



Marine Management Organisation

Sustainability Appraisal of the East Inshore and East Offshore Marine Plans

Sustainability Appraisal Report

Volume 1: Non-Technical Summary

Final following post-consultation changes




Marine Management Organisation

Sustainability Appraisal of the East Inshore and East Offshore Marine Plans

Sustainability Appraisal Report

Volume 1: Non-Technical Summary

Final following post-consultation changes

Author	Various	
Checker	David Hourd (Hyder), Doug Borthwick (HAL), Mark Fessey (URS)	
Approver	Nicky Hartley (Hyder), John Hartley (HAL), Steve Smith (URS)	

Report No 009-UA0003460-UE31-06-F

Date 27 January 2014

This report has been prepared for Marine Management Organisation in accordance with the terms and conditions of appointment for Sustainability Appraisal dated 24 March 2011. Hyder Consulting (UK) Limited (2212959) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

URS Infrastructure & Environment UK Limited ("URS") has prepared this Report for the sole use of Marine Management Organisation ("Client") in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by URS.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by URS has not been independently verified by URS, unless otherwise stated in the Report.

URS disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to URS' attention after the date of the Report.

Certain statements made in the Report that are not historical facts may constitute estimates, projections or other forward-looking statements and even though they are based on reasonable assumptions as of the date of the Report, such forward-looking statements by their nature involve risks and uncertainties that could cause actual results to differ materially from the results predicted. URS specifically does not guarantee or warrant any estimate or projections contained in this Report.

CONTENTS

1	INTRODUCTION AND BACKGROUND	1
2	WHAT IS SUSTAINABILITY APPRAISAL?	2
3	WHAT IS THE SCOPE OF THE SA?.....	4
3.1	What are the marine plans seeking to achieve?	4
3.2	What does the SA Cover?	4
3.3	What is the Sustainability Context and Baseline?.....	5
4	WHAT HAS PLAN-MAKING / THE SA INVOLVED TO-DATE?	9
4.1	Appraisal of Alternative Approaches.....	9
4.2	Findings of interim SA of the marine plans as they developed	13
5	WHAT ARE THE APPRAISAL FINDINGS FOR THE MARINE PLANS?	22
5.1	Air and Climate	22
5.2	Communities and Health	23
5.3	Cultural Heritage.....	24
5.4	Marine Ecology.....	25
5.5	Economy	27
5.6	Geology, Geomorphology and Coastal Processes	28
5.7	Landscape and Seascape	29
5.8	Water Environment.....	31
5.9	Summary of Cumulative Effects	32
6	NEXT STEPS	34
6.1	Adopting the Plan	34
6.2	Monitoring.....	34
6.3	How to comment on this document	Error! Bookmark not defined.

1 INTRODUCTION AND BACKGROUND

The Marine Management Organisation (MMO) has produced marine plans for England's East Inshore and Offshore areas. They set out how the UK Marine Policy Statement (MPS) will be implemented in the plan areas. The plan areas are shown in Figure 1-1.

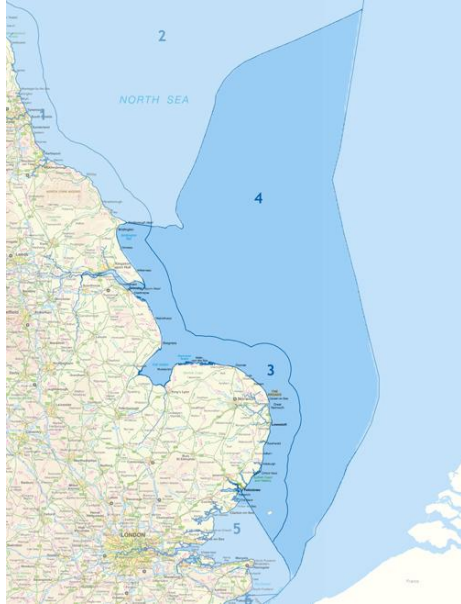


Figure 1-1 Boundaries of East Inshore and Offshore Marine Plans (areas 3 and 4)

These are the first marine plans to be produced under the Marine and Coastal Access Act 2009 in England and they seek to take account of the social, economic and environmental factors that affect the East marine plan areas and the communities that are dependent on or have an interest in these areas. Marine plans form part of a new plan-led management system for marine activities. The plans look forward 20 years and will be subject to periodic review during this time.

As part of the marine plan-making process, a Sustainability Appraisal (SA) has been undertaken. This is a requirement of the Marine and Coastal Access Act 2009. The SA process and subsequent report (including this Non-Technical Summary) incorporates the requirements of the European Union (EU) Strategic Environmental Assessment (SEA) Directive¹ as well as an Equalities Impact Assessment (EqIA)². In order to gain a full understanding of the process and its relation to the

final East marine plans it is recommended that this document be read in full. The following chapters set out the SA/plan making process which was been undertaken.

A separate Habitats Regulations Assessment (HRA) has also been undertaken to determine if the plans would have any likely significant adverse effects on European designated sites of nature conservation importance such as Special Areas of Conservation and Special Protection Areas.

This report is a Non-Technical Summary of the SA Report which has been produced for the East marine plans. The main SA Report is available as a separate volume.

¹ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment.

² An EqIA involves assessing the likely or actual effects of policies or services on people in respect of disability, gender and racial equality. It helps to make sure the needs of people are taken into account in the development and implementation of a new policy or plan or when changes are made to a current policy or plan.

2 WHAT IS SUSTAINABILITY APPRAISAL?

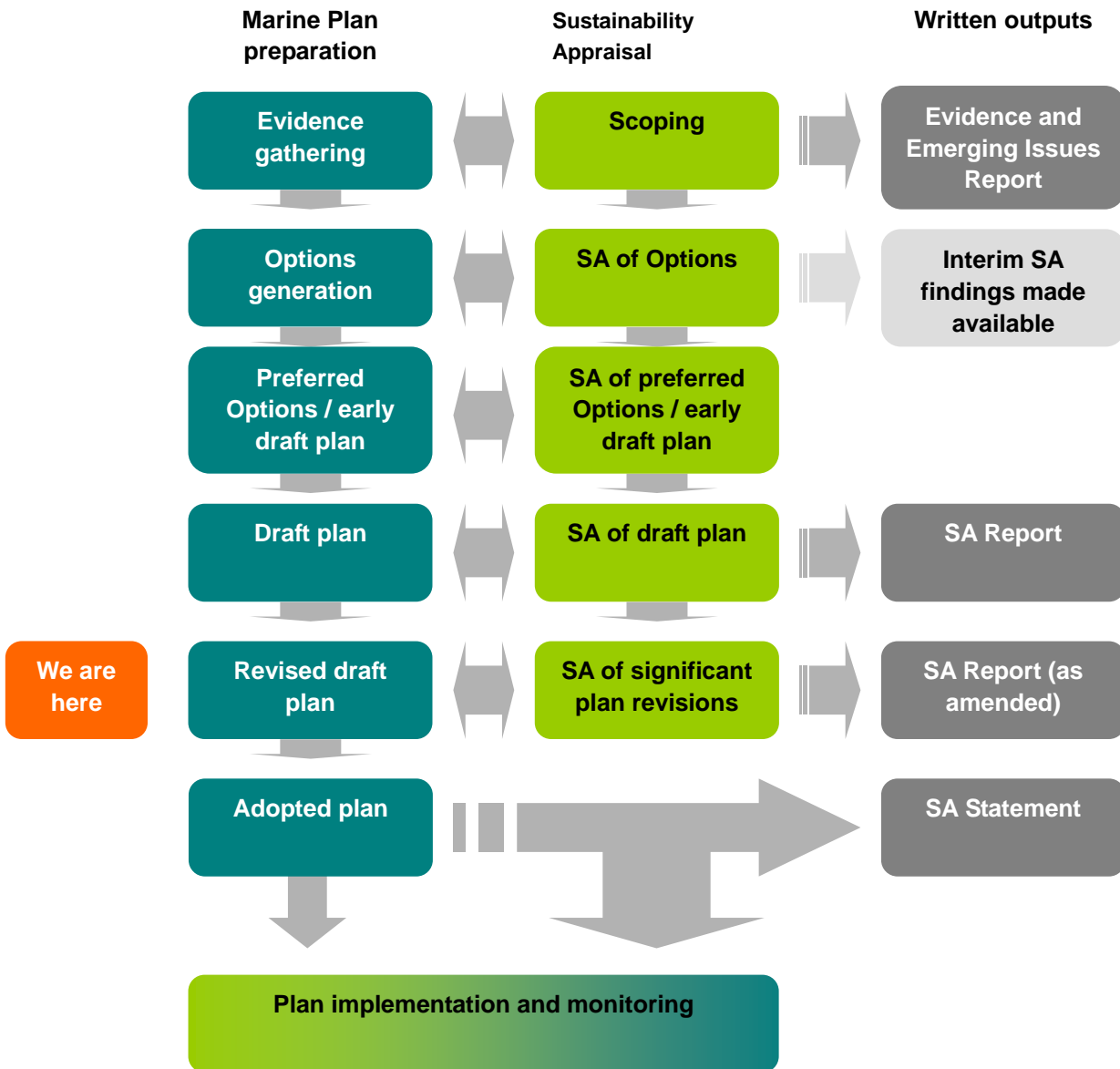
SA is a process, incorporating the requirements of the SEA Directive, for assessing the social, economic and environmental impacts of a plan and aims to ensure that sustainable development is at the heart of the plan-making process. The Marine and Coastal Access Act (2009) requires that the MMO carry out an appraisal of the sustainability of their proposals within the marine plans. The Act states that they can only proceed with those proposals if they consider that the result of the appraisal indicate that it is appropriate to do so³. The SEA Directive sets out a series of requirements for reporting assessing plans and policies and then for reporting on the findings of this process. The SA Report and this NTS conforms to these requirements, and so the layout and feel of both the full Report and this NTS is influenced by the requirements under the SEA Directive. The SA has been undertaken throughout the development of the marine plans and has informed the consideration of Options (alternatives) which underpin them.

Figure 2-1 shows the stages followed in the SA and how each integrates with the development of the marine plans. The East marine plans have evolved in response to the SA, with recommendations made in the SA being incorporated into subsequent drafts of the East marine plans. These iterations are documented in the SA Report.

Note that this SA and NTS have been updated to reflect any significant changes which have been made to the marine plans as a result of consultation feedback obtained during the public consultation in 2013. This is, therefore, the final SA and NTS.

³ Marine and Coastal Access Act 2009. Schedule 5 (7) (1-4)

Figure 2-1 Stages in the SA Process



3 WHAT IS THE SCOPE OF THE SA?

3.1 What are the marine plans seeking to achieve?

One of the functions of the MMO is to undertake marine planning in England. Marine plans seek to provide greater coherence of policy, and a forward-looking, proactive and spatial approach to the management of the marine area, its resources, and the activities and interactions that take place within it.

The UK Government vision for the marine environment is for, “*clean, healthy, safe, productive and biologically diverse oceans and seas*”. The aim of marine planning is to ensure a sustainable future for our coastal and offshore waters through managing and balancing the many activities, resources and assets in our marine environment.

It was decided early in the policy development process that marine planning should follow a similar approach to terrestrial planning in order that the two systems complement one another to aid integration at the land-sea boundary. Therefore, like terrestrial plans, marine plans will set the direction for decision making to ensure efficient and sustainable use of our marine resources.

Marine plans are intended to:

- Guide marine users to the most suitable locations for different activities
- Manage the use of marine resources to ensure sustainable levels
- Consider all marine users to ensure everyone with an interest has an opportunity to contribute to marine plans
- Take a holistic approach to decision making and consider all the benefits and impacts of all the current and future activities that occur in our marine environment.

The marine plans are structured as follows:

Chapter 1 – Background and Overview

Chapter 2 – Vision and Objectives

Chapter 3 – Plan policies

Chapter 4 – Implementation, monitoring and review

Chapter 5 – Glossary and Acronyms

3.2 What does the SA Cover?

The scope of the SA includes the environmental, social and economic effects of the marine plans. These are described under eight SA topics discussed in Table 3-1 below.

The following aspects of the marine plans have been identified as the key elements and as such, it is these elements which have been subject to the SA:

- The Plan Options
- The Plan Policies (and where appropriate, supporting policy maps)

It should be made clear that the East Inshore and Offshore Marine Plans have been written as one document with inshore and offshore elements identified where relevant. A single SA has consequently been undertaken on both plans combined.

The SA covers direct and indirect effects within the East marine plan areas but also considers possible indirect effects in neighbouring areas including terrestrial areas and those for other EU countries where relevant. The marine plans look at and consider activities for at least 20 years from their adoption. This enables the SA to consider the effects of the plans over these 20 years and beyond where possible. It should be noted that due to the long period of coverage, there are acknowledged uncertainties inherent in the appraisal. A separate supporting document has been produced⁴ which gives an up-to-date analysis of what are considered to be the potential benefits of the marine plans.







The scope of the SA includes the environmental, social and economic effects of the marine plans. These are described under eight SA topics discussed in Table 3-1 below.

3.3 What is the Sustainability Context and Baseline?

For all of the topics included within the SA, it is necessary to understand how the marine plans and the SA fit into the existing hierarchy of plans, programmes, strategies and environmental protection objectives. A detailed review of these is provided in Appendices A-H of Volume 3 of the SA Report. Over 100 documents were reviewed ranging from the outcomes of the World Summit on Climate Change through to relevant European Directives (e.g. the Marine Strategy Framework Directive (MSFD)) and local Shoreline Management Plans (SMPs).

It is also important to understand the existing conditions (known as baseline conditions) and key issues and opportunities that should be considered as part of the appraisal process. Further information relating to the scope of each of the SA topics and background information to support the appraisal is presented in Appendices A-H of Volume 3 of the SA Report. Table 3-1 summarises the current and future baseline conditions, and identifies the key issues and opportunities for each topic.

Table 3-1 Summary of Current and Future Baseline Conditions and Key Issues/Opportunities

Current baseline conditions in absence of marine plans		Predicted future baseline conditions in absence of marine plans	
	Current conditions are not particularly problematic		Future conditions are expected to be better than current
	Current conditions are already problematic in only localised areas, or there is no agreed criterion for whether it is problematic		Future conditions are expected to be roughly the same as current, or some aspects are expected to get better and others worse
	Current conditions are already problematic		Future conditions are expected to be worse than current

⁴ MMO (2013) Analysis of the East Inshore and East Offshore Marine Plans

SA Topic	Current baseline	Future baseline ⁵	Key Issues and Opportunities
Air and Climate			<ul style="list-style-type: none"> ▪ There is a need to ensure the maximum sustainable deployment of offshore wind and marine renewable technologies; ▪ Potentially suitable geological storage areas for carbon dioxide should be safeguarded. ▪ Air pollution associated with oil and gas exploitation and related industrial activities can be locally problematic. ▪ Marine planning could contribute to reducing further growth in emissions from the transport sector (shipping, aviation, road, rail)
Communities and Health			<ul style="list-style-type: none"> ▪ Social impacts relate to households and individuals as well as communities. ▪ A very wide range of other policies and initiatives influence community, health and equality. ▪ There is a need to address socio-economic deprivation, including income inequalities, increasing unemployment, low educational attainment and skills levels in order to tackle existing social and health inequalities. ▪ Tourism and recreation have some existing role in contributing to social wellbeing and health. ▪ Coastal communities adjacent to the East Inshore plan area include towns which are amongst the 10 per cent most deprived communities in England. Amongst these, fishing has declined as a significant contributor to employment and economy, though it retains social and heritage value. ▪ To focus training and employment opportunities at all levels associated with emerging industries, in particular to provide opportunities which enable young people to remain in or be drawn to the region. ▪ The marine plans provide an opportunity to direct investment towards areas of deprivation, potentially to help improve the quality of the living environment and opportunities, in order to tackle causes of social and health inequality and poor community cohesion. ▪ A very wide range of other policies and initiatives influence community, health and equality. This makes it difficult to identify and judge the significance of the marine plans policies on the existing situation. ▪ Whilst the region has a relatively small Black, Minority and Ethnic (BME) population, A2 and A8 migrant populations as well as Gypsy and Traveller populations experience particular vulnerabilities, including with respect to employment creation.
Cultural Heritage			<ul style="list-style-type: none"> ▪ Knowledge of marine archaeology is limited (especially in offshore areas and north of the Dogger Bank) but archaeological research frameworks are published that guide further studies. ▪ Developments in the offshore zone have the potential to uncover, disturb or destroy archaeological remains lying on or under the sea bed (including, for example aggregates extraction and benthic fishing). Indirect impacts of offshore developments are not always fully appreciated and cumulative effects are of particular concern. ▪ Diminishing 'way of life' associated with, for example, declining fishing communities. ▪ The marine plans provide an opportunity to improve the protection of heritage resources in the coastal and offshore zones. ▪ Opportunities to gain a greater insight into the marine archaeological resource and sharing of information may be possible.

⁵ Assumes marine plans are not in place

			<ul style="list-style-type: none"> ▪ Potential advantages to heritage tourism if coastal sites are protected, discovered, or enhanced through appropriate management.
Marine Ecology			<ul style="list-style-type: none"> ▪ Climate change: rising global air and sea temperatures and associated sea-level rise has implications for all receptors considered in the marine ecology chapter, for instance the loss of intertidal habitat through coastal squeeze. More direct changes include a change in the plankton growing season and the distribution of certain fish species which may also be prey species for other animals such as seals. Ocean acidification, through the uptake of CO₂ from the atmosphere, is predicted to have negative impacts on calcifying organisms, which will resonate at higher trophic levels. ▪ Habitat loss and disturbance: fishing impacts include the potential depletion of commercial fish stocks, impacts on benthic habitats and bycatch of non-target fish species, impacts on seabirds, marine reptiles and cetaceans. Habitat damage resulting from the harvesting of shellfish (such as scallop dredging) can also cause changes to marine ecosystems. On a smaller scale, direct impacts on benthic habitats arise from aggregate extraction, wind farm installation and other offshore subsea installation. ▪ Marine litter: ingestion of or entanglement in marine litter by fish, mammals, reptiles and birds can result in mortality. ▪ Marine noise: anthropogenic activities in the East Inshore and East Offshore areas which generate marine noise include shipping, oil and gas exploration and production and wind farm installation (presently largely reliant on pile driving). Marine mammals are of principal concern, though fish and cephalopods may also be subject to disturbance by noise. ▪ Pollution: estuarine fish species are still subject to pressure from inputs of pollutants and coastal developments, though a number of initiatives are helping to improve the physical and chemical quality of rivers and estuaries. ▪ Non-native species: the spread of non-native species may be accentuated by climate change (above). National and international initiatives to limit the transport of invasive species include the GloBallast Partnership Programme and the Invasive Non-native Species Strategy for Great Britain. ▪ The marine plans should contribute to the achievement of targets associated with, for instance, the implementation of the MSFD in the UK. ▪ The MMO should maximise the opportunities for integrating policy outcomes when drafting the marine plans (such as developments building-in beneficial features for marine ecology as part of good design). ▪ The marine plans provide the opportunity to set in policy how MCZs should be regarded in applications and consenting decisions once MCZs in the areas have been fully established.
Economy			<ul style="list-style-type: none"> ▪ Perhaps the key issue identified through scoping is the need to encourage private sector investment and enterprise, particularly in those localities currently underperforming and/or reliant on Government jobs and investment. This should help to ensure that growth is sustainable in the longer-term. ▪ At the same time, there is a need to recognise that not all places and all sectors will wish to focus on becoming more competitive. Keeping things as they are in some instances can help to secure a diverse economic base and support local distinctiveness. There is a need to support long established industries as well as those that are emerging and developing. ▪ In terms of addressing economic barriers associated with localities, there is a particular need to support investment in infrastructure, including, where possible, transport infrastructure that helps to address the problem of geographic peripherality. ▪ There is a need to support the Humber area and the Great Yarmouth /

			<p>Lowestoft area as they seek to develop a competitive advantage in relation to energy and green technologies.</p> <ul style="list-style-type: none"> ▪ Given that some new activities will be specialised / capital intensive activities that demand highly specialised labour or capital equipment from regional, national and even international markets, there is a need to support industries that can minimise 'leakage', including through supporting local skills development. ▪ In the shorter-term, there is also a need to support activities that will lead to employment with high local effects on labour utilisation, i.e. where labour catchments are relatively local, and there is demand for lower skilled labour, so creating jobs that are accessible for less well skilled workers who find themselves at increased risk of unemployment.
<p>Geology, Geomorphology and Coastal Processes</p>			<ul style="list-style-type: none"> ▪ Impacts at the coast have wider environmental and social implications, and are derived from both natural denudation process, and anthropogenic impacts including coastal defence and other coastal infrastructure (such as cable and pipe landfall, new port infrastructure) and sea-level change. ▪ As coastal erosion and inundation in some areas may be uneconomic or undesirable to halt through engineering, the realignment of some coastal infrastructure and housing may be expected. ▪ The loss of some of the coastal archaeological resource that cannot be studied prior to inundation and erosion may also be expected (for instance as recognised in SMP coastal cell policies). ▪ Many of the coastal and estuarine environments in the East Inshore area are defined as heavily modified due to land reclamation, coastal and flooding defences, aggregate extraction, use for marine fisheries, and navigation and port activity. Heavily modified water bodies include those sites which have had their character or physical form greatly altered by anthropogenic activities. Work is underway in order to try and achieve good ecological potential (GEP) in such areas. In order to achieve GEP, mitigation measures set out for each water body by the Environment Agency need to be put in place. ▪ The consideration of the resilience of proposed developments given present projections with regards to sea-level change, and their potential impact on sediment dynamics. ▪ Offshore habitats have been impacted by human activity, including for instance historical land claim of intertidal sediments, damage or removal of subtidal rocky habitats by mobile fishing gears. Targets to help achieve Good Environmental Stats (GES) under the MSFD have been drafted for seafloor integrity. Programmes of measures to achieve/maintain GES are yet to be put in place. ▪ The opportunity to consider a number of other relevant plans including River Basin Management Plans, SMPs, flood risk management and other existing coastal policies and initiatives (such as coastal change management areas), in planning decisions and in drafting the marine plans. ▪ The opportunity to consider the resilience of proposed developments given present projections with regards to sea-level change, and their potential impact on sediment dynamics, in keeping with the MPS.
<p>Landscape and Seascape</p>			<ul style="list-style-type: none"> ▪ The present and future leasing rounds of offshore wind are likely to see large numbers of larger turbines built in UK waters. Though the majority of the Round 3 wind zones are outside of territorial waters and therefore developments are unlikely to be greatly visible from the coast, views at sea and associated ancillary development (which may include additional port infrastructure and cable landfalls) for these wind farms and other marine renewables is likely in the coming years.

		<ul style="list-style-type: none"> ▪ The Southern North Sea is also a prospective area for carbon capture and storage (CCS) and continuing gas field development (balanced to an extent by gas installation decommissioning), both of which will result in ongoing or incremental offshore and potentially also coastal development. ▪ The Government believes that there is a compelling need for substantial additional port capacity over the next 20-30 years, which would be associated with a similar increase in vessel traffic ▪ The opportunity to consider landscape and seascape in offshore development consent both for individual developments and as part of cumulative assessments, and to implement landscape character assessment in the consideration of such impacts where appropriate. ▪ The ability to, where necessary, liaise with terrestrial planning authorities on seascape issues.
Water Environment		<ul style="list-style-type: none"> ▪ A large portion of the East coast is vulnerable to flooding and erosion – in the future this will increase in frequency due to climate change’. ▪ Climate change is affecting sea temperatures and the distribution of certain species and habitats. ▪ Ocean acidification is having an effect on the viability of ecosystems and marine species. ▪ Marine pollution derived from riverine, coastal sources, and atmospheric emissions remains a problem. While these issues are decreasing, there is a persistent legacy of some substances in industrial estuaries. ▪ Temporary effects in the water column result from dredging and other activities which cause turbidity. ▪ Coastal and marine litter and debris is a visual, ecological and economic problem. ▪ A key driver for change is the Water Framework Directive (WFD) requirement (and MSFD) to attain good ecological and chemical status.

4 WHAT HAS PLAN-MAKING / THE SA INVOLVED TO-DATE?

4.1 Appraisal of Alternative Approaches

4.1.1 Identifying reasonable alternatives

Plan Options development is an integral stage which occurs early in the plan-making process that looks at different ways of addressing the key issues for a plan and meeting the goals and objectives of that plan. The MMO’s marine plan-making process utilises best practice and guidance from terrestrial planning. However, the two systems are not identical, particularly in terms of the range and scope of the issues they are concerned with. It is these issues which drive the Plan Options stage of planning. Local Plans in the terrestrial planning system are concerned with a range of well-established issues, such as allocation of land for housing and transport provision and allocation of land for employment (i.e. for business). In terrestrial planning, the issues outlined above are identified as ‘key issues’ in all terrestrial plans and are often supported by individual studies that ‘feed in’ different numbers, ranges or goals to the Plan Options process. This process is largely driven by these ‘key issues’.

The marine planning system differs in that all marine plans do not have this set of common ‘key issues’. Different marine plan areas in England’s marine area have different drivers and ‘key issues’, there is no parallel key issue compared to the example of ‘housing’ or ‘transport’

provisions. In addition the information that feeds into the terrestrial Plan Options process comes from a well-established system where evidence and knowledge has built and developed over many years. As marine planning in England is in its infancy the availability of information of an equivalent extent and quality is much lower.

These factors resulted in the Plan Options process presenting a significant challenge. In order to define 'key issues' for the Plan Options process for the East marine plans the MMO concentrated on those key issues⁶ that it was possible to define spatially (a key requirement of Plan Options) and that had an aspect that looked to the future (another key requirement of Plan Options) so that the likely change for those issues was able to be understood for the life of the plans. This led to a limited range of issues being addressed initially through the Plan Options process, with other issues subsequently being considered in terms of the impact of the initial Plan Options.

As part of the plan-making process, it was necessary to develop and test a series of (alternatives) Options. These Options were then appraised as part of the SA process. The methodology used by the MMO to identify Options prior to their appraisal focused on a set of key issues for the plans which had been identified through stakeholder engagement and interrogation of the evidence assembled for the plans. Over 60 issues were identified through the Evidence and Issues Report⁷, which were refined to a list of 13:

1. Co-location
2. Displacement (and other 'impacts' on 'receptor' activities)
3. Economic (growth)
4. Growth of renewables (particularly wind energy)
5. Future change/growth in aggregates
6. Cabling
7. Oil and gas
8. Seascape
9. Environmental concerns/MSFD
10. MPAs
11. Need for more evidence/research (and the need to relate this to MMO research programme and those of other organisations)
12. Planning approach – explanation of it and guidance
13. Sufficient focus on local issues or relevant local locations/'hot spots'

The Options process used two of the key issues (those relating to offshore wind and aggregates) as the starting points for Options generation. It focused on these as they were the only key issues that could be successfully and consistently expressed spatially (a requirement of the SEA directive); which had evidence available that projected future change relating to these issues; and where evidence existed to present a robust baseline for these issues. Other key issues, such as those pertaining to oil and gas extraction, were not able to be expressed in terms of their future development, as there was insufficient evidence available to project the location of suitable commercial gas resources and the potential nature of any related developments. As the plans

⁶ Key issues were derived from both analysis of the evidence and engagement with stakeholders. More information on them can be found in the MMO's (2012) Evidence and Issues Report http://www.marinemanagement.org.uk/marineplanning/areas/east_issues.htm

⁷ http://www.marinemanagement.org.uk/marineplanning/areas/east_issues.htm

look forward over 20 years, the future aspects of key issues were crucial to their use in Plan Options, because it was through the projected future change that choices could then be made about approaches to developing policies for all issues and sectors. For the other key issues listed above the future change and drivers were uncertain enough that they could not be used to drive the initial Options process, which focused on the development of offshore wind and aggregates.

Implications of the Options were looked at both by stakeholders through workshops, and by members of the planning team. This was done in order to build up more information on the Plan Options and to think about the responses possible through planning to help address the implications. These responses then fed into plan policy development which was the next stage of the planning process.

Different approaches to the development of wind and aggregates were used as starting points for the Plan Options process, with four Plan Options developed (Options A-D). Plan Options A and B looked at different approaches to the development of offshore wind and Options C and D used different approaches to the development of the aggregates industry. Spatial analysis was undertaken to help illustrate the different implications of the Plan Options; these illustrations were used to help understand how the different Options may impact upon other activities (their implications).

The implications of the different Plan Options were looked at for the key issues listed above; so that each key issue was assessed for how the initial Options may differentially affect it. Some key issues were not affected by the Plan Options process, such as those relating to cabling, where industry practice and policy suggests that the only option is to bury cables wherever necessary and deal with individual applications, in terms of their spatial extent and implications for other uses of the seabed. Were evidence available during the Options process that suggested future cable routes, this could potentially have been factored into the Options process, but it was not. It was possible to identify where cables may affect other key issues and then account for these effects through the policy responses developed from the Options process, for example by affording a level of consideration to aggregates resource when making decisions on activities that could sterilise the resource. Other key issues not affected also included key issues relating to further evidence requirements and how marine plans integrate with existing plans.

As an interim plan-making / SA step, the following alternatives (Plan Options) were provided by the MMO and subjected to SA:

- A) Emphasise support for wind energy (leading to less support for co-location in Round 3 Zones – i.e. the areas most recently licenced for offshore wind development - than is the case currently)
- B) Emphasise support for co-location of wind with other activities in Round 3 Zones (i.e. more so than is the case currently / would be the case under a business as usual scenario)
- C) Emphasise strong support for aggregates (i.e. maximum safeguarding for aggregates extraction across the marine plan area, including within Round 3 Zones)
- D) Emphasise support for aggregates (i.e. maximum safeguarding for aggregates extraction across the marine plans, other than within Round 3 Zones)

4.1.2 Appraising reasonable alternatives

A high-level summary of SA findings is set out below in Table 4.1. The symbols for this assessment indicate how conditions may change under each option. It should be noted that due to Options appraisal being undertaken at an early stage of plan development, opportunities to avoid negative effects from within the plan could not be considered, unlike during the assessment

of the preferred plans in Section 5, as no policies had yet been developed. Note that a 'negative effect' doesn't necessarily mean that conditions will be worse under the option, simply that an existing negative trend may continue.

Table 4-1 below shows a summary of the assessment that was undertaken for the initial Plan Options. For some of the SA topics, it was hard to attribute the impact that the Options would have, because it was not possible to describe with any certainty the impact pathway between the SA topic and the potential outcome of the Plan Options. Even if there was a qualitative judgement that an option would have a positive impact, it was not possible to accurately distinguish this from baseline conditions (shown as 0 in Table 4-1, i.e. the plan option has a neutral effect). This uncertainty has led to the assessment at this stage showing little deviation from the baseline, though the suite of plan policies assessed in the following sections (4.2 and 5) have greater definition, and therefore potential plan outcomes can be more accurately assessed.

Table 4-1 Summary of the appraisal of alternative approaches

SA Topic		Baseline	Option A (Support for wind)	Option B (Support for co-location)	Option C (Strong support for aggregates)	Option D (Support for aggregates)
Air and Climate		+	+	0	0	0
Communities and Health		-	+	0	0	0
Cultural Heritage		-	0/-	0/-	0/-	0/-
Marine Ecology	Plankton	0	0	0	0	0
	Benthos	0/-	0/-	0/-	-	-
	Fish and Shellfish	0	0	0	0/-	0/-
	Cephalopods	0	0	0	0	0
	Birds	0/-	0/-	0/-	0/-	0/-
Marine Mammals		0/-	0/-	0/-	0/-	0/-
Economy		-	+	0	0	0
Geology, Geomorphology and Coastal Processes		0	0	0	0	0
Landscape and Seascape		0/-	0/-	0/-	0/-	0/-
Water Environment		+/-	+/-	+/-	+/-	+/-

Key

Degree to which baseline conditions may change subject to adoption of plan option

++ The option is likely to lead to significant improvements in baseline conditions or positive trends are expected to continue under this option

+	The option is likely to lead to some improvements in baseline conditions or positive trends are expected to continue under this option
0	The option is unlikely to alter baseline conditions significantly
-	The option is likely to lead to a deterioration in baseline conditions or negative trends are expected to continue under this option
--	The option is likely to lead to a significant deterioration in baseline conditions or negative trends are expected to continue under this option
?	The effects of the option are uncertain

In addition to being the subject of SA, these alternative approaches were also (concurrently) discussed with an SA Advisory Group comprising representatives of Natural England, Wildlife and Countryside Link, Joint Nature Conservation Committee, English Heritage, the Environment Agency (EA), industry umbrella bodies and representatives of key local authorities.

Subsequent to receiving the findings of the SA, and discussion with the SA Advisory Group, the MMO was able to select a preferred approach to use as a basis upon which to prepare the East marine plans. Subsequent meetings with the SA Advisory Group were convened through the plan making and SA process.

4.1.3 Reasons for Selecting the Preferred Approach

In deciding upon which plan option to choose, the MMO undertook an internal analysis that looked at the implications of the Plan Options for different sectors and environmental issues, using information from the Options appraisal undertaken as part of the SA process.

The MMO selected Option B, plus the spatial extent of aggregates resource areas from Option C, based upon the findings above, but also upon work undertaken in assessing the Options internally to see which would meet the plan objectives best and address national and local policy.

It was considered that Option B met policy objectives across government more fully than the other Options, because of its emphasis on addressing other issues as well as offshore wind. This option better represented the needs of a wider cross section of sectors including shipping and fishing. It holds the potential to have a minor positive effect on the economy topic through the support across sectors, but was assessed as not being likely to significantly alter the other topics represented in the baseline. Further analysis and evolution of the plans informed by the SA process, led to the inclusion of some positive economic aspects of Option A, presenting a more positive economic picture. This support for offshore wind was assessed as not being in conflict with the supportive policies for other sectors represented under Option B. It also does not have a differential effect on environmental and social topics than Option A, thereby ensuring no negative impact for those topics. Section 4.2 and chapter 5 reflect how the plans have developed since this initial appraisal of the Plan Options.

4.2 Findings of interim SA of the marine plans as they developed

Following the choice of preferred approach an initial draft of the marine plans document was produced. The policies within this draft were subject to the SA process and a series of recommendations were made under each SA topic to amend the document by means of mitigation and/or enhancement. A series of iterations of working drafts of the marine plans were subject to appraisal again in September 2012, November 2012 and then again in January and

March 2013. Following public consultation on the draft marine plans in 2013, a final version of the plans and accompanying SA was prepared in January 2014. The findings of the interim SA of the September and November 2012 drafts of the plan document are summarised below.

The findings of the SA process carried out on the January 2014 version of the plan document are summarised in Chapter 5. This is very similar to the March 2013 version (there were very few significant changes between the two versions) so it was not considered necessary to reproduce the March 2013 SA findings separately in this NTS.

Table 4-1 Summary of findings and key recommendations from September and November 2012 Interim SAs.

Summary of SA findings

Summary of key SA recommendations and how they were considered

Air and Climate

September:

The Plans include policies focused on offshore renewable wind energy, CCS and tidal stream technologies. There is also a 'Climate Change' policy focused on ensuring developments minimise greenhouse gas emissions and do not affect emissions from other marine activities (e.g. as a result of shipping routes becoming displaced and hence lengthened).

This is positive from a perspective of supporting the achievement of established national carbon reduction targets. In the long term, support and encouragement for wind energy in the East Plan areas should help to ensure that electricity generation from renewable sources will increasingly replace energy generation from fossil fuels.

In terms of CCS the plans should help to ensure that the option of early adoption is not unduly foreclosed. This is important given the potential contribution that CCS could make to climate change mitigation.

Regarding air quality, it is not possible to determine likely significant effects with any certainty.

September:

It was suggested that policy wording in relation to Ports and Shipping could recognise the importance of shipping as a relatively low carbon mode of transporting heavy freight. MMO's response was to add additional supporting text within the 'Ports and Shipping' section of the plan regarding the importance of reducing carbon emissions from freight transport and freeing up road and rail capacity.

It was suggested that there should be additional policy reference to the importance of ensuring that development does not lead to worsened air quality, particularly in areas where air quality is an existing problem. MMO's response was that this is unnecessary given that air quality issues are addressed via 'signposting' under objective 6 - 'To ensure a healthy, resilient and adaptable marine ecosystem in the East Plan areas'.

November:

Most of the changes made to policies since September have a relatively subtle effect. In particular:

Policy EC3, which reflects the central importance of supporting development of the wind energy industry, now refers to 'Regulatory authorities should...' rather than 'Licensing authorities will...'. This change is supported on the basis that it should increase the potential for this policy to be drawn on by terrestrial planning authorities as part of the policy context to inform Local Plan-making.

Policy WIND1, which seeks to ensure that offshore wind farm (OWF) development within existing leased areas is not compromised now specifies that there is a need to take into account the needs of the OWF during the 'construction, operation and decommissioning' stages.

Policy WIND3, which sets out the conditions under which

November:

It was suggested that the phrase '*Where emissions cannot be minimised, suitable mitigation measures will be encouraged*' is reconsidered on the basis that it will always be the case that emissions can be minimised.

Policy CCS3 states that: '*Where possible, regulatory authorities should support CCS developments that involve the re-use of oil or gas infrastructure, rather than installing new infrastructure*'. It is suggested that the term 'Where possible' is removed.

OWF development outside of leased areas will be appropriate, is now less restrictive which has positive implications in terms of OWF development.

The most notable change relates to Policy CC2. The revision to this policy has introduced the possibility that it is acceptable for applications to demonstrate how emissions will be 'mitigated' at the expense of demonstrating that emissions will be minimised. It appears that 'mitigation' will, in practice, mean demonstrating that mechanisms can be put in place to 'offset'. This is not considered appropriate, as efforts should always be made to minimise emissions associated with a particular development.

Communities and Health

September:

The marine plans are focused on promoting and supporting economic activities that will not only build on the existing strengths of coastal communities adjacent to the plan areas, but will also address particular problems being faced. The importance of supporting employment opportunities that meet the needs of localities close to the plan areas is reflected. Also, policies are dedicated to supporting the fishing and tourism sectors, both of which are vital from a perspective of maintaining employment for all, including those with lower levels of education or skills that might otherwise be at risk of unemployment.

It is anticipated that growth in the wind energy sector, which is driven in large part by national policy will benefit communities, including communities in need of regeneration around the Humber Estuary and at Great Yarmouth / Lowestoft.

September:

It was suggested that the marine plans might do more to influence the approach to procurement, skills development, and recruitment in order to maximise local capture of benefits associated with growth. The MMO's response was to state that this issue is sufficiently covered through Policy EC2, including through references to supply chain management.

It was suggested that climate change adaptation planning should be implemented that gives particular attention to improving the resilience of vulnerable coastal communities and households, recognising age disability, health and income as key indicators of vulnerability. In response, the MMO highlighted that this would not be appropriate given that this issue falls within the remit of the EA

November:

Most of the beneficial effects of the Plans highlighted as part of the September 2012 appraisal remain current. However, two changes have been made that give some cause for concern:

Policy SOC1 now supplements the reference to 'access to the coast and marine area' with a reference to the importance of providing health and social well-being benefits. The effects of this change are somewhat uncertain. Focusing on the policy wording, it could perhaps be criticised as distracting from the understanding of 'health and social-wellbeing' determinants as being extremely wide-ranging, and the fact that the 'key issues' are first and foremost associated with socio-economic drivers (rather than coastal/marine access).

The policy reference to encouraging '*applications that support tourism diversification including expanding the*

November:

Consider revisiting the changes made to Objective 4 and SOC1 to reflect the fact that health and wellbeing is associated with wide-ranging factors, of which coastal/marine access is one. The policy could be reworded to: *Decision-making authorities should support development and other activities or management measures that provide health and social well-being benefits including through maintaining, or enhancing, access to the coast and marine area.* Reference to the multi-faceted nature of health and well-being determinants should also be made within the supporting text.

season through new forms of tourism has been removed. A new policy reference to supporting *proposals that deliver tourism and/or recreation related benefits in [adjacent] communities* has been added to the 'Tourism and Recreation' Chapter. As a result there is possibly less policy support for tourism diversification. This is notable given that tourism diversification has the potential to make a significant contribution to addressing community and well-being problems in communities along the coastline.

Cultural Heritage

September:

The marine plans at this stage contained policies which both provided protection to heritage assets and also promoted activities which may result in harm to heritage assets. Some re-affirm existing policy such as, for example, those relating to the on-going role of the oil and gas industry, offshore wind and aggregates extraction. Some augment existing policy such as those which seek to avoid sterilisation of tidal power potential and fishing grounds. It was also the case that offshore wind and aggregates may have expanded under the provisions of this version of the plans which may create further risks to heritage assets. However, given the policy framework provided it is unlikely that this would be with any less care for the historic environment that in the absence of marine plans. Controls such as EIAs, legal protection and good practice guidance on heritage remained in place.

Policy was included for the direct protection of heritage based on avoidance of substantial harm to assets. Other policies offered indirect protection such as the biodiversity and governance policies regarding information gathering.

On balance it was considered that this version of the plans had both positive and negative effects on heritage.

November:

With regard to the likely significant effects on cultural heritage, the policies within the November 2012 draft of the marine plans are not greatly different to those within the September 2012 draft. Many of the policy areas of relevance remain similar in intention to those of the earlier version, albeit with minor changes in wording or emphasis. Consideration was given to the SA recommendations made in September. The principal change of relevance was that the main heritage protection policy had now included a sequential format for considering heritage assets when consenting new development. Other relevant policies had been merged. Overall both positive and negative effects were assigned.

September:

Recommendations at this stage included:

The need to consider the heritage effects of associated land-based development and to encourage liaison with terrestrial planners over impact assessment. Additional text was thus included in the tourism and recreation policies and further text in the governance policies.

Reference to the Valetta convention and a definition of heritage assets. It was considered that the MPS provided this sufficiently.

That heritage should be considered before burying cables. It was considered that this would already be done under existing mechanisms.

That the aggregates and offshore wind policy should signpost established industry heritage appraisal techniques. It was considered that such signposting was not required at that stage and sufficient reference was included elsewhere.

That the ports policy should reference the need to avoid impacts on heritage. Some text was thus added to the social policies to cover all sectors.

November:

Further recommendations included the suggestion to retain the term to avoid substantial harm and a greater focus on the environmental effects of associated onshore infrastructure.

Marine Ecology

September:

Many of the policies in the draft plans reflected existing policy level protection of water quality and sites and species of conservation interest, though a number of others had the potential to enhance present protection measures through ensuring that cumulative effects and good design (i.e. encouraging activities which have the potential to “enhance” benefits to marine ecology) were taken account of. With regards to the former, when considered in combination with policies designed to help enhance the evidence base it was thought the plans may increase the understanding of potential effects and methods used by applicants and decision makers in consenting. It was uncertain as to the possible effects (both positive and negative) that activity displacement (particularly fishing) could generate during the life of the plans, particularly if offshore wind and aggregates were to expand as a result of provisions in the plans, though encouragement of co-location where possible and project level consideration of fishing displacement could help to offset possible negative effects. In combination with existing environmental protection measures and other existing or forthcoming targets (e.g. through the MSFD), it was considered the plan may contribute to the provision of a high level of protection for marine ecology, and had the potential to result in a minor positive change in baseline conditions.

September:

It was considered that policies related to fishing could more explicitly tackle the possible environmental issue of displacement to different receiving environments rather than just the socio-economic issue of movement from existing grounds. It was thought these policies may benefit from any new information gathered/made available through policies EV1-6. MMO noted that the wider issue of displacement was dealt with in a separate strategic level policy and that evidence was flagged in policy context.

November:

Though policy wording and related context and justification was subject to minor alterations for the November issue of the draft plans (including accounting for SA interim recommendations, overall the outcome for marine ecology was not considered to be appreciably different to that predicted from the September issue (above).

November:

It was noted that the main policy dealing with protection of biodiversity is apparently restricted to habitats and species that are protected or are of conservation concern. With reference to the terrestrial example of the declines in common farmland birds, it was recommended that the policy should be widened to cover all marine biodiversity, not just that which was on the current conservation radar.

The aquaculture policy was framed in relation to aquaculture sites; an alternative approach which could be explicitly covered in the policy is the augmentation of natural stocks through the rearing and release of juveniles e.g. lobsters.

The Economy

September:

The Plans are supportive of a range of sectors, particularly those relating to energy, such as offshore wind. This is reflected in the fact that wind energy is the only economic sector given prominence in the overarching ‘Economy’ Policies, and the fact that issues relating to the efficient roll-out of wind energy are given

September:

It was suggested that the plans might include a policy focus on ensuring that particular ports, and associated small businesses, do not lose business as a result of fishing grounds and shipping routes being displaced. The MMO responded by highlighting that these considerations are reflected in the ‘Governance’ policy on displacement.

Summary of SA findings

detailed consideration through dedicated policies.

Wind energy is important, but growth in this sector alone will not enable all identified economic issues associated with localities along the coastline to be addressed. As such, the marine plans also give other sectors support through policy. Sector specific policies vary in their detail, reflecting the nature of the evidence base available.

As well as helping to ensure that fresh problems do not arise through conflicts between sectors, the likely outcome of setting various sector specific policies is that the Plans will provide a platform for reduced conflicts / more efficient cooperation between sectors. This outcome should help to ensure a diverse economic base.

November:

Most of the changes made to policies will have a relatively subtle effect. In particular:

Within the sector specific policies of the November 2012 Plans it is apparent that subtly different policy approaches are put in place to provide protection to particular activities. For example, in some cases policy wording highlights that, where it is not possible to minimise or mitigate the impact of a proposed activity on another/others, then the proposed activity should only be allowed subsequent to a consideration of relative merits.

Whilst the previous (Sept 2012) policy approach stated that there should be an emphasis on co-existence in relation to major development (those subject to EIA), the November 2012 policy approach does not state this, and so the assumption is that co-existence should be pursued regardless of the scale of the projects involved.

In relation to Aquaculture, the policy approach (which involves ensuring that other activities do result in opportunities for aquaculture being foreclosed) should now be applied 'where research identifies optimum sites...' as opposed to 'within designated shellfish waters, shellfish harvesting waters and sites subject to [existing regulatory orders]'.

Geology, Geomorphology and Coastal Processes

September:

The draft marine plans set out a range of policies of relevance to this SA topic, whether they be in relation to the avoidance of damage to MPAs selected wholly or in part for geological or geomorphological features, or whether they seek to influence activities which may generate direct physical effects on seabed features (e.g. aggregates extraction, renewables installation, cable and

Summary of key SA recommendations and how they were considered

It was suggested that Policy EC3 could also include specific reference to other renewable and low carbon technologies, rather than solely focus on offshore wind. The MMO's response was to highlight that there is a need to focus on the activity with the most potential to be transformational during the life of the plans, which has been assessed to be offshore wind

It was also suggested that Policy EC3 could be strengthened by reference to supporting a 'sustainable' offshore wind industry which places climate change mitigation at its centre, and recognises the potential air quality and climate impacts of associated developments, particularly in areas with existing air quality issues. The MMO's response was to make reference to the importance of growth in the wind energy sector being 'sustainable' in supporting text.

November:

It is suggested that the stringency of the policy wording is increased to reflect the importance of avoiding impacts to port activity. This could be achieved simply by inserting a reference to the need to take into account 'the relative merits' of port activity vs other activities (given that this reference is made in relation to the protection of tourism and recreation activities); or, it might be appropriate to refer to the need to 'bear in mind the importance of ports to local and national economies'.

September:

It was acknowledged in the MPS that climate change may exacerbate erosion and flooding issues, and that the planning authority should consider areas where development should be avoided (e.g. areas identified as Coastal Change Management Areas, or areas of coast which would be particularly sensitive to development). In addition to the climate change policy, a policy map reflecting

Summary of SA findings

pipeline installation). Many of the policies reaffirmed or complemented existing national scale policy (e.g. the MPS, National Policy Statements (NPSs), National Planning Policy Framework (NPPF)) and non-statutory plans (e.g. Shoreline Management Plans). It was noted that policies supporting renewables deployment, CCS and aggregates (e.g. through safeguarding resource areas or preference for such activities) have the potential to contribute to CO₂ reduction targets and related climate change effects at the coast (e.g. in relation to sea-level rise), though only in combination with wider measures and in the medium to long-term. Additional wind capacity or aggregate extraction that may arise from supportive policies supporting these sectors, would have corresponding environmental implications for the seabed. Considered in combination with other provisions of the marine plans relating to biodiversity/conservation and existing or planned initiatives (e.g. MSFD), these effects should be suitably considered and mitigated at the plan or project level.

November:

Though policy wording and related context and justification was subject to minor alterations for the November issue of the draft plans (including accounting for SA interim recommendations), overall the outcome for geology, geomorphology and coastal processes was not considered to be appreciably different to that predicted from the September issue (above).

Summary of key SA recommendations and how they were considered

areas identified as being particularly sensitive, connected with other relevant plans such as SMP coastal cell policies, may assist decision makers in considering erosion and flood risk (e.g. relevant to, amongst others, renewables landfall, CCS pipeline landfall, aggregates extraction). The MMO responded to say that text on coastal change management was added and that this also referred to relevant guidance, SMPs and related management measures.

It was considered that the CCS policy could be strengthened to reflect a preference for developments which avoid prevention or impedance of CO₂ transport and storage. Also related to CCS, it was questioned whether the policy to co-locate pipelines (e.g. with cable routes, gas pipelines) is likely to deliver. A variety of factors will dictate proposed pipeline routes (constructability, number of existing pipelines and cables requiring to be crossed, aggregate extraction areas, sensitive seabed habitats, conservation sites etc.). Identical routeing considerations apply to cables and oil and gas, though the cabling policy does not propose such co-location.

Landscape and Seascape

September:

It was thought that many of the activities projected to be responsible for changes in seascape during the life of the plans (e.g. new pipeline and cable landfalls, additional offshore wind and enhanced port capacity) were unlikely to be significantly altered (e.g. in form and location) by the policies in the draft plans document, though policy provisions have the potential to lead to minor increase in offshore wind and aggregates extraction. In response to this, and in the context of wider seascape considerations, the draft plans promote enhanced consideration of seascape in decision making, and the MMO commissioned a seascape character assessment. The proposed adoption of the European Landscape Convention (ELC) definition of landscape should lead to a consideration of seascape character outside of highly designated sites.

It was not considered that the characterisation related to the seascape policy, in its present form, provides sufficient detail as a basis for assessment and monitoring. It was suggested that this policy should make reference to other established methods until the publication and adoption of the underlying methods and characterisation commissioned by Natural England. The MMO responded that an agreed approach that can be used consistently across all plan areas was required, and that consideration of other methods may only lead to confusion between stakeholders. It was also noted that following advice from Defra, the definition of seascape should refer only to the visual impact from land, in line with the definition in the Marine Policy Statement.

Summary of SA findings

Summary of key SA recommendations and how they were considered

The plan reinforces the considerations made in Natural England's Coastal Access Scheme with regards to new coastal development and access which may not affect seascapes but may result in a greater number of coastal visitors experiencing them, and recognises the connection between seascape and the tourism offer.

November:

Though policy wording and related context and justification was subject to minor alterations for the November issue of the draft plans (including accounting for SA interim recommendations, overall the outcome for landscape and seascape was not considered to be appreciably different to that predicted from the September issue (above).

No additional recommendations were made for this iteration of the plans.

Water Environment

September:

It was recognised that the key drivers for change in the water environment were large scale climatic and ocean processes and the marine plans could have only a limited effect on them, other than with regards to pollution and coastal flooding. It was determined that again there was a combination of policies which re-affirmed existing mechanisms together with some which added to them..

A number of policies re-affirmed the need for offshore developments which have potential to affect water quality. However, it was recognised that significant controls and monitoring are already in place to protect water quality which would continue, for example, the requirement for EIAs and the provisions of the MSFD and WFD. Also two policies were included which required applicants to address the effects of new proposals on water quality and the risks of collisions and spillages. It was, however, considered that references to the role of the plans regarding coastal flooding was limited at this stage,

September:

Recommendations at this stage included:

The need to consider the water quality effects of associated land-based development and to encourage liaison with terrestrial planners over impact assessment. Additional text was thus included in the tourism and recreation policies and further text in the governance policies.

That the ports policy should reference the need to avoid impacts on water quality. Some text was thus added to the social policies to cover all sectors.

The marine plans have little provision with regard to coastal flood risk and erosion. Some information and sign-posting under the climate change policies has been included.

Marine litter and debris is a concern in the East marine plan areas. Marine litter was thence covered under objective 7 and signposts MSFD. The importance of clean healthy beaches was also mentioned under the TR policies

November:

With regards to the water environment, the policies within the November 2012 draft of the marine plans are not greatly different to those within the September 2012 draft. Many of the policy areas of relevance remain similar in intention to those of the earlier version, albeit with minor changes in wording or emphasis. Consideration was given to the SA recommendations made in September. The principal change of relevance was further signposting regarding how coastal change is addressed and also a reference to marine litter is now provided under Objective 6. Reference to the protection of the water environment is now also signposted in the ports policy.

November:

No further recommendations were made in November.

5 WHAT ARE THE APPRAISAL FINDINGS FOR THE MARINE PLANS?

Note that for the following assessment, the implications of the plans as a whole have been considered for each topic. The key consideration here is how adopting the plans might change conditions predicted in the absence of the plans, and whether the policies improve the baseline situation for the sustainability topics identified.

Please note that the assessments described below represent the assessment of the marine plans in January 2014 following consultation feedback on the draft plans.

5.1 Air and Climate

A foremost consideration relates to the influence of the plan in terms of supporting the commercial application of technologies for renewable energy generation and CCS. The Plans include policies focused on offshore wind energy, tidal stream technologies and CCS.

Of these technologies, offshore wind energy is the most prominent given the maturity of the technology. Importantly, one of the three 'Economic' policies is dedicated to ensuring that wind energy proposals are considered favourably. This 'Economic' policy complements the two 'Wind' focused policies and the effect should be to enhance developer confidence to some extent, i.e. ensure that plan areas are seen as suitable areas in which to invest in offshore wind. It is acknowledged that the main drivers of offshore wind energy development are national policy and associated market interventions.

The overall effect should be to bring about growth in the sector within the Plan areas over and above the baseline. It is not possible to say to what extent this will happen, only that it is a likely benefit of the plan policies. This is positive from a perspective of supporting the achievement of established national carbon reduction targets given that, in the long term, support and encouragement for wind energy in the East Plan areas should help to ensure that electricity generation from renewable sources increasingly replaces energy generation from fossil fuels.

In terms of CCS and tidal stream technologies there is less of a policy emphasis, but it should still be the case that a useful policy framework is put in place that will help to ensure that the potential to roll-out these activities is not unduly foreclosed. It is of particular importance that the option of early CCS adoption is not foreclosed given the potential to make a major contribution to climate change mitigation (albeit this potential is highly uncertain given that the first CCS demonstration project in the UK is yet to be completed).

There is also a 'Climate Change' policy that should have the effect of ensuring future decision-making seeks to minimise greenhouse gas emissions, including when giving consideration to the most appropriate locations for development. This will complement the 'Governance' policies which focused on encouraging co-existence and avoiding / minimising displacement and numerous sectoral policies that aim to ensure spatial conflict / displacement is minimised. A particularly important consideration is the need to avoid the unnecessary lengthening of shipping routes as this would lead to increased greenhouse gas emissions. Within the climate change policy there is also a reference to 'mitigation measures', the value of which is less clear.

Shifting patterns of economic activity could also contribute to localised air quality problems or worsen air quality in areas where it is already a problem. This could particularly be the case around the major ports (which are centres of activity that the Plan seeks to protect through a dedicated policy). However, it is not possible to determine likely significant effects with any certainty.

5.1.1 Conclusions and Recommendations

On balance, the plans are unlikely to have any significant impact on air quality or on climate change in the short-term; however, in the medium-term there may be a minor positive effect on the baseline in terms of climate change as a result of increased deployment of offshore wind. In the longer term, this support and encouragement for wind energy in the East Plan areas should help to ensure that electricity generation from renewable sources increasingly replaces energy generation from fossil fuels nationally. In terms of other climate change mitigation initiatives, the plans are less likely to have a significant effect. Similarly, the plans are unlikely to lead to significant effects in terms of air quality.

The first two sentences of Policy CC2 currently read: 'Proposals for development should minimise emissions of greenhouse gases as far as is appropriate. Mitigation measures will also be encouraged where emissions remain following minimising steps'. For clarity, consider referring to 'carbon offsetting' rather than 'mitigation measures'. Specifically, that the first two sentences could read: 'Proposals for development should minimise as far as practicable emissions of greenhouse gases. Carbon offsetting measures will also be supported where [necessary, / appropriate].

5.2 Communities and Health

The marine plans are focused on promoting and supporting economic activities that will not only build on the existing strengths of coastal communities adjacent to the plan areas, but will also address particular socio-economic problems being faced. Policy EC2, in particular, refers to the need to support: '*...additional sustainable employment benefits... particularly where these benefits have the potential to meet employment needs in localities close to the marine plan areas.*'

More specifically, the nature of the economic growth that will be stimulated as a result of the marine plans is likely to result in benefits to communities. It is anticipated that growth in the wind energy sector will benefit communities, including communities in need of regeneration around the Humber Estuary and at Great Yarmouth / Lowestoft. Growth in wind will primarily be driven by national policy and market interventions, though the supportive policies in the plans will encourage growth also (see section 5.1), at least in the longer term.). Assuming that maintenance and operations activities choose to locate nearby (an assumption that may or may not hold true), then the effect should be to create a good range of employment including opportunities for those with lower skill levels.

Having discussed the direct 'community' effects associated with growth in the wind energy sector, it is important to consider secondary effects including effects that relate to the way in which other economic sectors are affected. Such effects are difficult to predict with accuracy given that these marine plans are the first of their kind in England (and given that plan effects on the offshore wind sector are themselves less than certain). With this in mind, one sector where current activity could be affected due to an assumed increase in offshore wind due to policies within the plan is shipping and ports. This reflects on the fact that wind farm developments have the potential to affect shipping routes. Any effects will be mitigated to a considerable degree by application of the protective policies in the plan. Indeed, given the protective policies within the plan it is possible that the overall effect of the plan on ports and shipping could be positive relative to the baseline (i.e. a future situation where wind development comes forward without these protective policies in place). Furthermore, any negative effects on the ports and shipping sector will be to some extent offset by the increase in port-related activity resulting from the growth of offshore wind. Any impact to the ports and shipping sector along the East marine plan areas' coastline would be of some concern for 'communities and health' given identified problems of unemployment and associated deprivation associated with some localities. Ports and shipping activity can have high

local effects as labour catchments tend to be relatively local, and there is demand for lower skilled labour, meaning that jobs are accessible for workers who tend to be at increased risk of unemployment. As mentioned above, the potential growth of the offshore wind industry as a result of marine plans may also result in similar labour utilisation benefits. It is also worth noting that those plan policies that encourage integration between marine and terrestrial plans should help ensure that economic initiatives lead to be benefits for coastal communities.

In terms of other economic sectors which relate closely to 'communities and health', fishing is a key consideration. Fishing provides high-quality employment for people across all skills levels and is of great social value to particular communities. Dependence on fishing for employment can be as high as 20% in some communities; and these communities (although not large or numerous) can tend to be economically peripheral / lack alternative occupations. For fishing, implementation of the 'Governance' policies should mean that displacement of fishing by unplanned development is avoided and successful co-location achieved. It is not possible to 'drill-down' further and identify effects at more local scales at this stage due to a lack of locally specific evidence.

Similarly, other economic activity in relation to tourism and recreation is an important consideration given that this is central to the economy of some of the less affluent areas along the coastline where socio-economic problems can stem from underemployment / seasonal unemployment. Again, the plan policies aim to ensure no significant negative effect on tourism and recreation. Policy TR3 is of importance as it seeks to ensure support is given to proposals that *'deliver tourism and/or recreation related benefits in communities adjacent to the East Marine Plan areas'*. The supporting text helpfully refers to the importance of 'diversifying' tourism and also lists some tourism related development that could potentially be supported.

5.2.1 Conclusions and Recommendations

On balance, the East marine plans should have a positive effect on coastal communities and health as a result of targeted efforts to stimulate economic activity that could benefit communities in need of regeneration, as well as policies that will ensure that economic activities currently of importance from a community perspective are protected, including fishing.

It is recommended that the MMO should consider rewording Policy EC2 so that there is a clear emphasis on the need to favour economic activities where they are in-line with established objectives for addressing socio-economic problems (with a view to reducing inequality between communities).

5.3 Cultural Heritage

The marine plans contain policies which both provide protection to heritage assets and also promote activities which may result in harm to heritage assets. Many of these re-affirm existing policy such as, for example, those relating to the on-going role of the oil and gas industry. Some augment existing policy such as those which seek to avoid sterilisation of tidal power potential and fishing grounds and policy CAB1 which encourages the burying of cables within the seabed. In particular the plans promote the importance of offshore wind activity and aggregates extraction. Offshore wind development has potential to increase as a result of the plans compared with the situation without them, although this is not certain. This may occur in the Hornsea and Dogger Bank areas and aggregates extraction may increase in the areas between the Hornsea and East Anglia zones as a result of plan policies, although such an additional deployment cannot be confirmed. The shallow sand banks of the North Sea are known to have heritage potential, although this should be caveated with the fact that as yet undiscovered heritage assets may also exist in other areas. Whilst all of these activities have the potential to harm heritage assets, there are a number of controls in place both within the marine plans and already in existence. Indeed, controls are already in place to protect heritage assets which would continue, for example, the

requirement for project-level Environmental Impact Assessments (EIAs), legal protection for some wrecks and military remains, existing guidance on heritage for the aggregates industry and guidance on cumulative effects for wind energy developments. Furthermore, the marine plans contain a number of policies which either directly or indirectly offer protection to heritage assets. Principally, SOC2 makes specific provision for consideration of heritage assets by stating that, in order of preference, proposals will not compromise or harm the asset, otherwise impacts will be minimised and mitigated or if this is not possible the case for proceeding should be justified. The supporting text to the policy states that the aim of this policy is to ensure that existing marine and coastal heritage assets are protected from developments and other activities or management measures that may have a detrimental impact upon them. In the supporting text, the requirements of the MPS are re-iterated in terms of the need to conserve and manage assets (including those without formal designation) in recognition to the overall contribution to the historic environment – this includes the contribution to societal benefits. Policy SOC2 also sits beneath the marine plans Objective 5 which states, “*To conserve heritage assets and ensure that consider the character of the local area*”. Other policies offer indirect heritage protection through consideration of other things such as BIO1 regarding marine ecology, SOC1 regarding coastal access and GOV3 seeks to ensure that the impacts of displacement of activities are also considered. Information under Objective 11 of the marine plans relates to the need to improve the gathering, sharing and monitoring of evidence to support development, together with partnering to help achieve this; all of which would greatly help our understanding of the marine historic environment.

If the marine plans do encourage further growth in both the offshore wind and aggregate extraction sectors it is anticipated that the above policies included in the marine plans will help to mitigate any additional negative impacts on heritage assets that might result from this additional growth.

5.3.1 Conclusions and recommendations

There is uncertainty as to whether or not development occurring above the baseline as a result of the presence of marine plans would coincide with heritage assets. The policies contained within the marine plans afford consideration to negative impacts upon heritage assets. However, it is not possible to say categorically whether one effect would balance the other and monitoring will be required to determine this in the future.

A number of recommendations were made to mitigate any adverse effects identified or enhance the marine plans at earlier stages of the SA. No further recommendations have been made at this stage.

5.4 Marine Ecology

Policies in the marine plans are relevant to marine ecology either due to any influence they may have on marine activities which have the potential to generate effects (e.g. offshore wind, tidal energy, aggregates extraction), or by setting out how the environment will be considered in decision making/should be considered by project applicants, as well as the promotion/commissioning of research to help develop the evidence base for the marine plan areas. Some of the considerations assigned by these policies reflect existing legislative and policy level protection, for instance in relation to pollution associated with shipping collision risk, and considerations of sites and species of conservation interest.

Present protection measures may be augmented by a consideration of cumulative effects both through policy wording, and through research to be undertaken in keeping with the MMOs Strategic Evidence Plan (SEP) under Objective 11 of the marine plans. The policy justification which relates to cumulative effects highlights the use of new guidance on the topic, and also that there is an expectation that more is done than is provided for in existing measures. The SEP

outlines a need to improve the understanding of cumulative effects of multiple activities, stating this is a priority area of research over the next five years for the MMO.

It is stated in the marine plans (paragraph 154) that they will, "...make a contribution to implementing the MSFD alongside a range of other measures", though it is noted that the nature of this contribution will become clear as measures for achieving GES and the marine plans develop. This approach is consistent with the first UK MSFD marine strategy document which also sets targets and indicators for the achievement of GES. A number of policies relating to the protection of biodiversity including that protected under statutory mechanisms, and those of wider biodiversity interests, and the protection of MPAs by considering any impacts on the delivery of an "ecologically coherent network of sites", have the potential to contribute to the achievement of these targets, and to augment existing protection measures. Consistent with other national planning policy (e.g. Overarching NPS for Energy, the MPS), the plans include a policy which specifically relates to the incorporation of features which "enhance biodiversity and geological interests". The marine plans will complement existing terrestrial policy offshore and at the coast, for which the incorporation of such features is already a consideration.

At this stage of marine planning it has been difficult to identify with any certainty what impacts marine plans will have on the growth of individual sectors (i.e. to what extent marine plans will encourage growth/development beyond that which is already projected in the absence of the plans), and therefore it is not possible to explicitly define the location, scale or precise type of activity arising in response to plan policies (as distinct from other drivers). It is also not regarded possible to make a definitive judgement on the potential for displacement resulting from the adoption of these policies beyond, for instance, which may arise as Round 3 wind farm deployment begins to take place. Despite this uncertainty, effects for marine ecology directly related to the plans may arise from any change in scale or location of activities related to these policies or indirectly through related activity displacement. The marine plans should contribute to, or at least reaffirm, policies related to environmental protection. For example, displacement of fisheries is a specific consideration of the plans, with a specific policy relating to how displacement should be considered in proposals. Moreover, wider displacement issues are considered in overarching governance policies promoting activity co-location (wherever possible) and a requirement for consideration of wider displacement (i.e. not just fisheries) to be made in proposals.

5.4.1 Conclusions and recommendations

While many of the policies in the plans reassert existing policy and environmental protection provisions and/or put them in the context of the plan area, the implementation and monitoring proposals for the plans and related SEP have the potential to positively contribute to the understanding the environmental baseline and therefore improve its consideration in applications and consenting decisions. It is uncertain as to the possible effects that activity displacement (particularly of fishing) could generate. However policies dealing specifically with fishing displacement and wider displacement issues could help in assessing these impacts at the project level. The implementation of policies relating to biodiversity protection and an enhanced consideration of cumulative effects, in combination with existing environmental protection measures and other targets which are forthcoming, should help to provide for a high level of protection for marine ecology.

Recommendations for this SA topic include:

- The aquaculture policy could explicitly cover the augmentation of natural stocks through the rearing and release of juveniles e.g. lobsters.

- Policy relating to fishing displacement could more explicitly tackle the possible environmental issue of displacement to different receiving environments rather than just the socio-economic issue of movement from existing grounds.

5.5 Economy

It is anticipated that the marine plans will enable growth across sectors at levels beyond those likely in the absence of marine plans by:

- Increasing certainty in what sort of developments are likely to gain consent and where, making potential developments more attractive to investors
- Reducing transaction costs incurred by businesses that may arise in the absence of the clarity afforded by the marine plans
- Signposting to help ensure that developments mitigate negative impacts on each other thus avoiding the administrative and frictional costs that arise from conflict between sectors
- Signposting the need to consider activities which fall outside of existing licensing or management measures (e.g. some marine recreation activities) by highlighting the importance of co-location and the issue of displacement, contributing to the growth of these smaller sectors alongside the larger industries
- The inclusion of policies signposting fledgling sectors/technologies and encouraging consideration by other sectors of areas which might be needed for these fledgling sectors/technologies in the future (e.g. Carbon Capture Storage and Wave Energy)

From a SA perspective, considering economic effects on particular geographical areas / local economies or sectors of the population is important. In particular, there is a need to consider the rate and nature of economic growth that can be expected in areas along the coastline where there are well understood strategic/structural economic challenges and/or opportunities. As the bullets above aren't derived from localised evidence specific to the East plan areas it is not possible to use them to attribute significant impact on the economy baseline in this NTS and related SA Report, despite there being a strong likelihood of them impacting upon the baseline.

In terms of sector specific impacts, the plan is particularly supportive of energy development, particularly offshore wind, through policy EC3 and policies WIND1 and 2. Providing certainty for offshore wind investment could help offshore wind growth at the regional scale, as discussed in section 5.1. Offshore wind growth should result in economic benefits that will likely be captured locally along the coastline to a significant extent. The plans do not single out particular areas for associated onshore developments, but do highlight a range of other initiatives that may support economic growth in localities bordering the plan areas.

Though it cannot be attributed primarily to the plans, the growth in the offshore wind energy sector is likely to benefit the Humber Estuary and Great Yarmouth / Lowestoft areas. Per capita 'productivity' in these areas can be expected to rise significantly given that the renewables industry will be the beneficiary of very high levels of capital investment over coming years. Also, assuming that maintenance and operations activities choose to locate nearby (and this is not certain given the footloose nature of these industries), then the effect should also be to create a good range of employment including opportunities for those with lower skill levels. The supportive wind policies of the plans could encourage employment growth and other economic benefits over and above that predicted under a 'no plan' scenario baseline, though this is not certain.

Having identified the potential for the marine plans to encourage increased economic activity associated with the wind energy sector (and associated benefits in terms of labour utilisation and productivity), it is important to consider other sectors that may be affected by this additional

activity. It is possible that this additional activity may cause further competition for space which could in turn impact activity associated with other sectors, most notably shipping and ports. Port activity is of particular importance from an 'economic' perspective given that labour catchments tend to be relatively local, and there is demand for lower skilled labour, so creating jobs that are accessible for workers who find themselves at increased risk of unemployment. Ports are also important from a perspective of generating 'agglomeration effects' (i.e. bringing together businesses and encouraging cooperation) and driving improvements to local infrastructure. The ports and shipping policies (PS1-3) anticipate and try to avoid/minimise/mitigate negative impacts. This would not happen without the plans. Furthermore, increased offshore wind development could mean more activity for local ports. Overall, it is assumed for the purposes of this appraisal that possible contraction in port activities in key areas related to decreased shipping will be nullified by positive effects related to the expansion in offshore wind energy related activities centred on ports.

Oil and gas activity, whilst expected to decline over the life of the plans, is still an important economic contributor and is currently the largest sector in terms of GVA generated. The plans support further oil and gas exploration and production, with associated economic benefits. In terms of oil and gas, however, it is important to note that there can be less certainty in terms of 'where' the benefits of economic growth will be felt.

5.5.1 Conclusions and Recommendations

The marine plans are expected to lead to positive effects in the short, medium and long term, although there is a degree of uncertainty. This uncertainty relates to the fact that other drivers of economic activity are significant and wide ranging. The marine plans should support targeted economic activity that will help to bring about employment focused regeneration within particular communities where there are currently identified problems. It is not anticipated that, on balance, any particular economic activities or local economies will suffer as a result of the plans.

Further discussion of the anticipated benefits of marine planning can be found in the 'Analysis of the East Inshore and East Offshore Marine Plans'⁸.

5.6 Geology, Geomorphology and Coastal Processes

Policies and related context/justification contained in the marine plans provide the basis for both considering the protection of geological and geomorphological features (e.g. in the context of statutory designations) through decision making, and by augmenting existing terrestrial protection measures afforded by such designations such as earth science SSSIs and Geological Conservation Review (GCR) sites.

It is stated in the marine plans document that the plans will, "...make a contribution to implementing the MSFD alongside a range of other measures", though it is noted that the nature of this contribution will become clear as measures for achieving GES and the marine plans develop. This accords with the first MSFD marine strategy document which also sets targets and indicators for the achievement of GES, which includes a consideration of seafloor integrity. A number of policies relating to the protection of biodiversity, including the protection of MPAs by considering any impacts on the delivery of an "ecologically coherent network of sites", have the potential to contribute to the achievement of these targets.

Policies related to climate change and aggregates provide the basis for decision making authorities to ensure that activities consider the potential effects of climate change on their

⁸ MMO (2013) Analysis of the East Inshore and East Offshore Marine Plans

integrity, and how they may impact upon coastal and other adaptation measures, as well as providing (in combination with other national policy) that a suitable level of aggregates are available, e.g. for beach recharge projects where this is a suitable defence or adaptation measure. The policy related to activities and sea-level change is most likely to be implemented when considering nearshore and coastal structures which have the potential to alter sediment dynamics, or be subject to issues arising from sea-level change. It is noted that the policy signposts existing measures related to coastal change management, however outside of sea-level considerations, it is not clear where the marine plans provide additional safeguards to coastal processes and change.

A number of activity specific policies of relevance to this topic, for instance some of those associated with oil and gas, offshore wind, and aggregates, largely reflect existing policy or consenting mechanisms, and therefore it cannot be predicted with a high degree of confidence that these policies would result in an appreciably different outcome with regards to activity siting and resultant impacts on the environment from not adopting the plans. Section 5.3 outlines an assumption that there may be a possible increase in offshore wind (or more speedy deployment) and aggregates to result from plan adoption. In this instance a greater degree of physical disturbance to the seabed may arise. This needs to be considered both in the context of existing factors affecting industry confidence and existing consenting assessments at the plan and project level and other environmental protection commitments.

The plans include policy to safeguard potential aggregate resources (i.e. those areas not presently licensed or subject to exploration), though the policy does not infer exclusion from this area, in keeping with co-location/displacement policies. The resource area identified is significantly larger than what is likely to be required to meet demand and includes areas in close proximity to (and which apparently abut) the coast. The potential for aggregates extraction to make alterations to the wave environment or result in sediment drawdown due to localised deepening has been noted, and any application for a licence to extract aggregates within the potential resource area should be assessed as part of a Coastal Impact Assessment and (where appropriate) activity level EIA, as is current practice.

5.6.1 Conclusions and recommendations

It may be concluded that the marine plans could make a minor positive contribution to baseline conditions compared to the no plan option. There is, however, a general lack of consideration of coastal change and flooding, and how marine licensable activities (e.g. aggregates, tidal energy) could impact these – a separate policy explicitly acknowledging that nearshore developments should consider coastal erosion and flooding, and how this will integrate with land based plans and decision making would be useful. It is recognised that the consideration of such plans is made in the marine plans through signposting at the policy level.

5.7 Landscape and Seascape

The marine plans recognise those industries which are due to expand in the coming years within the east marine plan areas (e.g. offshore wind, tidal energy and CCS) and provide policy in support for these activities. The expansion or continuation of these and other activities are likely to influence the character and seascape of the plan areas in the lifetime of the plans, though it is not considered likely that the adoption of these policies on their own, or in combination would appreciably change the distribution (e.g. in form and location) of activities to a degree that the trajectory of change in the baseline will be significantly altered.

The seascape specific context contained in the marine plans uses the Marine Policy Statement definition, "...landscapes with views of the coast or seas, and coasts and the adjacent marine environment with cultural, historical and archaeological links with each other". The plans signpost

to existing policy and measures in relation to visual aspects of seascape, including highlighting the need to have regard to nationally designated areas, such as National Parks, Areas of Outstanding Natural Beauty and Heritage Coasts.

The character policy and related justification/explanation specifically relates to seascape character, defined in the marine plans as, "...the perception of an area, and the combination of characteristics at the surface, within the water column and on the seabed." The supporting text for the policy references a pilot study undertaken by Natural England, which divides the East marine plan areas into 10 seascape character areas – these areas are also delineated in a policy map. This study is available to assist decision makers, applicants and proposers in considering character of an area in relation to a development or other activity. The level of detail provided in the characterisation is not regarded as sufficient to help the relevant authority to, "...take into account existing character and quality, how highly it is valued and its capacity to accommodate change specific to any development" in relation to a proposal, as outlined in the MPS, though the study may provide the basis for further development-specific assessment. Periodic review of the character areas could enable an assessment of changes to the character of plan areas, and the relative success of the policy.

The policy and its related justification/explanation allows for a consideration of seascape character outside of highly designated sites, and is therefore in keeping with the principles laid out with regard to landscapes in the European Landscape Convention (ELC). In relation to terrestrial developments affecting seascape, as all public authorities must take any authorisation or enforcement decisions in accordance with marine policy documents, unless relevant considerations indicate otherwise, there is the potential for the marine plans to provide a more detailed consideration of issues at the development level, within the overall remit of the MPS definition of seascape. Though this policy applies both to the Inshore and Offshore marine plan areas, there is a level of uncertainty in terms of how the MPS definition of seascape (i.e. largely relating to the coastal environment) and the character policy will interact in decision making, particularly with regards to "non-visual" elements of seascape (see Paragraph 151 of the east marine plans).

A number of policies have the potential to positively influence the consideration of seascape in decision-making (directly or indirectly) by formalising certain non-statutory arrangements. For instance reinforcing the considerations made by Natural England's Coastal Access Scheme with regards to new coastal development and access, should help to maintain the access duty, and properly managed "enhancement" as suggested in the related policy, could encourage the number of people visiting and utilising space encompassing seascape views.

The policy text associated with TR1 makes the inherent connection between visual amenity and the tourism offer (paragraph 445), that, "This policy will be implemented by the public authorities responsible for authorising such developments. This could mean consideration of... seascape; please refer to the seascape section (character and visual resource) for more information". An equivalent piece of text relating seascape to tourism under policy SOC3 further helps in highlighting this link.

5.7.1 Conclusions and recommendations

Subject to mitigation, it is not regarded that the policies provide for decision making which could lead to irreversible changes. It is not regarded that, on their own, plan policies will generate transboundary effects in relation to this topic.

Plan review and monitoring should allow for updates to the character descriptions which will enable an assessment of changes to the character of plan areas, and the relative success of the seascape policy.

5.8 Water Environment

The key drivers for change in the water environment are large scale climatic and ocean processes. At present there are no local human activities within the marine plan areas that are likely to significantly change the physical properties of the water environment although it is recognised that acidity levels and carbon dioxide uptake is increasing as a result of global human activity. The main area of influence of the marine plans is, therefore, in terms of marine pollution/water quality and coastal flood risk. The marine plans contain policies which both provide protection to the water environment and also promote activities which may result in harm to water quality. Some of the policies re-affirm existing policy and practice such as, for example, those relating to the on-going role of the oil and gas industry, offshore wind and aggregates extraction. Some augment existing policy such as those which seek to avoid sterilisation of tidal power potential and fishing grounds and protection of aquaculture resources.

Of those which promote or favour new activities, OG1 and 2 seek to presume in favour of oil and gas development subject to the applicant mitigating negative impacts to the satisfaction of the public authorities – presumably this would include the Environment Agency and/or Cefas. Similarly, EC3 gives support to offshore wind expansion, WIND1 protects sites under lease from the Crown Estate for wind energy development and AGG2 seeks to protect aggregates sites subject to abstraction licenses. Each of these activities has potential to result in marine pollution. However, there already exist a number of mechanisms and drivers for controlling this such as MSFD and WFD, OSPAR Convention, MARPOL and others. Furthermore, the marine plans contain a number of policies which either directly or indirectly offer protection to water quality. Principally ECO2 requires applicants to address the risks of pollution as a result of collision. Again, these policies are identified as re-affirming existing policy. BIO1 and ECO1 seek for development to avoid harm to biodiversity interests and sites including cumulative effects on ecosystems which is likely to indirectly afford some protection to water quality in those areas. CCS2 encourages consideration of oil/gas infrastructure for re-use for CCS, which would help to reduce the possible adverse effects on water quality. GOV1-3 seek to ensure plans are in accordance with other relevant plans and which would include numerous water protection and anti-pollution components. The information provided under Objective 11 all relates to the need to improve the gathering, sharing and monitoring of evidence which would relate to the significant amount of research and monitoring of marine water quality, for example through OSPAR.⁹

In terms of reducing the risk of flooding, the marine plans include CC1 which identifies that proposals should have regard to a) how they are impacted upon by, and respond to, climate change and b) how they may impact upon climate change adaptation measures elsewhere during their lifetime. This is consistent with the MPS and NPPF, and its supporting text identifies the important role of the EA, local authorities and others in coastal change management. It stipulates that consultation with these bodies should be carried out at the earliest opportunity. It is considered that this consultation would raise any concerns about whether or not the proposals would exacerbate coastal flood risk or erosion. This would also mean that associated development from offshore activity, such as cabling would be addressed collaboratively.

5.8.1 Conclusions and recommendations

Having reviewed the policies above, it is considered that on balance, despite a possible slight (and uncertain) increase in offshore wind development and aggregates extraction compared with the no plans option, the marine plans are unlikely to have a significant effect on overall water

⁹ The OSPAR Convention (Oslo and Paris Conventions, for the protection of the marine environment of the North-East Atlantic) is the current legal instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic.

quality. The marine plans would go significantly beyond existing policy mechanisms and other mechanisms such as the MSFD and WFD would have a greater impact. As such, the overall assessment of the marine plans on the water environment is neutral.

A number of recommendations were made to mitigate for any adverse effects identified or enhance the marine plans at earlier stages of the SA. No further recommendations have been made at this stage.

5.9 Summary of Cumulative Effects

The significance of cumulative effects resulting from a range of activities, or multiple incidences of one activity, may vary based on factors such as the nature of the projects proposed and the sensitivity of the receiving communities and environment. The large majority of the policies in the plan are generic or criteria-based policies without a clear spatial dimension. It is therefore difficult to assess the extent to which the implementation of these policies might conflict with other existing economic, social or environmental policies as this will substantially be determined by the spatial locations where the marine policies are given effect. The marine plan policies create a presumption in favour of sustainable development and therefore any developments coming forward would need to conform to other existing policies unless material considerations indicated otherwise. The other policies in the plan provide a wide range of community and environmental safeguards which should, to an extent, serve to limit the impacts of individual projects.

There are seven plan policies that have a spatial component, covering five economic sectors. The environmental effects of four of these sectors' associated activities (CCS, tidal energy, oil & gas and offshore wind energy) in the plan areas have, to a large extent, already been assessed within the Offshore Energy SEA 2¹⁰. Furthermore, it should be recognised that, among others, the MPS, NPSs and SEA and EIA procedures also provide mechanisms to assess and control potential environmental effects.

For marine aggregate extraction, the Humber and Anglian Marine Aggregate Regional Environment Assessments (REAs), also provide an assessment of the environmental effects of most of the existing licences in the marine plan areas. While there is some potential for future developments under these seven policies to generate cumulative effects on communities and the environment, there is also significant potential to mitigate adverse impacts through careful site selection and/or introduction of exclusion areas or other management measures, for example, MPAs or UK Biodiversity Action Plan (BAP) features underpinned by rigorous monitoring in line with existing requirements such as for OSPAR, WFD and MSFD, amongst others. Although it cannot be determined to what extent development under these seven policies could potentially create conflict with existing UK orientated environmental and community policies and generate adverse effects this is predicted to be unlikely. In terms of effects on adjacent state territories due to activities within the marine plans' area these are likely to be less than those within UK waters. Given the existing range of control mechanisms it is not anticipated that potential transboundary effects would be significant. While there may be potential conflicts between development and environmental objectives, no conflicts with existing economic or social policies were identified.

Overall the policies may have positive cumulative effects in the medium to longer term on climate change objectives (principally through reducing greenhouse gas emissions as a result of renewables provision); positive cumulative effects on the economy; but potentially negative cumulative effects for landscape/townscape and visual amenity, and for biodiversity as a result of the prioritisation of economic objectives. These negative effects may be negated to some extent by policies reaffirming commitments relating to the protection of biodiversity, any additional policy

¹⁰ (DECC, 2011) Offshore Energy Strategic Environmental Assessment 2 (OESEA2)

which goes beyond existing provisions (e.g. ECO1, SOC3), as well as recommendations for further work, including that to address cumulative effects.

6 NEXT STEPS

6.1 Adopting the Plan

The draft East marine plans and associated documents (including this SA NTS and the SA Report) were published for public consultation in 2013. Representations made during the consultation have informed any further alterations to the plans and associated documents and the SA has been updated to reflect these. The East marine plans and associated documents have been finalised by the MMO and submitted to the Secretary of State for adoption. As part of this submission, the MMO have provided a recommendation as to whether the plans should be subject to an 'Independent Investigation' (II), with the SA providing an information resource. The Secretary of State will then decide on whether an II is needed or not. At this point, if an II is not deemed necessary, then the Secretary of State will adopt the plans. If an II is needed, the II would then look to address any unresolved issues. Once resolved, the plans could then be adopted. At the point of plan adoption a 'SA Statement' will be published, explaining the 'residual effects' of the plans, and also the measures that will be taken to monitor these effects.

6.2 Monitoring

The final stage of the SA process is to monitor the marine plans to test how they perform against the effects predicted during the SA. Monitoring therefore helps to ensure that any undesirable sustainability effects are identified and allows remedial actions to be directed accordingly.

The monitoring framework proposed for the marine plans in the SA Report consists of a number of indicators that have been developed to record potentially significant sustainability effects related to each of the SA topics. It is intended that a review of monitoring for each indicator will be undertaken in line with the wider programme for monitoring of the marine plans. Monitoring will make use of data collected for existing programmes wherever possible for example, the MSFD.

The monitoring framework is presented in the SA Report.