastal protection.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: No heritage assets are present therefore no impacts.
Scheme (from 6 year programme)	(Northumberland and North Tyneside SMP2)	MA04	Marsden Bay Cliff Erosion Study	0	-	0	+	0	0	0	People: Residential properties present further inland and not at risk in the short term. Material Assets: The A183 Coast Road and coastal footpath are at risk of coastal erosion and may require diversion in the future. . Water: No effects are anticipated therefore no direct impact. Soil and geology: Continued erosion will improve the visibility of the geological formation in the cliffs. Biodiversity: Loss of cliff top habitats but new cliff falls will allow new habitats to be created and colonized. Neutral impact. Landscape: Coastal erosion will continue the natural coastal processes in line with the natural landscape. . Heritage: No heritage assets are present and at risk.
Scheme (from 6 year programme)	(Northumberland and North Tyneside SMP2)	MA06	Repairs to North Sunderland harbour breakwaters	+	+	-	0	-	0	0	People: Protection of residential properties inland. Material Assets: Protection of Tynemouth commercial and industrial areas. Water: Potential negative impact on water with repairs to a coastal structure. Soil and geology: No impact anticipated therefore no direct effect. Biodiversity: Potential negative impact on coastal biodiversity with repairs to a coastal structure. Landscape: No change as the structure would be the same as that existing. Heritage: No heritage assets are present therefore no impact is anticipated.
Maintenance	Tweed Estuary (Northumberland and North	MA02	HTL, HTL, HTL Modify defences around Sandstell Point subject to study and development plans.	+ +	+ +	0	0	- -	- -	+ +	People: High value receptor present (residential and commercial properties etc). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (beach, recreation assets,

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
	Tyneside SMP2)										tourism assets). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed Soil and geology: Action will prevent natural geological processes of the foreshore. Assume a neutral impact. Biodiversity: Action within area of international/national high value (SAC, SPA, Ramsar, SSSI) includes natural defence. Action may result in loss (small spatial scale) and contribute to coastal squeeze Landscape: Action within high value designated landscape (AONB, Heritage Coast). Action may impact on the landscape value Heritage: Scheduled Monuments, Conservation Area and Listed buildings present. Presume positive likely impact from protection via action
Maintenance	Amble (Northumberland and North Tyneside SMP2)	MA15	HTL, HTL, HTL Improvement works to seawalls in Little Shore Wave Basin.	+ +	+ +	0	- -	- -	- -	0	People: Residential properties present (Assume protection and positive impact from action Material Assets: Bay view road with commercial businesses based on tourism (e.g. café, B&Bs etc). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed Soil and geology: Action will prevent natural geological processes of the foreshore. Assume no direct impact. Biodiversity: Action within area of international/national high value (SAC, SPA, Ramsar, MCZ, SSSI) includes natural defence, dune and saltmarsh. Action may result in loss (small spatial scale). Landscape: Action within high value designated landscape (AONB, Heritage Coast). Action may impact on the landscape value Heritage: No Schedule Monument or Listed Buildings nearby therefore neutral impact assumed.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
Maintenance	Seaton Sluice to Curry's Point (Northumberland and North Tyneside SMP2)	MA24	NAI, NAI, NAI Maintenance of existing defence assets recommended	+ +	+ +	0	+ +	- -	0	0	People: High value receptor present (residential properties). Assume protection and positive impact from action Material Assets: Infrastructure receptors including community centre, recreation and amenity facilities (playground, tennis courts). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed Soil and geology: Action will allow natural geological processes of the foreshore to occur. Biodiversity: Action within area of international/national high value (SPA, Ramsar, MCZ, SSSI) and local/low value (LNR) and may result in loss (small spatial scale) Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No listed building or Schedule Monument within the vicinity of the existing defences therefore a neutral effect is assumed.
Maintenance	Curry's Point to Brown's Point (Northumberland and North Tyneside SMP2)	MA25	HTL, HTL, HTL Maintenance of existing defence assets recommended	+ +	+ +	0	0	- -	0	+ +	People: High value receptor present (promenade, town properties, tourism etc). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (Coastal road, beach, promenade, seafront etc). Assume protection and positive impact from action Water: No anticipated change. Assumed neutral impact. Soil and geology: Action will prevent natural roll back of the beach and geological processes of the foreshore but will not impact on high value designated geological features (SSSI). Assumed neutral impact. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action not within designated landscape. Assumed neutral impact

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: High value listed buildings present, in particular near coastal edge. Presume positive likely effect from protection via action.
Maintenance	Brown's Point to Tynemouth North Pier (River Tyne to Flamborough Head SMP2)	MA26	HTL, HTL, HTL Port of Tyne – maintenance of harbour structures	+ +	+ +	-	0	- -	0	0	People: High employment centre. Assume protection and positive impact from action. Material Assets: High value infrastructure receptors present that require access to Port of Tyne. Assume protection and positive impact from action Water: Potential impact on water quality through maintenance of harbour structures. Soil and geology: Action will prevent natural geological processes occurring but action will not damage or destroy geology. A netural effect is envisaged. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No listed buildings or Scheduled Monuments located on the harbour structures. Presume neutral impact.
Maintenance	Brown's Point to Tynemouth North Pier (River Tyne to Flamborough Head SMP2)	MA26	HTL, HTL, HTL Maintenance of existing defence assets recommended	+ +	+ +	0	- -	- -	0	0	People: High value receptor present (residential and commercial properties (town centre), Percy Gardens. Positive impact anticipated from action. Material Assets: Infrastructure receptors present (Sea Banks Road). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Soil and geology: Action will continue to prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI).

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Landscape: Action not within designated landscape. Assumed neutral impact Heritage: No listed buildings or Scheduled Monuments located along Sea Banks. No impact assumed.
Maintenance	Tynemouth North Pier to Fish Quay (River Tyne to Flamborough Head SMP2)	MA27	HTL, HTL, HTL Maintenance of existing defence assets recommended	+ +	+ +	0	- -	- -	0	+ +	People: High value receptor present (residential, commercial properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (beach, Fish Quay, commercial assets etc). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Soil and geology: Action will continue to prevent natural geological processes of the foreshore. Assume negative impact Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) area and may result in loss (small spatial scale). Landscape: Action not within designated landscape. Assumed neutral impact Heritage: High value Scheduled monuments and listed buildings present, in particular near coastal edge. Presume positive likely effect from protection via action.
Asset Management and Maintenance	Saltwick Nab to Hundale Point (Robin Hoods Bay) (River Tyne to Flamborough Head SMP2)	MA25	NAI, NAI, NAI Robin Hoods Bay - Preventative maintenance as recommended by strategy	+ +	+ +	0	+ +	- -	+ +	0	People: High value receptor present (residential properties). Assume protection and positive impact from action. Material Assets: High value infrastructure receptors present (Harbour & infrastructure, (commercial fishing industry, marina asset), Yorkshire water assets and outfall pipeline out to sea, lifeboat station, foreshore road, cliff railway, designated bathing beach, hotel of architectural merit, park & gardens etc). Assume protection and positive impact from action. Water: No anticipated change. No direct impact assumed.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Soil and geology: Action will allow natural geological processes to continue which will benefit the visibility of the geological formations of the SSSI. Biodiversity: Action within area of international/national high value (SAC, SSSI) area and may result in loss (small spatial scale) and contribute to coastal squeeze. Landscape: Action within area of high value landscape (National park, Heritage Coast). Action thought likely will impact more positively on landscape value than with no action. Heritage: High value Listed buildings present located away from coastline. No impact assumed therefore neutral effect.
Development Planning and Adaptation	Beadnell and Beadnell Bay (Northumberland and North Tyneside SMP2)	MA08	HTL, HTL, HTL Beadnell North Sea Wall Improvements Project Appraisal Report	+ +	+ +	0	0	-	0	0	People: High value receptor present (properties). Assume protection and positive impact from action. Footpath and bridleway along frontage would be impacted during construction. Material Assets: High value infrastructure receptors present (Road, properties). Assume protection and positive impact from action Water: Protection from potential pollution on high value Biodiversity and designated Bathing Water Beach. Therefore assume water conditions remain at neutral impact Soil and geology: Action should not change the geological processes. Biodiversity: Maintenance action will not impact biodiversity but since SAC, SPA, Ramsar, SSSI are present there may be a small loss of habitat through coastal squeeze with provision of new rock armour. Landscape: Action within regional area of high value (AONB, Heritage Coast). As action is maintenance and replacement then we assume that impact is neutral. Heritage: Scheduled Monuments are not located near to the area of action therefore no significant effect is anticipated.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
Development Planning and Adaptation	Beacon Hill to Creswell (Northumberland and North Tyneside SMP2)	MA17	MR, MR, MR Develop a progressive transitional management approach, with ongoing discussion regarding the possible need for further management to the area behind Bondi Carrs.	+ +	0	-	+ +	+	0	0	People: Receptors are limited to isolated farms. Assume protection and positive impact from action Material Assets: Coastal access road however this could be redirected to allow MR. Water: Potential that inland water bodies could become brackish/saline with MR. This could impact biodiversity Potential adverse impact via action Soil and geology: Action would allow the roll back of dunes and natural geological process to continue. Biodiversity: Action within area of high value (SPA, Ramsar, MCZ, SSSI). Action may result in positive increase in high value designated area (small spatial scale). However, may have an adverse negative impact on from inundation of saltwater to some designated features Landscape: Action within high value designated landscape (Heritage Coast). A natural MR action is likely to result in a neutral impact. Heritage: No Listed Buildings or Scheduled Monuments would be impacted by PR. Neutral impact anticipated.
Development Planning and Adaptation	Beacon Hill to Creswell (Northumberland and North Tyneside SMP2)	MA17	MR, MR, MR Possible need for further management to the area	+ +	0	-	+ +	+	0	0	People: Receptors are limited to isolated farms. Assume protection and positive impact from action Material Assets: Coastal access road however this could be redirected to allow MR. Water: Potential that inland water bodies could become brackish/saline with MR. This could impact biodiversity Potential adverse impact via action Soil and geology: Action would allow the roll back of dunes and natural geological process to continue. Biodiversity: Action within area of high value (SPA, Ramsar, MCZ, SSSI). Action may result in positive increase in high value designated area (small spatial scale). However, may have an adverse negative impact on from inundation of saltwater to some designated features

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Landscape: Action within high value designated landscape (Heritage Coast). A natural MR action is likely to result in a neutral impact. Heritage: No Listed Buildings or Scheduled Monuments would be impacted by PR. Neutral impact anticipated.
Development Planning and Adaptation	Sunderland Harbour to Pincushion Point (River Tyne to Flamborough Head SMP2)	MA08	HTL, HTL, HTL Potential schemes to South Sunderland	+ +	+ +	+ +	0	-	0	0	People: High value receptor present (dock, commercial properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (port/docks, industrial infrastructure, railway, road etc). Assume protection and positive impact from action Water: Action will protect potential contaminated land from flooding. Soil and geology: Action will prevent natural geological processes of the foreshore. Assume neutral impact. Biodiversity: Action within area of low value with no designations. May result in loss (small spatial scale). Landscape: Action will look similar to that which currently existing. Assume a neutral impact. Heritage: No high value heritage assets near to the coastline therefore neutral impact assumed.
Development Planning and Adaptation	Sunderland Harbour to Pincushion Point (River Tyne to Flamborough Head SMP2)	MA08	HTL, HTL, HTL Scheme development for Harbour East Bay. Review and develop defence requirements to Port regeneration area. High economic risk. Examine opportunity for realignment to provide an integrated approach with regeneration. Defences in poor condition.	+ +	+ +	+ +	0	-	0	0	People: High value receptor present (dock, commercial properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (port/docks, industrial infrastructure, railway, road etc). Assume protection and positive impact from action Water: Action will protect potential contaminated land from flooding. Soil and geology: Action will prevent natural geological processes of the foreshore. Assume neutral impact. Biodiversity: Action within area of low value with no designations. May result in loss (small spatial scale).

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Landscape: Action will look similar to that which currently existing. Assume a neutral impact. Heritage: No high value heritage assets near to the coastline therefore neutral impact assumed.
Development Planning and Adaptation	Blackhall Rocks to Heugh Breakwater (River Tyne to Flamborough Head SMP2)	MA11	NAI, NAI, NAI Management strategy for Crimdon Valley. Potential for biodiversity. Resolve local land use together with access and environmental enhancement.	+ +	+ +	0	+ +	0	0	0	People: One residential properties (Pony World) however, the roll back of the dunes through NAI would not impact this property in the short term. Material Assets: A Caravan park is present to the north of the dunes and Pony World is present inland of the dunes. Roll back of the dunes through NAI would not impact this commercial asset in the short term. Water: No impact anticipated. Assumed a neutral impact. Soil and geology: Action will allow natural geological processes to continue with potentially greater visibility of the geological SSSI. Biodiversity: Action within area of international/national high value (SAC, SPA, Ramsar, SSSI, NNR). The roll back of dunes may result in the loss of existing embryonic dune flora but the increase of more established, vegetated dune habitat. With the roll back of the dune systems new embryonic dunes will be created. Assume a neutral impact. Landscape: The area is not within a designated landscape value area, however the roll back of the dunes will continue to provide the natural coastal landscape. Heritage: No heritage assets are present along the coastline therefore a neutral impact is anticipated.
Development Planning and Adaptation	Blackhall Rocks to Heugh Breakwater (River Tyne to Flamborough Head SMP2)	MA11	HTL, HTL, HTL Development strategy for area of North Sands. Develop an integrated approach to defence of the cemetery frontage. Identify potential erosion risk contribution. Potential development in risk	+ +	+ +	+	-	- -	-	0	People: High value receptor present (cemetery). Assume protection and positive impact from action Material Assets: Future development site present. Assume protection and positive impact from action

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
			area. Opportunity for enhancement of designated area and local biodiversity. Ensure integration with redevelopment. Maintain heritage and amenity value								Water: Protection of cemetery will avoid the risk of contaminated land releases. Soil and geology: Action will prevent natural geological processes of the foreshore. Biodiversity: Action within area of international/national high value (SAC, SPA, Ramsar, SSSI, NNR) may result in loss (small spatial scale) and coastal squeeze. Landscape: Area not within a designated landscape value area, but is with a high value conservation area. May have an adverse impact on townscape value Heritage: No heritage assets are present along the coastline therefore a neutral impact is anticipated.
Development Planning and Adaptation	Hartlepool Bay (River Tyne to Flamborough Head SMP2)	MA12	HTL, HTL, HTL Middleton Beach. Advise on defence. Ensure integration with redevelopment to provide sustainable defence	+ +	+ +	0	- -	- -	0	0	People: High value receptor present (Commercial and residential properties etc). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (High breakwater, Marina and harbour, fishing port, international cargo/trade port, network railway, coast road, tourism assets, yacht club). Assume protection and positive impact from action Water: No impact anticipated. Assumed a neutral impact. Soil and geology: Action will continue to prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI). Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) may result in loss (small spatial scale) Landscape: Area not within a designated landscape value area. Assumed neutral impact Heritage: No high value Scheduled Monuments and Listed buildings present immediately along the coastline. Presume neutral impact via action.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
Development Planning and Adaptation	Hartlepool Bay (River Tyne to Flamborough Head SMP2)	MA12	HTL, HTL, HTL Marina. Detailed project appraisal report. Develop recommendations of strategy. High economic risk. Review sustainable development. Benefits associated with port. Possible biodiversity improvement. Interaction with Middleton development	+ +	+ +	0	- -	- -	0	0	People: High value receptor present (Commercial and residential properties etc). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (High breakwater, Marina and harbour, fishing port, international cargo/trade port, network railway, coast road, tourism assets, yacht club). Assume protection and positive impact from action Water: No impact anticipated. Assumed a neutral impact. Soil and geology: Action will prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI). Biodiversity: Action within area of international/national high value (SPA, Ramsar, SSSI) may result in loss (small spatial scale) Landscape: Area not within a designated landscape value area. Assumed neutral impact Heritage: No high value Scheduled Monuments and Listed buildings present immediately along the coastline. Presume neutral impact via action.
Development Planning and Adaptation	Tees Bay (River Tyne to Flamborough Head SMP2)	MA13	NAI, NAI, NAI Management plan for Seaton Dunes. Co-ordinate land use and dune management. High opportunity for biodiversity linked to designated areas. Amenity use of area. Associated flood risk	-	-	0	+ +	0	0	0	People: Residential and commercial properties (including a golf course). Material Assets: Infrastructure receptors present (golf course, commercial properties). Assume protection and positive impact from action Water: No anticipated change. No direct impact assumed. Soil and geology: Action will ensure natural geological processes of the foreshore which may impact positively on high value designated geological features (SSSI). Biodiversity: The roll back of dunes may result in the loss of existing embryonic dune flora but the increase of more established, vegetated dune habitat. With the roll back of the dune systems new embryonic dunes will be created. Assume a neutral impact.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Landscape: Action not within designated landscape. Assumed neutral impact Heritage: Protected wreck site present but no Listed Buildings are present along the coastline.
Development Planning and Adaptation	Coaltham and Redcar (River Tyne to Flamborough Head SMP2)	MA14	HTL, HTL, MR Revised strategy and appraisal. Extend strategy to Redcar east and develop detailed schemes. High economic risk. High risk to properties. Potential development issues. Integration with designated sites. Amenity use of Redcar and beach. Long term management of East Redcar	+ +	+ +	- -	- -	0	0	0	People: High value receptor present (residential and commercial properties). Assume protection and positive impact from action Material Assets: High value infrastructure receptors present (promenade, Esplanade, commercial properties, lifeboat station). Assume protection and positive impact from action Water: High value Biodiversity areas and Designated Bathing Beaches within action (see below). Potential impact to water quality via action. Soil and geology: Action may potentially prevent natural geological processes of the foreshore which may impact on high value designated geological features (SSSI). Biodiversity: The roll back of dunes may result in the loss of existing embryonic dune flora but the increase of more established, vegetated dune habitat. With the roll back of the dune systems new embryonic dunes will be created. Assume a neutral impact. Landscape: Area not within a designated landscape value area. Assumed neutral impact Heritage: No listed buildings or Schedule Monuments are present and designated wreck site present. Presume neutral impact.
Development Planning and Adaptation	Mill Howle to Saltburn (River Tyne to Flamborough Head SMP2)	MA15	NAI, NAI, NAI Develop strategy for Marske and Saltburn. High economic loss. Risk to properties. Potential for biodiversity enhancement. Amenity use of area. Maintain water sports and access	- -	-	- -	0	0	- -	- -	People: A high number of residential properties are at risk of coastal erosion. Material Assets: High value material assets include the beach, pier, water sports access and facilities). Assume loss of significant material assets but protection of water sports and access. Water: High value Saltburn Sands Designated Bathing Beaches should not be impacted by the action. Potential impact to water quality from pollution via action.

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Soil and geology: Action will allow the natural geological processes of the foreshore to occur (however, there are no designated features present). Assume no neutral impact. Biodiversity: The roll back of dunes may result in the loss of existing embryonic dune flora but the increase of more established, vegetated dune habitat. With the roll back of the dune systems new embryonic dunes will be created. Assume a neutral impact. Landscape: Area not within a designated landscape value area, but is with a high value townscape area (conservation area, registered Park and Gardens). May have an adverse impact on townscape value Heritage: High value Listed buildings present, (including tramway and pier) a registered Park and garden and a conservation area. Action could have impacts upon setting.
Development Planning and Adaptation	Huntcliff and Hummersea Cliff (River Tyne to Flamborough Head SMP2)	MA17	MR, NAI, NAI Skinningrove Scheme Development. Define specific works based on strategy. Support for local community. Economic risk and potential loss of properties. Maintaining access and amenity.	- -	-	-	0	-	- -	-	People: High value receptor present and at risk residential properties). Assume negative impact as a result of the action. Material Assets: High value infrastructure receptors present (Beach, jetty, commercial fishing, carpark etc). Assume some loss through flooding and coastal erosion. Water: Potential for pollution of low value biodiversity area. Potential for pollution from erosion of contaminated coastal land (industrial heritage) via action. Soil and geology: Action may prevent natural geological processes of the foreshore. No designated geological features present. Biodiversity: Action within area containing regional medium value (SINC) dune BAP habitat (small spatial scale). Opportunity for positive impact, potential for negative impact. Landscape: Area within high value designated landscape area (heritage coast, national trust land). May have an adverse impact on heritage value

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: High value heritage coast will be impacted although no heritage assets will be directed impacted by the action.
Development Planning and Adaptation	White Nab to Cayton Bay (River Tyne to Flamborough Head SMP2)	MA29	NAI, NAI, NAI Cayton Bay: Realignment strategy, develop managed realignment and access strategy plan. Maintaining use of Cayton Bay. Advice on sustainable development.	- -	- -	0	+ +	+ +	+	0	People: Residential properties at risk of coastal erosion on top of the cliffs. Material Assets: Residential properties at risk of coastal erosion on top of the cliffs. Cleveland Road would need to be realigned to maintain access. Water: No anticipated change. No direct impact assumed. Soil and geology: Action will promote natural geological processes of the foreshore which may impact positively on high value designated geological features (SSSI). Biodiversity: High value MCZ and SSSI designation present. Potential positive impact from action on returning area to a more natural state. Landscape: Within an area of designated regional value landscape (National Trust). Heritage: Low value area, no heritage features on the coastline.
Development Planning and Adaptation	Black Rocks to Filey Brigg (River Tyne to Flamborough Head SMP2)	MA29	NAI, NAI, NAI Cayton Bay: Management plan, to review implications of managed realignment. Risk to properties. Highway management. Important environmental issues. Access and amenity	- -	- -	0	+ +	+ +	+	0	People: Residential properties at risk of coastal erosion on top of the cliffs. Material Assets: Residential properties at risk of coastal erosion on top of the cliffs. Cleveland Road would need to be realigned to maintain access. Water: No anticipated change. No direct impact assumed. Soil and geology: Action will promote natural geological processes of the foreshore which may impact positively on high value designated geological features (SSSI). Biodiversity: High value MCZ and SSSI designation present. Potential positive impact from action on returning area to a more natural state. Landscape: Within an area of designated regional value landscape (National Trust).

RECEPTOR				PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
											Heritage: Low value area, no heritage features on the coastline.
Scheme	South Filey Bay (River Tyne to Flamborough Head SMP2)	MA31	NAI, NAI, NAI Filey - Scheme appraisal to develop strategy recommendations for outflanking defence. High economic value and risk to properties. Important amenity of Filey Bay	- -	- -	0	+ +	- -	- -	0	People: Commercial and residential properties are at risk and therefore action may have a negative impact. Material Assets: Cobble Landing and commercial properties also present. Assume a negative impact. Water: No anticipated change. No direct impact assumed Soil and geology: Action will allow natural geological processes of the foreshore which may allow designated geological features to be more visible (SSSI). Biodiversity: Action within area of national high value (MCZ, SSSI). Action may result in loss (small spatial scale). Landscape: Action within area of high value landscape (Conservation Area). May have a negative impact on the designated area. Heritage: Scheduled monument, Conservation Area, Listed buildings not located near the action. Presume neutral effect.

Appendix G Coastal strategy actions strategic assessment

Receptor	PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY (includes earth system processes)	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
SA objective	Minimise significant adverse impacts upon people and communities	Minimise significant adverse impacts upon material assets	Manage and minimise the risk of pollution to the water environment.	To use natural geological processes to support and facilitate the integrity of geological designations	To use natural processes to support and facilitate ecosystem functions and the integrity of designations.	Minimise significant adverse impacts upon the landscape and seascape, particularly in relation to protected landscapes.	Manage and minimise significant adverse impacts upon designated cultural heritage assets and their setting.	
Assessment Criteria (Indicators) **Would the Coastal Strategy…..**	Result in a deterioration of the quality of life for people and communities ?	Result in the loss, degradation, or function of material assets? Protect material assets?	Lead to an increased risk in pollution to the water environment?	Enable natural coastal geological processes to continue? Result in a detrimental impact on designated geological site features?	Result in damage to, fragmentation or loss of existing designated wildlife sites, habitats and species? Enable natural coastal processes to continue?	Cause significant adverse impact to the setting or fabric of a protected landscape?	Cause the loss of or damage to heritage assets? Have a detrimental impact upon the setting of heritage assets?	
South Tyneside Council Coastal Management Strategy 2007-2012	+ +	+ +	+ +	+ +	+ +	+ +	+ +	People: Does not promote increase of flooding risk on residential properties. Assume that residential properties will be protected. Material Assets: the strategy aims to protect valuable assets wherever possible from the effect of coastal erosion and flooding. Water: the strategy aim to protect environmental designations while preventing or minimising the impact of flooding. It also aims to improve the environmental quality of beaches. Soil and Geology: the strategy aim to protect environmental designations while preventing or minimising the impact of flooding. Biodiversity: the strategy aim to protect environmental designations while preventing or minimising the impact of flooding. Landscape: the strategy aim to protect environmental designations while preventing or minimising the impact of flooding. Heritage: the strategy aim to protect environmental designations while preventing or minimising the impact of flooding.
Hartlepool Borough Council Seaton Carew Coastal Strategy Study	+ +	+ +	0	0	0	0	**0**	People: The strategy aims to protect residential properties.

Receptor	PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY (includes earth system processes)	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
								Material Assets: The strategy aims to protect commercial properties. Water: No significant impact on water receptors are anticipated. Therefore no direct impact. Soil and Geology: No impact on the soil and geological formations are anticipated therefore no direct impact. Biodiversity: There is a risk of coastal squeeze with hold the line and an increase of dune habitat through the roll back of the dune system. No direct effect. Landscape: The natural landscape will continue with rolling back of the dune system. Any hold the line action will mean the landscape will stay in its existing condition. No direct impact is assumed. Heritage: No impacts on coastal heritage is anticipated. Therefore no direct impact.
Scarborough Borough Council Runswick Bay strategy	+ +	+ +	0	+ +	0	+ +	+ +	People: The strategy aims to protect residential properties. Material Assets: The strategy aims of protect commercial properties. Water: No impacts on water receptors are anticipated. Therefore no direct impact. Soil and Geology: The strategy aims to protect the two SSSIs designated for geology Biodiversity: No European or Nationally designated sites for biodiversity are present along the coastline. Therefore no direct impact is anticipated. Landscape: The strategy aims to protect the conservation area and National Park. Heritage: The strategy aims to protect the Heritage Coastline.
Scarborough Borough Council Whitby Strategy	+ +	+ +	0	+ +	-	+ +	+ +	People: The strategy aims to protect residential properties. Material Assets: The strategy aims to protect commercial properties. Water: No impacts on water receptors are anticipated. Therefore no direct impact.

Receptor	PEOPLE	MATERIAL ASSETS	WATER AND GEOHYDROMORPHOLOGY	SOIL AND GEOLOGY (includes earth system processes)	BIODIVERSITY	LANDSCAPE	HERITAGE	COMMENT
								Soil and Geology: No significant impact to Whitby to Saltwick SSSI and erosion of the cliffs will improve visibility of the designated geological features. Biodiversity: No international or European designated sites for biodiversity are present however there are nationally designated sites for biodiversity and protection of the coastline may result in coastal squeeze of habitats. Landscape: The strategy aim to protect the Conservation Area. Heritage: The strategy aims to protect heritage assets.
Scarborough Borough Council Robin Hoods Bay Strategy	+ +	+ +	-	0	- -	0	0	People: The strategy aims to protect residential properties. Material Assets: The strategy aims to protect material assets. Water: Coastal water may be impacted with replacement of existing defences. Soil and Geology: The geological SSSIs will not be impacted by the strategy. Biodiversity: The strategy may result in coastal squeeze on a European designated site. Landscape: The National Park will not be impacted by the strategy. Heritage: The strategy will aim to protect the Heritage coastline.
Scarborough Borough Council Scarborough Town Strategy	+ +	+ +	0	0	- -	0	0	People: The strategy aims to protect residential properties. Material Assets: The strategy aims to protect material assets. Water: No anticipated impact on water receptors. Soil and Geology: No anticipated impact on geological formations. Biodiversity: Potential loss of habitats through coastal squeeze. Landscape: The strategy aims to protect Scarborough's Conservation Area. Heritage: The strategy will aim to protect heritage assets.

Appendix H

Cumulative assessment for SMP Action Plans and FCERM 6 year Programme

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

Appendix H Cumulative Assessment for Coastal Actions

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
N to NT	MA2	Sandstell Point Berwick BC	+ +	+ +	0	0	- -	- -	+ +	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA cumulative effects where the action may impact on receptors that also lie in other MAs e.g. Berwickshire and North Northumberland Coast SAC and Northumberland Coast AONB.	2015	It is assumed the works are ongoing therefore we recommend that the proposed management action in MA02 are not undertaken at the same time as other works within MA08 Beadnell North Sea Wall Improvements, MA10 Craster Coast Protection Scheme and MA11 Boulmer which may have a significant cumulative effect on Berwickshire and North Northumberland Coast SAC and Northumberland Coast AONB to avoid cumulative effects.
N to NT	MA04	Marsden Bay Cliff Erosion Study Berwick BC	0	-	0	+	0	0	0	No in-combination effect as there is only one management action proposed in this MA. No cross MAs cumulative effects are anticipated.	2021	No cumulative effect.
N to NT	MA06	Repairs to North Sunderland harbour breakwaters Berwick BC	+	+	-	0	-	0	0	No in-combination effects as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Berwickshire and North Northumberland Coast SAC.	2021	We recommend that the proposed management actions in MA04 Marsden Bay Cliff Erosion Study, MA06 Repairs to North Sunderland harbour breakwaters, MA08 Beadnell North Sea Wall Improvements (should they be undertaken in 2021) and MA10 Craster Coast Protection Scheme should not be undertaken at the same time to avoid cumulative impacts on Berwickshire and North Northumberland Coast SAC.
N to NT	MA08	Beadnell North Sea Wall Improvements Northumberland County Council	+ +	+ +	0	0	-	0	0	Yes, multiple potential positive in-combination actions within the MA with impacts on people and material assets. There may be potential cross MA negative cumulative effects on Berwickshire and	2015-2021	We recommend that the proposed management actions in MA04 Marsden Bay Cliff Erosion Study, MA06 Repairs to North Sunderland harbour breakwaters, MA06 Repairs to North Sunderland harbour breakwater and MA10 Craster Coast Protection Scheme should not be undertaken at the same time to avoid cumulative impacts on Berwickshire and North Northumberland Coast SAC. This is on the assumption that MA08 Beadnell North Sea Wall Improvements are undertaken in 2021.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										North Northumberland Coast SAC.		
N to NT	MA10	Craster Coast Protection Scheme Northumberland County Council	+ +	+ +	0	0	-	-	0	No in-combination effects as there is only one management action proposed in this MA. There be potential cross MA negative cumulative effects on Northumberland Coast AONB Berwickshire and North Northumberland Coast SAC.	2021	We recommend that the proposed management actions in MA04 Marsden Bay Cliff Erosion Study, MA06 Repairs to North Sunderland harbour breakwater and MA8 Beadnell North Sea Wall Improvements should not be undertaken at the same time to avoid cumulative impacts on Berwickshire and North Northumberland Coast SAC. This is on the assumption that MA08 Beadnell North Sea Wall Improvements are undertaken in 2021.
N to NT	MA11	Boulmer Northumberland County Council	+ +	+ +	+ +	+	-	-	+	No in-combination effects as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Northumberland Coast AONB and Berwickshire and North Northumberland Coast SAC	2009-2013	It is unknown when Boulmer will be undertaken therefore with the assumption that the action will be undertaken in the future there are potential cumulative effects with MA02 Sandstell Point, MA06 Repairs to North Sunderland harbour breakwaters, MA08 Beadnell North Sea Wall Improvements and MA10 Craster Protection Scheme depending on the timing of delivery. We recommend that the proposed management actions should not be undertaken at the same time to avoid cumulative impacts on Berwickshire and North Northumberland Coast SAC. This should be reconfirmed once the timing is known.
N to NT	MA15	Little Shore Wave Basin Northumberland County Council	+ +	+ +	0	- -	- -	- -	0	No in-combination effects as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar and Coquet to St Mary's MCZ	2011 (but on hold)	Due to the extent of the Northumbria Coast SPA/Ramsar across the Cell 1 coastline and the unconfirmed timings of the actions it is difficult to confirm the cumulative effects. However we can identify where there may be potential cumulative effects on the following receptors from the following management actions should they be undertaken at the same time: <u>Northumbria Coast SPA/Ramsar</u> MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements, <u>Coquest to St Marys MCZ</u> MA17 Beacon Hill to Creswell management and Bondi Carrs.MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
												We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar and the Coquest to St Marys MCZ. This should be reconfirmed once the timings are known.
N to NT	MA17	Beacon hill to Creswell management and Bondi Carrs Alnwick DC	+ +	0	-	+ +	+	0	0	Yes, multiple potential in-combination actions within the MA with impacts on People, water, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Coquet to St Mary's MCZ, Northumberland Shore SSSI and Low Hauxley Shore SSSI	Ongoing	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements, <u>Coquest to St Mary's MCZ</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance <u>Northumberland Shore SSSI and Low Hauxley Shore SSSI</u> MA17 Beacon Hill to Creswell managed realignment We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Coquest to St Mary's MCZ, Northumberland Shore SSSI and Low Hauxley Shore SSSI. This should be reconfirmed once the timings are known.
	MA17	Beacon Hill to Creswell managed realignment Environment Agency	+ +	0	-	+ +	+	0	0	Yes, multiple potential in-combination actions within the MA with impacts on people, water, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Coquet to St Mary's MCZ, Northumberland Shore SSSI and Low Hauxley Shore SSSI	Ongoing	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements, <u>Coquest to St Mary's MCZ</u>

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
												MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance <u>Northumberland Shore SSSI and Low Hauxley Shore SSSI</u> MA17 Beacon hill to Creswell management and Bondi Carrs We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Coquest to St Mary's MCZ, Northumberland Shore SSSI and Low Hauxley Shore SSSI. This should be reconfirmed once the timings are known.
N to NT	MA20	Newbiggin Point Coastal Protection Scheme Northumberland County Council	+	+	+ +	0	- -	0	+	No in-combination effects as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar and Coquet to St Mary's MCZ.	2012/2013	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. <u>Coquest to St Mary's MCZ</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar and the Coquest to St Marys MCZ. This should be reconfirmed once the timings are known.
N to NT	MA24	St. Mary's Island Causeway improvements Berwick BC/North Tyneside	+ +	+ +	0	0	- -	0	+ +	Yes, multiple potential in-combination actions within the MA with impacts on people, material assets, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA /Ramsar, Northumberland Shore SSSI and Coquet to St Mary's MCZ	2015	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements,

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										and heritage assets e.g. lighthouse and cottage.		Coquest to St Mary's MCZ MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 Seaton Sluice to Curry's Point Maintenance. Northumberland Shore SSSI MA24 Seaton Sluice to Curry's Point Maintenance, We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Coquest to St Mary's MCZ and Northumberland Shore SSSI. This should be reconfirmed once the timings are known.
N to NT	MA24	Seaton Sluice to Curry's Point Maintenance North Tyneside	+ +	+ +	0	+ +	- -	0	0	Yes, multiple potential in-combination actions within the MA with impacts on people, material assets, soil & geology and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA /Ramsar, Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI and Coquet to St Mary's MCZ and heritage assets e.g. lighthouse and cottage.	When required.	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. Northumbria Coast SPA/Ramsar MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements, Coquest to St Mary's MCZ MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements. Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Coquest to St Mary's MCZ, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA25	Whitley Bay Southern Promenade – improvements North Tyneside	+ +	+ +	0	0	- -	0	+ +	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, biodiversity and heritage.	2015	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. Northumbria Coast SPA/Ramsar

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI, listed buildings.		MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA25	Curry's Point to Brown's Point Maintenance North Tyneside	+ +	+ +	0	0	- -	0	+ +	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI and listed buildings	Ongoing	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. Northumbria Coast SPA/Ramsar MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA26	Tynemouth Longsands Bear's Back Seawall – improvements	+	+	+	+	- -	0	+	Yes, multiple potential in-combination effects within the MA with impacts on	Planned to be delivered in the	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
		North Tyneside								people, material assets, water, soil & hydrology, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI.	Medium term	<u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. <u>Northumberland Shore SSSI, Tynemouth to Seaton Sluice SSSI</u> MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA26	Central Promenade Appraisal, Design and construction, North Tyneside North Tyneside	0	+ +	0	0	-	0	0	Yes, multiple potential in-combination effects within the MA with impacts on material assets and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI.	2021	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. <u>Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI</u> MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA26	Outdoor Pool North Tyneside	-	0	0	++	- -	0	0	Yes, multiple potential in-combination effects within	2019-2022.	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										the MA with impacts on people, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA /Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI		<u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. <u>Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI</u> MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Sea Banks Seawall – improvements and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.
N to NT	MA26	Sea Banks Seawall – improvements North Tyneside	+ +	+ +	0	- -	- -	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI.	2019-2022	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction and MA27 Fish Quay improvements. <u>Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI</u> MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, and MA27 Fish Quay improvements. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
N to NT	MA26	Brown's Point to Tynemouth North Pier Maintenance North Tyneside	+ +	+ +	-	0	- -	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water and biodiversity. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA and Ramsar, Northumberland Shore SSSI and Tynemouth to Seaton Sluice SSSI.	When required.	Cumulative effects are predicted to impact Northumbria Coast SPA and Ramsar, Northumberland Shore SSSI as a result of MA27 North Bay (Scarborough) Urgent Wall Improvement Phase 2, MA27, North Bay (Scarborough) Urgent Wall Improvement Phase 2, MA27 Tynemouth North Pier to Fish Quay Maintenance should the action occur at the same time. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar and Northumberland Shore SSSI. This should be reconfirmed once the timings are known.
N to NT	MA27	Tynemouth North Pier to Fish Quay Maintenance North Tyneside	+ +	+ +	0	- -	- -	0	+ +	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA and Ramsar and Northumberland Shore SSSI.	When required.	Cumulative effects are predicted to impact Northumbria Coast SPA and Ramsar and Northumberland Shore SSSI as a result of MA26 Brown's Point to Tynemouth North Pier Maintenance MA27 North Bay (Scarborough) Urgent Wall Improvement Phase 2, MA27, North Bay (Scarborough) Urgent Wall Improvement Phase 2 should occur at the same time. We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar and Northumberland Shore SSSI. This should be reconfirmed once the timings are known.
N to NT	MA27	Fish Quay – improvements North Tyneside	+	+ +	0	-	- -	0	+ +	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA/Ramsar, Northumberland Shore SSSI and listed buildings	2020-2022	Cumulative effects are predicted on the following receptors from the following management actions should they be undertaken at the same time. <u>Northumbria Coast SPA/Ramsar</u> MA15 Little Shore Wave Basin, MA17 Beacon Hill to Creswell management and Bondi Carrs, MA17 Beacon Hill to Cresswell Managed realignment, MA20 Newbiggin Point, MA24 St. Mary's Island Causeway improvements and MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point t Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements. <u>Northumberland Shore SSSI</u> MA24 Seaton Sluice to Curry's Point Maintenance, MA25 Whitley Bay Southern Promenade – Improvements, MA25 Curry's Point to Brown's Point Maintenance, MA26 Tynemouth Longsands Bear's Back Seawall – improvements, MA26 Central Promenade Appraisal, design and construction, MA26 Outdoor Pool, MA26 Sea Banks Seawall – improvements.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
												We recommend that the works are not all undertaken at the same time due to potential for cumulative affects upon the Northumbria Coast SPA/Ramsar and Northumberland Shore SSSI. This should be reconfirmed once the timings are known.
RT to FH	MA08	Scheme under review for Harbour East Bay Sunderland City Council	+ +	+ +	-	0	0	+	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water and biodiversity. There may be potential cross MA negative cumulative effects on Hendon Railway SNCI, Hendon Cliffs SNCI and Halliwell Banks SNCI.	Unknown.	Cumulative effects are predicted on Hendon Railway SNCI, Hendon Cliffs SNCI, Halliwell Banks SNCI from MA08 Potential schemes to South Sunderland and MA08 Harbour East Bay should they occur at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA08	Potential schemes to South Sunderland Sunderland City Council	+ +	+ +	+ +	0	-	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water and biodiversity. There may be potential cross MA negative cumulative effects on Hendon Railway SNCI, Hendon Cliffs SNCI, Halliwell Banks SNCI.	Unknown. Strategy in progress.	Cumulative impacts are predicted on Hendon Railway SNCI, Hendon Cliffs SNCI, Halliwell Banks SNCI from MA08 Potential schemes to South Sunderland and MA08 Harbour East Bay should they occur at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA08	Harbour East Bay Sunderland City Council	+ +	+ +	+ +	0	-	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water and biodiversity. There may be potential cross MA negative cumulative effects on Hendon Railway SNCI, Hendon Cliffs SNCI and Halliwell Banks SNCI.	Unknown. PAR in progress.	Cumulative impact are predicted on Hendon Railway SNCI, Hendon Cliffs SNCI, Halliwell Banks SNCI from MA08 Potential schemes to South Sunderland and MA08 Harbour East Bay should they occur at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA11	Headland Walls and Blocksands, Hartlepool Hartlepool Borough Council	+ +	+ +	+ +	0	- -	0	+	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water, biodiversity and heritage.	Partially completed.	Cumulative effects are predicted on Chourdon Point to Castle Eden Dene SAC, Blackhall Colliery to Crimdon SAC, Durham Coast SAC /NNR, Teesmouth and Cleveland SPA, Northumbria Coast SPA/ Ramsar, Hartlepool Headland SPA/Ramsar/SSSI, Blackhall Rock SSSI, Hart Warren Dunes SSSI, Tees and

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										There may be potential cross MA negative cumulative effects on Chourdon Point to Castle Eden Dene SAC, Blackhall Colliery to Crimdon SAC, Durham Coast SAC /NNR, Teesmouth and Cleveland SPA, Northumbria Coast SPA/ Ramsar, Hartlepool Headland SPA/Ramsar/SSSI, Blackhall Rock SSSI, Hart Warren Dunes SSSI, Tees and Hartlepool Foreshore and Wetlands SSSI and Hartlepool Headland SSSI.		Hartlepool Foreshore and Wetlands SSSI and Hartlepool Headland SSSI from MA11 North Sands development strategy. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA11	North Sands development strategy. Co-ordinated by Hartlepool BC	+ +	+ +	+	-	- -	-	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water, soil & hydrology and landscape. There may be potential cross MA negative cumulative effects on Chourdon Point to Castle Eden Dene SAC, Blackhall Colliery to Crimdon SAC, Durham Coast SAC /NNR, Teesmouth and Cleveland SPA, Northumbria Coast SPA/ Ramsar, Hartlepool Headland SPA/Ramsar/SSSI, Blackhall Rock SSSI, Hart Warren Dunes SSSI, Tees and Hartlepool Foreshore and Wetlands SSSI, Hartlepool Headland SSSI.	In progress.	Cumulative effects are predicted on Chourdon Point to Castle Eden Dene SAC, Blackhall Colliery to Crimdon SAC, Durham Coast SAC /NNR, Teesmouth and Cleveland SPA, Northumbria Coast SPA/ Ramsar, Hartlepool Headland SPA/Ramsar/SSSI, Blackhall Rock SSSI, Hart Warren Dunes SSSI, Tees and Hartlepool Foreshore and Wetlands SSSI and Hartlepool Headland SSSI from MA11 Headland Walls and Blocksands, Hartlepool. We recommend that the timing of works in MA11 is considered during the strategy development.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
RT to FH	MA11	Crimdon Valley Management Strategy Co-ordinated by Hartlepool BC/ Easington DC/ Durham Heritage Coast	+ +	+ +	0	+ +	0	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets and soil & hydrology. No cross MAs are anticipated.	Unknown.	No cumulative effect.
RT to FH	MA12	Middleton Beach Co-ordinated by Hartlepool BC	+ +	+ +	0	- -	- -	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Teesmouth and Cleveland Coast SPA/Ramsar, Hartlepool Docks and Harbour SNCI, Hartlepool Submerged Forest SSSI Carr House Sands (South Pier to Little Scar) County Wildlife Site and Long Scar rock platform Regionally Important Geological and Geomorphological Site.	PAR in progress. Unknown start date.	Since the timings are unknown there is potential that the following receptors will be impacted by cumulative effects from MA12 Marina and MA13 Management for Seaton Carew defences determined from strategy. Teesmouth and Cleveland Coast SPA/Ramsar, Hartlepool Docks and Harbour SNCI, Hartlepool Submerged Forest SSSI Carr House Sands (South Pier to Little Scar) County Wildlife Site and Long Scar rock platform Regionally Important Geological and Geomorphological Site We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA12	Marina Private/ Co-ordinated by Hartlepool BC	+ +	+ +	0	- -	- -	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology and biodiversity. There may be potential cross MA negative cumulative effects on Teesmouth and Cleveland Coast SPA/Ramsar, Hartlepool Docks and Harbour SNCI, Hartlepool Submerged Forest SSSI, Carr	PAR in progress. Unknown start date.	Since the delivery timings are unknown there is potential that the following cumulative effects will impact the following receptors from MA12 Middleton Beach and MA13 Management for Seaton Carew defences determined from strategy: Teesmouth and Cleveland Coast SPA/Ramsar, Hartlepool Docks and Harbour SNCI, Hartlepool Submerged Forest SSSI, Carr House Sands (South Pier to Little Scar) County Wildlife Site and Long Scar rock platform Regionally Important Geological and Geomorphological Site We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										House Sands (South Pier to Little Scar) County Wildlife Site and Long Scar rock platform Regionally Important Geological and Geomorphological Site		
RT to FH	MA13	Management for Seaton Carew defences determined from strategy. Hartlepool BC	+ +	+ +	++	- -	- -	0	-	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water, soil & hydrology, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Teesmouth and Cleveland Coast SPA/Ramsar, Redcar Rocks SSSI (geological features), Hartlepool Submerged Forest SSSI (geological features), Little Scar Regionally Important Geological and Geomorphological Site and listed buildings	Unknown.	Since the timings are unknown there is potential that following receptors will be impacted by cumulative effects from the following management actions: <u>Teesmouth and Cleveland Coast SPA/Ramsar, Hartlepool Submerged Forest SSSI,</u> MA12 Middleton Beach, MA12 Marina. <u>Redcar Rocks SSSI (geological features), Hartlepool Submerged Forest SSSI (geological features), Little Scar Regionally Important Geological and Geomorphological Site</u> MA13 Management Plan for Seaton Dunes We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA13	Management plan for Seaton Dunes Co-ordinated by Hartlepool BC (Environment Agency)	-	-	0	+ +	0	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets and soil & hydrology. There may be potential cross MA negative cumulative effects on Redcar Rocks SSSI (geological features), Hartlepool Submerged Forest SSSI (geological features), Little Scar Regionally Important Geological and Geomorphological Site and North Gare Bathing Beach Regionally Important Geological and Geomorphological Site	Unknown.	The following receptors would be impacted by cumulative effects from MA13 Management for Seaton Carew defences determined from strategy: Redcar Rocks SSSI (geological features), Hartlepool Submerged Forest SSSI (geological features), Little Scar Regionally Important Geological and Geomorphological Site. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
RT to FH	MA14	Redcar eastern extension and revised strategy and appraisal. Environment Agency/ Redcar and Cleveland BC	+ +	+ +	- -	- -	0	0	0	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on South Gare and Coatham Sands SSSI, Redcar Rocks SSSI, Redcar Sands Designated bathing beach and Marske Sands Designated bathing beach.	Ongoing. Unknown delivery date.	It is predicted that South Gare and Coatham Sands SSSI, Redcar Rocks SSSI, Redcar Sands Designated bathing beach and Marske Sands Designated bathing beach would be impacted by cumulative effects from MA14 Redcar eastern extension. We recommend that the timing of works in MA14 is considered during the revised strategy and appraisal development..
RT to FH	MA15	Marske and Saltburn strategy Redcar and Cleveland BC	- -	-	- -	0	0	- -	- -	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on The Inclined Tramway (upper and lower buildings) Listed building, The Saltburn Pier and entrance Listed building, Listed Buildings, Old Saltburn Conservation Area, Registered Park and Gardens and Saltburn Sands Designated Bathing Water.	Unknown delivery date.	There may be cumulative effects on The Inclined Tramway (upper and lower buildings) Listed building, The Saltburn Pier and entrance Listed building, Listed Buildings, Old Saltburn Conservation Area, Registered Park and Gardens and Saltburn Sands Designated Bathing Water as a result of MA15 Markse and Saltburn strategy. We recommend that the cumulative impacts upon cultural heritage are included in the SEA for the Markse and Saltburn strategy. This should be specifically identified in any scope of works for the strategy. Early assessment of impacts upon settings of cultural heritage assets potentially affected and any direct impacts should be considered in consultation with the County Archaeologist.
RT to FH	MA17	Skinningrove Scheme development Redcar and Cleveland BC	- -	-	-	0	-	- -	-	No in-combination effect as there is only one management action proposed in this MA. No cross MA cumulative impacts are anticipated.	Progressing. Unknown delivery date.	No cumulative effect.
RT to FH	MA18	Relocate Cowbar Lane (not coast protection) Redcar and Cleveland BC	+ +	+ +	-	0	- -	0	0	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative	Started 2016. Unknown delivery date.	Cumulative effects are predicted on Boulby Quarry SSSI (geological features and fossils), Runswick Bay MCZ and the proposed SSSI at Hunt and Boulby cliffs (breeding seabird colonies) as a result of MA21 Runswick Bay Appraisal and Works (could overlap with Cowbar Lane). We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										effects on Boulby Quarry SSSI (geological features and fossils), Runswick Bay MCZ and the proposed SSSI at Hunt and Boulby cliffs (breeding seabird colonies)		
RT to FH	MA21	Runswick Bay Appraisal and Works Scarborough Borough Council	+ +	- -	0	+ +	- -	-	0	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA negative cumulative effects on Boulby Quarry SSSI (geological features and fossils), Runswick Bay MCZ and the proposed SSSI at Hunt and Boulby cliffs (breeding seabird colonies)	2017	Cumulative effects are predicted on Boulby Quarry SSSI (geological features and fossils), Runswick Bay MCZ and the proposed SSSI at Hunt and Boulby cliffs (breeding seabird colonies) as a result of MA18 Relocate Cowbar Lane (not coast protection) (could overlap with MA21 Runswick Bay Appraisal and Works). We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA23	Whitby Harbour Pier improvements Scarborough Borough Council	+ +	+ +	0	0	-	-	- -	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, biodiversity, landscape and heritage. There may be potential cross MA negative cumulative effects on River Esk Site of Importance for Nature Conservation (SINC) and Whitby to Saltwick geological SSSI.	Progressing. Unknown delivery date.	There may be potential cumulative effects on the River Esk Site of Importance for Nature Conservation (SINC) and Whitby to Saltwick geological SSSI as a result of MA23 Whitby Harbour Pier improvements and MA23 Whitby Strategy 2 – Management Unit 13 West Cliff PAR- Spa should they both occur in 2022. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA23	Whitby Strategy 2 – Management Unit 13 West Cliff PAR- Spa Scarborough Borough Council	+ +	+ +	0	0	-	0	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets and biodiversity. There may be potential cross MA negative cumulative effects on River Esk Site of	2022	There may be potential cumulative effects on the River Esk Site of Importance for Nature Conservation (SINC) and Whitby to Saltwick geological SSSI as a result of MA23 Whitby Harbour Pier improvements and MA23 Whitby Strategy 2 – Management Unit 13 West Cliff PAR- Spa should they both occur in 2022. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										Importance for Nature Conservation (SINC) and Whitby to Saltwick geological SSSI		
RT to FH	MA25	Robins Hood Bay Maintenance Scarborough Borough Council	+ +	+ +	0	+ +	- -	+ +	0	No in-combination effect as there is only one management action proposed in this MA. No cross MA cumulative effects are anticipated.	PAR currently being finalised.	No cumulative effect.
RT to FH	MA26	Scalby Ness PAR & Works Scarborough Borough Council	0	0	+	0	0	0	0	No in-combination effect as there is only one receptor impacted within the MA. No cross MAs cumulative effects are anticipated.	2018	No cumulative effect.
RT to FH	MA27	North Bay (Scarborough) Urgent Wall Improvement Phase 2 Scarborough Borough Council	+ +	+ +	0	0	-	0	0	No in-combination effect as there is only one management action proposed in this MA. No cross MA cumulative effects are anticipated. There may be potential cross MA negative cumulative effects on Northumbria Coast SPA and Ramsar and Northumberland Shore SSSI.	2020	No cumulative effect.
RT to FH	MA28	Scarborough South Bay: Rose Gardens Scarborough Borough Council	+ +	+ +	-	- -	- -	- -	+ +	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, water, soil & hydrology, biodiversity, landscape and heritage. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, South Sands Designated Bathing Beach, Scarborough Borough Council Conservation Area,	2015-2021	Cumulative effects are predicted to impact Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, South Sands Designated Bathing Beach, Scarborough Borough Council Conservation Area, Registered Parks and Gardens as a result of MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff, MA28 Scarborough South Bay: South Bay Pool and MA28 Scarborough South Bay: South Cliff Gardens should they be undertaken at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
										Registered Parks and Gardens, Scheduled Monument and listed buildings.		
RT to FH	MA28	Scarborough South Bay: Foreshore Road and St Nicholas Cliff Scarborough Borough Council	+ +	+ +	0	0	- -	- -	0	Yes, multiple potential in-combination effects within the MA with impacts on people, materials assets, biodiversity and landscape. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Cayton, Cornelian and South Bays SSSI, Scarborough Borough Council Conservation Area and Registered Parks and Gardens	2015-2021	Cumulative effects are predicted to impact Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Scarborough Borough Council Conservation Area and Registered Parks and Gardens as a result of MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: South Bay Pool, MA28 Scarborough South Bay: South Cliff Gardens should they occur at the same time. Cumulative effects are predicted to impact Cayton, Cornelian and South Bays SSSI as a result of MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: South Bay Pool MA28 Scarborough South Bay: South Cliff Gardens and MA29 Cayton Bay: Management Plan for managed realignment should they occur at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA28	Scarborough South Bay: South Bay Pool Scarborough Borough Council	+ +	+ +	0	-	- -	- -	+	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology, biodiversity, landscape and heritage. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Cayton, Cornelian and South Bays SSSI, South Sands Designated Bathing Beach, Scarborough Borough Council Conservation Area, Registered Parks and Gardens, Scheduled Monument and listed buildings	2015-2021	Cumulative effects are predicted to impact Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Scarborough Borough Council Conservation Area, Registered Parks and Gardens, Scheduled Monument and listed buildings as a result of MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff, MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: South Bay Pool and MA28 Scarborough South Bay: South Cliff Gardens should the actions occur at the same time. Cumulative effects are predicted to impact Cayton, Cornelian and South Bays SSSI as a result of MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff, MA28 Scarborough South Bay: South Cliff Gardens and MA29 Cayton Bay: Management Plan for managed realignment should they occur at the same time. Cumulative effects are predicted to impact South Sands Designated Bathing Beach as result of MA28 Scarborough South Bay: Rose Gardens. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA28	Scarborough South Bay: South Cliff Gardens	+ +	+ +	+ +	- -	- -	- -	+	Yes, multiple potential in-combination effects within	2015-2021	Cumulative effects are predicted to impact Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Scarborough Borough Council Conservation Area,

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
		Scarborough Borough Council								the MA with impacts on people, material assets, water, soil & hydrology, biodiversity and heritage. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, North Bay to South Toll House Cliff SSSI, Cayton, Cornelian and South Bays SSSI, Scarborough Borough Council Conservation Area, Registered Parks and Gardens, Scheduled Monument and listed buildings.		Registered Parks and Gardens, Scheduled Monument as a result of MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff, MA28 Scarborough South Bay: Rose Gardens and MA28 Scarborough South Bay: South Bay Pool should they occur at the same time. Cumulative effects are predicted to impact Cayton, Cornelian and South Bays SSSI as a result of MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff MA28 Scarborough South Bay: South Bay Pool and MA29 Cayton Bay: Management Plan for managed realignment should they occur at the same time We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA29	Cayton Bay: Management Plan for managed realignment. Scarborough Borough Council	- -	- -	0	+ +	+ +	+	0	No in-combination effect as there is only one management action proposed in this MA. There may be potential cross MA positive cumulative effects on Cayton, Cornelian and South Bays SSSI and Gristhorpe Bay and Red Cliff SSSI	Ongoing.	Cumulative effects are predicted to impact Cayton, Cornelian and South Bays SSSI as a result of MA28 Scarborough South Bay: Rose Gardens, MA28 Scarborough South Bay: Foreshore Road and St Nicholas Cliff MA28 Scarborough South Bay: South Bay Pool and MA28 Scarborough South Bay: South Cliff Gardens should they occur at the same time. We recommend that the works are not all undertaken at the same time. This should be reconfirmed once the timings are known.
RT to FH	MA31	Filey – Cliff Stabilisation Scarborough Borough Council	+	0	+ +	+ +	- -	- -	-	Yes, multiple potential in-combination effects within the MA with impacts on people, water, soil & hydrology, biodiversity, landscape and heritage. Potential positive cumulative effects on beach and water quality conditions. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, Filey Brigg SSSI, SINC.	2017	Cumulative effects are predicted to impact Castle Ground rMCZ, Filey Brigg SSSI, SINC and SBC Conservation Area as a result of MA31 Filey –Outflanking defence at Filey. The in combination impacts are likely to not be significant; this should be reconfirmed during any EIA as part of the proposed works.

Key for table:
N to NT – Northumberland and North Tyneside SMP2
RT to FH – River Tyne to Flamborough Head SMP2

SMP2	Management Area (MA)	Management action and responsible authority	Assessment of actions (from Appendix F)							Screened in based on spatial extent and why	Temporal extent	Cumulative effect conclusion
			P	MA	W	S & G	B	L	H			
RT to FH	MA31	Filey - Outflanking defence at Filey Scarborough Borough Council	- -	- -	0	+ +	- -	- -	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology, biodiversity and landscape. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, Filey Brigg SSSI, SINC and SBC Conservation Area	2017	Cumulative impacts are predicted to impact Castle Ground rMCZ, Filey Brigg SSSI, SINC and SBC Conservation Area as a result of MA31 Filey –Outflanking defence at Filey. The in combination impacts are likely to not be significant; this should be reconfirmed during any EIA as part of the proposed works.
RT to FH	MA31	Filey – Defence scheme appraisal Scarborough Borough Council	- -	- -	0	+ +	- -	- -	0	Yes, multiple potential in-combination effects within the MA with impacts on people, material assets, soil & hydrology, biodiversity and landscape. There may be potential cross MA negative cumulative effects on Castle Ground rMCZ, Filey Brigg SSSI, SINC and SBC Conservation Area	2015	Cumulative impacts are predicted to impact Castle Ground rMCZ, Filey Brigg SSSI, SINC and SBC Conservation Area as a result of MA31 Filey –Outflanking defence at Filey The in combination impacts are likely to not be significant; this should be reconfirmed during any EIA as part of the proposed works.

Appendix I

Cumulative assessment for coastal strategies

Appendix I Cumulative Assessment for Coastal Strategies

	Assessment of actions (see Appendix G)									
Strategies	**P**	**MA**	**W**	**S & G**	**B**	**L**	**H**	**Screened in based on spatial extent and why**	**Temporal extent**	**Cumulative effect conclusion**
South Tyneside Council Coastal Management Strategy 2007-2012	+ +	+ +	+ +	+ +	+ +	+ +	+ +	No inter strategy impacts. Potential cumulative impacts between strategy and the following MAs on Northumbria Coast SPA: MA15 Little Shore Wave Basin (2011) MA20 Newbiggin Point (2012/2013)	It is assumed that the screened in strategies were all implemented between 2007 and 2012	No cumulative effects.
Hartlepool Borough Council Seaton Carew Coastal Strategy Study	+ +	+ +	0	0	0	0	0	No inter strategy impacts. Potential strategy impacts on Teesmouth and Cleveland Coast SPA and Ramsar from the following management actions: MA11 Headland Walls and Blocksands (partially complete) MA11 North Sands development strategy (in progress) MA12 Middleton Beach (unknown start date PAR in progress) MA12 Marine (PAR in progress) MA13 management for Seaton Carew defences (unknown start date)	Management actions are either partially completed, in progress or of unknown start date.	No cumulative effects
Scarborough Borough Council Runswick Bay strategy	+ +	+ +	0	+ +	0	+ +	+ +	No inter strategy impacts. Potential cumulative impacts on bathing water quality measures between the strategy and the MA21 Runswick Bay Appraisal and Works (2017) from the Rock Armour Fillet Scheme.	2017	No cumulative effects.

	Assessment of actions (see Appendix G)									
Strategies	**P**	**MA**	**W**	**S & G**	**B**	**L**	**H**	**Screened in based on spatial extent and why**	**Temporal extent**	**Cumulative effect conclusion**
Scarborough Borough Council Whitby Strategy	+ +	+ +	0	+ +	-	+ +	+ +	No inter strategy impacts. Potential intra strategy impacts from management actions at MA23 Whitby Harbour Improvements and Whitby Strategy 2 West Cliff PAR on Runswick Bay Village and the Marine Conservation Zone.	Progressing and 2022.	No cumulative effects. It is recommended that the timing of strategy actions at MA23 Whitby Harbour Improvements and Whitby Strategy 2 West Cliff PAR are considered to avoid cumulative impacts on people.
Scarborough Borough Council Robin Hoods Bay Strategy	+ +	+ +	-	0	- -	0	0	No inter strategy impacts. No cumulative impacts between the strategy and MA 25 Robin Hood's Bay as minor works and monitoring.	None	None
Scarborough Borough Council Scarborough Town Strategy	+ +	+ +	0	0	- -	0	0	No inter strategy impacts. No cumulative impacts between the strategy and the proposed management actions within the MA27 and 28.	None	None