Llywodraeth Cymru
Welsh Government

Sustainability Appraisal Addendum

Welsh National Marine Plan

November 2019

 WG39253 Digital ISBN 978-1-83933-411-5

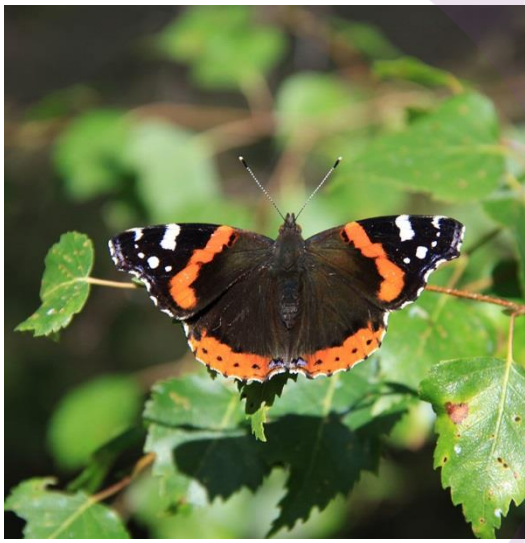
Llywodraeth Cymru
Welsh Government

wood.

Welsh Government

Welsh National Marine Plan

Sustainability Appraisal Report: Addendum



Wood Environment & Infrastructure Solutions UK Limited – June 2019

Report for

Welsh Government
Cathays Park
Cardiff
CF10 3NQ

Main contributors

Pete Davis
Alex Melling
Katharine Mason

Issued by

.....
Alex Melling

Approved by

.....
Pete Davis

Wood

Redcliff Quay
120 Redcliff Street
Bristol BS1 6HU
United Kingdom
Tel +44 (0)117 317 8950

Doc Ref. rbri039ir

h:\projects\35445 wales marine spatial plan\assessment\final marine plan\addendum report\final\sa report addendum (final) 25.06.19.docx

Copyright and non-disclosure notice

Third party disclaimer

Management systems

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with our management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.

Document revisions

No.	Details	Date
1	Draft Report	17.06.19
2	Final Report	25.06.19

Executive Summary

The Welsh Government is currently preparing the Welsh National Marine Plan (WNMP) for the inshore and offshore regions of Wales. Consultation on a draft plan took place between December 2017 and March 2018. Taking into account the representations received to the consultation, the findings of accompanying assessments, as well as ongoing stakeholder engagement, the Welsh Government has revised the WNMP structure, objectives and policies. To ensure compliance with the sustainability appraisal (SA) requirements of the Marine and Coastal Access Act 2009 and the Strategic Environmental Assessment (SEA) regulations[1], these changes have been screened and, where appropriate, assessed as part of the ongoing SA process. The purpose of this addendum is to present the outcome of the screening of the changes to the Draft WNMP and the detailed appraisals of the relevant policies in order to ensure that all the likely significant effects of the WNMP have been identified, described and evaluated.

Introduction

This Executive Summary provides an overview of the addendum to the Welsh National Marine Plan Sustainability Appraisal Report[2] (the SA Report). The addendum presents the findings of the Sustainability Appraisal (SA) of the significant changes made to the Draft Welsh National Marine Plan (WNMP) following consultation between December 2017 and March 2018.

The following sections of this Executive Summary:

- provide an overview of the WNMP and the plan preparation process to-date;
- describe the approach to identifying the changes to the Draft WNMP that are considered significant for the purposes of the SA, and the approach to their appraisal;
- summarise the findings of the SA of the significant changes to the Draft WNMP; and
- set out the next steps in the SA of the WNMP.

What is the Welsh National Marine Plan?

The WNMP is the first marine plan for Wales and represents the start of a process of shaping a future for Wales' seas through marine planning to support economic, social and environmental objectives. It will implement the UK Marine Policy Statement[3], at the national level, guiding the sustainable development of Wales' seas by setting out how applicants should shape licence applications and how proposals will be

[1] Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 No. 1633). Please note that the SA of the WNMP was undertaken in accordance with the UK as opposed to Welsh SEA regulations given the potential for the plan to have effects in other parts of the UK.
[2] Welsh Government (2017) *Welsh National Marine Plan Sustainability Appraisal Report*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/sustainability-en.pdf [Accessed June 2019].
[3] HM Government (2011) *UK Marine Policy Statement*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69322/pb3654-marine-policy-statement-110316.pdf [Accessed May 2019].

considered by decision makers including, in particular, the consenting authorities as well as guiding other decisions with the potential to affect the plan area.

The WNMP covers both the Welsh inshore region (from high water and the landward extent out to 12 nautical miles from shore) and offshore region (beyond 12 nautical miles). The overarching vision of the Plan is as follows:

> *"Welsh seas are clean, healthy, safe, productive and biologically diverse:*
>
> *Through an ecosystem approach, natural resources are sustainably managed and our seas are healthy and resilient, supporting a sustainable and thriving economy.*
>
> *Through access to, understanding of and enjoyment of the marine environment and maritime cultural heritage, health and well-being are improving.*
>
> *Through Blue Growth more jobs and wealth are being created and are helping coastal communities become more resilient, prosperous and equitable with a vibrant culture.*
>
> *Through the responsible deployment of low carbon technologies, the Welsh marine area is making a strong contribution to energy security and climate change emissions targets."*

The plan contains objectives and policies to support the achievement of this vision. Plan objectives and general cross-cutting policies are of a general nature that apply to all sectors and activities, while sector objectives and policies apply to decisions related to a particular activity.

The development of the WNMP has been informed by relevant evidence on the state and current use of Welsh seas and coastal waters and the potential opportunities for future use, alongside the views of stakeholders obtained through a process of sustained engagement. In this context, the Welsh Government published the Draft WNMP[4] for public consultation over a 16-week period between 7th December 2017 and 29th March 2018. Wood (formerly Amec Foster Wheeler) was commissioned by the Welsh Government to undertake a SA, incorporating Strategic Environment Assessment (SEA), of the Draft WNMP. An SA Report[5] presenting the findings of this appraisal was published for consultation alongside the Draft WNMP.

Taking into account the representations received to the Draft WNMP consultation, the findings of the accompanying assessments including the SA, ongoing stakeholder engagement and further detailed work in respect of tidal lagoons, the Welsh Government has revised the Draft WNMP. The changes to the Draft WNMP can be broadly categorised as follows:

- **Structural changes:** for example, reducing the length and complexity of the plan by restructuring the Draft WNMP and removing/transferring some of the material to other documents such as Implementation Guidance and Marine Planning Notices (MPNs), which may be produced in the future.
- **Policy amendments:** for example, revisions to the policies of the Draft WNMP including the combining of policies, changes to policy wording, the deletion of policies and the inclusion of additional policies.
- **Deletion of Strategic Resource Areas (SRAs):** the removal of SRAs[6] from within the plan and deferral to their future consideration under individual MPNs, and focusing the role of SRAs on safeguarding possible future resource use, rather than supporting new activity.

[4] Welsh Government (2017) *Draft Welsh National Marine Plan*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/draft-plan-en.pdf [Accessed May 2019].
[5] Welsh Government (2017) *Welsh National Marine Plan Sustainability Appraisal Report*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/sustainability-en.pdf [Accessed May 2019].
[6] In order to indicatively allocate space and focus future use, the Draft WNMP included SRAs for certain sectors. These were identified as areas of good opportunity for potential future use by a particular sector over the plan period and beyond.

- **Supporting text amendments:** for example, revisions to the introductory sections of the plan and amendments to the policy implementation guidance.

In total, 65 changes have been made to the Draft WNMP (15 amendments to the objectives and 50 to the general and sector policies). The changes range from minor wording amendments for clarity to the addition of new policies and the consolidation of other existing policies.

Further information about the preparation of the WNMP is set out in Section 1.2 of this addendum.

What is Sustainability Appraisal?

It is essential that the WNMP contributes to the sustainable development of the Welsh marine area. To support this objective, the Welsh Government is required to carry out a Sustainability Appraisal (SA) of the WNMP in order to assess the likely effects of the proposed plan policies.[7] SA is a means of ensuring that sustainability considerations are taken into account in the WNMP through an iterative approach. This iterative approach has sought to identify and evaluate the likely social, economic and environmental effects of plan proposals and alternatives, proposing measures to avoid, minimise or mitigate any adverse effects and maximise positive effects, thereby enhancing the sustainability performance of the plan. This has included consideration of secondary, cumulative, synergistic and cross-border effects and the effects arising from the reasonable alternatives to the WNMP.

The SA also incorporates a process set out under a European Directive[8] and related UK regulations[9] called Strategic Environmental Assessment (SEA). The SEA regulations set out to integrate environmental considerations into the development of plans and programmes such as the WNMP.

As part of an iterative process, the SA of the Draft WNMP was completed in October 2017. The SA Report was prepared to meet the reporting requirements of the SEA Directive and assessed the following key components of the plan:

- vision;
- plan objectives;
- sector objectives;
- general cross-cutting policies; and
- sector policies (including SRAs).

In addition, the reasonable alternatives to the Draft WNMP (as proposed) were also appraised.

Informed by the appraisal of the WNMP policies, a judgement was also been made regarding whether, and the extent to which, the WNMP would support or detract from the achievement of each of the seven well-being goals for Wales established in the Well-being of Future Generations (Wales) Act 2015[10] and the objective for the sustainable management of natural resources (SMNR) set out in the Environment (Wales) Act 2016[11].

This addendum assesses the likely significant effects of the changes to the Draft WNMP in order to update the SA Report (as appropriate) and ensure that all the likely significant effects of the WNMP have been identified, described and evaluated. This addendum should be read in conjunction with the 2017 SA Report that was published alongside the Draft WNMP.

[7] The requirement for SA of the WNMP is set out in Schedule 6 (Part 10) of the Marine and Coastal Access Act 2009.
[8] European Union Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment.
[9] Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 No. 1633).
[10] Available from http://www.legislation.gov.uk/anaw/2015/2/contents/enacted [Accessed May 2019].
[11] Available from http://www.legislation.gov.uk/anaw/2016/3/contents/enacted [Accessed May 2019].

Section 1.3 of this addendum describes the requirement for SA and the SA process for the WNMP in further detail.

How Have the Changes to the Draft WNMP Been Appraised?

Screening of Changes

The first step in the process of appraising the changes to the Draft WNMP has been to identify which of the amendments are significant for the purposes of the SA (with reference to the requirements of the SEA regulations)[12]. Some of the changes involve minor wording changes for clarity, while others involve more substantial revisions to policy wording or the addition of new policies. Any change proposed to the plan that would lead to a likely significant social, economic and/or environmental effect, or alternatively, would result in the removal of a previously identified significant effect, would need to be considered further. The changes to the Draft WNMP have therefore been screened in order to identify those amendments that are likely to have 'significant' effects.

Of the 65 changes made to the Draft WNMP, 20 have been identified as having potentially significant effects. These changes relate to: one plan objective; four sector objectives; five general cross-cutting policies; and 10 sector policies.

The screening of the changes to the Draft WNMP is described in more detail in Sections 2.2 and 3.2 of this addendum. The complete findings of the screening analysis are presented in Appendix B.

Appraisal of Significant Changes

Following the screening stage, those changes to the Draft WNMP determined as being likely to have significant effects have been taken forward for detailed appraisal. This has followed the approach to the appraisal of the Draft WNMP contained in the SA Report in order to ensure consistency in the treatment of new or amended policies.

The SA Framework adopted to assess the Draft WNMP and amended policies comprises of criteria and associated guide questions which broadly present the preferred social, economic and environmental outcome. By appraising the policies against the criteria, it is more apparent where the revised Draft WNMP will contribute to sustainability, where it might have an adverse effect, and where any positive effects could be enhanced. The SA criteria are shown below in **Table ES.1**. The complete SA Framework is presented in **Section 2.3** of this addendum.

Table ES.1 SA Criteria Used to Appraise the WNMP

Sustainability Appraisal Criteria	
1. To protect and enhance biodiversity (habitats, species and ecosystems).	8. To support and enhance the Welsh language and culture.
2. To protect and enhance the quality of surface, ground, estuarine and coastal water.	9. To support appropriate tourism in Wales and protect and enhance opportunities for recreation.
3. To protect and enhance the physical features of the marine environment.	10. To promote the sustainable use of natural resources.
4. To protect and enhance air quality.	11. To support sustainable development of marine and coastal economy.

[12] As reflected in Annex II of the SEA Directive and Schedule 1 of the transposing regulations.

Sustainability Appraisal Criteria	
5. To protect and enhance landscape and seascape character and other protected features.	12. To maintain and enhance the well-being of local communities.
6. To limit the causes and effects of climate change and promote adaptation.	13. To protect and enhance human health with special regard to vulnerable groups in society.
7. To protect and enhance cultural, historic and industrial heritage resources.	14. To promote good governance.

What are the Findings of the Appraisal?

Those objectives and policies with potentially significant changes have been appraised against the SA criteria, with commentary describing the potential effects.

Compatibility Assessment of the WNMP Objectives

The Draft WNMP sets out the Welsh Government's vision for the Welsh inshore and offshore marine area which is underpinned by 13 plan objectives and 12 sector objectives. The vision and objectives were assessed for their compatibility against the 14 SA criteria that comprise the SA Framework, with the findings presented in Section 4.3 of the SA Report. This compatibility assessment has been updated to reflect the changes to the Draft WNMP.

The Draft WNMP plan objectives (as amended) are broad ranging and span key socio-economic and environmental policy areas which are consistent with the themes of the UK High Level Marine Objectives (HLMOs). One significant change has been made to the plan objectives, which is the inclusion of an additional objective relating to coastal tourism and recreation (Objective 5). For this objective, the updated compatibility assessment has identified potential tensions between the aspiration for blue growth and the need to protect and enhance the marine environment. However, tourism in Wales is heavily reliant upon the natural environment and built heritage, which may indirectly support the conservation and enhancement of these assets.

There are no material changes to the other plan objectives and, consequently, the findings of the SA report. None of the plan objectives have been assessed as being incompatible with all of the SA criteria and compatibilities have been identified against each SA criteria.

Changes to four sector objectives were identified as being potentially significant for the purposes of the SA (two Energy - Low Carbon objectives, Energy – Oil and Gas, and Tourism and Recreation). The compatibility assessment contained in Section 4.3 of the SA Report has been updated as a result of these changes; however, as a consequence, there is little material change to the assessment and the summary of the findings presented in the SA Report remains unchanged.

Further detail on the compatibility assessment of the WNMP objectives can be found in Section 3.3.

Appraisal of General Cross-cutting Policies

Each general cross-cutting policy in the Draft WNMP has been individually appraised against the SA criteria, with the findings of the appraisal presented at Appendix D to the SA Report. For five of the general cross-cutting policies, the changes to the Draft WNMP were identified as being potentially significant for the purposes of the SA (including one new policy). These policies have therefore been re-appraised (or appraised if new) and the updated appraisal matrices are contained at **Appendix C** of this addendum.

The general cross-cutting policies with potentially significant changes are:

- SOC_06: Designated landscapes;
- SOC_11: Resilience to climate change;
- ENV_01: Resilient marine ecosystems;
- ENV_03: Invasive non-native species; and
- ENV_07: Fish Species and Habitats.

Table ES.2 presents the updated findings of the general cross-cutting policies appraisal. Amendments to scoring as a result of the changes to the Draft WNMP and policy re-appraisal are underlined. Within this table, the policies have been grouped by theme (reflecting the structure of the WNMP) with a score indicating both the performance of each individual policy against the SA criteria and the cumulative effects of the policies under each theme.

A summary of the performance of the five general cross-cutting policies taken forward for (re)appraisal against the SA criteria is provided in the sub-section that follows. Commentary is then provided on the implications arising for the SA Report.

Table ES.2 Summary of the General Cross-cutting Policy Appraisal

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Overarching Planning Policy														
GEN_01	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GEN_02	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effect	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Achieving a Sustainable Marine Economy														
ECON_01	?	?	?	?	?	+/?	+/?	+/?	++/?	?	++	++	+/?	0
ECON_02	+/?	+/?	+/?	0	+/?	+/?	+/?	0	+	+	++	+	+/?	++
Cumulative Effect	+/?	+/?	+/?	?	+/?	+/?	+/?	+/?	++/?	+/?	++	++	+/?	++
Ensuring a Strong, Healthy and Just Society														
SOC_01	+/-/?	?	?	?	+/?	?	+/?	?	++	?	+	+	+	+

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
SOC_02	+/?	+/?	+/?	+/?	+/?	+/?	+	+	+	0	+	++	+	+
SOC_03	++	++	+	++	+	0	+	0	+	+	+	++	++	0
SOC_04	0	0	0	0	0	0	++	++	+	0	0	+	0	0
SOC_05	0	0	0	0	++	0	++	+	++	0	+	+	0	0
SOC_06	++	0	+	0	++	0	++	+	++	0	+	+	0	0
SOC_07	0	0	+	0	++	0	++	+	++	0	+	+	+	0
SOC_08	+	0	++	0	0	++	0	0	+/?	0	+/?	+/?	+/?	0
SOC_09	+/-	+	++	0	+/-	++	+/-	0	+	0	++	++	++	0
SOC_10	+	0	0	+	0	++	0	0	0	++	+	+/?	+	+
SOC_11	+/-	+	+	+/?	+/-	++	+/-	0	+	++/-/?	+	+	+	+
Cumulative Effect	+/-	+	++	+	++/-	++	++/-	+	++	+/-	+	++	+	+
Living Within Environmental Limits														
ENV_01	++	++	++	+	+	+	0	0	+	0	+/-/?	+	+	0
ENV_02	++	++	++	0	0	+	0	0	+	0	+/-/?	+	+	+
ENV_03	++	+	+	0	0	0	0	0	+	0	++	0	+/?	0
ENV_04	++	++	0	0	+	0	+	0	+	++	+	+	+	0

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ENV_05	++	0	0	0	+	0	0	0	0	0	0	+	+	0
ENV_06	++	++	0	++	0	+	0	0	+	+	+/?	+	++	0
ENV_07	+	0	0	0	0	0	0	0	0	0	+/?	+/?	0	0
Cumulative Effects	++	++	++	+	+	+	+	0	+	+	+/-/?	+	+	+
Promoting Good Governance														
GOV_01	+	+	+	+	+	+	+	+	+	+	+	+	+	++
GOV_02	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effects	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Using Sound Science Responsibly														
SCI_01	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effects	+	+	+	+	+	+	+	+	+	+	+	+	+	++

Key

Symbol	Effect
++	The policy is likely to have a significant positive effect on the SA criteria.
+	The policy is likely to have a positive effect on the SA criteria.
0	The policy is likely to have a neutral effect on the SA criteria.
-	The policy is likely to have a negative effect on the SA criteria.
--	The policy is likely to have a significant negative effect on the SA criteria.
?	The effects of the policy on the SA criteria are uncertain at this stage.

*Note: where more than one symbol is presented in a box it indicates that the appraisal has found more than one score for the category. Where the scores are both positive and negative, hatching has been used. Where a box is coloured but also contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect or where there remains uncertainty over whether an effect could arise. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Likely Significant Positive Effects

Policies SOC_06 and SOC_11 are included under the theme in the WNMP of 'ensuring a strong, healthy and just society'. The policies relate to landscapes (including nationally designated landscape assets) and climate change mitigation and adaptation. Positive effects have been identified across all of the SA criteria for these two policies, with effects having been assessed as significant in respect of biodiversity (SA Criteria 1), landscape and seascape (SA Criteria 5), climate change (SA Criteria 6), heritage (SA Criteria 7) and tourism and recreation (SA Criteria 9). A mixed significant positive and minor negative effect has also been identified for Policy SOC_11 with respect to resources (SA Criteria 10).

The significant positive effects identified in respect of biodiversity, landscape and seascape, heritage and tourism and recreation predominantly reflect the protection afforded to designated landscapes under Policy SOC_06 and the associated landscape and seascape benefits this is likely to generate. It also reflects, and is consistent with, the broader purposes of National Parks and Areas of Outstanding Natural Beauty (AONB), which include conserving and enhancing natural beauty, wildlife and cultural heritage, and the promotion of enjoyment of the protected areas.

Policy SOC_11 seeks to ensure that proposals have included appropriate adaptation measures to ensure resilience to climate change and supports proposals that contribute more broadly to climate change adaptation and/or mitigation. This has been assessed as having a significant positive effect on climate change. With regard to the mixed significant positive and minor negative effect identified in respect of resources, this reflects the potential for the policy to support offshore renewable energy development and contribute significantly towards renewable energy targets, but also the fact that climate change adaptation may involve the unsustainable use of marine aggregates for coastal defences.

Policies ENV_01, ENV_03 and ENV_07 under the theme 'living within environmental limits' promote the protection and enhancement of the marine environment and resilient marine ecosystems. They cover: the restoration and enhancement of marine ecosystems; invasive non-native species; and fish habitats. Significant positive effects have been identified against four of the SA criteria; biodiversity (SA Criteria 1), water (SA Criteria 2), physical environment (SA Criteria 3) and economy (SA Criteria 11). These effects principally arise from the provisions of Policy ENV_01 to help ensure that proposals avoid, minimise or mitigate adverse effects (and generate positive effects) on biodiversity and geodiversity, which would also support improvements to water quality. Policy ENV_03 requires proposals to help control the introduction and spread of invasive species arising from development/activity in, and use of, the marine area. In light of the importance of this issue for marine ecosystems in Wales, this has been assessed as having a significant positive effect on biodiversity and the economy.

No further significant positive effects have been identified during the appraisal of the five general cross-cutting policies.

Likely Significant Negative Effects

No significant negative effects have been identified during the appraisal of the five general cross-cutting policies.

Implications for the Findings of the SA Report

Section 4.4 of the SA Report includes commentary on the cumulative effects of the general cross-cutting policies by policy theme. Following the above appraisal of new and potentially significantly amended policies, there were found to be no material changes to the overall effects of the Draft WNMP for the general cross-cutting policy themes. As a result, no changes are required to be made to the relevant subsections of the SA Report.

More detailed commentary on the likely significant effects of the general cross-cutting policies and implications for the findings of the SA report can be found in Section 3.4 of this addendum.

Appraisal of Sector Policies

As for the general cross-cutting policies, each sector policy in the Draft WNMP has been individually appraised against the SA criteria. The findings of the appraisal are presented at Appendix E to the SA Report. For 10 of the sector policies, the changes to the Draft WNMP were identified as being potentially significant for the purposes of the SA (including two new policies). These policies have therefore been re-appraised (or appraised if new) and the updated appraisal matrices are contained at **Appendix C** of this addendum.

The 10 sector policies with changes that may be significant for the purposes of the SA are:

- SAF_01: Safeguarding existing activity;
- SAF_02: Safeguarding strategic resources;
- AGG_01: Aggregates (Supporting);
- AQU_01: Aquaculture (supporting);
- ELC_01: Low carbon energy (supporting) wind;
- ELC_02: Low Carbon Energy (supporting) wave;
- ELC_03: Low Carbon Energy (supporting) tidal stream;
- ELC_04: Low Carbon Energy (supporting) tidal range;
- O&G_01: Oil and gas (supporting); and
- P&S_01: Ports and shipping (supporting).

Table ES.3 presents the updated findings of the sector policy appraisal. As above, amendments to scoring as a result of the changes to the Draft WNMP and policy re-appraisal are underlined. A summary of the performance of the 10 sector policies taken forward for (re)appraisal against the SA criteria is provided in the sub-section that follows. Commentary is then provided on the implications arising for the SA Report.

Table ES.3 Summary of the Sector Policy Appraisal

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Safeguarding														
DEF_01	+	+	0	0	0	0	0	0	0	0	+/?	+/?	+	+
SAF_01	+/-/?	++/?	+/?	+/?	+/?	++/-/?	+/?	+/?	++/?	++/--/?	++/?	+/?	++/?	+
SAF_02	0	0	0	0/?	0	+/?	0	0	0	+/?	+/?	+/?	0	+

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Cumulative Effects	+/ -/?	++ /?	+/ ?	+/ ?	+/ ?	++ /- /?	+/ ?	+/ ?	++ /?	++ /-- /?	++ /?	+/ ?	++ /?	+
Aggregates														
AGG_01 (a/b)	-/?	-/?	-/?	-/?	0	+/ -/?	-/?	?	0	++ /--	++ /?	+/ ?	0/-	+
Cumulative Effects	-/?	-/?	-/?	-/?	0	+/ -/?	-/?	?	0	++ /--	++ /?	+/ ?	0/-	+
Aquaculture														
AQU_01 (a/b)	+/ -/?	+/ ?	-/?	+/ -/?	-/?	+/ -/?	-/?	0	+/ -/?	0	++ /?	+/ ?	+/ ?	+
Cumulative Effects	+/ -/?	+/ ?	-/?	+/ -/?	-/?	+/ -/?	-/?	0	+/ -/?	0	++ /?	+/ ?	+/ ?	+
Dredging and Disposal														
D&D_01	-/?	-/?	-/?	-	0	+/ -/?	-/?	0	+	-	++	+	-	0
Cumulative Effects	-/?	-/?	-/?	-	0	+/ -/?	-/?	0	+	-	++	+	-	0
Energy – Low Carbon														
ELC_01 (a/b)	+/ -	-/?	-/?	+/ -	-- /?	++ /-	-/?	?	-/?	++ /-	++ /?	++ /?	+/ -	++
ELC_02 (a/b)	+/ -/?	-/?	-/?	+/ -	-/?	++ /-	-/?	?	-/?	++ /-	++ /?	+/ ?	+/ -	+
ELC_03 (a/b)	+/ -	-/?	-/?	+/ -	-/?	++ /-	-/?	?	-/?	++ /-	++ /?	++ /?	+/ -	+
ELC_04	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Cumulative Effects	+/-/?	+/-/?	+/-/?	+/-/?	--/?	++/-	-/?	?	+/-/?	++/-	++/?	++/?	+/-/?	++
Energy – Oil and Gas														
O&G_01 (a/b)	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	?	0	++/--/?	+/?	0/+/?	+/-/?	0
O&G_02	-/?	-/?	-/?	-/?	-/?	++/?	-/?	?	0	++/?	+/?	+/?	-/?	+
Cumulative Effects	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	++/-/?	+/-/?	?	0	++/--/?	+/?	+/?	+/-/?	+
Fisheries														
FIS_01 (a/b)	+/-	?	?	?	+/?	?	+/?	+	+	?	+	+	+/?	+
Cumulative Effects	+/-	?	?	?	+/?	?	+/?	+	+	?	+	+	+/?	+
Ports and Shipping														
P&S_01 (a/b)	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
P&S_02	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
Cumulative Effects	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
Subsea Cabling														
CAB_01	-/?	0	-/?	0	0	++/-	-/?	0	0	++/-	++	++	0	0
Cumulative Effects	-/?	0	-/?	0	0	++/-	-/?	0	0	++/-	++	++	0	0

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Tourism and Recreation														
T&R_01 (a/b)	+/ -/?	+/ -/?	+/ -/?	-/?	+/ -/?	-/?	+/ -/?	+/ ?	++	-/?	++ /?	++ /?	++ /?	+
Cumulative Effects	+/ -/?	+/ -/?	+/ -/?	-/?	+/ -/?	-/?	+/ -/?	+/ ?	++	-/?	++ /?	++ /?	++ /?	+

Likely Significant Positive Effects

The new safeguarding policies, SAF_01 and SAF_02, have broadly positive effects on the SA criteria. For Policy SAF_01, positive effects have been assessed as significant for a number of criteria due to the increased certainty provided in respect of the protection of licensed or established activities. Significant positive effects have also been identified for Policy SAF_01 in respect of water (SA Criteria 2), tourism and recreation (SA Criteria 9), economy (SA Criteria 11) and health (SA Criteria 13). These effects arise from: the safeguarding of existing and planned wastewater management and treatment infrastructure; the protection of existing businesses and jobs; and the protection and enhancement of the coastal tourism and recreation sector. Additionally, several marine sectors would have beneficial effects on health if activities are safeguarded, including recreation, water quality and fishing.

Across the aggregates (AGG_01), aquaculture (AQU_01), oil and gas (O&G_01) and ports and shipping (P&S_01) sector policies, six significant positive effects have been identified. Policies AGG_01, AQU_01 and P&S_01 were assessed as having significant positive effects on the economy (SA Criteria 11) as they support the growth of the respective sectors, providing greater certainty to developers to encourage future investment. There is the potential for new projects supported by the policies to adversely affect other economic activities in the marine area; however, the application of sector safeguarding policies (SAF_01 and SAF_02), which require new proposals to avoid, minimise or mitigate their impacts on existing or planned activities in other sectors, is expected to avoid potential adverse impacts, although some uncertainty remains.

Policy P&S_01 has been identified as having a significant positive effect on well-being (SA Criteria 12), as ports and shipping provide large scale direct and indirect employment opportunities, and ports, harbours and marinas can also be a catalyst for regeneration and enhanced service provision. However, the magnitude of effect is uncertain and will be dependent on (inter alia) the number of jobs created and the extent to which posts are filled by the local workforce.

Three of the low carbon energy policies (ELC_01, ELC_02 and ELC_03) are assessed as having significant positive effects against five of the SA criteria. For the three policies, significant effects relate to climate change (SA Criteria 6) and resources (SA Criteria 10) as the provisions for wind, wave and tidal stream energy are expected to help encourage renewable energy development and innovation in the sector together with supporting a long term reduction in greenhouse gas emissions, once projects are operational. During construction, however, energy and resources would be required and greenhouse gases emitted.

The delivery of renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. Investment in the renewables sector may also create local employment opportunities which could benefit coastal communities. Significant positive effects have therefore been identified in

respect of well-being (SA Criteria 12) for Policies ELC_01 and ELC_03 and economy (SA Criteria 11) for Policies ELC_01, ELC_02 and ELC_03. However, the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force.

Offshore wind energy generation has the potential to make a significant contribution towards UK and Welsh Government climate change targets. Further, making evidence available and support for strategic planning and liaison with the sector and other interested parties on the opportunities for future resources and de-risking consenting for the sector would promote collaboration. Policy ELC_01 has therefore been assessed as having a significant positive effect on governance (SA Criteria 14).

No further significant positive effects have been identified during the appraisal of the ten sector policies.

Likely Significant Negative Effects

Across the four low carbon energy policies (ELC_01 to ELC_04), one significant negative effect has been identified. This relates to landscape and seascape (SA Criteria 5) for Policy ELC_01, due to the potential for offshore wind energy developments to have adverse impacts on landscape/seascape and visual amenity. Impacts would be principally associated with the introduction of wind turbines into landscapes/seascapes and views, and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. The magnitude of landscape/seascape and visual effects will be dependent on the exact scale and location of development, distance to shore, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors, which is uncertain. There is at least the potential for adverse effects associated with this policy to be significant where development is visible from protected areas, although this could be avoided through the siting of proposals.

No further significant negative effects have been identified during the appraisal of the ten sector policies.

Mixed Likely Significant Effects

A mixed significant positive and significant negative effect has been identified for Policy SAF_01 with respect to resources (SA Objective 10) due to the safeguarding of aggregates, oil and gas and renewable energy resources. This would increase the development of low carbon marine energy, but would also lead to the future use of non-renewable aggregate and hydrocarbon resources. Policy SAF_01 has also been assessed as having a mixed significant positive and minor negative effect on climate change (SA Criteria 6), as a result of the reductions in greenhouse gas emissions associated with the safeguarding of renewable energy resources, alongside the safeguarding of offshore hydrocarbons which would give rise to greenhouse gas emissions during exploration and production activity. Uncertainties remain for Policy SAF_01 (as they also do for SAF_02) regarding the type and location of future activities, and it is unknown whether incompatible new proposals will present a convincing case for proceeding, which if accepted by the relevant public body, would give rise to negative effects on existing activities.

Policies AGG_01 and O&G_01 have both been assessed as having a mixed significant positive and significant negative effect with respect to resources (SA Criteria 10). For Policy AGG_01, this relates to the potential for new extraction to meet demand for aggregates over the plan period; however, the winning of marine aggregates will unavoidably result in the depletion of a non-renewable resource. Policy O&G_01b, meanwhile, seeks to avoid the negative effects associated with the recovery of hydrocarbon reserves by minimising extraction in the Welsh onshore licence area, and avoiding unsustainable extraction of a non-renewable resource. However, the continued extraction of oil and gas reserves under Policy O&G_01a would result in the direct loss of a primary natural resource that is non-renewable, giving rise to a mixed effect. For both policies, a negative effect also arises from the use of non-renewable natural resources (aggregates, oil

and gas) during exploration and operational activities. Some uncertainty remains as the magnitude of effects will depend on the extent of future oil and gas activity in the plan area which is at present unknown.

Implications for the Findings of the SA Report

Section 4.5 of the SA Report includes commentary on the cumulative effects of the sector policies by sector. Following the appraisal of new and potentially significantly amended policies, there were found to be no material changes or minor changes to the overall effects of the Draft WNMP for the majority of the sectors in the Plan. In these cases, no changes have been required to the relevant subsections of the SA Report. For the Energy – Low Carbon and Energy – Oil and Gas sectors, significant changes to the effects of the Draft WNMP were identified, and are discussed below.

The changes to the Draft WNMP introduce two new safeguarding policies (SAF_01 and SAF_02) in addition to the original defence safeguarding policy (DEF_01), under a new safeguarding sector. The effects identified against the SA criteria for SAF_01 and SAF_02 reflect the previously recorded effects of the sector safeguarding policies. While the cumulative effects are a new addition due to the change in structure of the plan, the effects associated with safeguarding the various sectors has not changed.

Energy – Low Carbon

The low carbon sector policies have undergone substantial revision. The amendments present new policy text on proposals for offshore wind energy (Policy ELC_01) whilst policy on wave energy and tidal stream energy has been moved to new individual policies (Policies ELC_02 and ELC_03 respectively). Additionally, explicit support for tidal lagoons has been removed and a new policy introduced, the purpose of which is to enhance understanding of future opportunities and environmental constraints for tidal range resources (Policy ELC_04).

The removal of support for tidal lagoons has resulted in previously identified significant negative effects no longer being identified for biodiversity (SA Criteria 1), water (SA Criteria 2) and the physical environment (SA Criteria 3). A new significant negative effect with some uncertainty has been identified with respect to landscape and seascape (SA Criteria 5) for Policy ELC_01 due strengthened support for offshore wind development, which has the potential for adverse landscape/seascape character and visual impacts (this was originally a minor negative effect with some uncertainty). Significant positive effects have also been identified against well-being (SA Criteria 12) for Policies ELC_01 and ELC_03, which were originally minor positive effects.

The three sector safeguarding policies have been removed; however, the policy intent has been included in the new overarching safeguarding policies SAF_01 and SAF_02. The benefits associated with safeguarding in this sector are therefore considered under the cumulative effects for the safeguarding policies.

The cumulative effects of the energy and low carbon sector policies have changed as a result of the Draft WNMP revisions, and in five instances the change is significant. This relates to biodiversity, water, physical environment, landscape and seascape, and well-being, as detailed above. Minor changes to cumulative effects were also present for climate change (SA Criteria 6) and resources (SA Criteria 10) reflecting the consumption of resources and energy and emission of greenhouse gases associated with the construction and installation of renewable energy devices.

Energy – Oil and Gas

The changes to the Draft WNMP include the addition of Policy O&G_01b as a new sub-policy. Policy O&G_01b reflects the Welsh Government's movement towards a low-carbon Wales, and seeks to avoid the development and extraction of oil and gas in areas that fall within the Welsh onshore licence area, with the exception of proposals for mine safety or scientific purposes. This has altered the appraisal of Policy O&G_01 to include minor positive effects with respect to biodiversity (SA Criteria 1), water (SA Criteria 2), physical

environment (SA Criteria 3), air quality (SA Criteria 4), landscape and seascape (SA Criteria 5), climate change (SA Criteria 6), heritage (SA Criteria 7) and health (SA Criteria 13) due to minimising oil and gas extraction in the Welsh onshore licence area. The magnitude of positive effects on economy (SA Criteria 11) and well-being (SA Criteria 12) has also reduced due to the discouragement of investment in the onshore licence area. Sub-policy O&G_01a and Policy O&G_02 were not subject to potentially significant changes.

The sector safeguarding policies O&G_03 and O&G_04 have been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding policy SAF_01. The benefits associated with safeguarding the oil and gas sector are therefore considered under the cumulative effects for the safeguarding policies.

As a result of the changes, the cumulative effects of the policies in this sector have changed in alignment with the above effects, with the addition of minor positive effects against the majority of the SA criteria. There are two significant changes to the cumulative effects; these are for climate change, which is now identified as a mixed significant positive and minor negative effect with some uncertainty (originally a mixed minor positive and minor negative effect with some uncertainty was identified), and the removal of a significant positive effect against economy, which is now a minor positive effect with some uncertainty. These changes to scoring reflect the avoidance of oil and gas extraction in the Welsh onshore licence area.

More detailed commentary on the likely significant effects of the sector policies and implications for the findings of the SA report can be found in Section 3.6 of this addendum.

Cumulative Effects

There is the potential for the policies contained within the Draft WNMP to act in-combination both with each other and with other plans and programmes to generate cumulative (including synergistic and secondary) effects. The updated appraisal of cumulative effects highlights that all of the SA criteria will experience positive effects as a result of the implementation of the policies contained in the revised Draft WNMP (although nine of these have mixed effects, with a negative effect also identified). Cumulative significant positive effects are expected in respect of all the SA criteria with the exception of air quality (SA Criteria 4) and Welsh language (SA Criteria 8), for which effects have been assessed as positive. This broadly reflects the likely socio-economic benefits that supporting economic activity in the marine area is likely to deliver and the strong framework provided by the plan policies that will help to conserve and enhance Wales' marine environment and support the sustainable management of natural resources. Of the nine cumulative negative effects identified, two were assessed as significant negative effects (landscape and seascape (SA Criteria 5) and resources (SA Criteria 10)). The negative effects reflect both the sensitivity of the marine environment to change and the likely direct and indirect adverse environmental effects of new development or activity supported by the sector policies.

The revised Draft WNMP policies also sit within the context of a number of other plans and programmes. Those plans and programmes that are considered to be particularly relevant to, and have the potential to interact with, the WNMP have been subject to an initial screening to highlight where the WNMP could have a significant in-combination effect.

Implementation of the revised Draft WNMP in-combination with the screened plans and programmes would generate cumulative significant positive effects on the SA criteria in most cases. This reflects the aim of the revised Draft WNMP to deliver sustainable development of Wales' marine area and the expectation that the policies of the plan will complement, reinforce, support and help guide the delivery of the other plans' and programmes' objectives, particularly in terms of environmental conservation and enhancement, climate change mitigation and adaptation and economic growth. It is not predicted that the revised Draft WNMP would create conflict with the objectives of the other plans and programmes identified. New development or activity in the marine area supported by the sector policies of the revised Draft WNMP could, however, have cumulative negative effects in-combination with those plans and programmes that also promote development in the coastal area (such as local development plans).

More detail on secondary, cumulative and synergistic effects is contained in Section 3.6. The screening of other plans and programmes is presented at Appendix D.

Contribution of the Revised Draft WNMP to the Well-being Goals for Wales and Objective for SMNR

In addition to considering the effects of the revised Draft WNMP on the SA criteria, an assessment has been undertaken of the contribution that the plan is likely to make to the achievement of the well-being goals established in the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR set out in the Environment (Wales) Act 2016.

The overarching plan objective of the revised Draft WNMP is to "*Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, supporting the Sustainable Management of Natural Resources (SMNR) by taking account of the cumulative effects of all uses of the marine environment*". Reflecting this objective, the assessment demonstrates that the revised Draft WNMP policies are likely to make a significant positive contribution to the achievement of the seven well-being goals for Wales, supporting the objective for SMNR.

The revised Draft WNMP seeks to deliver blue growth which is underpinned by the principles of sustainable development. Development and use of the marine area will unavoidably require the use of natural resources and could result in some adverse environmental effects that would need to be considered carefully in the context of the well-being goal 'A resilient Wales'. However, the general cross-cutting policies of the revised Draft WNMP seek to avoid, minimise or mitigate significant adverse effects associated with new development or activity and will help to ensure a positive contribution to the Well-being goals.

Further detail on the contribution of the WNMP to Wales' Well-being Goals and the Objective for SMNR is presented in Section 3.8 of this addendum.

Next Steps

Following finalisation of the WNMP, the plan will be subject to independent investigation if required[13]. The plan will then be adopted and published by the Welsh Ministers with the agreement of the UK Secretary of State for Environment, Food and Rural Affairs (because the plan contains provision relating to retained functions).

The Welsh Government will issue a Post Adoption Statement as soon as reasonably practicable after the adoption of the WNMP. The Post Adoption Statement will summarise how the SA and consultation responses have been taken into account and how socio-economic and environmental considerations have been integrated into the final decisions regarding the WNMP.

During the period of the WNMP, the Welsh Government will monitor its implementation and any significant social, economic and environmental effects. The final monitoring framework will be presented in the Post Adoption Statement. Consistent with the requirements of the Marine and Coastal Access Act 2009, Welsh Government will report at least every three years on the effects of policies in this plan.

[13] Section 13 of Schedule 6 'Marine Plans; Preparation and Adoption' of the Marine and Coastal Access Act 2009.

Contents

1. Introduction

1.1 Overview

The Welsh Government is currently preparing the Welsh National Marine Plan (WNMP) for the inshore and offshore regions of Wales in accordance with the Marine and Coastal Access Act 2009 (MCAA)[14]. The purpose of marine planning under the MCAA is to help achieve sustainable development in the marine area; Welsh Ministers are the Marine Planning Authority under the MCAA, responsible for creating marine plans for both the inshore region (0-12 nautical miles) and offshore region (beyond 12 nautical miles) of Wales.

The Draft Welsh National Marine Plan[15] (Draft WNMP) was published for formal, public consultation over a 16-week period between 7th December 2017 and 29th March 2018. As required by Schedule 6 (Part 10) of the MCAA, the Welsh Government carried out a Sustainability Appraisal (SA) to assess the likely effects of the proposed policies contained in the Draft WNMP and help optimise the contribution of the plan to sustainable development. An SA Report[16] presenting the findings of this appraisal was published alongside the Draft WNMP for consultation. In meeting its requirement to undertake a SA of the WNMP, the Welsh Government also determined that the SA should incorporate an assessment in accordance with the requirements of the Strategic Environmental Assessment (SEA) Directive[17] and transposing regulations[18] (the SEA Regulations).

Following consultation, the Welsh Government has revised the Draft WNMP. To meet the Welsh Government's responsibilities under the SEA Directive and regulations, it is necessary to consider whether the changes to the Draft WNMP are likely to have significant effects[19], and if so, to ensure that such effects are identified, described and evaluated prior to the adoption of the plan. This document has therefore been prepared as an addendum to the SA Report in order to take account of, and appraise, the changes to the Draft WNMP.

1.2 The Welsh National Marine Plan

Requirement to Prepare a Marine Plan

Together, the UK Marine Policy Statement (UK MPS)[20] and marine plans form a new plan-led system for decision making in relation to marine activities. They are intended to provide for greater coherence in policy and a forward-looking, proactive and spatial planning approach to the management of the marine area, its resources, and the activities and interactions that take place within it.

As set out in **Section 1.1**, the MCAA places a duty on marine planning authorities to prepare marine plans for their region where a UK MPS is in place; the Welsh Ministers are the relevant Marine Planning Authority for the Welsh inshore and offshore regions. The Welsh marine area consists of around 32,000 km^2 of sea, as well

[14] HM Government (2009) *Marine and Coastal Access Act 2009*. Available from http://www.legislation.gov.uk/ukpga/2009/23/pdfs/ukpga_20090023_en.pdf [Accessed June 2019].
[15] Welsh Government (2017) *Draft Welsh National Marine Plan*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/draft-plan-en.pdf [Accessed June 2019].
[16] Welsh Government (2017) *Welsh National Marine Plan Sustainability Appraisal Report*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/sustainability-en.pdf [Accessed June 2019].
[17] EU (2001) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment
[18] HM Government (2004) *The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 1633)*
[19] As reflected in Annex II of the SEA Directive and Schedule 1 of the transposing regulations.
[20] HM Government (2011) *UK Marine Policy Statement*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69322/pb3654-marine-policy-statement-110316.pdf [Accessed June 2019].

as 2,120 km of coastline; the WNMP will cover both the Welsh inshore region (from high water and the landward extent out to 12 nautical miles from shore) and offshore region (beyond 12 nautical miles), each of which are a plan area under the MCAA, in a single document.

The WNMP is the first marine plan for Wales and represents the start of a process of shaping a future for Wales' seas through marine planning to support economic, social and environmental objectives. It will implement the UK MPS at the national level, guiding the sustainable development of Wales' seas by setting out how applicants should shape licence applications and how proposals will be considered by decision makers including, in particular, the consenting authorities as well as guiding other decisions with the potential to affect the plan area.

The Draft Welsh National Marine Plan

The WNMP has been prepared by the Welsh Government in accordance with the MCAA. It has involved a number of steps covering evidence gathering, policy development, plan implementation and review, supported by ongoing stakeholder engagement and an iterative process of impact assessment. As part of this plan development process, the Welsh Government prepared the Welsh National Marine Plan: Initial Draft[21] that was made available for comment between November 2015 and January 2016. This pre-consultation exercise and the responses received, alongside ongoing assessment and appraisal, helped to inform the preparation of the Draft WNMP[22].

The Draft WNMP contains the following components:

- **vision**: the overarching statement about what will characterise the Welsh marine area at a given point in the future;
- **plan objectives**: a statement of desired outcomes or observable behavioural changes that the WNMP is seeking to achieve in order to realise the vision;
- **sector objectives**: objectives that operate alongside the plan objectives and are sector-specific statements of desired outcomes;
- **general cross-cutting policies**: these are cross-cutting plan policies of a general nature that apply to all sectors and activities (though the degree to which they need to be considered depends on the scale and likely impact of the proposal) and support the delivery of the plan objectives;
- **sector policies**: operate alongside the general cross-cutting policies as sector specific policies that apply to decisions related to a particular activity. They include supporting policies (to support development of a given sector) and safeguarding policies (to protect current or potential future activities from negative impacts from other activities).

The Welsh Government published the Draft WNMP for formal, public consultation over a 16-week period between 7th December 2017 and 29th March 2018. A summary of the consultation responses received to the Draft WNMP is available via the Welsh Government's website[23].

Changes to the Draft Welsh National Marine Plan

Taking into account the representations received to the Draft WNMP consultation, the findings of the accompanying assessments including the SA, ongoing stakeholder engagement and further detailed work in

[21] Welsh Government (2015) *Welsh National Marine Plan Initial Pre-Consultation Draft*.
[22] Welsh Government (2017) *Draft Welsh National Marine Plan*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/draft-plan-en.pdf [Accessed May 2019].
[23] Welsh Government (2018) *Draft Welsh National Marine Plan: Consultation – summary of response*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/draft-welsh-national-marine-plan-summary-of-responses.pdf [Accessed June 2019].

respect of tidal lagoons, the Welsh Government has revised the Draft WNMP. The 65 changes to the Draft WNMP can be broadly categorised as follows:

- **Structural changes:** for example, reducing the length and complexity of the plan by restructuring the Draft WNMP and removing/transferring some of the material to other documents such as Implementation Guidance and Marine Planning Notices (MPNs), which may be produced in the future.
- **Policy amendments:** for example, revisions to the policies of the Draft WNMP including the combining of policies, changes to policy wording, the deletion of policies and the inclusion of additional policies.
- **Deletion of Strategic Resource Areas (SRAs):** the removal of SRAs[24] from within the plan and deferral to their future consideration under individual MPNs, and focusing the role of SRAs on safeguarding possible future resource use, rather than supporting new activity.
- **Supporting text amendments:** for example, revisions to the introductory sections of the plan and amendments to the policy implementation guidance.

All changes made to the Draft WNMP policies and objectives are detailed in **Appendix B.**

1.3 Sustainability Appraisal of the Welsh National Marine Plan

The Requirement for a Sustainability Appraisal of the Welsh National Marine Plan

SA is a form of assessment that considers the social, economic and environmental effects of a plan or programme in the context of sustainable development. The requirement to undertake SA of marine plans is set out in Schedule 6 (Part 10) of the MCAA, which states that:

> *"(1) A marine plan authority preparing a marine plan must carry out an appraisal of the sustainability of its proposals for inclusion in the plan.*
>
> *(2) The authority may proceed with those proposals only if it considers that the results of the appraisal indicate that it is appropriate to do so.*
>
> *(3) The marine plan authority must publish a report of the results of the appraisal.*
>
> *(4) The report is to be published when the marine plan authority publishes the consultation."*

In meeting its requirement to undertake a SA of the WNMP, the Welsh Government determined that the SA should incorporate an assessment in accordance with the requirements of the European Union Directive 2001/42/EC on the Assessment of the Effects of Certain Plans and Programmes on the Environment[25], more commonly known as the SEA Directive. This has been transposed into UK regulations as the Environmental Assessment of Plans and Programmes Regulations 2004 (SI 2004 No. 1633), hereafter referred to as the SEA Regulations[26].

The SEA Directive aims for a high level of environmental protection and to promote sustainable development. It applies to certain plans that are likely to have significant effects on the environment. The WNMP has been treated as a plan for the purpose of the SEA Directive, and the SA considers socio-economic

[24] In order to indicatively allocate space and focus future use, the Draft WNMP included SRAs for certain sectors. These were identified as areas of good opportunity for potential future use by a particular sector over the plan period and beyond.
[25] Available from http://ec.europa.eu/environment/eia/sea-legalcontext.htm [Accessed May 2019].
[26] Please note that the SA of the WNMP was undertaken in accordance with the UK as opposed to Welsh SEA Regulations given the potential for the plan to have effects in other parts of the UK.

and environmental effects in the same way as environmental effects are required to be assessed by the SEA Directive.

The Sustainability Appraisal Process To-date

SA has been an integral part of the preparation of the WNMP. The main stages of the SA process to-date are summarised below:

- Consultation on the scope of the SA as part of the draft Strategic Scoping Exercise (SSE) [27] consultation that took place in August 2014. Responses to the consultation informed the revised SSE that is presented in Wales' Marine Evidence Report (WMER)[28] and includes information on the state of the Welsh marine environment (including the current situation and future trends) and the relevant policy context.
- Ongoing, informal feedback on the developing WNMP vision, objectives and plan policies alongside a high level sustainability review[29] of emerging policies that was published alongside the Initial Draft WNMP in November 2015;
- Detailed appraisal of the Draft WNMP policies in accordance with the approach set out in the SSE (as amended to reflect consultation responses) with the findings of the appraisal presented in an Initial Draft SA Report[30] that was issued to the WNMP Stakeholder Reference Group and other bodies for comment between 16th February and 10th March 2017;
- Publication of an SA Report[16] to accompany the Draft WNMP;
- Appraisal of Tidal Lagoon Policy Options[31];
- Appraisal of changes to the Draft WNMP (this addendum).

The SA of the Draft WNMP was completed in October 2017. The SA Report was prepared to meet the reporting requirements of the SEA Directive and assessed the following key components of the plan:

- vision;
- plan objectives;
- sector objectives;
- general cross-cutting policies; and
- sector policies (including SRAs).

In addition, the reasonable alternatives to the Draft WNMP (as proposed) were also appraised.

Comments received on the SA Report were wide ranging, covering all aspects of the report including the methodology, findings of the appraisal, recommendations and monitoring proposals. A summary of the responses received to the SA Report is contained at **Appendix A** to this report.

Following consultation on the Draft WNMP, the Welsh Government reviewed the proposed policy approach to tidal lagoons, as set out in Policy ELC_01, in light of the feedback received during consultation. A Tidal

[27] Welsh Government (2014) *Developing the Welsh National Marine Plan: Draft Strategic Scoping Exercise*.
[28] Welsh Government et al (2015) *Wales' Marine Evidence Report*. Available from http://gov.wales/docs/drah/publications/151008-wales-marine-evidence-report-master-october-2015-en.pdf [Accessed June 2019].
[29] Amec Foster Wheeler (2015) *High Level Sustainability Review of the Emerging Policies of the Initial Pre-Consultation Draft Welsh National Marine Plan*. Available from http://gov.wales/docs/drah/publications/151127-welsh-national-marine-plan-sustainability-review-en.pdf [Accessed June 2019].
[30] Amec Foster Wheeler (2017) *Welsh National Marine Plan: Sustainability Appraisal Report (Initial Draft).*
[31] Wood (2019) *Technical Note: Welsh National Marine Plan Sustainability Appraisal and Habitats Regulations Assessment: Appraisal of Tidal Lagoon Policy Options*

Lagoon Policy and Sustainability Appraisal and Habitats Regulations Assessment Technical Working Group (TWG) was established in order to provide advice and guidance on this matter and the associated SA and HRA. In liaison with the TWG, a number of potential tidal lagoon policy options were identified and considered by the Welsh Government.

To inform the selection of the preferred tidal lagoon policy approach, the policy options identified in liaison with the TWG were subject to SA. The SA was published in a Technical Note for the TWG to inform the ongoing revision of the Draft WNMP (see **Appendix E**). Welsh Government considered the SA of the tidal lagoon policy options alongside the comments received from the TWG and consultation responses to the Draft WNMP. As a result of this process, the 'Evidence Focus' policy text was selected to be taken forward as the preferred policy approach. This has been included as Policy ELC_04 in the revised Draft WNMP and has been to subject to screening and SA, alongside the other policy changes, as part of the preparation of this addendum.

To meet the Welsh Government's responsibilities under the SEA Directive and regulations, it is necessary to consider whether the changes to the Draft WNMP (including the preferred tidal lagoon policy) are likely to have significant effects, and if so, to ensure that such effects are identified, described and evaluated prior to the adoption of the plan. In this regard, UK Government guidance[32] on SEA states:

> "*Where plans or programmes go through several successive consultation exercises, it is important to keep the implications for the Environmental Report under review to ensure that it remains consistent with the plan or programme on which opinions are being sought. If significant changes are made from the original proposals, the Responsible Authority will need to consider whether a revised Environmental Report is needed.*"

It is also important for the SA to have fully considered the likely significant effects of any changes to the Draft WNMP in order for the Welsh Government to comply with Schedule 6 (Part 10) of the MCAA, which stipulates that "*The authority may proceed with those proposals only if it considers that the results of the appraisal indicate that it is appropriate to do so*".

This addendum assesses the likely significant effects of the changes in order to update the SA Report (as appropriate) and ensure that all the likely significant effects of the WNMP have been identified, described and evaluated. This has included consideration of secondary, cumulative, synergistic and cross-border effects and the effects arising from the reasonable alternatives to the WNMP.

1.4 The Well-being of Future Generations (Wales) Act 2015 and The Environment (Wales) Act 2016

The Well-being of Future Generations (Wales) Act 2015[33] places a duty on Welsh public bodies to carry out sustainable development. In this Act, sustainable development is defined as "*the process of improving the economic, social, environmental and cultural well-being of Wales by taking action, in accordance with the sustainable development principle, aimed at achieving the well-being goals*". In this context, the sustainable development principle means that public bodies "*must act in a manner which seeks to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs*".

The Environment (Wales) Act 2016[34] introduced a new legislative approach for the sustainable management of natural resources (SMNR). It seeks to maintain and enhance the resilience of Wales' ecosystems and the

[32] ODPM (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*. Available from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7657/practicalguidesea.pdf [Accessed May 2019].
[33] Available from http://www.legislation.gov.uk/anaw/2015/2/contents/enacted [Accessed May 2019].
[34] Available from http://www.legislation.gov.uk/anaw/2016/3/contents/enacted [Accessed May 2019].

services and benefits they provide and, in so doing, meet the needs of the present generation without compromising the ability of future generations to meet their needs.

Plans such as the WNMP must be prepared in accordance with the sustainable development principle and well-being goals of the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR. The seven well-being goals for Wales and the objective for SMNR have together, therefore, informed and guided the development of the WNMP; SA has been a key tool with which to ensure and demonstrate this by seeking to maximise the delivery of environmental, social, economic and cultural outcomes. In this context, the SA Report explicitly assessed the likely contribution of the Draft WNMP to the achievement of the well-being goals for Wales and the objective for SMNR. This assessment has been reviewed and updated as part of this addendum.

1.5 Habitats Regulations Assessment

The WNMP could have effects on habitats or species in respect of which certain sites have been identified as of community importance for nature conservation (hereafter referred to as European sites). These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EC). UK policy accords the same level of protection to sites listed or proposed under The Convention on Wetlands of International Importance, called the Ramsar Convention, and to proposed SPAs (pSPAs), candidate SACs (cSACs) and possible SACs.

In accordance with The Conservation of Habitats and Species Regulations 2017 (SI 2017 No. 1012) ('the Habitats Regulations'), there is a need to consider whether the WNMP is likely to have a significant effect (alone, or in-combination with other plans) on any European designated nature conservation site, a process known as Habitats Regulations Assessment (HRA). A report[35] presenting the HRA of the WNMP was published alongside the draft plan in December 2017.

The HRA Report has been updated to reflect the changes to the Draft WNMP. Where relevant, the findings of the HRA have been used to inform this SA, particularly in terms of the comments against the SA criteria for biodiversity.

1.6 Structure of this Addendum

This addendum to the Draft WNMP SA Report is structured as follows:

- **Section 1: Introduction** - provides an overview of the WNMP and the SA process to-date;
- **Section 2: Approach** - describes the approach to identifying those changes to the Draft WNMP that are considered significant for the purposes of the SA and sets out the methodology for their appraisal;
- **Section 3: Summary of Effects** - identifies the changes to the Draft WNMP that are significant and summarises the findings of their appraisal, including the implications for the SA Report;
- **Section 4: Conclusions and Next Steps** – presents the conclusions of the SA of the changes to the Draft WNMP and details the next steps for the SA of the WNMP.

This report should be read in conjunction with the SA Report and HRA published December 2017.

[35] Welsh Government (2017) *Welsh National Marine Plan Habitats Regulations Assessment*. Available from https://beta.gov.wales/draft-welsh-national-marine-plan [Accessed June 2019].

2. Approach

2.1 Introduction

This section outlines the methodology used to appraise the changes to the Draft WNMP. **Section 2.2** details how the changes have been 'screened' to determine whether they are considered significant for the purposes of the SA. **Section 2.3** then sets out the SA Framework that has been used to appraise those changes that are considered to be significant; the methodology for their appraisal is summarised in **Section 2.4**. **Section 2.5** documents the difficulties encountered during the appraisal process including key uncertainties and assumptions.

2.2 Determining the Significance of the Changes to the Draft WNMP for the Sustainability Appraisal

In considering any likely significant effects, reference has been made to Schedule 1 of the SEA Regulations which provides the criteria used to determine likely significant effects and includes consideration of:

- The characteristics of plans and programmes (and any changes) taking into account (inter alia):
  - the degree to which the plan or programme sets a framework for projects and other activities, either with regard to the location, nature, size and operating conditions or by allocating resources;
  - the degree to which the plan or programme influences other plans and programmes including those in a hierarchy;
  - the relevance of the plan or programme for the integration of environmental considerations in particular with a view to promoting sustainable development.
- The characteristics of the effects and of the area likely to be affected.

Informed by these criteria, the evidence base and stakeholder consultation, the SA has defined what constitutes a significant effect, and presents these in the definitions of significance in Appendix C of the SA Report. Any change proposed to the Draft WNMP that would lead to a likely significant social, economic and/or environmental effect in this context, or alternatively, would result in the removal of a previously identified significant effect, would need to be considered further.

The changes to the Draft WNMP have therefore been screened in order to identify those amendments that are likely to have 'significant' effects. **Table** identifies, for each of the plan amendments types summarised in **Section 1.2**, whether the change would be significant and what factors have been considered in coming to this conclusion.

Table 2.1 Screening Considerations for Significance of Changes

Type of Change	Description	Screening Considerations	Significant?
Structural change	Revision to the overall structure of the Draft WNMP.	Changes to the structure of the Draft WNMP would not affect policy intent and would therefore not influence the findings of the SA nor give rise to significant effects.[36]	No.
Amendment to policy:			
Policy wording	Revision to policy wording in order to make the wording and/or intent of policies clearer or to introduce new criterion.	Amendments to policy wording are not considered to be significant for the purposes of the SA, unless they introduce a new topic or criterion, identify new development or locations for development, affect the likelihood of any development coming forward and/or provide the framework for future projects which would require consent. Where changes to a policy introduce an additional criterion, a judgement has been made as to whether or not the amendment would affect the previous assessment findings and/or should be acknowledged in the assessment. In such instances, significance is determined on a case-by-case basis and a comment made on whether or not the previous assessment has been amended and which SA criteria are affected.	Determined on a case-by-case basis.
New policy	Introduction of new general cross-cutting or sector policies.	The introduction of new WNMP policies may generate significant effects and have therefore be taken forward for appraisal.	Yes.
Policy deletion	Deletion of current policies contained within the Draft WNMP.	Where existing policies are deleted, this is not deemed significant unless the deletion of the policy results in a substantial change to a previously identified significant effect. For the purposes of the SA, a substantial change would include: • an additional significant effect not previously identified; • a change in the probability, duration, frequency and reversibility of the significant effect; • a change in the magnitude and spatial extent of the significant effect;	Determined on a case-by-case basis.

[36] Where structural changes to the Draft WNMP include removing/transferring some of the material in the plan to other documentation, then the Welsh Government would be required to determine whether any such material would constitute a plan or programme under the SEA Directive and Regulations or under the MCAA and so would be subject to SEA/SA.

Type of Change	Description	Screening Considerations	Significant?
		• a consequential change in any resulting cumulative significant effect; and/or • a lessening of a significant effect to a minor effect. Such changes could be positive or negative.	
Combining of policies	Combining of policies contained within the Draft WNMP.	Where existing policies are combined, this has not been considered significant on the basis that the policies' intent (and therefore associated effects) are unlikely to be affected. However, this has been reviewed on a case-by-case basis.	Determined on a case-by-case basis.
Deletion of SRAs	Removal of current SRAs identified in the Draft WNMP.	Where existing SRAs are removed, this has not been deemed significant unless the deletion of the SRA results in a substantial change to a previously identified significant effect.	Determined on a case-by-case basis.
Amendment to supporting text	Change to the introductory sections of the plan and implementation guidance.	Changes to the introductory text to the Draft WNMP would not be likely to generate significant effects. Changes to the implementation guidance are unlikely to change policy intent and are therefore not considered significant.	No.

Based on the principles outlined above, each change to the Draft WNMP has been screened in order to determine the significance of the proposed change for the SA. Those changes that are considered to be significant are summarised in **Section 3.2** of this report, together with an indication of why they are considered to be significant; **Appendix B** presents this analysis in full.

The appraisal of those changes deemed to be significant for the purposes of the SA has subsequently been undertaken in accordance with the approach to the appraisal of the Draft WNMP, as set out in Section 3 of the SA Report (and summarised below in **Section 2.3** and **2.4**), in order to ensure consistency. The following sections present an overview of the framework used for the appraisal of significant changes and summary of the adopted methodology.

2.3 Sustainability Appraisal Framework

Consistent with the approach to the SA of the Draft WNMP, a SA Framework has been used to support the appraisal of those changes that are significant. The SA Framework comprises of SA criteria and guide questions which broadly represent the preferred social, economic and environmental outcome. By assessing each significant change against the same SA criteria, it is more apparent where the revised Draft WNMP will contribute to environmental sustainability, where it might have a negative effect, and where a positive effect could be improved.

Table 2.2 presents the SA Framework including the SA criteria and guide questions. For each SA criteria, the relevant well-being goals of the Well-being of Future Generations (Wales) Act 2015 are identified and an

indication provided of the relevance to the objective for SMNR established in the Environment (Wales) Act 2016.

Table 2.2 SA Framework

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
1. To protect and enhance biodiversity (habitats, species and ecosystems).	*Protect and enhance designated nature conservation sites (e.g. SACs, SPAs, Ramsar and SSSIs), habitats and species?* *Protect and enhance the structure and function of marine and coastal ecosystems?* *Avoid adverse impacts on marine ecology from underwater noise?* *Provide opportunities for people to come in to contact with and appreciate wildlife and wild places?* *Maintain and restore key ecological processes, and in particular coastal and marine processes?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A globally responsible Wales	Yes
2. To protect and enhance the quality of surface, ground, estuarine and coastal water.	*Affect demand for water resources and the availability of water to meet the demand?* *Affect groundwater or freshwater, estuarine or marine water quality?* *Promote high quality surface water management and waste water treatment and disposal?*	• A prosperous Wales • A resilient Wales • A healthier Wales	Yes
3. To protect and enhance the physical features of the marine environment.	*Affect marine and coastal processes and/or erosion rates?* *Protect and enhance designated coastal features or sites e.g. geological SSSIs?* *Ensure the protection of the seabed in designated or sensitive areas?* *Support the policies and actions of Shoreline Management Plans?*	• A prosperous Wales • A resilient Wales • A healthier Wales	Yes
4. To protect and enhance air quality.	*Help to reduce emissions of air pollutants associated with marine or coastal activities and developments?*	• A healthier Wales • A resilient Wales • A globally responsible Wales	Yes
5. To protect and enhance landscape and seascape character and other protected features.	*Recognise and respect non-designated landscape and seascape character?* *Help to protect designated coastal landscapes and/or townscapes, such as National Parks, AONBs, Heritage Coast or conservation areas?*	• A resilient Wales • A healthier Wales • A Wales of cohesive communities	Yes
6. To limit the causes and effects of climate change and promote adaptation.	*Contribute to a reduction, directly or indirectly, in greenhouse gas emissions?* *Contribute positively to resilience and/or adaptation to climate change, helping to ensure that forecast*	• A prosperous Wales • A resilient Wales • A healthier Wales	Yes

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
	changes are considered over the lifetime of any proposed development or activity?	• A globally responsible Wales	
7. To protect and enhance cultural, historic and industrial heritage resources.	*Help to protect the site and setting of marine and coastal historic sites and assets including scheduled monuments and protected wrecks, landscapes and seascapes?* *Help to avoid or minimise damage to onshore and offshore archaeologically important sites?* *Help to protect and enhance culturally important sites?*	• A prosperous Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
8. To support and enhance the Welsh language and culture.	*Protect Welsh language and culture?* *Promote and enhance opportunities for the promotion and development of Welsh language and culture?*	• A prosperous Wales • A more equal Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
9. To support appropriate tourism in Wales and protect and enhance opportunities for recreation.	*Help to protect and promote the attractiveness of the coastal and marine environment for visitors?* *Help to protect and promote the distinctiveness of landscapes and seascapes?* *Help to protect and promote sustainable opportunities for recreation in the coastal and marine environment for residents and visitors?* *Help to promote the health and well-being of local communities through supporting appropriate opportunities for recreation?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A more equal Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
10. To promote the sustainable use of natural resources.	*Promote the protection and accessibility of the seabed for the winning of marine aggregates?* *Promote the sustainable use of natural resources including oil and gas?* *Help to support the development of low carbon energy and thereby contribute towards meeting renewable energy targets?* *Promote the sustainable management of waste?"*	• A prosperous Wales • A resilient Wales • A globally responsible Wales	Yes
11. To support sustainable development of marine and coastal economy.	*Contribute to the growth of any marine activity without detriment to another?*	• A prosperous Wales • A resilient Wales	Yes

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
	Help to ensure that capacity is provided for shipping needs, including sea space, water depth and port facilities? *Support the protection and conservation of marine fish stocks and ensure the continuation a sustainable fishing industry in Wales?* *Help to promote the sustainable growth of aquaculture in Wales?* *Help ensure appropriate defence activities can be undertaken in sustainable manner?* *Facilitate telecommunications including cable laying in appropriate areas?*	• A globally responsible Wales	
12. To maintain and enhance the well-being of local communities.*	*Help to promote employment creation and thereby support the local and Welsh economy?* *Help to address social needs such as the retention of high skill levels and achieving a balance of full and part-time work, where appropriate?* *Help to promote attractive, viable, safe and well-connected communities?* *Help to promote equality?*	• A prosperous Wales • A healthier Wales • A more equal Wales • A Wales of cohesive communities • A globally responsible Wales	Yes
13. To protect and enhance human health with special regard to vulnerable groups in society.	*Promote the maintenance and enhancement of human health, and minimise the adverse effects on any vulnerable groups in particular?*	• A more equal Wales • A heathier Wales • A Wales of cohesive communities	Yes
14. To promote good governance.	*Support integrated decision making and collaboration across marine and terrestrial interfaces and boundaries?* *Promote engagement in marine planning?* *Support continued research and policy development in marine planning?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A more equal Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language • A globally responsible Wales	Yes

* Please note that well-being in the context of SA Criteria 12 is separate and distinct from the seven well-being goals for Wales established in the Well-being of Future Generations (Wales) Act 2015. Identification of this criteria predated the Act. Commentary on the contribution of the Draft WNMP (as amended) to the well-being goals of the Act is contained in Section 3.8 of this report.

2.4 Methodology

The following components of the Draft WNMP, assessed as part of the SA Report, have been re-appraised as appropriate in order to take into account those changes judged to be significant:

- plan objectives;
- sector objectives;
- general cross-cutting policies; and
- sector policies.

The compatibility assessment of the plan objectives and sector objectives against the 14 SA criteria that comprise the SA Framework (Section 4.3 of the SA Report) has been updated and this is presented in **Section 3.2**. Those policy changes identified as being significant for the purposes of the SA following the screening stage have been assessed against the SA criteria. This has been undertaken by re-appraising the relevant policy and updating the appraisal matrices contained in Appendices D and E of the SA Report. The amended matrices are contained at **Appendix C**; a summary of the appraisal including commentary on the implications for the findings of the SA Report is presented in **Sections 3.4** and **3.5**.

In considering the likely significant effects of the revised policies on the SA criteria, the following factors have been taken into account:

- the nature of the potential effect (what is expected to happen);
- the probability of the potential effect occurring;
- the timing of the potential effect;
- the magnitude of the potential effect;
- the potential effect on vulnerable communities, sensitive habitats and/or ecosystems;
- the geographic scale of the potential effect (e.g. local, regional, national);
- the location of the potential effect;
- the duration of the potential effect (e.g. short, medium or long term);
- the permanence of the potential effects; and
- the reasons for any uncertainty and any assumptions needed to complete the appraisal.

The definitions of significance contained in Appendix C to the SA Report have been used to ensure a consistent approach to interpreting the significance of effects. Where appropriate, measures to mitigate adverse effects and enhance positive effects are identified. However, it is understood that the opportunity to make any further changes to the revised Draft WNMP is exceptionally limited, and in consequence, it is recommended that any residual proposals for mitigation and enhancement are considered by the Welsh Government as part of the ongoing marine planning process, including the formal review of the WNMP.

Secondary, Cumulative and Synergistic Effects

The SEA Directive, and its implementing regulations, require that potential secondary, cumulative and synergistic effects are considered as part of the SA. In particular, it is important to consider the combined sustainability effects of the policies of the revised Draft WNMP both alone and in-combination with other plans and programmes.

An assessment of the potential for the policies contained within the Draft WNMP to act in-combination both with each other and with other plans and programmes to generate cumulative (including synergistic and secondary) effects is contained in Section 4.6 of the SA Report. As part of the analysis presented in this addendum, the assessment of cumulative effects has been updated in order to reflect, and take account of, the changes to the Draft WNMP. The updated assessment is contained in **Section 3.6**.

Cross-border Effects

In Section 4.7 of the SA Report, consideration is given as to whether the Draft WNMP is likely to give rise to cross-border effects (i.e. effects beyond the plan area). This assessment has been updated in light of the changes to the Draft WNMP and is presented in **Section 3.7**.

Contribution to the Well-being Goals for Wales and Objective for SMNR

Informed by the appraisal of the general cross-cutting policies and sector policies against the SA criteria, a judgement has been made regarding whether, and the extent to which, the Draft WNMP would support or detract from the achievement of each of the well-being goals for Wales and the objective for SMNR. This assessment is presented in Section 4.7 of the SA Report.

The assessment has been updated as part of this addendum in order to determine whether the policy changes would affect the WNMP's contribution to the well-being goals and objective for SMNR. The updated assessment is presented in **Section 3.8**.

2.5 Uncertainties and Assumptions

The SEA Directive requires the identification of any difficulties (such as technical deficiencies or lack of knowledge) encountered during the appraisal process. In undertaking the appraisal of the policy changes, a number of uncertainties have been identified and assumptions made. These assumptions and uncertainties are documented in the appraisal matrices contained at **Appendix C** and include the following (inter alia):

Uncertainties

- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- It is uncertain whether any proposals incompatible with existing activities will present a clear and convincing case for proceeding (which if accepted by the relevant public body, would give rise to negative effects on existing activities).
- The location, extent and delineation of SRAs is subject to further evidence gathering, definition, development and refinement and is currently uncertain.
- The extent to which proposals to protect marine ecosystems may limit activities and development in the marine environment is uncertain.
- It is uncertain whether safeguarding tourism and recreation activities would result in the protection of designated assets.
- The nature and location of adaptation and mitigation proposals and measures, and the extent of their benefits, is not known at this stage.

- The extent of any future deployment of tidal lagoon schemes in the plan area and associated greenhouse gas emission savings is uncertain.
- The timescales for floating wind technology to be commercially viable and the scale of future installations in Wales is currently unknown.

Assumptions

- It is assumed that projects with formal applications would progress to become operational.
- It is assumed that aquaculture activities will experience growth.
- It is assumed future aggregate activity will remain in close proximity to markets.
- It is assumed that protection and enhancement of designated landscapes would result in greater recreational use of the marine area.
- It is assumed that proposals may include project-specific actions such as energy efficiency measures and incorporation of renewable energy, in addition to larger proposals in the clean energy sector such as wind farms, wave and tidal energy or Carbon Capture and Storage, which would significantly contribute to greenhouse gas mitigation.
- It is assumed that oil and gas exploration or production will take place in Welsh waters, with the exclusion of intertidal areas, estuaries and coastal inlet waters.
- It is assumed that the construction, operation and closure/decommissioning of proposals in the marine area will comply (where appropriate) with all relevant regulations.
- It is assumed that the environmental effects of activities/development that may come forward as a result of the implementation of the Draft WNMP will be fully considered through the relevant regulatory regime including, for example, marine licensing, Environmental Impact Assessment (EIA) and HRA (as appropriate) at the project stage.
- For the purposes of the appraisal, it is assumed that the broad objectives of extant European Union (EU) legislation will be maintained once the UK has withdrawn from the EU and that similar or equivalent environmental protections will remain in place. This assumption is consistent with the Welsh Government's commitments contained in the consultation document 'Environmental Principles and Governance in Wales Post European Union Exit'[37]. In order to minimise the consequences of uncertainty to the assessment, it has been assumed that there would be continuity in sector economies and operations after withdrawal from the EU.

[37] Welsh Government (2019) *Consultation Document: Environmental Principles and Governance in Wales Post European Union Exit*. Available from https://gov.wales/sites/default/files/consultations/2019-03/eu-exit-consultation-document_0.pdf [Accessed June 2019].

3. Summary of Effects

3.1 Overview

This section summarises the findings of the SA for the changes to the Draft WNMP. **Section 3.2** details the outcome of the initial screening used to determine the significance of the changes; **Section 3.3** then presents the updated compatibility assessment of the WNMP objectives with the SA criteria. **Sections 3.4** and **3.5**, respectively, summarise the re-appraisal of those general cross-cutting policies and sector policies taken forward for assessment following screening and discuss the implications for the findings of the SA Report. The cumulative, synergistic and secondary effects of the revised Draft WNNP are considered in **Section 3.6** and cross-border effects in **Section 3.7**. Commentary is then provided on the performance of the revised Draft WNMP against the well-being goals of the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR set out in the Environment (Wales) Act 2016 (**Section 3.8**). **Section 3.9** outlines mitigation measures and finally, in **Section 3.10**, consideration is given to the implications of the changes to the Draft WNMP for the appraisal of reasonable alternatives contained in Section 4.10 of the SA Report.

3.2 Screening Outcomes

In accordance with the approach detailed in **Section 2.2**, each change to the Draft WNMP has been screened in order to determine the significance of the proposed amendment. Of the 65 changes made to the Draft WNMP, a total of 20 have been identified as being potentially significant for the purposes of the SA. These changes relate to: one plan objective; four sector objectives; five general cross-cutting policies; and 10 sector policies and are listed in **Table 3.1**.

The complete findings of the screening analysis are presented in **Appendix B**. The screening indicates, for each change, whether or not it would require an amendment to the SA and why.

Table 3.1 Screening of Policy Changes

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
High Level Marine Objective	Ensuring a strong, healthy and just society	5. Recognise the significant value of coastal tourism and recreation to the Welsh economy and well-being and ensure such activity and potential for future growth are appropriately safeguarded.	Yes.	New objective. The amendment is considered a significant addition to the objectives, broadening the scope to explicitly include recognition and support for recreation and the tourism sector.
Sector Objective	Energy – Low Carbon	To contribute significantly to the decarbonisation of our economy and to our prosperity ~~blue growth~~ by increasing the amount of ~~low-carbon~~ marine renewable energy generated, through ~~by~~: Supporting further commercial deployment of offshore wind technologies at scale over the lifetime of this plan; Supporting the development and demonstration of wave energy and tidal stream ~~and wave energy~~ technologies in the short to medium term ~~over the next 5-10 years~~; Increasing (where appropriate) the number of wave energy and tidal stream energy generation devices deployed in commercial scale developments over the medium term ~~over the next 10-20 years~~; ~~Supporting further commercial development of offshore wind over the next 3-5 years taking advantage of any favourable UK Government financial mechanisms under the Contract for Difference;~~ Developing a better understanding of the potential for ~~Promote evidence gathering and research on tidal lagoon development to support the sustainable development and deployment of~~ tidal lagoon power technology; and Recognising the potential role of the marine environment in new coastal ~~Supporting the~~ nuclear energy generation facilities ~~sector~~. ~~To develop Wales as an exemplar of marine renewable energy technology by developing the essential skill base and technical knowledge to support the growth of the industry over the next 20 years.~~	Yes.	The objective removes explicit support for the development and deployment of tidal lagoon technology and for the nuclear energy sector, which affects the scope of the objective.
Sector Objective	Energy – Low Carbon	To develop Wales as an exemplar of marine renewable energy technology by developing the essential skill base.	Yes.	This text has been removed from the above Low Carbon objective to become a stand-alone objective, and therefore

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		infrastructure and technical knowledge to support the development ~~growth~~ of the industry over the next 20 years.		now requires a separate assessment. Note that the changes to the objective wording are not significant in terms of the purpose or scope.
Sector Objective	Energy – Oil and Gas ~~(including Gas Unloading and Storage and Carbon Dioxide Capture and Storage)~~	~~Optimising the economic development and~~ Maximising the sustainable recovery of UK oil and gas ~~resource~~ in order to provide ~~Welsh and wider UK businesses and~~ commercial and domestic consumers with a secure, affordable and resilient supply of ~~fossil fuels~~ energy whilst meeting UK decarbonisation goals.	Yes.	The removal of the phrase 'optimising the economic development' and its replacement with 'maximising the sustainable recovery', whilst ensuring greater alignment with the UK maximising economic recovery strategy for the oil and gas sector, also anticipates changes arising from devolution of responsibilities from the Oil and Gas Authority to Welsh Government. The amendments include reference to affordability and decarbonisation goals which could affect the nature and likelihood of developments coming forward and may result in significant effects.
Sector Objective	Tourism and Recreation	To contribute to sustainable development ~~growth, supporting the "Wales Tourism Strategy" target to grow tourism earnings in Wales by 10% or more by 2020,~~ by protecting and promoting access to the coast and improving the quality of the visitor experience thereby increasing Wales' reputation as a world class sustainable marine tourism and recreation destination.	Yes.	The amendment removes reference to the Wales Tourism Strategy and numerical targets for tourism earnings to align with the other (unquantified) plan objectives. Whilst the broad intent remains the same, the removal of growth targets leaves an objective more focused on the quality of the visitor experience and Wales as a tourist destination which arguably could have effects, as it could lead to a lessening of effects and impacts. The change is on balance considered significant for the purposes of the SA.
General Cross Cutting Policy	SOC_06: Designated landscapes	Proposals should ~~that~~ demonstrate how potential impacts on ~~that they are compatible with~~ the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated ~~are encouraged~~. have been taken into consideration and should, in order of preference: a) avoid adverse impacts on designated landscapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised.	Yes.	The policy now includes specific reference to potential impacts on designated landscapes, the mitigation hierarchy and includes reference to opportunities for enhancement of designated landscapes. These amendments could result in significant changes in the SA. The other amendments clarify the policy and ensure a consistent approach throughout the Plan, but do not alter the policy scope or purpose.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance designated landscapes are encouraged.		
General Cross Cutting Policy	SOC_11: Resilience to climate change	Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaptation measures, taking into account Climate Change Risk Assessments for Wales. Proposals that contribute to climate change adaptation and/or mitigation are encouraged.	Yes.	The amendment includes support for climate change mitigation, which introduces a new criterion that should be reflected in the assessment for this policy. Note that climate change mitigation is already supported through SOC_10 and would therefore not affect the overall Plan.
General Cross Cutting Policy	ENV_01: Resilient marine ecosystems	Proposals should demonstrate how ~~they contribute to the protection, restoration and/or enhancement of marine ecosystems.~~ potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.	Yes.	The policy now includes specific reference to potential impacts on marine ecosystems, the mitigation hierarchy and includes reference to opportunities for enhancement. These amendments strengthen the policy and could result in significant changes in the SA. The amendments also clarify the policy and ensure a consistent approach throughout the Plan.
General Cross Cutting Policy	ENV_03: Invasive non-native species	Proposals should demonstrate how they avoid or minimise the risk of introducing and spreading invasive non-native species.	Yes.	The additional policy wording makes a further explicit requirement on proposals to demonstrate how they would avoid or minimise the risk of introducing and spreading invasive non-native species. The wording recognises that there may be additional measures not specific to biosecurity requirements that could facilitate this objective. In

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		Where appropriate, pProposals should include biosecurity measures to reduce the risk of introducing and spreading invasive non-native species.		consequence, the amendments significantly strengthen the scope and likely effectiveness of the policy, and has been screened in, to permit any significant effects to be recorded.
General Cross Cutting Policy	ENV_07: Fish Species and Habitats	Proposals potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: a) avoid adverse impacts on those areas; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised; If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	Yes.	ENV_07 is a new policy and has been screened into the SA for completeness; however, it is a renamed and very slightly amended FIS_03, and as such the SA of the new policy is likely to be very closely aligned with the findings of the SA of the draft FIS_03.
Sector Policy	AGG_01: Aggregates (Supporting)	AGG01 a: Proposals for new aggregate extraction will be supported, ~~in strategic resource areas are encouraged~~ within any ~~permitted~~ tonnage limits, ~~that may be defined for that area~~ where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. AGG_01 b: Relevant public authorities ~~should~~ are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities: for the sustainable use of~~:~~ wider marine aggregate natural resources; ~~aggregate Strategic Resource Areas and~~ to define and, once in place, further develop and refine Strategic Resource Areas for Aggregates	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		~~wider marine aggregate natural resources;~~ in order to support the sustainable ~~growth~~ development of the aggregate sector through marine planning.		
Sector Policy	AQU_01: Aquaculture (supporting)	AQU_01a: Proposals for new aquaculture ~~activities~~ developments will be supported where they contribute to the objectives of this plan ~~in Strategic Resource Areas are encouraged.~~ Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. AQU_01b: Relevant public authorities ~~should~~ and the sector are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities for the sustainable use of aquaculture resources including the identification of: natural resources that provide aquaculture potential ~~aquaculture Strategic Resource Areas; and~~ opportunities to define and, once in place, further develop and refine Strategic Resources Areas for aquaculture ~~wider natural resources that provide aquaculture potential;~~ in order to support the sustainable growth of the aquaculture sector through marine planning.	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.
Sector Policy	ELC_01: Low carbon energy (supporting) wind	ELC_01 a: Proposals for offshore wind energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for wind >350MW will be considered by UK Government in accordance with relevant national policy. In determining an NSIP for a wind proposal, the decision maker will have regard to this plan. Any determination in relation to energy developments of any scale will be taken	Yes.	The amendment presents new policy text on proposals for offshore wind energy. Other sources of renewable energy are now addressed in separate ELC policies.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		in accordance with this plan alongside any other relevant considerations. ELC_01 b: In order to understand future opportunities for offshore wind development, including floating technologies, this plan supports strategic planning for the sector. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wind energy resources including identification of: natural resources that provide potential opportunity for future use; evidence to de-risk consenting for the sector; and opportunities to define and, once in place, further develop and refine Strategic Resource Areas for offshore wind energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals for all types of marine renewable energy generation (wind tidal and wave energy) and associated infrastructure are strongly encouraged especially:~~ ~~in corresponding wave, tidal stream and any other defined renewable energy technology test and demonstration zones; and~~ ~~in corresponding wave, tidal stream and tidal lagoon strategic resources areas.~~ ~~Relevant public authorities should, in liason with the sector and other interested parties, collaborate to understand opportunities for the sustainable use of:~~		

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		~~renewable energy Strategic Resources Areas; and wider natural resources that provide renewable energy potential;~~ ~~In order to support the sustainable growth of the renewable energy sector through marine planning.~~ ~~In order to understand future opportunities for Offshore Wind development, proposals are encouraged that support strategic planning for the sector. Relevant public authorities should, in liason with the sector and other interested parties, collaborate to:~~ ~~Collect evidence to support understanding of environmental constraints and opportunities~~ ~~Support understanding of the optimal siting of offshore wind developments across Wales.~~ ~~Relevant public authorities should make relevant evidence widely available to support planning and decision making.~~		
Sector Policy	ELC_02: Low Carbon Energy (supporting) wave ~~(Safeguarding)~~	ELC_02 a: Proposals for wave energy energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. ELC_02 b In order to understand future opportunities for wave energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wave energy resources including identification of: natural resources that provide potential opportunity for future use; evidence to de-risk consenting for the sector; and opportunities to define and, once in place, further develop and refine Strategic Resource Areas for wave energy resource safeguarding	Yes.	The amendment presents new policy text on proposals for wave energy. Other sources of renewable energy are now addressed in separate ELC policies. The removed safeguarding text is now included in the new safeguarding policy SAF_01.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting areas where a consent or authorisation for renewable energy generation has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed renewable energy activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised. If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~		
Sector Policy	ELC_03: Low Carbon Energy (supporting) tidal stream ~~(Safeguarding)~~	ELC_03 a: Proposals for tidal stream energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. ELC_03 b: In order to understand future opportunities for tidal stream energy development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of tidal stream energy resources including identification of:	Yes.	The amendment presents new policy text on proposals for tidal stream energy. Other sources of renewable energy are now addressed in separate ELC policies. The removed safeguarding text is now included in the new safeguarding policy SAF_01.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		natural resources that provide potential opportunity for future use; evidence to de-risk consenting for the sector; and opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal stream energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting areas where an exploration or option agreement has been offered or is in place for renewable energy generation, including for demonstration areas, should not be authorised unless compatibility with the intended activity can be satisfactorily demonstrated. Compatibility should be achieved, in order of preference, through: a. avoiding adverse impacts on those activities; and/or b. minimising impacts where they cannot be avoided; and/or c. mitigating impacts where they cannot be minimised. If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~		
Sector Policy	ELC_04: Low Carbon Energy (supporting) tidal range ~~(Safeguarding)~~	ELC_04: In order to understand future opportunities for tidal range development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to:	Yes.	The amendment presents new policy text on proposals for tidal lagoon energy. Other sources of renewable energy are now addressed in separate ELC policies. The removed safeguarding text is now included in the new safeguarding policy SAF_02.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; support understanding of the optimal siting of tidal lagoon developments across Wales as part of a wider, UK perspective; and identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting Strategic Resource Areas for renewable energy (including those within the UK Offshore Energy SEA process) should demonstrate how they, in order of preference:~~ ~~a. avoid adverse impacts on future potential renewable energy activities in those areas; and/or~~ ~~b. minimise impacts where they cannot be avoided; and/or~~ ~~c. mitigate impacts where they cannot be minimised; and~~ ~~should present a clear and convincing justification for proceeding where (a-c) are not possible.~~		
Sector Policy	O&G_01: Oil and gas (supporting)	O&G_01 a: Proposals that maximise the ~~long term supply~~ economic recovery of oil and gas ~~are encouraged, provided they~~ will be supported where they comply with the objectives of this plan and ~~of~~ fully meet the environmental safeguards contained within the statutory process of awarding production licences and subsequent activity specific approvals. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. O&G_01 b: Welsh Government policy is to avoid the continued extraction of fossil fuels in intertidal areas and	Yes.	O&G_01b is a new sub-policy. The additional policy text for O&G_01a is for clarification and is not considered significant for the purposes of the SA.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		estuaries and coastal inlet waters that fall within the Welsh onshore licence area. Applications for new petroleum licenses in these areas should not be supported, unless required for mine safety or scientific purposes. Proposals for the development and extraction of oil and gas in these areas with land based elements must provide robust and credible evidence to demonstrate how they conform to the Planning Policy Wales Energy Hierarchy for Planning, including how they make a necessary contribution towards decarbonising the energy system.		
Sector Policy	P&S_01: Ports and shipping (supporting)	P&S_01 a: Proposals for ports, harbours and shipping activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~in strategic Resources Areas (SRAs) are encouraged~~. P&S_01 b: Relevant public authorities ~~should~~ and the sector are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities ~~for~~ to support the sustainable ~~use~~ development of ~~port and shipping strategic resources areas in order to support the sustainable growth of~~ the ports and shipping sector through marine planning.	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.
Sector Policy	SAF_01: Safeguarding existing activity	a: Proposals likely to have significant adverse impacts upon an established activity covered by a formal application or authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for the proposal to progress under exceptional circumstances. b: Proposals likely to have significant adverse impacts upon an established activity not subject to a formal authorisation must demonstrate how they will address compatibility issues with that activity.	Yes.	SAF_01 is a new policy and has been screened in for SA.

Policy Type	Sector	Draft WNMP Objective/Policy	Is the change significant for the purposes of the SA?	Comment
		Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Under SAF 01 a and b, compatibility should be demonstrated through, in order of preference: Avoiding significant adverse impacts on those activities, and/or Minimising significant adverse impacts where these cannot be avoided; and/or Mitigating significant adverse impacts where they cannot be minimised		
Sector Policy	SAF_02: Safeguarding strategic resources	Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Compatibility should be demonstrated through, in order of preference: Avoiding significant adverse impacts on this potential strategic resource use, and/or Minimising significant adverse impacts where these cannot be avoided; and/or Mitigating significant adverse impacts where they cannot be minimised	Yes.	SAF_02 is a new policy and has been screened in for SA.

3.3 Compatibility Assessment of the WNMP Objectives

The Draft WNMP sets out the Welsh Government's vision for the Welsh inshore and offshore marine area which is underpinned by 13 plan objectives and 12 sector objectives. The vision and objectives were assessed for their compatibility against the 14 SA criteria that comprise the SA Framework using a matrix with the findings presented in Section 4.3 of the SA Report. This compatibility assessment has been updated to reflect the changes to the Draft WNMP.

Plan Objectives

The changes to the Draft WNMP include an additional plan objective (Objective 5). The compatibility assessment contained in the SA Report has therefore been updated as a result of this change and is presented in **Table 3.2** (note that for completeness, the compatibility assessment for the other unchanged plan objectives is reproduced and changes not deemed to be significant for the purposes of the SA are shown; changes to scoring are underlined).

The compatibility assessment of the WNMP vision contained in the SA Report remains unchanged as is therefore not repeated here.

Table 3.2 Compatibility Assessment – Plan Objectives

HLMO Theme	Draft WNMP Plan Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Overarching	1. Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, supporting the Sustainable Management of Natural Resources (SMNR) through decision making and by taking account of the cumulative effects of all uses of the marine environment.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Achieving a sustainable marine economy	2. Contribute to a thriving Welsh economy by encouraging economically productive activities and profitable and sustainable businesses that create long term employment at all skill levels.	-	-	-	-	-	-	-	?	+	-	+	+	+	~
	3. Support the opportunity to sustainably develop marine renewable energy resources with the right development in the right place, helping to achieve the UK's energy security and carbon reduction objectives, whilst fully considering other's interests, and ecosystem resilience.	+/-	-	-	+	-	+	-	?	-	+	+	+	+	~

HLMO Theme	Draft WNMP Plan Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
	4. Provide space to support existing and future sustainable economic activity through managing multiple uses, encouraging the co-existence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing displacement of existing activities.	~	~	~	~	~	~	~	~	~	~	+	~	~	+
	5. Recognise the significant value of coastal tourism and recreation to the Welsh economy and well-being and ensure such activity and potential for future growth are appropriately safeguarded.	+/-	+/-	+/-	-	+/-	-	+/-	+	+	-	+	+	+	+
Ensuring a strong, healthy and just society	6. Contribute to supporting the development of vibrant, more equitable, culturally and linguistically distinct, cohesive and resilient coastal communities.	~	~	~	~	~	~	~	+	~	~	~	+	+	~
	7. Support enjoyment and stewardship of our coasts and seas and their resources by encouraging equitable and safe access to a resilient marine environment, whilst protecting and promoting valuable landscapes, seascapes and historic assets.	+	+	+	~	+	~	+	~	+	+	~	+	+	+

HLMO Theme	Draft WNMP Plan Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
	8. Improve understanding and enable action supporting climate change adaptation and mitigation.	+	+	+	+	+	+	~	~	~	+	+/-	+/-	+	+
Living within environmental limits	9. Support the achievement and maintenance of Good Environmental Status (GES) and Good Ecological Status (GeS).	+	+	+	~	+	~	~	~	+/-	+	-	-	+	~
	10. Protect, conserve, restore and enhance marine biodiversity to halt and reverse its decline including supporting the development and functioning of a well-managed and ecologically coherent network of Marine Protected Areas (MPAs) and resilient populations of representative, rare and vulnerable species.	+	+	+	~	~	~	~	~	+/-	~	-	-	~	~
	11. Maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations.	+	+	+	~	+	+	~	~	+	+	+	+	+	~

HLMO Theme	Draft WNMP Plan Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Promoting good governance	12. Support proportionate, consistent and integrated decision making through implementing forward-looking policies as part of a plan-led, precautionary, risk-based and adaptive approach to managing Welsh seas.	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Using sound science responsibly	13. Develop a shared, accessible marine evidence base to support use of sound evidence and provide a mechanism for the unique characteristics and opportunities of the Welsh Marine Area to be better understood.	+	+	+	+	+	+	+	+	+	+	+	+	+	+

Key

Symbol	Effect
+	Objectives are potentially compatible.
~	No clear relationship between objectives.
-	Objectives are potentially incompatible.
?	Uncertain if objectives are related.

NB: where more than one symbol/colour is presented in a box it indicates that the appraisal has identified both compatibilities and incompatibilities between the WNMP plan objectives and the SA criteria. Where a box is coloured but also contains a '?', this indicates a degree of uncertainty regarding the relationship between the WNMP plan objectives and the SA criteria although a professional judgement is expressed in the colour used.

The Draft WNMP objectives (as amended) are broad ranging and span key socio-economic and environmental policy areas which are consistent with the themes of the UK High Level Marine Objectives (HLMOs). As a result, none of the plan objectives have been assessed as being incompatible with all of the SA criteria and compatibilities have been identified against each SA criteria.

The updated compatibility assessment presented in **Table 3.2** does highlight that in some instances possible tensions may exist between the plan objectives and the SA criteria. Where tensions have been identified, this primarily relates to, on the one hand, the aspiration for blue growth, and on the other, the need to protect and enhance the marine environment, optimise resource use and reduce emissions. In this respect, Plan Objectives 2 and 5 in particular could be less compatible with those SA criteria concerning environmental conservation and enhancement (SA Criteria 1, 2, 3, 5 and 7), air quality (SA Criteria 4), climate change (SA Criteria 6) and resource use (SA Criteria 10). This reflects the potential for activities in the marine area supported by these objectives, including increased recreational pressures, to result in adverse environmental effects and an increase in the use of natural resources both during construction and operation. For Plan Objective 5, however, the potential for compatibility with SA Criteria 1, 2, 3, 5 and 7 also exists, as tourism in Wales is heavily reliant upon the natural environment and built heritage, which may indirectly support the conservation and enhancement of these assets.

Plan Objective 3 has also been assessed as being less compatible with a number of the SA criteria given the possible adverse impacts associated with renewable energy development (although there may be longer term benefits in terms of biodiversity, air quality and climate change). The range and type of adverse effects associated with development in the sectors supported by the WNMP are discussed further in Section 4.5 of the SA Report (with updates provided in **Section 3.5** of this addendum as appropriate) and to avoid repetition are not repeated here.

Conversely, those plan objectives that seek to protect and enhance the marine environment (in particular Plan Objectives 9 and 10) could restrict blue growth should associated WNMP policies unnecessarily preclude activities from taking place in the marine area. Possible tensions have therefore been identified in respect of SA Criteria 11 (economy) and 12 (well-being). However, it should be recognised that the aim of blue growth supported by the Draft WNMP is to support sustainable development in the marine area and in this context, where the plan objectives have been identified as being potentially less compatible with the SA criteria, such tensions can be resolved if activity takes place in accordance with all of the plan objectives and policies which together seek to deliver the vision of the Draft WNMP for clean, healthy, safe, productive and biologically diverse seas.

In some instances, the potential for both compatibilities and incompatibilities has been identified. In particular, Plan Objectives 9 and 10 have been assessed as having mixed compatibility with SA Criteria 9 which reflects the reliance of coastal tourism and recreation in Wales upon the natural environment but also the potential for objectives that promote environmental protection to restrict development in this sector. Plan Objective 8, meanwhile, has been assessed as being both compatible and less compatible with SA Criteria 11 and 12 due to the potential for the promotion of climate change adaptation and mitigation to support economic development and jobs creation in the renewables sector but also the restriction this may place on economic growth more generally.

Whilst it is acknowledged that the scope for further change to the plan objectives is now very limited, when the WNMP is reviewed by the Welsh Government, the plan objectives could be enhanced through reference to:

- working across marine and terrestrial boundaries and supporting other plans and programmes such as local development plans and shoreline management plans (under Plan Objective 12); and
- engagement on marine planning issues (under Plan Objective 13).

Sector Objectives

Alongside the plan objectives, the Draft WNMP sets out 12 sector objectives. As per the plan objectives, the sector objectives were assessed for their compatibility against the 14 SA criteria with the findings presented in Section 4.3 of the SA Report.

Changes to a total of four sector objectives were identified as being potentially significant for the purposes of the SA. The compatibility assessment contained in the SA Report has therefore been updated as a result of these changes, and this is presented in **Table 3.3** (note that for completeness, the compatibility assessment for the other unchanged sector objectives is reproduced and changes not deemed to be significant for the purposes of the SA are shown; changes to scoring are underlined).

In this instance the summary of the assessment contained in Section 4.3 of the SA Report remains unchanged and is therefore not repeated here.

Table 3.3 Compatibility Assessment – Sector Objectives

Sector	Draft WNMP Sector Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Aggregates	To continue to use marine aggregates resources at a rate and in locations which best meet our current and future needs by ensuring adequate reserves are provided for through long-term licences.	-	-	-	+/-	~	+/-	-	?	~	+/-	+	+	~	~
Aquaculture	To facilitate the development of sustainable aquaculture in Welsh waters, including promoting innovative finfish, shellfish and marine algal businesses and associated supply chains.	+/-	+	-	+/-	-	+/-	-	?	+/-	~	+	+	+	~
Defence	To contribute to the defence of the nation by ensuring that Defence and National Security activities are not compromised.	+	+	~	~	~	~	~	~	~	~	+	+	+	+
Dredging and Disposal	To maintain safe and effective navigational access for shipping, fishing and leisure craft and support future growth and increases in port facilities and vessel size whilst promoting the optimal sustainable use of dredged material and ensuring adequate disposal facilities are available.	-	-	-	-	~	+/-	-	~	+	-	+	+	-	~
Energy – Low Carbon	To contribute significantly to the decarbonisation of our economy and to our prosperity by increasing the amount of marine renewable energy generated, through:	+/-	-	-	+	-	+	-	?	-	+	+	+	+	~

Sector	Draft WNMP Sector Objective	SA Criteria													
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
	• Supporting further commercial deployment of offshore wind technologies at scale over the lifetime of this plan; • Supporting the development and demonstration of wave energy and tidal stream technologies in the short to medium term; • Increasing (where appropriate) the number of wave energy and tidal stream energy generation devices deployed in commercial scale developments over the medium term; • Developing a better understanding of the potential for tidal lagoon power technology; and • Recognising the potential role of the marine environment in new coastal nuclear energy generation facilities.														
	To develop Wales as an exemplar of marine renewable energy technology by developing the essential skill base, infrastructure and technical knowledge to support the development of the industry over the next 20 years.	≃	≃	≃	≃	≃	+	≃	≃	≃	+	+	+	≃	+
Energy – Oil and Gas	Maximising the sustainable recovery of UK oil and gas in order to provide commercial and domestic consumers with a secure, affordable and resilient supply of energy whilst meeting UK decarbonisation goals.	-	-	-	-	-	+/-	-	?	~	+/-	+	+	-	~
Fisheries	To support and safeguard a sustainable, diversified and profitable fishing sector including promoting sustainable capture fisheries and optimising the economic value of fish caught as a supply of sustainable protein.	+/-	?	?	?	+	?	+	+	+	?	+	+	+	~

Sector	Draft WNMP Sector Objective	SA Criteria												
		1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Ports and Shipping	To safeguard established shipping routes and support sustainable growth in the shipping and ports sector.	-	-	-	+/-	-	+/-	-	?	+	-	+	+	+/-	~
Subsea Cabling	To support the optimal distribution of electricity and better global communications through the growth of digital communication networks.	-	~	-	~	~	+/-	-	~	~	+/-	+	+	~	~
Surface Water and Wastewater Treatment and Disposal	To safeguard the capacity to safely and effectively treat and discharge surface water runoff and wastewater.	+	+	~	~	~	+	~	~	+	+	+	+	+	~
Tourism and Recreation	To contribute to sustainable development by protecting and promoting access to the coast and improving the quality of the visitor experience thereby increasing Wales' reputation as a world class sustainable marine tourism and recreation destination.	+/-	+/-	+/-	-	+/-	-	+/-	+	+	-	+	+	+	~

Key

Symbol	Effect
+	Objectives are potentially compatible.
~	No clear relationship between Objectives.
-	Objectives are potentially incompatible.
?	Uncertain if objectives are related.

NB: where more than one symbol/colour is presented in a box it indicates that the appraisal has identified both compatibilities and incompatibilities between the WNMP sector objectives and the SA criteria. Where a box is coloured but also contains a '?', this indicates a degree of uncertainty regarding the relationship between the WNMP sector objectives and the SA criteria although a professional judgement is expressed in the colour used.

3.4 Appraisal of General Cross-cutting Policies

The Draft WNMP contains cross-cutting policies that apply to all sectors and activities and support the delivery of the vision and plan objectives. Each policy has been individually appraised against the SA criteria with commentary provided describing the potential effects. The findings of the appraisal are presented at Appendix D to the SA Report.

The screening has identified that for five of the general cross-cutting policies, the changes to the Draft WNMP may be significant for the purposes of the SA (including one new policy). These are:

- SOC_06: Designated landscapes;
- SOC_11: Resilience to climate change;
- ENV_01: Resilient marine ecosystems;
- ENV_03: Invasive non-native species; and
- ENV_07: Fish Species and Habitats.

These policies have therefore been re-appraised (or appraised if new) and the updated appraisal matrices are contained at **Appendix C**.

Table 4.3 of the SA Report presents a summary of the findings of the appraisal for the general cross-cutting policies; this has been updated and is presented in **Table 3.4** (amendments to scoring as a result of the changes to the Draft WNMP and policy re-appraisal are underlined). Within this table, the policies have been grouped by theme (reflecting the structure of the WNMP) with a score indicating both the performance of each individual policy against the SA criteria and the cumulative effects of the policies under each theme.

A summary of the performance of the five policies taken forward for (re)appraisal against the SA criteria is provided in the sub-sections that follow. Commentary is then provided on the implications arising for the SA Report.

Table 3.4 Summary of the General Cross-cutting Policy Appraisal

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Overarching Planning Policy														
GEN_01	+	+	+	+	+	+	+	+	+	+	+	+	+	+
GEN_02	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effect	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Achieving a Sustainable Marine Economy														

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ECON_01	?	?	?	?	?	+/?	+/?	+/?	++/?	?	++	++	+/?	0
ECON_02	+/?	+/?	+/?	0	+/?	+/?	+/?	0	+	+	++	+	+/?	++
Cumulative Effect	+/?	+/?	+/?	?	+/?	+/?	+/?	+/?	++/?	+/?	++	++	+/?	++
Ensuring a Strong, Healthy and Just Society														
SOC_01	+/-/?	?	?	?	+/?	?	+/?	?	++	?	+	+	+	+
SOC_02	+/?	+/?	+/?	+/?	+/?	+/?	+	+	+	0	+	++	+	+
SOC_03	++	++	+	++	+	0	+	0	+	+	+	++	++	0
SOC_04	0	0	0	0	0	0	++	++	+	0	0	+	0	0
SOC_05	0	0	0	0	++	0	++	+	++	0	+	+	0	0
SOC_06	++	0	+	0	++	0	++	+	++	0	+	+	0	0
SOC_07	0	0	+	0	++	0	++	+	++	0	+	+	+	0
SOC_08	+	0	++	0	0	++	0	0	+/?	0	+/?	+/?	+/?	0
SOC_09	+/-	+	++	0	+/-	++	+/-	0	+	0	++	++	++	0
SOC_10	+	0	0	+	0	++	0	0	0	++	+	+/?	+	+
SOC_11	+/-	+	+	+/?	+/-	++	+/-	0	+	++/-/?	+	+	+	+

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Cumulative Effect	+/-	+	++	+	++/-	++	++/-	+	++	+/-	+	++	+	+
Living Within Environmental Limits														
ENV_01	++	++	++	+	+	+	0	0	+	0	+/-/?	+	+	0
ENV_02	++	++	++	0	0	+	0	0	+	0	+/-/?	+	+	+
ENV_03	++	+	+	0	0	0	0	0	+	0	++	0	+/?	0
ENV_04	++	++	0	0	+	0	+	0	+	++	+	+	+	0
ENV_05	++	0	0	0	+	0	0	0	0	0	0	+	+	0
ENV_06	++	++	0	++	0	+	0	0	+	+	+/?	+	++	0
ENV_07	+	0	0	0	0	0	0	0	0	0	+/?	+/?	0	0
Cumulative Effects	++	++	++	+	+	+	+	0	+	+	+/-/?	+	+	+
Promoting Good Governance														
GOV_01	+	+	+	+	+	+	+	+	+	+	+	+	+	++
GOV_02	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effects	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Using Sound Science Responsibly														
SCI_01	+	+	+	+	+	+	+	+	+	+	+	+	+	++
Cumulative Effects	+	+	+	+	+	+	+	+	+	+	+	+	+	++

Key

Symbol	Effect
++	The policy is likely to have a significant positive effect on the SA criteria.
+	The policy is likely to have a positive effect on the SA criteria.
0	The policy is likely to have a neutral effect on the SA criteria.
-	The policy is likely to have a negative effect on the SA criteria.
--	The policy is likely to have a significant negative effect on the SA criteria.
?	The effects of the policy on the SA criteria are uncertain at this stage.

*Note: where more than one symbol is presented in a box it indicates that the appraisal has found more than one score for the category. Where the scores are both positive and negative, hatching has been used. Where a box is coloured but also contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect or where there remains uncertainty over whether an effect could arise. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Summary of Likely Significant Effects of Re-appraised Policies

Likely Significant Positive Effects

Policies SOC_06 and SOC_11 are included under the theme in the WNMP of 'ensuring a strong, healthy and just society'. The policies relate to landscapes (including nationally designated landscape assets) and climate change mitigation and adaptation. Positive effects have been identified across all of the SA criteria for these two policies, with effects having been assessed as significant in respect of biodiversity (SA Criteria 1), landscape and seascape (SA Criteria 5), climate change (SA Criteria 6), heritage (SA Criteria 7) and tourism and recreation (SA Criteria 9). A mixed significant positive and minor negative effect has also been identified for Policy SOC_11 with respect to resources (SA Criteria 10).

The significant positive effects identified in respect of biodiversity, landscape and seascape, heritage and tourism and recreation predominantly reflect the protection afforded to designated landscapes under Policy SOC_06 and the associated landscape and seascape benefits this is likely to generate. It also reflects, and is consistent with, the broader purposes of National Parks and Areas of Outstanding Natural Beauty (AONB), which include conserving and enhancing natural beauty, wildlife and cultural heritage, and the promotion of enjoyment of the protected areas.

Policy SOC_11 seeks to ensure that proposals have included appropriate adaptation measures to ensure resilience to climate change and supports proposals that contribute more broadly to climate change adaptation and/or mitigation. This has been assessed as having a significant positive effect on climate change. With regard to the mixed significant positive and minor negative effect identified in respect of resources, this reflects the potential for the policy to support offshore renewable energy development and contribute significantly towards renewable energy targets, but also the fact that climate change adaptation may involve the unsustainable use of marine aggregates for coastal defences.

Policies ENV_01, ENV_03 and ENV_07 under the theme 'living within environmental limits' promote the protection and enhancement of the marine environment and resilient marine ecosystems. They cover: the restoration and enhancement of marine ecosystems; invasive non-native species; and fish habitats. Significant positive effects have been identified against four of the SA criteria; biodiversity (SA Criteria 1), water (SA Criteria 2), physical environment (SA Criteria 3) and economy (SA Criteria 11). These effects principally arise from the provisions of Policy ENV_01 to help ensure that proposals avoid, minimise or

mitigate adverse effects (and generate positive effects) on biodiversity and geodiversity, which would also support improvements to water quality. Policy ENV_03 requires proposals to help control the introduction and spread of invasive species arising from development/activity in, and use of, the marine area. In light of the importance of this issue for marine ecosystems in Wales, this has been assessed as having a significant positive effect on biodiversity and the economy.

No further significant positive effects have been identified during the appraisal of the five general cross-cutting policies.

Across the policies, minor positive effects have been identified across all of the SA criteria. This principally reflects the wider socio-economic and environmental benefits that could be derived from the protection of landscapes, habitats and increased climate change resilience. This includes increased flood protection, the enhancement of coastal character and the sense of identity and culture, improved tourism and recreational opportunities (and associated human health, wellbeing and economic benefits), and healthier seas that continue to support economic opportunities such as fishing, aquaculture and tourism.

Likely Significant Negative Effects

No significant negative effects have been identified during the appraisal of the five general cross-cutting policies.

Minor negative effects have been identified in respect of biodiversity (SA Criteria 1), landscape and seascape (SA Criteria 5), heritage (SA Criteria 7), resources (SA Criteria 10) and economy (SA Criteria 11). The negative effects identified principally relate to Policy SOC_11 and reflect the potential for measures to minimise coastal change and flooding that require the creation of hard structures to adversely affect ecology, landscape and seascape and the setting of historic assets. However, such effects will be assessed on a case-by-case basis as part of the design phase and consenting process for these activities. It is also recognised that, in the short term in particular, proposals to protect marine ecosystems could limit activities and development in the marine environment. In consequence, a negative effect has been identified in respect of the economy; however, this is uncertain and in the longer term, if protection aids the recovery of marine fauna/flora, activities could increase and benefit from resilient marine ecosystems.

Implications for the Findings of the SA Report

Section 4.4 of the SA Report includes commentary on the cumulative effects of the general cross-cutting policies by policy theme. Commentary is provided in the following subsections on how the changes to the Draft WNMP affect the findings presented in this section of the SA Report.

Overarching Planning Policy

The changes to this subsection of the Draft WNMP are not considered significant and as such, no changes are required to this section of the SA Report.

Achieving a Sustainable Marine Economy

The changes to this subsection of the Draft WNMP are not considered significant and as such, no changes are required to this section of the SA Report.

Ensuring a Strong, Healthy and Just Society

The changes to the Draft WNMP include revisions to Policy SOC_06 to include specific reference to potential impacts on designated landscapes, the mitigation hierarchy and to opportunities for the enhancement of designated landscapes. This change strengthens the policy in terms of the positive effects on biodiversity (SA Criteria 1), heritage (SA Criteria 7) and tourism and recreation (SA Criteria 9) identified in the SA Report

and which are now considered to be a significant positive effect; however, there has not been any consequential change to the overall cumulative effects of this section of the Draft WNMP on these SA criteria.

Policy SOC_11 has been amended to include support for climate change mitigation which has been assessed as having a significant positive effect (as opposed to a positive effect as identified in the SA Report) on resources (SA Criteria 10). However, the revision to Policy SOC_11 incorporates the requirements of Policy SOC_12 which has been deleted such that there has not been any consequential change to the overall cumulative effects of this section of the Draft WNMP on SA Criteria 10.

Living Within Environmental Limits

Changes have been made to a number of the general cross-cutting policies under this theme of the Draft WNMP. However, the appraisal summarised in **Table 3.4** identifies that these changes only affect the scoring of Policy ENV_07 against the SA criteria.

The inclusion of Policy ENV_07 introduces further minor positive effects against biodiversity (SA Criteria 1), economy (SA Criteria 11) and well-being (SA Criteria 12). Overall, however, there are no changes to the cumulative effects of this section of the Draft WNMP on the SA criteria, so amendments to the SA Report are not required. Further, whilst Policy ENV_07 is a new policy, it represents a renamed and very slightly amended version of the original sector policy FIS_03, such that the SA of the new policy is closely aligned with the previous findings of the SA and does not materially affect the sustainability performance of the Draft WNMP.

Promoting Good Governance

The changes to this subsection of the Draft WNMP are not considered significant and as such, no changes are required to this section of the SA Report.

Using Sound Science Responsibly

The changes to this subsection of the Draft WNMP are not considered significant and as such, no changes are required to this section of the SA Report.

3.5 Appraisal of Sector Policies

The Draft WNMP contains policies that relate to specific sectors/activities and support the delivery of the sector objectives. They include supporting policies (to encourage development of a given sector) and safeguarding policies (to protect a given sector's current or potential future activities from negative impacts caused by other activities). Each policy has been individually appraised against the SA criteria with commentary provided describing the potential effects. The findings of the appraisal are presented at Appendix D to the SA Report.

The screening has identified that for 10 of the sector policies, the changes to the Draft WNMP may be significant for the purposes of the SA (including two new safeguarding policies). These are:

- SAF_01: Safeguarding existing activity;
- SAF_02: Safeguarding strategic resources;
- AGG_01: Aggregates (Supporting);
- AQU_01: Aquaculture (supporting);
- ELC_01: Low carbon energy (supporting) wind;

- ELC_02: Low Carbon Energy (supporting) wave;
- ELC_03: Low Carbon Energy (supporting) tidal stream;
- ELC_04: Low Carbon Energy (supporting) tidal range;
- O&G_01: Oil and gas (supporting); and
- P&S_01: Ports and shipping (supporting).

These policies have therefore been re-appraised (or appraised if new) and the updated appraisal matrices are contained at **Appendix C**.

Table 4.4 of the SA Report presents a summary of the findings of the appraisal of the sector policies. This table has been updated and is presented in **Table 3.5** (amendments to scoring as a result of the changes to the Draft WNMP and policy re-appraisal are underlined). Within this table, the policies have been grouped by sector (reflecting the structure of the revised Draft WNMP) with a score indicating both the performance of each individual policy against the SA criteria and the cumulative effects of the policies for each sector.

A summary of the performance of the 10 policies taken forward for (re)appraisal against the SA criteria is provided in the sub-sections that follow. Commentary is then provided on the implications arising for the SA Report.

Table 3.5 Summary of the Sector Policy Appraisal

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Safeguarding														
DEF_01	+	+	0	0	0	0	0	0	0	0	+/?	+/?	+	+
SAF_01	+/-/?	++/?	+/?	+/?	+/?	++/-/?	+/?	+/?	++/?	++/--/?	++/?	+/?	++/?	+
SAF_02	0	0	0	0/?	0	+/?	0	0	0	+/?	+/?	+/?	0	+
Cumulative Effects	+/-/?	++/?	+/?	+/?	+/?	++/-/?	+/?	+/?	++/?	++/--/?	++/?	+/?	++/?	+
Aggregates														
AGG_01 (a/b)	-/?	-/?	-/?	-/?	0	+/-/?	-/?	?	0	++/--	++/?	+/?	0/-	+

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Cumulative Effects	-/?	-/?	-/?	-/?	0	+/-/?	-/?	?	0	++/--	++/?	+/?	0/-	+
Aquaculture														
AQU_01 (a/b)	+/-/?	+/?	-/?	+/-/?	-/?	+/-/?	-/?	0	+/-/?	0	++/?	+/?	+/?	+
Cumulative Effects	+/-/?	+/?	-/?	+/-/?	-/?	+/-/?	-/?	0	+/-/?	0	++/?	+/?	+/?	+
Dredging and Disposal														
D&D_01	-/?	-/?	-/?	-	0	+/-/?	-/?	0	+	-	++	+	-	0
Cumulative Effects	-/?	-/?	-/?	-	0	+/-/?	-/?	0	+	-	++	+	-	0
Energy – Low Carbon														
ELC_01 (a/b)	+/-	-/?	-/?	+/-	--/?	++/-	-/?	?	-/?	++/-	++/?	++/?	+/-	++
ELC_02 (a/b)	+/-/?	-/?	-/?	+/-	-/?	++/-	-/?	?	-/?	++/-	++/?	+/?	+/-	+
ELC_03 (a/b)	+/-	-/?	-/?	+/-	-/?	++/-	-/?	?	-/?	++/-	++/?	++/?	+/-	+
ELC_04	±	±	±	0	0	+/?	0	0	±	+/?	±	+	0	+
Cumulative Effects	+/-/?	+/-/?	+/-/?	+/-/?	--/?	++/-	-/?	?	+/-/?	++/-	++/?	++/?	+/-/?	++
Energy – Oil and Gas														
O&G_01 (a/b)	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	?	0	++/--/?	+/?	0/+/?	+/-/?	0

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
O&G_02	-/?	-/?	-/?	-/?	-/?	++/?	-/?	?	0	++/?	+/?	+/?	-/?	+
Cumulative Effects	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	++/-/?	+/-/?	?	0	++/--/?	+/?	+/?	+/-/?	+
Fisheries														
FIS_01 (a/b)	+/-	?	?	?	+/?	?	+/?	+	+	?	+	+	+/?	+
Cumulative Effects	+/-	?	?	?	+/?	?	+/?	+	+	?	+	+	+/?	+
Ports and Shipping														
P&S_01 (a/b)	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
P&S_02	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
Cumulative Effects	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+
Subsea Cabling														
CAB_01	-/?	0	-/?	0	0	++/-	-/?	0	0	++/-	++	++	0	0
Cumulative Effects	-/?	0	-/?	0	0	++/-	-/?	0	0	++/-	++	++	0	0
Tourism and Recreation														
T&R_01 (a/b)	+/-/?	+/-/?	+/-/?	-/?	+/-/?	-/?	+/-/?	+/?	++	-/?	++/?	++/?	++/?	+
Cumulative Effects	+/-/?	+/-/?	+/-/?	-/?	+/-/?	-/?	+/-/?	+/?	++	-/?	++/?	++/?	++/?	+

Key

Symbol	Effect
++	The policy is likely to have a significant positive effect on the SA criteria.
+	The policy is likely to have a positive effect on the SA criteria.
0	The policy is likely to have a neutral effect on the SA criteria.
-	The policy is likely to have a negative effect on the SA criteria.
--	The policy is likely to have a significant negative effect on the SA criteria.
?	The effects of the policy on the SA criteria are uncertain at this stage.

*Note: where more than one symbol is presented in a box it indicates that the appraisal has found more than one score for the category. Where the scores are both positive and negative, hatching has been used. Where a box is coloured but also contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect or where there remains uncertainty over whether an effect could arise. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

Summary of Likely Significant Effects of Re-appraised Policies

Likely Significant Positive Effects

The new safeguarding policies, SAF_01 and SAF_02, have broadly positive effects on the SA criteria. For Policy SAF_01, positive effects have been assessed as significant for a number of criteria due to the increased certainty provided in respect of the protection of licensed or established activities. Significant positive effects have also been identified for Policy SAF_01 in respect of water (SA Criteria 2), tourism and recreation (SA Criteria 9), economy (SA Criteria 11) and health (SA Criteria 13). These arise from: the safeguarding of existing and planned wastewater management and treatment infrastructure; the protection of existing businesses and jobs; and the protection and enhancement of the coastal tourism and recreation sector. Additionally, several marine sectors would have beneficial effects on health if activities are safeguarded, including recreation, water quality and fishing.

Across the aggregates (AGG_01), aquaculture (AQU_01), oil and gas (O&G_01) and ports and shipping (P&S_01) sector policies, six significant positive effects have been identified. Policies AGG_01, AQU_01 and P&S_01 were assessed as having significant positive effects on the economy (SA Criteria 11) as they support the growth of the respective sectors, providing greater certainty to developers to encourage future investment. There is the potential for new projects supported by the policies to adversely affect other economic activities in the marine area; however, the application of sector safeguarding policies (SAF_01 and SAF_02), which require new proposals to avoid, minimise or mitigate their impacts on existing or planned activities in other sectors, is expected to avoid potential adverse impacts, although some uncertainty remains.

Policy P&S_01 has been identified as having a significant positive effect on well-being (SA Criteria 12), as ports and shipping provide largescale direct and indirect employment opportunities, and ports, harbours and marinas can also be a catalyst for regeneration and enhanced service provision. However, the magnitude of effect is uncertain and will be dependent on (inter alia) the number of jobs created and the extent to which posts are filled by the local workforce.

Three of the low carbon energy policies (ELC_01, ELC_02 and ELC_03) are assessed as having significant positive effects against five of the SA criteria. For the three policies, significant effects relate to climate change (SA Criteria 6) and resources (SA Criteria 10) as the provisions for wind, wave and tidal stream energy are expected to help encourage renewable energy development and innovation in the sector together with

supporting a long term reduction in greenhouse gas emissions, once projects are operational. During construction, however, energy and resources would be required and greenhouse gases emitted.

The delivery of renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. Investment in the renewables sector may also create local employment opportunities which could benefit coastal communities. Significant positive effects have therefore been identified in respect of well-being (SA Criteria 12) for Policies ELC_01 and ELC_03 and economy (SA Criteria 11) for Policies ELC_01, ELC_02 and ELC_03. However, the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force.

Offshore wind energy generation has the potential to make a significant contribution towards UK and Welsh Government climate change targets. Further, making evidence available and support for strategic planning and liaison with the sector and other interested parties on the opportunities for future resources and de-risking consenting for the sector would promote collaboration. Policy ELC_01 has therefore been assessed as having a significant positive effect on governance (SA Criteria 14).

No further significant positive effects have been identified during the appraisal of the ten sector policies.

Across the ten policies, minor positive effects have been identified across all other SA Criteria. These effects principally relate to safeguarding sector activities, the associated benefits relating to Policies SAF_01 and SAF_02 and further evidence gathering in respect of the potential opportunities associated with Wales' tidal range resource, which is expected to enhance understanding of the marine environment and the effects of tidal lagoon schemes (under Policy ELC_04). Additionally, there are minor positive effects associated with excluding intertidal areas, estuaries or other coastal inlet waters from oil and gas extraction as a result of Policy O&G_01b.

Positive effects with respect to governance (SA Criteria 14) have been identified across the majority of the policies. For the safeguarding policies in particular, this reflects the plan's support for the identification and development of SRAs that will, through an evidence-based approach, enable better understanding of the distribution of resources across the plan area together with associated constraints and opportunities.

Likely Significant Negative Effects

Across the four low carbon energy policies (ELC_01 to ELC_04), one significant negative effect has been identified. This relates to landscape and seascape (SA Criteria 5) for Policy ELC_01, due to the potential for offshore wind energy developments to have adverse impacts on landscape/seascape and visual amenity. Impacts would be principally associated with the introduction of wind turbines into landscapes/seascapes and views, and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. The magnitude of landscape/seascape and visual effects will be dependent on the exact scale and location of development, distance to shore, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors, which is uncertain. There is at least the potential for adverse effects associated with this policy to be significant where development is visible from protected areas, although this could be avoided through the siting of proposals.

No further significant negative effects have been identified during the appraisal of the ten sector policies.

Across the ten sector policies, minor negative effects have been identified across the majority of the SA criteria, with the exception of Welsh language, economy, well-being and governance. Effects predominantly relate to the direct loss of, and/or damage, to habitats and species and the seabed, impacts on water quality due to suspended sediments and discharges and energy and resource use, generation of waste and emissions to air (and associated effects on health). Additionally, support for future development and activity

in the plan area may result in disturbance to, or loss of, underwater heritage assets, the introduction of new built form into landscapes and seascapes, and the possible decline in, or displacement of, tourism.

Mixed Likely Significant Effects

A mixed significant positive and significant negative effect has been identified for Policy SAF_01 with respect to resources (SA Objective 10) due to the safeguarding of aggregates, oil and gas and renewable energy resources. This would increase the development of low carbon marine energy, but would also lead to the future use of non-renewable aggregate and hydrocarbon resources. Policy SAF_01 has also been assessed as having a mixed significant positive and minor negative effect on climate change (SA Criteria 6), as a result of the reductions in greenhouse gas emissions associated with the safeguarding of renewable energy resources, alongside the safeguarding of offshore hydrocarbons which would give rise to greenhouse gas emissions during exploration and production activity. Uncertainties remain for Policy SAF_01 (as they also do for SAF_02) regarding the type and location of future activities, and it is unknown whether incompatible new proposals will present a convincing case for proceeding, which if accepted by the relevant public body, would give rise to negative effects on existing activities.

Policies AGG_01 and O&G_01 have both been assessed as having a mixed significant positive and significant negative effect with respect to resources (SA Criteria 10). For Policy AGG_01, this relates to the potential for new extraction to meet demand for aggregates over the plan period; however, the winning of marine aggregates will unavoidably result in the depletion of a non-renewable resource. Policy O&G_01b seeks to avoid the negative effects associated with the recovery of hydrocarbon reserves by minimising extraction in the Welsh onshore licence area, and avoiding unsustainable extraction of a non-renewable resource. However, the continued extraction of oil and gas reserves under Policy O&G_01a would result in the direct loss of a primary natural resource that is non-renewable, giving rise to a mixed effect for Policy O&G_01. For both policies, a negative effect also arise from the use of non-renewable natural resources (aggregates, oil and gas) during exploration and operational activities. Resources including energy, water and aggregates would also be required to support oil and gas facilities and aggregate extraction, in addition to waste generation. Some uncertainty remains as the magnitude of effects will depend on the extent of future oil and gas activity in the plan area which is at present unknown.

Implications for the Findings of the SA Report

Section 4.5 of the SA Report includes commentary on the cumulative effects of the sector policies, by sector. Commentary is provided in the following subsections on how the changes to the Draft WNMP affect the findings presented in this section of the SA Report.

Safeguarding

The changes to the Draft WNMP introduce two new safeguarding policies (SAF_01 and SAF_02) in addition to the original defence safeguarding policy (DEF_01). No changes were made to the wording of the defence policy contained in the Draft WNMP, and there are therefore no changes to the effects of Policy DEF_01 as identified in the SA Report.

Policies SAF_01 and SAF_02 seek to safeguard current and future potential activity in all marine sectors other than defence. Policy SAF_01 applies to established activities across the sectors, while Policy SAF_02 specifically relates to future SRAs. The revised Draft WNMP makes provision for the establishment of SRAs with an initial focus on the aggregates and low carbon energy sectors, followed by the aquaculture sector. The appraisal of Policy SAF_02 therefore relates to these sectors only. Prior to refinement of the Draft WNMP, the SA Report had included an SRA for the Ports & Shipping sector for existing activities, which has now been removed. The policy intent is included in Policy SAF_01, so there is no overall change to the effects of the plan as a result of this amendment.

The effects identified against the SA Criteria for SAF_01 and SAF_02 reflect the previously recorded effects of the sector safeguarding policies. While the cumulative effects are a new addition due to the change in structure of the plan, the effects associated with safeguarding the various sectors has not changed.

Aggregates

The changes to the Draft WNMP remove the reference to supporting proposals in the aggregates sector SRA in Policy AGG_01. While the SRA did not preclude proposals from coming forward anywhere within the Marine Plan area, it provided a degree of policy guidance over the location of potential future development and activity. The removal of the SRA reduces this presentational clarity; although, the actual locations of aggregate resource clearly remain unaffected. Reflecting the marginal increased policy uncertainty around the location of any new extractions, there have been minor changes to the policy appraisal including the removal of a minor positive effect for air quality (SA Criteria 4) and increased uncertainty with respect to climate change (SA Criteria 6). Aggregates extraction will result in energy use and generate emissions to air (including greenhouse gases), and while current licensed reserves are located in close proximity to markets, it is not known whether future resources will be extracted from the same locations.

The sector safeguarding Policies AGG_02, AGG_03 and AGG_04 have also been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01 (for Policies AGG_02 and AGG_03) and SAF_02 (for Policy AGG_04). The benefits associated with safeguarding aggregates are therefore considered under cumulative effects for the safeguarding policies.

As a result of these amendments, there have also been minor changes to the cumulative effects for air quality, climate change and health. However, overall there have been no significant changes to the effects of the plan with respect to the aggregates sector.

Aquaculture

The changes to the Draft WNMP remove the reference to supporting proposals in the aquaculture sector SRA in Policy AQU_01. While the SRA did not preclude proposals from coming forward anywhere within the Marine Plan area, it provided a degree of policy guidance over the location of potential future development and activity. However, the effects previously identified in the SA Report for this policy are unaffected.

The sector safeguarding policies AQU_02 and AQU_03 have also been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding policies SAF_01 and SAF_02, respectively and the benefits associated with safeguarding aquaculture are therefore considered under cumulative effects for the safeguarding policies outlined above.

There has not been any consequential change to the overall cumulative effects of the aquaculture sector policies. As there are no changes to the cumulative effects of this section of the revised Draft WNMP on the SA criteria, no amendments to the SA Report are required.

Defence

No changes were made to the wording of the defence policy, and there has therefore been no change to the effects of Policy DEF_01 identified in the SA Report. This policy has, however, been moved to the safeguarding section of the plan. Overall, there is no material change to the effects of the revised Draft WNMP with respect to defence.

Dredging and Disposal

The sector safeguarding Policies D&D_02 and D&D_03 have been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding Dredging and Disposal are therefore considered under the cumulative effects for safeguarding. Policy D&D_01 was not subject to potentially significant changes.

The cumulative effect on governance (SA Criteria 14) for the dredging and disposal sector is now neutral rather than a minor positive effect, as effects are now captured under the safeguarding policies. Overall, there is no significant change to the effects of the plan with respect to the dredging and disposal sector.

Energy – Low Carbon

The low carbon sector policies have undergone substantial revision. The amendments present new policy text on proposals for offshore wind energy (Policy ELC_01) whilst policy on wave energy and tidal stream energy has been moved to new individual policies (Policies ELC_02 and ELC_03 respectively). Additionally, explicit support for tidal lagoons has been removed and a new policy introduced the purpose of which is to enhance understanding of future opportunities and environmental constraints for tidal range resources (Policy ELC_04).

The removal of support for tidal lagoons has resulted in previously identified significant negative effects no longer being identified for biodiversity (SA Criteria 1), water (SA Criteria 2) and the physical environment (SA Criteria 3). A new significant negative effect with some uncertainty has been identified with respect to landscape and seascape (SA Criteria 5) for Policy ELC_01 due strengthened support for offshore wind development, which has the potential for adverse landscape/seascape character and visual impacts (this was originally a minor negative effect with some uncertainty). Significant positive effects have also been identified against well-being (SA Criteria 12) for Policies ELC_01 and ELC_03, which were originally minor positive effects. The policies have been assessed individually and all significant effects summarised in the above section 'Summary of Likely Significant Effects of Re-appraised Policies'.

The three sector safeguarding policies have been removed; however, the policy intent has been included in the new overarching safeguarding Policies SAF_01 and SAF_02. The benefits associated with safeguarding in this sector are therefore considered under the cumulative effects for the safeguarding policies.

The cumulative effects of the energy and low carbon sector policies have changed as a result of the WNMP revisions, and in five instances the change is significant. This relates to biodiversity, water, physical environment, landscape and seascape, and well-being, as detailed above. Minor changes to cumulative effects were also present for climate change (SA Criteria 6) and resources (SA Criteria 10) reflecting the consumption of resources and energy and emission of greenhouse gases associated with the construction and installation of renewable energy devices.

Energy – Oil and Gas

The changes to the Draft WNMP include the addition of Policy O&G_01b as a new sub-policy. Policy O&G_01b reflects the Welsh Government's movement towards a low-carbon Wales, and seeks to avoid the development and extraction of oil and gas in areas that fall within the Welsh onshore licence area, with the exception of proposals for mine safety or scientific purposes. This has altered the appraisal of Policy O&G_01 to include minor positive effects with respect to biodiversity (SA Criteria 1), water (SA Criteria 2), physical environment (SA Criteria 3), air quality (SA Criteria 4), landscape and seascape (SA Criteria 5), climate change (SA Criteria 6), heritage (SA Criteria 7) and health (SA Criteria 13) due to minimising oil and gas extraction in the Welsh onshore licence area. The magnitude of positive effects on economy (SA Criteria 11) and well-being (SA Criteria 12) has also reduced due to the discouragement of investment in the onshore licence area. Sub-policy O&G_01a and Policy O&G_02 were not subject to potentially significant changes.

The sector safeguarding Policies O&G_03 and O&G_04 have been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding the oil and gas sector are therefore considered under the cumulative effects for the safeguarding policies.

As a result of the changes, the cumulative effects of the policies in this sector have changed in alignment with the above effects, with the addition of minor positive effects against the majority of the SA Criteria. There are two significant changes to the cumulative effects. These are for climate change, which is now

identified as a mixed significant positive and minor negative effect with some uncertainty (originally a mixed minor positive and minor negative effect with some uncertainty), and the removal of a significant positive effect against economy, which is now a minor positive effect with some uncertainty. These reflect the avoidance of oil and gas extraction in the Welsh onshore licence area.

Fisheries

The sector safeguarding Policy FIS_02 has been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding the fisheries sector are therefore considered under the cumulative effects for the safeguarding policies.

Policy FIS_03 has also been removed from the revised Draft WNMP; however, a renamed and slightly amended version has been included as the new general Policy ENV_07. The SA of Policy ENV_07 is closely aligned with the findings of the SA of the draft Policy FIS_03, although the effects are now included under the general cross-cutting theme 'Living Within Environmental Limits'. Policy FIS_01 was not subject to potentially significant changes.

Overall, there has not been any consequential change to the cumulative effects of the fisheries sector policies. As there are no changes to the cumulative effects of this section of the Draft WNMP on the SA criteria, no amendments to the SA Report are required.

Ports and Shipping

The changes to the Draft WNMP remove the reference to supporting proposals in the ports and shipping SRA in Policy P&S_01. However, the SRA for this sector related to existing ports within the plan area and, therefore, its removal does not materially affect the findings of the SA as future port development is likely to be located at existing facilities.

The sector safeguarding Policy P&S_03 has also been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding the ports and shipping sector are therefore considered under the cumulative effects for the safeguarding policies. Policy P&S_02 was not subject to potentially significant changes.

There has not been any consequential change to the overall cumulative effects of the ports and shipping sector policies. As there are no changes to the cumulative effects of this section of the Draft WNMP on the SA criteria, no amendments to the SA Report are required.

Subsea Cabling

The sector safeguarding Policy CAB_02 has been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding in this sector are therefore considered under cumulative effects for safeguarding. Policy CAB_01 was not subject to potentially significant changes.

The cumulative effect on governance (SA Criteria 14) identified in the SA Report for subsea cabling is now neutral rather than a minor positive effect, as effects are now captured under the safeguarding policies. Overall, there is no significant change to the effects of the plan.

Surface Water and Wastewater Treatment and Disposal

The sector safeguarding Policy SWW_01 has been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding in the surface water and wastewater treatment and disposal sector are therefore considered

under cumulative effects for the safeguarding policies. Overall there is no material change to the effects of the plan with respect to the surface water and wastewater treatment and disposal sector.

Tourism and Recreation

The sector safeguarding Policy T&R_02 has been removed in the revised Draft WNMP; however, the policy intent has been included in the new overarching safeguarding Policy SAF_01. The benefits associated with safeguarding the tourism and recreation sector are therefore considered under cumulative effects for the safeguarding policies. Policy T&R_01 was not subject to potentially significant changes. Overall, there has not been any consequential change to the overall cumulative effects of the tourism and recreation sector policies.

As there are no changes to the cumulative effects of this section of the Draft WNMP on the SA criteria, no amendments to the SA Report are required.

3.6 Secondary, Cumulative and Synergistic Effects

In determining the significance of effects of a plan or programme, the SEA Directive requires that consideration is given to the cumulative nature of the effects. An assessment of the potential for the policies contained within the Draft WNMP to act in-combination both with each other and with other plans and programmes to generate cumulative (including synergistic and secondary) effects is therefore contained in Section 4.6 of the SA Report. This assessment has been updated to reflect the amendments to the Draft WNMP and the consequential changes to the findings of the SA Report as set out in **Sections 3.2** to **3.5** above.

Cumulative Effects Arising from the Revised Draft WNMP

Table 3.6 presents the appraisal of the cumulative effects of the revised Draft WNMP by summarising the cumulative effects of the general cross-cutting policies (by theme) and sector policies (by sector) identified in **Tables 3.4** and **3.5** on the SA criteria. The effects identified are based on an overall judgement of how the plan, when taken as a whole, performs against the SA criteria and reflect the range of effects identified through the appraisal (i.e. whether significant or minor, positive or negative).

Table 3.6 Cumulative Effects Arising from the Revised Draft WNMP

SA Criteria	*General Cross-cutting Policies*						*Sector Policies*										
	Overarching Planning Policy	Achieving a Sustainable Marine Economy	Ensuring a Strong, Healthy and Just Society	Living Within Environmental Limits	Promoting Good Governance	Using Sound Science Responsibly	Safeguarding Policy	Aggregates	Aquaculture	Dredging and Disposal	Energy – Low Carbon	Energy – Oil and Gas (incl Gas Unloading/ Storage and CCS)	Fisheries	Ports and Shipping	Subsea Cabling	Tourism and Recreation	Cumulative Effects of the Revised Draft WNMP Policies (i.e. the combined effects of all the Revised Draft WNMP policies)
1. Biodiversity	+	+/?	+/-	++	+	+	+/-/?	-/?	+/-/?	-/?	+/-/?	+/-/?	+/-	-/?	-/?	+/-/?	++/-/?
2. Water	+	+/?	+	++	+	+	++/ ?	-/?	+/?	-/?	+/- /?	+/- /?	?	-/?	0	+/- /?	++/-/?
3. Physical Environment	+	+/?	++	++	+	+	+/?	-/?	-/?	-/?	+/- /?	+/- /?	?	-/?	-/?	+/- /?	++/-/?
4. Air Quality	+	?	+	+	+	+	+/?	-/?	+/- /?	-	+/- /?	+/- /?	?	+/- /?	0	-/?	+/-/?
5. Landscape and Seascape	+	+/?	++/ -	+	+	+	+/?	0	-/?	0	--/?	+/- /?	+/?	-/?	0	+/- /?	++/--/?
6. Climate Change	+	+/?	++	+	+	+	++/ -/?	+/- /?	+/- /?	+/- /?	++/ -	++/ -/?	?	+/- /?	++/ -	-/?	++/-/?
7. Heritage	+	+/?	++/ -	+	+	+	+/?	-/?	-/?	-/?	-/?	+/- /?	+/?	-/?	-/?	+/- /?	++/-/?

SA Criteria	*General Cross-cutting Policies*						*Sector Policies*										
	Overarching Planning Policy	Achieving a Sustainable Marine Economy	Ensuring a Strong, Healthy and Just Society	Living Within Environmental Limits	Promoting Good Governance	Using Sound Science Responsibly	Safeguarding Policy	Aggregates	Aquaculture	Dredging and Disposal	Energy – Low Carbon	Energy – Oil and Gas (incl Gas Unloading/ Storage and CCS)	Fisheries	Ports and Shipping	Subsea Cabling	Tourism and Recreation	Cumulative Effects of the Revised Draft WNMP Policies (i.e. the combined effects of all the Revised Draft WNMP policies)
8. Welsh Language	+	+/?	+	0	+	+	+/?	?	0	0	?	?	+	?	0	+/?	+
9. Tourism and Recreation	+	++/?	++	+	+	+	++/?	0	+/-/?	+	+/-/?	0	+	+/?	0	++	++
10. Resources (incl Waste)	+	+/?	+/-	+	+	+	++/--/?	++/--	0	-	++/-	++/--/?	?	-/?	++/-	-/?	++/--/?
11. Economy	+	++	+	+/-/?	+	+	++/?	++/?	++/?	++	++/?	+/?	+	++/?	++	++/?	++
12. Well-being	+	++	++	+	+	+	+/?	+/?	+/?	+	++/?	+/?	+	++/?	++	++/?	++
13. Health	+	+/?	+	+	+	+	++/?	0/-	+/?	-	+/-/?	+/-/?	+/?	+/-/?	0	++/?	++/-/?
14. Governance	++	++	+	+	++	++	+	+	+	0	++	+	+	+	0	+	++

Cumulative Significant Positive Effects

The appraisal of cumulative effects presented in **Table 3.6** highlights that all of the SA criteria will experience positive effects as a result of the implementation of the policies contained in the revised Draft WNMP. Cumulative significant positive effects are expected in respect of all the SA criteria with the exception of air quality (SA Criteria 4) and Welsh language (SA Criteria 8), for which effects have been assessed as positive. This broadly reflects the likely socio-economic benefits that supporting economic activity in the marine area is likely to deliver and the strong framework provided by the plan policies that will help to conserve and enhance Wales' marine environment and support the sustainable management of natural resources. It is also consistent with the overall vision for the Welsh inshore and offshore marine area set out in the revised Draft WNMP (to deliver clean, healthy, safe, productive and biologically diverse seas).

The appraisal of cumulative effects demonstrates that the revised Draft WNMP policies are, in particular, likely to deliver significant benefits in respect of: climate change (SA Criteria 6); resources (SA Criteria 10); tourism and recreation (SA Criteria 9); the economy (SA Criteria 11); well-being (SA Criteria 12); and governance (SA Criteria 14), as evidenced by the number of sectors/policies that are expected to generate significant positive effects on these SA criteria (for each criterion cited, at least four significant positive effects has been identified).

The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry. In this regard, the Welsh Government's Marine Renewable Energy Strategic Framework has identified a scenario to secure 6.4GW through marine tidal stream and wave energy development. The generation of renewable energy is strongly supported by the general cross-cutting policies and, through their support for growth in the low carbon sector, CCS and electricity distribution and safeguarding of existing activity and strategic resources, by the sector policies. The sector policies additionally support strategic planning in respect of offshore wind, wave energy, tidal stream and tidal range in order to understand future opportunities for the deployment of these technologies. A cumulative significant positive effect has therefore been identified for climate change (SA Criteria 6) and resources (SA Criteria 10).

Policy AGG_01 is expected to lead to the more sustainable management of marine aggregates including through support for the identification and review of permitted tonnage limits. Reflecting the importance of marine dredged sand and gravel to Wales, and taking into account the potential for new extraction to meet demand for aggregates over the plan period (consistent with the relevant requirements of the UK MPS), Policy AGG_01 has been assessed as having a significant positive effect on SA Criteria 10 (noting also the significant negative effect on the same criteria recorded below).

Policy O&G_01b seeks to avoid the development and extraction of oil and gas in areas that fall within the Welsh onshore licence area, with the exception of proposals for mine safety or scientific purposes. This reflects the Welsh Government's commitment to moving towards a low-carbon Wales, and the long-term aim of removing fossil fuels from the energy mix. During this transition, fossil fuel resources (including oil and gas) and options for the capture and storage of waste carbon dioxide in geological formations will continue to play an important role in the energy mix. Key considerations in the continued reliance on fossil fuels include climate change, energy security, cost of energy to businesses and consumers and environmental impact. In this context, Policy O&G_01 is assessed as having a significant positive effect on SA Criteria 10 (noting the significant negative effect on the same criteria below).

The Welsh coastline and seas support a wide range of economic activities across a number of sectors. The WMER estimates the total value of economic activity within the plan area to be approximately £2.1bn of Gross Value Added (GVA). In this context, the revised Draft WNMP promotes blue growth (including tourism) and identifies significant scope for future growth in certain sectors over the plan period. Reflecting the intent of the sector policies to safeguard existing economic activity in the marine area whilst encouraging sector productivity and growth, the revised Draft WNMP is therefore expected to help maintain and enhance Wales' marine economy (including the visitor economy) and its contribution to national GVA. Whilst it is not possible to quantify the effect of the revised Draft WNMP upon sector growth, the scale of potential future

growth of some sectors is significant, in particular the low carbon sector. Cumulative significant positive effects have therefore been identified in relation to tourism and recreation (SA Criteria 9) and the economy (SA Criteria 11).

Linked to the strong policy support for blue growth, the revised Draft WNMP policies are expected to encourage proposals for economic development that generate local employment opportunities and wealth, tackle deprivation and increase skills, delivering potentially substantial benefits to Wales' coastal communities. In this regard, the plan may contribute towards addressing the issues highlighted in the 2014 Welsh Index of Multiple Deprivation regarding deprivation in some coastal areas. In this context, a cumulative significant positive effect has been identified for well-being (SA Criteria 12).

The strong performance of the revised Draft WNMP in terms of governance (SA Criteria 14) reflects in particular the emphasis of the general cross-cutting policies on the consideration of cumulative effects, adaptive management and the application of an evidence-based analysis in decision making. It also reflects the expectation that the implementation of the sector policies will promote research and engagement on marine planning issues and help further understanding of future development opportunities and constraints to growth, including through the identification of SRAs linked the safeguarding sector policies. This is particularly pertinent given that the WNMP is the first marine plan for Wales and represents the start of a systematic process of shaping Wales' seas through marine planning to support economic, social and environmental objectives.

Cumulative Significant Negative Effects

The sector policies of the revised Draft WNMP have been assessed (in-combination) as having cumulative negative effects across several of the SA criteria and particularly those relating to the built and natural environment, including: biodiversity (SA Criteria 1); water (SA Criteria 2); the physical environment (SA Criteria 3); air quality (SA Criteria 4); landscape and seascape (SA Criteria 5); climate change (SA Criteria 6); heritage (SA Criteria 7); and resources (SA Criteria 10). This reflects both the sensitivity of the marine environment to change and the likely direct and indirect adverse environmental effects of new development or activity supported by the sector policies. The range of adverse effects are broad and include, for example:

- disturbance to, or loss of, habitats and species;
- reduced water quality due to the mobilisation of sediment or pollution;
- changes in bathymetry / seabed topography;
- impacts on landscape and seascape character;
- disturbance to, or loss of, heritage assets;
- increased emissions to air and energy use; and
- resource use and waste generation.

Adverse environmental impacts could potentially be significant where they affect sensitive sites or receptors. The likelihood of adverse effects occurring and their magnitude may also be increased in areas where multiple activities are concentrated. A detailed assessment of in-combination effects and the capacity of the receiving environment/ecosystem resilience may therefore be required at the project stage. Such an assessment could also usefully support any future review of the WNMP and/or plan guidance. However, it is likely that adverse effects could be largely avoided through siting at the project stage. Further, activities in the marine environment are heavily regulated and the environmental impacts of proposals would be considered during the award of licences (where relevant) and be assessed at the project stage (including as part of any Environmental Impact Assessment (EIA), HRA or Coastal Impact Study (CIS) and through the Environmental Permitting regime).

Proposals related to the implementation of the WNMP would also be determined in accordance with the relevant general cross-cutting policies of the plan which provide a strong framework to support the conservation and enhancement of the marine environment. Importantly, policies such as Policy GOV_01 explicitly require that proposals assess cumulative effects and that adverse effects are avoided, minimised and/or mitigated. Nevertheless, the appraisal of cumulative effects presented in **Table 3.6** highlights that, notwithstanding the existing regulatory framework and policy provisions of the revised Draft WNMP, there remains some residual uncertainty with respect to the probability of adverse effects occurring and their magnitude (i.e. whether effects are significant or minor) which will be in part dependent on the exact type, scale and location of future development in the context of the sensitivity/capacity of the receiving environment.

Despite the provisions of the general cross-cutting policies, a cumulative significant negative effect has been identified in respect of landscape and seascape (SA Criteria 5). This is due to the support provided by Policy ELC_01 for offshore wind development, which has the potential for adverse impacts on seascape character. However, there are a number of inherent uncertainties relating to the scale and location of development, the baseline environmental characteristics of development locations and the potential for project-level mitigation to be implemented (in accordance with the policies of the revised Draft WNMP) to reduce the magnitude of adverse effects in this regard.

Policies AGG_01 and O&G_01 have been assessed as having a cumulative significant negative effect in respect of resources (SA Criteria 10). The winning of marine aggregates (Policy AGG_01) would unavoidably result in the depletion of non-renewable resources. The continued extraction of hydrocarbon reserves in existing and future licensed blocks in offshore areas under Policy O&G_01a would also result in the direct loss of a primary natural resource that is non-renewable (whilst the policy aims to maximise the return from existing wells and undertake efficient recovery, resources (including energy, water and aggregates) would still be required to support the construction, operation and decommissioning of oil and gas facilities).

Policy SAF_01 has also been assessed as having a significant negative effect on resources (SA Criteria 10) (albeit with a significant positive effect recorded against the same criteria). This reflects the fact that, whilst the policy safeguards resources within the plan area (with associated benefits for those sectors covered by the WNMP), this is likely to lead to the future use of non-renewable resources (with associated negative environmental effects).

In addition to the adverse effects highlighted above, the appraisal has identified the potential for new development and activities supported by the sector policies to cause disruption to, or displace, other economic activities in the marine area and which, if not managed, could result in adverse economic effects. However, sector interactions are complex and it is possible for siting considerations at the project level to avoid conflicts. It is also important to note that the policies of the revised Draft WNMP promote co-existence (see Policy ECON_02) and the safeguarding of existing activities and strategic resources (through the future identification of SRAs) which can be reasonably expected to manage potential conflicts between sectors, helping to ensure that adverse economic impacts are avoided, minimised or mitigated, unless in exceptional circumstances.

Cumulative Effects Arising From Other Plans and Programmes

The revised Draft WNMP policies sit within the context of a number of other plans and programmes. These plans and programmes are identified in the WMER. Those plans and programmes at the UK, national (Wales) and regional/local level that are considered to be particularly relevant to, and have the potential to interact with, the WNMP have been subject to an initial screening assessment. The purpose of this assessment is to highlight where the WNMP could have a significant in-combination effect and what the nature of that effect would be (i.e. whether significant positive or significant negative). The results of this screening exercise are presented in **Appendix D**.

The effects of the revised Draft WNMP in-combination with other plans and programmes are difficult to meaningfully or accurately assess. However, the screening assessment indicates that implementation of the revised Draft WNMP in-combination with the plans and programmes listed in **Appendix D** would generate cumulative significant positive effects on the SA criteria in most cases. This reflects the aim of the revised Draft WNMP to deliver sustainable development of Wales' marine area and the expectation that the policies of the plan will complement, reinforce, support and help guide the delivery of the other plans' and programmes' objectives, particularly in terms of environmental conservation and enhancement, climate change mitigation and adaptation and economic growth.

It is not predicted that the revised Draft WNMP would create conflict with the objectives of the other plans and programmes identified. New development or activity in the marine area supported by the sector policies of the revised Draft WNMP could, however, have cumulative negative effects in-combination with those plans and programmes that also promote development in the coastal area (such as local development plans). Cumulative negative effects in this regard could relate to, for example:

- biodiversity, due to increased visitor pressure and marine litter;
- landscape and seascape, as a result of development both offshore and at the coast;
- climate change, as a result of increased greenhouse gas emissions associated with new development;
- air quality, principally due to increased vehicle/vessel movements and construction activity; and
- waste and resource use, due to an anticipated cumulative increase in waste arisings associated with new development and the requirement for materials in the construction of new development.

However, effects in this regard will be avoided/minimised through the policy measures contained within the revised Draft WNMP (including, in particular, Policy GOV_01 concerning the assessment, avoidance, minimisation and mitigation of cumulative adverse effects arising from proposals and Policy GOV_02 which relates to cross-border and plan compatibility) and across the other plans and programmes listed in **Appendix D**. In this context, no significant negative cumulative effects have been identified. The exception to this is the effect of the revised Draft WNMP in-combination with offshore licensing rounds administered by the UK Oil and Gas Authority on resources (SA Criteria 10) and in particular oil and gas. However, as Policies O&G_01 and O&G_02 of the revised Draft WNMP relate specifically to proposals for oil and gas exploration and production in existing and future blocks licensed by the UK Government, these effects have already been considered above and are therefore not repeated here.

It should be noted that there does remain some residual uncertainty with respect to the probability of adverse cumulative effects occurring and their magnitude (i.e. whether effects are significant or minor) which will be in part dependent on the exact type, scale and location of future development supported by the WNMP and other plans and programmes in the context of the sensitivity/capacity of the receiving environment and ecosystem resilience.

3.7 Cross-border Effects

In Section 4.7 of the SA Report, consideration is given as to whether the Draft WNMP is likely to give rise to cross-border effects (i.e. effects beyond the plan area). This assessment has been updated to reflect the changes to Draft WNMP and is presented below.

The revised Draft WNMP does not delineate specific resource areas which would benefit from support under the plan; however, some marine resources and potential areas of activity are located in close proximity/adjacent to Wales' border with England, including the Severn Estuary and Liverpool Bay. In consequence, there is the potential for impacts to affect receptors in the English marine area and beyond.

The construction, operation and decommissioning of renewable energy development especially could give rise to cross-boundary impacts, particularly in respect of biodiversity (SA Criteria 1), due to (inter alia) effects on mobile species and loss of habitat (for example, associated with the operation of tidal stream schemes) and water (SA Criteria 2) and the physical environment (SA Criteria 3), due to changes to hydrodynamics and sediment transport and discharges. There is also the potential for cross-border effects on landscape and seascape (SA Criteria 5) due to the introduction of built form into landscapes/seascapes and views. However, these effects are considered unlikely to be significant, with the exception of wind development. Depending on the scale and location, there is the potential for adverse effects to be significant where wind developments are visible from protected areas, although this could be avoided through siting of proposals.

Notwithstanding the potential adverse cross-border effects identified, the existing regulatory regime and the provisions of the general cross-cutting policies of the WNMP, including Policy GOV_02 in particular, will help to avoid, minimise or mitigate significant negative effects where possible. As the WNMP is implemented and its effects monitored, it will be possible to consider further any cross-border effects, including the effects of the plan in-combination with marine plans prepared by surrounding administrations.

3.8 Contribution of the Revised Draft WNMP to Wales' Well-being Goals and the Objective for SMNR

The Well-being of Future Generations (Wales) Act 2015 places a duty on public bodies to carry out sustainable development aimed at achieving the seven well-being goals for Wales. The well-being goals established by the Act are as follows:

- a prosperous Wales;
- a resilient Wales;
- a healthier Wales;
- a more equal Wales;
- a Wales of cohesive communities;
- a Wales of vibrant culture and thriving Welsh language; and
- a globally responsible Wales.

The Environment (Wales) Act 2016, meanwhile, has established an objective for SMNR *"to maintain and enhance the resilience of ecosystems and the benefits they provide and, in so doing—*

> *(a) meet the needs of present generations of people without compromising the ability of future generations to meet their needs, and*
>
> *(b) contribute to the achievement of the well-being goals in section 4 of the Well-being of Future Generations (Wales) Act 2015".*

The well-being goals and SMNR objective have been mapped to the SA criteria that comprise the SA Framework. Through the appraisal of the WNMP policies against the SA criteria, it is therefore possible to assess the contribution that the implementation of the plan would make to the achievement of the goals and objective. This assessment is presented in Section 4.7 of the SA Report and has been updated to reflect the changes to the Draft WNMP.

The updated assessment is presented in **Table 3.7**. Informed by the appraisal of the general cross-cutting policies and sector policies against the SA criteria (as summarised in the preceding sections), a judgement has been made regarding whether, and the extent to which, the revised Draft WNMP would support or

detract from the achievement of each well-being goal (and by extension, the SMNR objective) in-turn with commentary provided to justify the conclusions reached.

Table 3.7 Assessment of the Contribution of the Revised Draft WNMP to the Well-being Goals for Wales

Well-being Goals	Related SA Criteria	Contribution to the Well-being Goal	Commentary
A prosperous Wales: An innovative, productive and low carbon society which recognises the limits of the global environment and therefore uses resources efficiently and proportionately (including acting on climate change); and which develops a skilled and well-educated population in an economy which generates wealth and provides employment opportunities, allowing people to take advantage of the wealth generated through securing decent work.	SA Criteria 1, 2, 3, 6, 7, 8, 9, 10, 11, 12, 14	++/-/?	Through the sector policies, the revised Draft WNMP safeguards existing activity and promotes blue growth across several key sectors. This will to help maintain and enhance Wales' marine economy and its contribution to national GVA, in-turn generating benefits for coastal communities. In this regard, Policies ECON_01 and SOC_02 specifically encourage proposals that contribute to the well-being of coastal communities and that: create local employment opportunities; generate wealth; allow people to take advantage of the wealth; protect and create employment at all skill levels; and tackle poverty by supporting deprived coastal communities. Through both the general cross-cutting policies and sector policies, the revised Draft WNMP promotes climate change mitigation and adaptation and supports growth in the low carbon sector. The policies of the plan are therefore likely to help ensure the sustainable management of resources in the marine environment. The appraisal of the sector policies against the SA criteria has highlighted the potential for direct and indirect adverse environmental effects associated with new development and activity. It is also anticipated that economic growth in the marine area will result in an increase in both the extraction of non-renewable resources (such as aggregates and oil and gas) and resource use (associated with the construction, operation and decommissioning of development). However, the general cross-cutting policies of the revised Draft WNMP seek to manage these effects and in consequence, it is expected that significant adverse effects will be largely avoided/minimised, although some uncertainty remains. **Overall, the revised Draft WNMP has been assessed as making a mixed significant positive and minor negative contribution to the well-being goal 'A prosperous Wales'.**
A resilient Wales: A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).	SA Criteria 1, 2, 3, 4, 5, 6, 9, 10, 11, 14	++/-/?	The general cross-cutting policies of the revised Draft WNMP, and particularly those under the theme of 'Living Within Environmental Limits', support the conservation and enhancement of the marine environment and the biodiversity it supports. Policy ENV_01 specifically requires that proposals demonstrate how they contribute to the protection, restoration and/or enhancement of marine ecosystems. Policies SOC_08, SOC_09, SOC_11 and SOC_12, meanwhile, support climate change adaptation and resilience. The appraisal of the sector policies against the SA criteria has identified the potential for direct and indirect adverse environmental effects associated with new development and activity. This includes negative effects on biodiversity, water quality and the physical environment which together support

Well-being Goals	Related SA Criteria	Contribution to the Well-being Goal	Commentary
			healthy ecosystems. However, the general cross-cutting policies of the revised Draft WNMP are expected to help avoid, minimise or mitigate significant adverse effects associated with new development or activity, although some uncertainty remains. **Overall, the revised Draft WNMP has been assessed as making a mixed significant positive and potentially negative contribution to the well-being goal 'A resilient Wales'.**
A healthier Wales: A society in which people's physical and mental well-being is maximised and in which choices and behaviours that benefit future health are understood.	SA Criteria 1, 2, 3, 4, 5, 6, 9, 12, 12, 14	**++/-/?**	The general cross-cutting policies of the revised Draft WNMP seek to conserve and enhance water and air quality, minimise noise and promote climate change adaptation which is expected to help protect human health. Policy SOC_02 stipulates that proposals that contribute to the well-being of coastal communities are encouraged. Alongside policies which seek to improve access to the marine environment (see Policy SOC_01, for example) and promote recreation and tourism opportunities (Policy T&R_01), this is expected to help promote healthy lifestyles. Wales' seas provide an important source of food and in consequence, those sector policies relating to aquaculture and fisheries are likely to promote human health. The appraisal of the sector policies has highlighted the potential for development in the marine area to result in adverse impacts on human health due to, for example, noise, disturbance and emissions to air caused by construction activity at the coast. However, the general cross-cutting policies of the revised Draft WNMP seek to manage these effects and in consequence, it is expected that significant adverse effects will be largely avoided/minimised, although some uncertainty remains. **Overall, the revised Draft WNMP has been assessed as making a mixed significant positive and negative contribution to the well-being goal 'A healthier Wales'.**
A more equal Wales: A society that enables people to fulfil their potential no matter what their background or circumstances (including their socio economic background and circumstances).	SA Criteria 8, 9, 12, 13, 14	**++**	Blue growth in the sectors supported by the revised Draft WNMP has the potential to provide employment and training opportunities that benefit Wales' coastal communities (which include pockets of deprivation, particularly in some northern coastal towns). Policies ECON_01 and SOC_02 specifically encourage proposals that contribute to the well-being of coastal communities and that contribute to: • a more resilient economy; • employment opportunities particularly for coastal communities; protecting and creating employment at all skill levels; • maintaining communities with a high-density of Welsh speakers; and/or • tackling poverty by supporting deprived coastal communities. **Overall, the revised Draft WNMP has been assessed as making a significant positive contribution to the well-being goal 'A more equal Wales'.**

Well-being Goals	Related SA Criteria	Contribution to the Well-being Goal	Commentary
A Wales of cohesive communities: Attractive, viable, safe and well-connected communities.	SA Criteria 5, 7, 8, 9, 12, 13, 14	++	As highlighted above, Policy SOC_02 of the revised Draft WNMP specifically encourages proposals that contribute to the well-being of coastal communities. Those general cross-cutting policies of the Draft WNMP that seek to conserve and enhance heritage (Policy SOC_05) and seascapes (Policy SCO/07), meanwhile, are expected to help maintain and enhance the attractiveness of coastal areas. The revised Draft WNMP sector policies protect existing, and support proposals for new, digital communications infrastructure and ports and harbours that will help to maintain and enhance the connectivity of both Wales' coastal communities and the nation as a whole. **Overall, the revised Draft WNMP has been assessed as making a significant positive contribution to the well-being goal 'A Wales of cohesive communities Wales'.**
A Wales of vibrant culture and thriving Welsh language: A society that promotes and protects culture, heritage and the Welsh language, and which encourages people to participate in the arts, and sports and recreation.	SA Criteria 1, 5, 7, 8, 9, 14	++/-/?	The general cross-cutting policies of the revised Draft WNMP seek to conserve and enhance heritage assets that make an important contribution to Welsh culture (Policy SOC_05) and encourage proposals that contribute to the conservation and promotion of Welsh language and culture (Policy SOC_04). The protection/promotion of the fisheries sector through the safeguarding policies and Policies FIS_01 and ENV_07 of the Draft WNMP is likely to make a positive contribution to the conservation and enhancement of the cultural identify of Wales' coastal communities. Economic development and associated job creation in the marine area has the potential to help retain populations of local, Welsh speakers and to attract Welsh speakers back to coastal communities. Whilst there is the potential that economic growth in the marine area could result in an influx of non-Welsh speakers to Welsh speaking communities (which could adversely affect Welsh language and culture), on balance the policies of the revised Draft WNMP are considered likely to make a positive contribution to Welsh language and culture in this regard, although some uncertainty remains. This conclusion reflects the findings of the Welsh Language Impact Assessment prepared in support of the revised Draft WNMP which states that "*support for proposals for economically sustainable activities where they contribute to maintaining communities with a high density of Welsh speakers should have a positive effect in terms of retaining Welsh speakers in their home communities*." Policy SOC_01 seeks to improve access to the marine environment whilst Policy T&R_01, in-combination with the safeguarding policies of the plan, concern the protection and development of tourism and recreation opportunities. This is expected to help encourage participation in marine-related sports and recreation such as walking, canoeing and sailing. The general cross-cutting policies of the revised Draft WNMP, and particularly those under the theme of 'Living Within Environmental Limits', support the conservation and enhancement of the marine environment and the biodiversity it supports. The marine

Well-being Goals	Related SA Criteria	Contribution to the Well-being Goal	Commentary
			environment, including its biodiversity and seascape, are important elements of Wales' culture and supports recreation. The construction, operation and decommissioning of development in the marine area could have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage and the natural marine environment. However, the general cross-cutting policies of the revised Draft WNMP seek to manage these effects and in consequence, it is expected that significant adverse effects will be largely avoided/minimised, although some uncertainty remains. **Overall, the revised Draft WNMP has been assessed as making a mixed significant positive and minor negative contribution to the well-being goal 'A Wales of vibrant culture and thriving Welsh language'.**
A globally responsible Wales: A nation which, when doing anything to improve the economic, social, environmental and cultural well-being of Wales, takes account of whether doing such a thing may make a positive contribution to global well-being.	SA Criteria 1, 4, 6, 10, 11, 12, 14	+	As demonstrated in the commentary above, the policies of the revised Draft WNMP are expected to help conserve and enhance marine ecosystems and contribute to climate change mitigation and adaptation, although any contribution to global well-being in this regard is expected to be limited given the geographic and functional scope of the Draft WNMP. **Overall, the revised Draft WNMP has been assessed as making a positive contribution to the well-being goal 'A globally responsible Wales'.**

Key

Symbol	Effect
+ +	The revised Draft WNMP is likely to make a significant positive contribution to the achievement of the well-being goal.
+	The revised Draft WNMP is likely to make a minor positive contribution to the achievement of the well-being goal.
0	The revised Draft WNMP will not make a positive or negative contribution to the achievement of the well-being goal.
-	The revised Draft WNMP is likely to have a minor negative impact on the achievement of the well-being goal.
--	The revised Draft WNMP is likely to have a significant negative impact on the achievement of the well-being goal.
?	The relationship between the revised Draft WNMP and the well-being goals is uncertain.

*Note: where more than one symbol is presented in a box it indicates that the assessment has found more than one score for the category. Where the scores are both positive and negative, hatching has been used. Where a box is coloured but also contains a ?, this indicates uncertainty over whether the effect could be a minor or significant effect or where there remains uncertainty over whether an effect could arise. A conclusion of uncertainty arises where there is insufficient evidence for expert judgement to conclude an effect.

The overarching plan objective of the revised Draft WNMP is to "*Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, supporting the Sustainable Management of Natural Resources (SMNR) by taking account of the cumulative effects of all uses of the marine environment*". Reflecting this objective, the assessment presented in **Table 3.7** demonstrates that the revised Draft WNMP policies are likely to make a significant positive contribution to the achievement of the seven well-being goals for Wales, supporting the objective for SMNR.

The revised Draft WNMP seeks to deliver blue growth which is underpinned by the principles of sustainable development. Development and use of the marine area will unavoidably require the use of natural resources and could result in some adverse environmental effects that would need to be considered carefully in the context of the well-being goal 'A resilient Wales'. However, the general cross-cutting policies of the revised Draft WNMP seek to avoid, minimise or mitigate significant adverse effects associated with new development or activity and will help to ensure the sustainable management of natural resources.

The Environment (Wales) Act 2016 introduces a number of principles that underpin the achievement of SMNR. These principles, which are to be applied equally, have guided the development of the revised Draft WNMP. It is outside the scope of this SA to consider exactly how the plan has been developed in accordance with these principles and it is recommended that the Welsh Government gives further consideration with regard to how best to ensure and demonstrate the integration of SMNR principles in the process of plan development and future marine spatial planning decisions.

3.9 Mitigation

As highlighted in **Section 1.3**, the SA has been undertaken iteratively alongside the development of the Draft WNMP in order to enhance its sustainability performance. The appraisal of the Draft WNMP identifies measures to help address potential negative effects and enhance positive effects associated with the implementation of the WNMP; these measures are highlighted within the detailed appraisal matrices contained in Appendices D and E of the SA Report.

Where appropriate, measures to mitigate adverse effects and enhance positive effects are identified in the (re)appraisal of the general cross-cutting and sector policies contained in **Appendix C** of this addendum as well as in **Section 3.2** (in respect of the plan objectives). However, it is understood that the opportunity to make any further changes to the revised Draft WNMP is exceptionally limited, and in consequence, it is recommended that any residual proposals for mitigation and enhancement are considered by the Welsh Government as part of the ongoing marine planning process, including the formal review of the WNMP.

It should be noted that, where negative effects have been identified during the appraisal, these primarily relate to the promotion of new development and activity in the marine area. The general cross-cutting policies of the revised Draft WNMP provide a strong framework to manage such impacts and it is against the provisions of these policies that proposals will be determined (as appropriate) under statutory regulatory processes. Further, activities in the marine environment are heavily regulated and the environmental impacts of proposals would be assessed and appropriately addressed at the individual project stage.

3.10 Reasonable Alternatives

One alternative to the Draft WNMP was identified as 'reasonable' and taken forward for appraisal in the SA Report, namely a 'High level strategic Draft WNMP'. For the purposes of the SA, it was assumed that the

'High level strategic Draft WNMP' would still provide sector-specific policy but would not identify SRAs. The appraisal of this reasonable alternative was presented in Section 4.10 of the SA Report which concluded:

> "*The appraisal of the high level strategic Draft WNMP alternative suggests that, overall, the range and type of effects on the SA criteria associated with its implementation would be very similar to those identified in respect of the Draft WNMP as proposed. This reflects the expectation that a high level strategic Draft WNMP would contain the same general cross-cutting policies. However, the appraisal has highlighted that the absence of sector-specific SRAs would, relative to the Draft WNMP as proposed, result in a higher level of uncertainty with regard to the magnitude of effects across the majority of the SA criteria. This alternative would also likely reduce the value and utility of the WNMP as it is more likely to describe (as opposed to manage) sustainable development*."

In response to consultation on the Draft WNMP, the SRAs have been deleted from the plan and therefore the alternative of a 'High level strategic Draft WNMP' has now been taken forward. However, it should be noted that there remains a commitment in the revised Draft WNMP to the future identification of SRAs in a MPN, supported by Policy SAF_02 which states that "*Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use*".

In this context, the intent of the SRAs will be to safeguard strategic resources although the plan makes clear that, where there is good confidence, SRAs may in the future identify areas for sustainable use. In consequence, the increased uncertainty resulting from a lack of spatial specificity associated with this alternative that was identified in the SA Report is likely to reduce over time as SRAs are identified.

As detailed in **Appendix A**, several respondents to consultation on the Draft WNMP highlighted the need for the SA to consider a broader range of reasonable alternatives, including:

- no plan;
- a national plan with the current level of spatial and sectoral detail but more environmentally focussed;
- as above but with an economic focus;
- as above but with a social focus;
- a highly prescriptive and spatial plan with increased use of zoning; and
- a two-tiered planning approach with local/subnational plans underneath a national plan.

These alternatives were considered in preparing the Draft WNMP and during the SA process. However, following the application of the reasonableness test in compliance with Article 5(1) of the SEA Directive, they were not taken forward for appraisal as reasonable alternatives. Section 2.5 of the SA Report provides further detail in respect of these alternatives and the rationale for their rejection.

4. Conclusions and Next Steps

4.1 Conclusions

This addendum to the Draft WNMP SA Report been prepared in order to take account of, and appraise, the changes to the plan. In light of the changes to the Draft WNMP, which have been considered and appraised in **Section 3** of this report, the conclusions of the SA Report have been reviewed and updated and are presented in the subsections below.

The Likely Significant Effects of the Revised Draft WNMP

Significant Positive Effects

Overall, the appraisal has found that the implementation of the revised Draft WNMP policies will have positive effects on the majority of the SA criteria. Reflecting the breadth of the revised Draft WNMP policies, significant positive effects are expected in respect of all the SA criteria with the exception of air quality (SA Criteria 4) and Welsh language (SA Criteria 8), for which effects have been assessed as positive. This broadly reflects the likely socio-economic benefits that supporting economic activity in the marine area is likely to deliver and the strong framework provided by the plan policies that will help to conserve and enhance Wales' marine environment and support SMNR.

Wales is ideally suited for the establishment of a successful and competitive marine energy industry. The generation of renewable energy is strongly supported by the general cross-cutting policies and, through their support for growth in the low carbon sector, carbon capture and storage and electricity distribution, by the sector policies. The sector policies additionally support strategic planning in respect of offshore wind, wave energy, tidal stream and tidal range in order to understand future opportunities for the deployment of these technologies. This is reflected in the significant positive effects identified for climate change (SA Criteria 6) and resources (SA Criteria 10).

Policy AGG_01 is expected to lead to the more sustainable management of marine aggregates including through support for the identification and review of permitted tonnage limits. Reflecting the importance of marine dredged sand and gravel to Wales, and taking into account the potential for new extraction to meet demand for aggregates over the plan period, Policy AGG_01 has been assessed as having a significant positive effect on SA Criteria 10 (noting also the significant negative effect on the same criteria recorded below).

Policy O&G_01b seeks to avoid the development and extraction of oil and gas in areas that fall within the Welsh onshore licence area, with the exception of proposals for mine safety or scientific purposes. This reflects the Welsh Government's commitment to moving towards a low-carbon Wales, and the long-term aim of removing fossil fuels from the energy mix. During this transition, fossil fuel resources (including oil and gas) and options for the capture and storage of waste carbon dioxide in geological formations will continue to play an important role in the energy mix. Key considerations in the continued reliance on fossil fuels include climate change, energy security, cost of energy to businesses and consumers and environmental impact. In this context, Policy O&G_01 is assessed as having significant positive effect on SA Criteria 10 (noting the significant negative effect on the same criteria below).

The Welsh coastline and seas support a wide range of economic activities across a number of sectors. The revised Draft WNMP promotes blue growth (including tourism) and identifies significant scope for future growth in certain sectors over the plan period. Reflecting the intent of the sector policies to safeguard existing economic activity in the marine area whilst encouraging sector productivity and growth, the revised Draft WNMP is therefore expected to help maintain and enhance Wales' marine economy (including the

visitor economy) and its contribution to national GVA. Whilst it is not possible to quantify the effect of the revised Draft WNMP upon sector growth, the scale of potential future growth of some sectors is significant, in particular the low carbon sector. This is reflected in the significant positive effects identified for tourism and recreation (SA Criteria 9) and the economy (SA Criteria 11).

Linked to the strong policy support for blue growth, the revised Draft WNMP policies are expected to encourage proposals for economic development that generate local employment opportunities and wealth, tackle deprivation and increase skills, delivering potentially substantial benefits to Wales' coastal communities. In this regard, the plan may contribute towards addressing the issues highlighted in the 2014 Welsh Index of Multiple Deprivation regarding deprivation in some coastal areas. This is reflected in the significant positive effects identified for well-being (SA Criteria 12).

The strong performance of the revised Draft WNMP in terms of governance (SA Criteria 14) reflects in particular the emphasis of the general cross-cutting policies on the consideration of cumulative effects, adaptive management and the application of an evidence-based analysis in decision making. It also reflects the expectation that the implementation of the sector policies will promote research and engagement on marine planning issues and help further understanding of future development opportunities and constraints to growth, including through the identification of SRAs. This is particularly pertinent given that the WNMP is the first marine plan for Wales and represents the start of a systematic process of shaping Wales' seas through marine planning to support economic, social and environmental objectives.

Significant Negative Effects

Policy ELC_01 has been assessed as having a significant negative effect on landscape and seascape (SA Criteria 5) due to the support for offshore wind development, which has the potential for adverse impacts on seascape character. However, there are a number of inherent uncertainties relating to the scale and location of development, the baseline environmental characteristics of development locations and the potential for project-level mitigation to implemented (in accordance with the policies of the revised Draft WNMP) to reduce the magnitude of adverse effects in this regard.

In addition to the effects identified above, Policies AGG_01 and O&G_01 have been assessed as having a cumulative significant negative effect in respect of resources (SA Criteria 10). The winning of marine aggregates (Policy AGG_01) would unavoidably result in the depletion of non-renewable resources. The continued extraction of hydrocarbon reserves in existing and future licensed blocks in offshore areas under Policy O&G_01a, meanwhile, would result in the direct loss of a primary natural resource that is non-renewable (whilst the policy aims to maximise the return from existing wells and undertake efficient recovery, resources (including energy, water and aggregates) would still be required to support the construction, operation and decommissioning of oil and gas facilities).

Policy SAF_01 has also been assessed as having a significant negative effect on resources (SA Criteria 10) (albeit with a significant positive effect recorded against the same criteria). This reflects the fact that, whilst the policy safeguards resources within the plan area (with associated benefits for those sectors covered by the WNMP), this is likely to lead to the future use of non-renewable resources (with associated negative environmental effects).

Contribution of the Revised Draft WNMP to the Well-being Goals for Wales and Objective for SMNR

In addition to considering the effects of the revised Draft WNMP on the SA criteria, an assessment has been undertaken of the contribution that the plan is likely to make to the achievement of the well-being goals established in the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR set out in the Environment (Wales) Act 2016.

The overarching plan objective of the revised Draft WNMP is to "*Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, supporting the Sustainable Management of Natural Resources (SMNR) by taking account of the cumulative effects of all uses of the marine environment*". Reflecting this objective, the assessment demonstrates that the revised Draft WNMP policies are likely to make a significant positive contribution to the achievement of the seven well-being goals for Wales, supporting the objective for SMNR.

The revised Draft WNMP seeks to deliver blue growth which is underpinned by the principles of sustainable development. Development and use of the marine area will unavoidably require the use of natural resources and could result in some adverse environmental effects that would need to be considered carefully in the context of the well-being goal 'A resilient Wales'. However, the general cross-cutting policies of the revised Draft WNMP seek to avoid, minimise or mitigate significant adverse effects associated with new development or activity and will help to ensure the sustainable management of natural resources.

4.2 Reasons for Selecting the Revised Draft WNMP and Rejecting the Draft WNMP

As set out in **Section 3.10**, one alternative to the Draft WNMP was identified as 'reasonable' and taken forward for appraisal in the SA Report, namely a 'High level strategic Draft WNMP'. Through the changes to the Draft WNMP, SRAs have now been removed from the plan and therefore the alternative of a 'High level strategic Draft WNMP' has now been taken forward (although there remains a commitment in the revised Draft WNMP to the future identification of SRAs in a MPN).

The removal of SRAs, and therefore the selection of the 'High level strategic Draft WNMP' alternative and rejection of a WNMP including SRAs (the Draft WNMP), is principally in respect to consultation comments received on this aspect of the Draft WNMP which raised a number of issues in respect of the SRA approach including (inter alia):

- ambiguity on the definition and application of SRAs in decision making;
- perceived prioritisation of economic growth over biodiversity conservation;
- the need to incorporate consideration of environmental opportunities, sensitivities and constraints when identifying SRAs;
- a lack of evidence to support the identification of SRAs; and
- the need for stakeholder engagement in the identification of SRAs.

Despite the removal of SRAs from the Draft WNMP, it should be noted that there remains a commitment in the revised Draft WNMP to the future identification of SRAs in a MPN. The intent of SRAs will be to safeguard strategic resources although the plan makes clear that, where there is good confidence, SRAs may in the future identify areas for sustainable use. In consequence, the increased uncertainty associated with this alternative that was identified in the SA Report is likely to reduce over time as SRAs are identified.

4.3 Recommendations

Based on the appraisal of the Draft WNMP, Section 5.3 of the SA Report identifies a number of recommendations which could be considered by the Welsh Government in working towards the preparation of future marine plans. In light of the changes to the Draft WNMP, the recommendations have been updated and are presented below

- **Resolving uncertainties**: The appraisal of the revised Draft WNMP has highlighted that, despite the existing regulatory framework and policy provisions of the plan, there remains

some residual uncertainty with respect to the probability of effects occurring and their magnitude which will be in part dependent on the exact type, scale and location of future development in the context of the sensitivity/capacity of the receiving environment. The development of future marine plans presents an opportunity to resolve these uncertainties through the development of the evidence base and ongoing monitoring and in this regard, it is noted that the revised Draft WNMP includes a number of policies that concern the development of the marine evidence base and identification of SRAs. It is recommended that the Welsh Government develops a programme for further research which may focus on, for example:

- the environmental capacity of, and constraints and opportunities associated with, possible SRAs to accommodate development for different sectors;
- the value of marine ecosystems and the goods and services they provide;
- the quantity, quality and distribution of natural resources in the marine area and their capacity to support sustainable development;
- the potential environmental impacts of new development and activity in the marine area with particular emphasis on renewable energy development;
- the opportunities to avoid, manage and mitigate significant adverse impacts associated with new development and activity in the marine area;
- the potential conflicts and synergies that exist between marine users, activities and the environment and how these relate to Wales' well-being goals;
- the cumulative effects of implementing the WNMP both alone and in-combination with other plans and programmes including the marine plans of surrounding administrations;
- the opportunities for delivering social, economic and environmental benefits and to support the achievement of Wales' wellbeing goals through development and use of the marine environment.

Any research programme should be developed in liaison with key stakeholders and be delivered through collaboration and engagement including across borders. Research should draw upon experience gained through the consenting, development, operation and decommissioning of proposals in order to inform future decision making and policy.

- **Identifying targets**: Evidence on capacity may permit the identification of targets in future marine plans. Such targets may relate to, for example, the number of jobs to be created over the plan period, the volume of aggregates to be produced or the amount of low carbon energy to be generated. This could help provide greater clarity in terms of the intended outcomes of future plans, support future monitoring and prevent the over-exploitation of resources.
- **Providing supplementary locational guidance**: MPNs and Implementation Guidance could usefully detail, and provide direction on, the priorities, constraints and opportunities within each SRA (once identified). Alternatively, this guidance could be set out in Area Statements to be developed by Natural Resources Wales in accordance with the Environment (Wales) Act 2016. The Welsh Government may also wish to consider whether additional supplementary guidance on specific topics or sectors could be developed in order to provide further detail in respect of the policies of the WNMP and ensure that they are understood and applied effectively. Welsh Government should also consider whether Implementation Guidance and MPNs need to be screened against the requirements for SA/SEA and HRA to ensure that any likely significant effects are identified, described and evaluated and opportunities for mitigation/enhancement identified and actioned.

- **Reviewing policy effectiveness**: Ongoing monitoring of the WNMP's implementation should be used to review the effectiveness of the plan policies in delivering sustainable development of the Welsh seas. In evaluating the effectiveness of plan policies, it will be important for the Welsh Government to consult the Marine Licensing Team and other plan users and for learning to inform the plan monitoring and reporting process.
- **Ensuring that marine spatial planning decisions are consistent with the SMNR principles and contribute to Wales' well-being goals**: The Well-being of Future Generations (Wales) Act 2015 places a duty on public bodies to carry out sustainable development aimed at achieving the seven well-being goals for Wales. The Environment (Wales) Act 2016, meanwhile, introduces a number of principles that underpin the achievement of SMNR. It is recommended that the Welsh Government gives further consideration with regard to how best to ensure and demonstrate the integration of SMNR principles and Wales' well-being goals in the process of future plan development and marine spatial planning decisions in order to ensure that it meets it duty to carry out sustainable development. This could be achieved through the preparation of a checklist(s) and associated guidance, for example.

4.4 Next Steps

Following finalisation of the WNMP, the plan will be subject to independent investigation if required[38]. The plan will then be adopted and published by The Welsh Ministers with the agreement of the UK Secretary of State for Environment, Food and Rural Affairs (because the plan contains provision relating to retained functions).

The Welsh Government will issue a Post Adoption Statement as soon as reasonably practicable after the adoption of the WNMP. The Post Adoption Statement will summarise how the SA and consultation responses have been taken into account and how socio-economic and environmental considerations have been integrated into the final decisions regarding the WNMP.

In accordance with the statutory requirement (MCAA s.61) and the SEA Directive, during the period of the WNMP, the Welsh Government will monitor its implementation and any significant social, economic and environmental effects. Consistent with the requirements of the MCAA, Welsh Government will report at least every three years on the effects of policies in this plan. With regards to meeting the requirements of the SEA Directive, Appendix G to the SA Report identifies a number of potential indicators that could be used for monitoring the sustainability effects of the WNMP. This list is provisional and indicative only and a final monitoring framework will be presented in the Post Adoption Statement.

[38] Section 13 of Schedule 6 'Marine Plans; Preparation and Adoption' of the Marine and Coastal Access Act 2009.

Appendix A
Summary of SA Report Consultation Responses

Comments received on the SA Report were wide ranging, covering all aspects of the report including the methodology, findings of the appraisal, recommendations and monitoring proposals. Regarding the methodology adopted for the SA (as detailed in Section 3 of the SA Report), comments related to:

- the assumptions underpinning the SA and in particular the extent to which the general cross-cutting policies and project-level assessment will be effective in mitigating the adverse impacts identified in the appraisal;
- the scoping of cross-boundary effects and the need to consider cross-boundary socio-economic effects;
- the need for greater clarity with respect to how environmental limits to the plan area have been assessed;
- the combining of SEA topics, the perceived 'balancing' of socio-economic and environmental effects and the need for a separate SEA Environmental Report;
- the definitions of significance that have been used to guide the SA;
- the need to consider how the Draft WNMP performs against the principle of SMNR;
- the need for greater stakeholder involvement in future assessments and the incorporation of ecosystem services assessment; and
- the need for an internal compatibility analysis of the Draft WNMP, highlighting synergies and potential areas of tension between the plan's vision, objectives and policies.

Several respondents also highlighted the need for the SA to consider a broader range of reasonable alternatives to the Draft WNMP, including:

- no plan;
- a high level national plan only;
- the current national plan as proposed;
- a national plan with the current level of spatial and sectoral detail but more environmentally focussed;
- as above but with an economic focus;
- as above but with a social focus;
- a highly prescriptive and spatial plan with increased use of zoning; and
- a two-tiered planning approach with local/subnational plans underneath a national plan.

The majority of responses received relating to the findings of the SA concerned the effects identified in respect of the tidal lagoon element of Policy ELC_01. The comments received concerned (inter alia):

- the need to consider the effects of renewable energy development on the ports and shipping sector;

- the prominence of effects of tidal lagoons in the context of Ecologically Coherent Networks of marine protected sites:
- the need to more fully consider the cumulative impacts of multiple tidal lagoon projects; and
- the extent to which some of the effects identified in respect of tidal lagoons may be significant (for example, in terms of salinity and increased water temperature) and/or uncertain given that the technology and the measures required to mitigate impacts are well understood.

Other comments relating to the findings of the SA concerned the need for greater consideration of: effects on landscapes and seascapes; effects of aquaculture on biodiversity and the effects on marine energy development if located in the military Castlemartin and Manorbier MOD firing areas off the south coast of Pembrokeshire.

Respondents generally agreed with the SA Report's recommendations (Section 5.3), including ensuring marine planning decisions are consistent with the SMNR principles and undertaking further research to resolve the uncertainties identified in the appraisal. Some respondents suggested that further detail could be provided in respect of how environmental effects could be mitigated through refinement of policies and SRAs and targets. One respondent also considered that would be a need for further specific supplementary guidance to support the implementation of the WNMP.

A number of respondents felt that further work is required in respect of monitoring, taking into account the challenges of different reporting cycles, choice of monitoring indicators, practicalities and robustness of monitoring and roles and responsibilities.

Appendix B
Screening of Policy Changes

Table B.1 Proposed Changes to the Objectives

High Level Marine Objective Theme		Draft WNMP Objective	Is the change significant for the purposes of the SA?	Comment
Overarching	1	Support the sustainable development of the Welsh marine area by contributing across Wales' well-being goals, ~~ensuring~~ supporting the Sustainable Management of Natural Resources (SMNR) through decision making and by taking account of the cumulative effects of all uses of the marine environment.	No.	The amendment does not have a significant effect on the purpose or scope of the objective. The wording change is considered to more accurately reflect the limits that the influence of an objective of a spatial plan can have in supporting the delivery of SMNR. The inclusion of the reference to decision making in connection to SMNR addresses the potential gap created by the previous draft objective 13.
Achieving a sustainable marine economy	2	Contribute to a thriving Welsh economy by encouraging economically productive activities and profitable and sustainable businesses that create long term employment at all skill levels.	No.	No change.
	3	~~Maximise~~ Support the opportunity to sustainably develop marine renewable energy resources with the right development in the right place, helping to achieve the UK's energy security and carbon reduction objectives, whilst fully considering other's interests and ecosystem resilience.	No.	The amendment does not have a significant effect on the purpose or scope of the objective. The wording change is considered to more accurately reflect the limits that the influence of an objective of a spatial plan can have in the development of marine renewable energy resource.
	4	Provide space to support existing and future sustainable economic activity through managing multiple uses, encouraging the coexistence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing the displacement of existing activities.	No.	No change.
	5	Recognise the significant value of coastal tourism and recreation to the Welsh economy and well-being and ensure such activity and potential for future growth are appropriately safeguarded.	Yes.	New objective. The amendment is considered a significant addition to the objectives, broadening the scope to explicitly include recognition and support for recreation and the tourism sector.
Ensuring a	6	~~Reduce poverty and support~~ Contributing to supporting the development of vibrant, more equitable, culturally and	No.	The amendment does not have a significant effect on the purpose or scope of the objective. The wording change is considered to more accurately reflect the

High Level Marine Objective Theme		Draft WNMP Objective	Is the change significant for the purposes of the SA?	Comment
		linguistically distinct, cohesive and resilient coastal communities.		limits that the influence of an objective of a spatial plan can have in supporting the development of coastal communities.
	7	Support enjoyment and stewardship of our coast and seas and their resources by encouraging equitable and safe access to the marine environment, whilst protecting and promoting valuable landscapes, seascapes and ~~heritage~~ historic assets.	No.	The amendment is for clarification and is not considered significant for the purposes of the objective.
	8	Improve understanding and enable action supporting climate change adaptation and mitigation.	No.	No change.
Living within environmental limits	9	Support the achievement and maintenance of Good Environmental Status (GES) and Good Ecological Status (GeS).	No.	The original objective supporting GES (under the Marine Strategy Framework Directive (MSDF)) already included factors that would be considered for GeS (under the Water Framework Directive (WFD)) e.g. biodiversity, ecosystems, and physical and chemical conditions. The amendment, whilst importantly clarifying the objective's support to both the MSDF and WFD, however, does not significantly extend the scope of issues covered under the objective, and so is not considered to have a significant effect.
	10	Protect, conserve, restore and enhance marine biodiversity to halt and reverse its decline including supporting the development and functioning of a well-managed and ecologically coherent network of Marine Protected Areas (MPAs) and resilient populations of representative, rare and vulnerable species.	No.	The amendment adds detail to the objective, by emphasising the role of MPAs which are designated for their marine conservation importance; however, the change does not significantly alter the scope or purpose of the objective regarding the commitment towards biodiversity.
	11	Maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations.	No.	No change.
Promoting good governance	12	Support proportionate, consistent and integrated decision making through implementing forward-looking policies as part of a plan-led, precautionary, risk-based and adaptive approach to managing Welsh seas.	No.	No change.

High Level Marine Objective Theme		Draft WNMP Objective	Is the change significant for the purposes of the SA?	Comment
	~~13~~	~~Apply the Sustainable Development (SD) principle and the principles of Sustainable Management of Natural Resources (SMNR) to decision making as part of a plan lead approach delivered in line with ecosystem approach principles~~.	No.	The objective has been removed and no longer forms a part of the plan, however the intent remains in place as part of Objective 1. The principles of sustainable development and the SMNR should therefore still be considered in decision-making.
Using sound science responsibly	13	Develop a shared, accessible marine evidence base to support use of sound evidence and provide a mechanism for the unique characteristics and opportunities of the Welsh Marine Area to be better understood.	No.	No change.

Table B.2 Proposed Changes to Sector Objectives

Sector	Draft WNMP Sector Objective	Is the change significant for the purposes of the SA?	Comment
Aggregates	To continue to use marine aggregates resources at a rate and in locations which best meet our current and future needs by ensuring adequate reserves are provided for through long-term licences.	No.	No change.
Aquaculture	~~To double production by 2020, and to further increase production over the lifetime of this plan. Specifically by 2020 increase:~~ ~~• Marine finfish to 2,000 tonnes (761 Tonnes in 2012);~~ ~~• Shellfish, especially mussels, to 16,000 tonnes (from 8,376 tonnes in 2012).~~ To facilitate the development of sustainable aquaculture in Welsh waters, including promoting innovative finfish, shellfish and marine algal businesses and associated supply chains.	No.	The amendment removes numerical targets for aquaculture production to ensure that the wording of the objective is aligned with the other plan objectives. The amendment also reflects the extent to which a spatial plan can influence developments in aquaculture. Whilst the amendment arguably changes the focus of the objective (from aquaculture production to aquaculture development), the interpretation and appraisal of the objective remains unaffected, as the previous appraisal focused on the spatial development aspects.
Defence	To contribute to the defence of the nation by ensuring that Defence and National Security activities are not compromised.	No.	No change.
Dredging and Disposal	To maintain safe and effective navigational access for shipping, fishing and leisure craft and support future growth and increases in port facilities and vessel size whilst promoting the optimal sustainable use of dredged material and ensuring adequate disposal facilities are available.	No.	No change.
Energy – Low Carbon	To contribute significantly to the decarbonisation of our economy and to our prosperity ~~blue growth~~ by increasing the amount of ~~low-carbon~~ marine renewable energy generated, through ~~by~~: • Supporting further commercial deployment of offshore wind technologies at scale over the lifetime of this plan; • Supporting the development and demonstration of wave energy and tidal stream ~~and wave energy~~	Yes.	The objective removes explicit support for the development and deployment of tidal lagoon technology and for the nuclear energy sector, which affects the scope of the objective.

Sector	Draft WNMP Sector Objective	Is the change significant for the purposes of the SA?	Comment
	technologies in the short to medium term ~~over the next 5-10 years~~; • Increasing (where appropriate) the number of wave energy and tidal stream energy generation devices deployed in commercial scale developments over the medium term ~~over the next 10-20 years~~; • ~~Supporting further commercial development of offshore wind over the next 3-5 years taking advantage of any favourable UK Government financial mechanisms under the Contract for Difference~~; • Developing a better understanding of the potential for ~~Promote evidence gathering and research on tidal lagoon development to support the sustainable development and deployment of~~ tidal lagoon power technology; and • Recognising the potential role of the marine environment in new coastal ~~Supporting the~~ nuclear energy generation facilities ~~sector~~. ~~To develop Wales as an exemplar of marine renewable energy technology by developing the essential skill base and technical knowledge to support the growth of the industry over the next 20 years.~~		
Energy – Low Carbon	To develop Wales as an exemplar of marine renewable energy technology by developing the essential skill base, infrastructure and technical knowledge to support the development ~~growth~~ of the industry over the next 20 years.	Yes.	This text has been removed from the above Low Carbon objective to become a stand-alone objective, and therefore now requires a separate assessment. Note that the changes to the objective wording are not significant in terms of the purpose or scope.
Energy – Oil and Gas ~~(including Gas Unloading and Storage and Carbon Dioxide Capture and Storage)~~	~~Optimising the economic development and~~ Maximising the sustainable recovery of UK oil and gas ~~resource~~ in order to provide ~~Welsh and wider UK businesses and~~ commercial and domestic consumers with a secure, affordable and resilient supply of ~~fossil fuels~~ energy whilst meeting UK decarbonisation goals.	Yes.	The removal of the phrase 'optimising the economic development' and its replacement with 'maximising the sustainable recovery', whilst ensuring greater alignment with the UK maximising economic recovery strategy for the oil and gas sector, also anticipates changes arising from devolution of responsibilities from the Oil and Gas Authority to Welsh Government. The amendments include reference to affordability and decarbonisation goals which could affect the nature and likelihood of developments coming forward and may result in significant effects.

Sector	Draft WNMP Sector Objective	Is the change significant for the purposes of the SA?	Comment
Fisheries	To support and safeguard a sustainable, diversified and profitable fishing sector including promoting sustainable capture fisheries and optimising the economic value of fish caught as a supply of sustainable protein.	No.	The amendment does not have a significant effect on the purpose or scope of the objective.
Ports and Shipping	To safeguard established shipping routes and support sustainable ~~growth~~ development in the shipping and ports sector.	No.	The amendment is for clarification and not considered significant for the purposes of the SA.
Subsea Cabling	To support the optimal distribution of electricity and better global communications through the growth of digital communication networks.	No.	No change.
Surface Water and Wastewater Treatment and Disposal	To safeguard the capacity to safely and effectively treat and discharge surface water runoff and wastewater.	No.	No change.
Tourism and Recreation	To contribute to sustainable development ~~growth, supporting the "Wales Tourism Strategy" target to grow tourism earnings in Wales by 10% or more by 2020,~~ by protecting and promoting access to the coast and improving the quality of the visitor experience thereby increasing Wales' reputation as a world class sustainable marine tourism and recreation destination.	Yes.	The amendment removes reference to the Wales Tourism Strategy and numerical targets for tourism earnings to align with the other (unquantified) plan objectives. Whilst the broad intent remains the same, the removal of growth targets leaves an objective more focused on the quality of the visitor experience and Wales as a tourist destination which arguably could have effects, as it could lead to a lessening of effects and impacts. The change is on balance considered significant for the purposes of the SA.

Table B.3 Proposed Changes to General Cross Cutting Policies

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
GEN_01: Planning Policy	There is a presumption in favour of the sustainable development of the plan area in order to contribute to Wales' well-being goals.	No.	No change.
GEN_02: Planning Policy	Relevant public authorities should take a proportionate, risk-based approach to application of relevant marine planning policies in decision making.	No.	No change.
Econ_01: ~~Blue Growth~~ Sustainable Economic growth	Proposals for economically sustainable activities are encouraged, particularly where they contribute to: • the sustainable management of natural resources thereby supporting ecosystem resilience • a more resilient economy; • employment opportunities particularly for coastal communities; • ~~generating wealth~~ • ~~allowing people to take advantage of the wealth~~ • protecting and creating employment at all skill levels; • maintaining communities with a high-density of Welsh speakers; and/or • tackling poverty by supporting deprived coastal communities, ~~and/or~~. • ~~The sustainable management of natural resources thereby supporting ecosystem resilience.~~	No.	The deletion of the criteria does not have a significant effect on the purpose or scope of the policy.
ECON_02: Co-existence	Proposals should demonstrate how they have considered ~~that consider~~ opportunities for coexistence with other compatible sectors ~~are encouraged~~ in order to optimise the value and use of the marine area and marine natural resources.	No.	The amendment strengthens the policy's focus on coexistence and will aid the consistency of application by ensuring that all proposals that come forward have considered opportunities for coexistence; however, overall the policy intent remains unchanged.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
SOC_01: Access to the marine environment	Proposals that ~~should~~ maintain or enhance access to the marine environment are encouraged.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
SOC_02: Well-being of coastal communities	Proposals that contribute to the well-being of coastal communities are encouraged.	No.	No change.
SOC_03: Marine pollution incidents	Proposals should demonstrate how they minimise their risk of causing or contributing to marine pollution incidents.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
SOC_04: Welsh language and culture	Proposals that contribute to the promotion and facilitation of the use of the Welsh language and culture are encouraged.	No.	No change.
SOC_05: Historic assets	Proposals should demonstrate how potential impacts on historic assets and their settings have been taken into consideration ~~at an early stage~~ and should, in order of preference: a) avoid adverse impacts on historic assets and their settings; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be ~~adequately addressed~~ avoided, minimised or mitigated, proposals ~~should~~ must present a clear and convincing justification for proceeding. Opportunities to enhance historic assets are encouraged.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
SOC_06: Designated landscapes	Proposals should ~~that~~ demonstrate how potential impacts on ~~that they are compatible with~~ the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated ~~are encouraged~~. have been taken into consideration and should, in order of preference: a) avoid adverse impacts on designated landscapes; and/or b) minimise impacts where they cannot be avoided; and/or	Yes.	The policy now includes specific reference to potential impacts on designated landscapes, the mitigation hierarchy and includes reference to opportunities for enhancement of designated landscapes. These amendments could result in significant changes in the SA. The other amendments clarify the policy and ensure a consistent approach throughout the Plan, but do not alter the policy scope or purpose.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance designated landscapes are encouraged.		
SOC_07: Seascapes	Proposals should demonstrate how potential impacts on seascapes have been taken into consideration ~~at an early stage~~ and should, in order of preference: a) avoid adverse impacts on seascapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be ~~adequately addressed~~ avoided, minimised or mitigated, proposals should present a clear and convincing justification for proceeding. Opportunities to enhance seascapes are encouraged.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
SOC_08: Resilience to coastal change and flooding	Proposals should demonstrate how they are resilient to coastal change and flooding over their lifetime.	No.	No change.
SOC_09: Effects on coastal change and flooding	Proposals ~~are encouraged that~~ should demonstrate how they: • ~~demonstrate that they have no~~ avoid significant adverse impact upon coastal processes; • minimise the risk of coastal change and flooding; ~~and~~ Proposals that align with the relevant Shoreline Management Plan(s) and its policies are encouraged.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
SOC_10: Minimising climate change	Proposals should demonstrate how they, in order of preference: • avoid the emission of greenhouse gases; and/or	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	• minimise them where they cannot be avoided; and/or • mitigate them where they cannot be minimised. Where significant emission of greenhouse gases cannot be ~~adequately addressed~~ avoided, minimised or mitigated, proposals for regulated activities ~~should~~ must present a clear and convincing ~~justification~~ case for proceeding.		
SOC_11: Resilience to climate change	Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaptation measures, taking into account Climate Change Risk Assessments for Wales. Proposals that contribute to climate change adaptation and/or mitigation are encouraged.	Yes.	The amendment includes support for climate change mitigation, which introduces a new criterion that should be reflected in the assessment for this policy. Note that climate change mitigation is already supported through SOC_10 and would therefore not affect the overall Plan.
~~SOC_12 Support for wider resilience to climate change~~	~~Relevant public authorities should support opportunities that contribute towards climate change adaptation and/or mitigation.~~	No.	The policy has been removed, but the intent has been retained through the additional text included in SOC_11; however the additional text widens the scope of support from relevant public authorities to all proposals.
ENV_01: Resilient marine ecosystems	Proposals should demonstrate how ~~they contribute to the protection, restoration and/or enhancement of marine ecosystems.~~ potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.	Yes.	The policy now includes specific reference to potential impacts on marine ecosystems, the mitigation hierarchy and includes reference to opportunities for enhancement. These amendments strengthen the policy and could result in significant changes in the SA. The amendments also clarify the policy and ensure a consistent approach throughout the Plan.
ENV_02: Marine protected areas	Proposals should demonstrate how they:	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	• avoid adverse impacts on individual Marine Protected Areas (MPAs) and the coherence of the network as a whole; • have regard to the measures to manage MPAs; and • avoid adverse impacts on ~~non-marine~~ designated sites that are not part of the MPA network.		
ENV_03: Invasive non-native species	Proposals should demonstrate how they avoid or minimise the risk of introducing and spreading invasive non-native species. Where appropriate, p~~P~~roposals should include biosecurity measures to reduce the risk of introducing and spreading invasive non-native species.	Yes.	The additional policy wording makes a further explicit requirement on proposals to demonstrate how they would avoid or minimise the risk of introducing and spreading invasive non-native species. The wording recognises that there may be additional measures not specific to biosecurity requirements that could facilitate this objective. In consequence, the amendments significantly strengthen the scope and likely effectiveness of the policy, and has been screened in, to permit any significant effects to be recorded.
ENV_04: Marine litter	Proposals should demonstrate that they: • avoid the deliberate introduction of litter into the marine plan area; and • minimise the risk of accidental release of litter.	No.	The amendment increases clarity and aids interpretation and is not considered significant for the purposes of the SA.
ENV_05: Underwater noise	Proposals should demonstrate that they have considered man-made noise impacts on the marine environment and, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated ~~adequately addressed~~ proposals ~~should~~ must present a clear and convincing ~~justification~~ case for proceeding	No.	The amendment increases clarity to aid interpretation and has also been made to ensure a consistent approach throughout the Plan. It is not considered significant for the purposes of the SA.
ENV_06: Air and water quality	Proposals should demonstrate that they have considered their potential air and water quality impacts and should, in order of preference:	No.	The amendment increases clarity to aid interpretation and has also been made to ensure a consistent approach throughout the Plan. It is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	a) avoid adverse impacts; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated ~~adequately addressed~~ proposals ~~should~~ must present a clear and convincing ~~justification~~ case for proceeding		
ENV_07: Fish Species and Habitats	Proposals potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: a) avoid adverse impacts on those areas; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised; If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	Yes.	ENV_07 is a new policy and has been screened into the SA for completeness; however, it is a renamed and very slightly amended FIS_03, and as such the SA of the new policy is likely to be very closely aligned with the findings of the SA of the draft FIS_03.
GOV_01: Cumulative effects	Proposals should demonstrate that they have assessed potential cumulative effects and should, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated ~~adequately addressed~~ proposals should present a clear and convincing ~~justification~~ case for proceeding Proposals that contribute to positive cumulative effects are encouraged.	No.	The amendment increases clarity to aid interpretation and has also been made to ensure a consistent approach throughout the Plan. It is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
GOV_02: ~~Wales' well being goals~~ Cross-border and plan compatibility	Relevant public authorities, in making their decisions, ~~should seek to maximise the contribution to the achievement of the seven well being goals for Wales and make their decisions in accordance with the sustainable development principle. In doing so they~~ should have regard to: • any applicable policy in a relevant marine plan; • any applicable policy in relevant terrestrial development plans or related documents; • the Natural Resources Policy; • any relevant local well-being plan(s) (including the local well-being assessment); and • any relevant area statement(s) produced by Natural Resources Wales (NRW).	No.	The amendment removes reference to the well-being goals for Wales, which as a statutory duty on public bodies, required under the Well-being and Future Generations Act 2015, already applies and does not need inclusion in the policy to be given effect. The remainder of the amendments are minor and are not considered significant for the purposes of the SA.
SCI_01: Risk-based decision making	Relevant public authorities should make decisions using sound evidence and a risk-based approach. Where appropriate they should apply the precautionary principle and consider opportunities to apply adaptive management.	No.	No change.

Table B.4 Proposed Changes to Sector Policies

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
AGG_01: Aggregates (Supporting)	**AGG01 a:** Proposals for new aggregate extraction will be supported, ~~in strategic resource areas are encouraged~~ within any ~~permitted~~ tonnage limits, ~~that may be defined for that area~~ where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **AGG_01 b:** Relevant public authorities ~~should~~ are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities: • for the sustainable use of~~:~~ wider marine aggregate natural resources; • ~~aggregate Strategic Resource Areas and~~ to define and, once in place, further develop and refine Strategic Resource Areas for Aggregates • ~~wider marine aggregate natural resources;~~ in order to support the sustainable ~~growth~~ development of the aggregate sector through marine planning.	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.
~~**AGG_02: Aggregates (Safeguarding)**~~	~~Proposals potentially affecting areas where a marine licence and production agreement for aggregate extraction has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed aggregate activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
~~**AGG_03: Aggregates (Safeguarding)**~~	~~Proposals potentially affecting areas where an exploration or option agreement has been offered or is in place for aggregate extraction should not be authorised unless compatibility with the existing, authorised or proposed aggregate activity can be satisfactorily demonstrated. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
~~**AGG_04: Aggregates (Safeguarding)**~~	~~Proposals potentially affecting Strategic Resource Areas for aggregate extraction should demonstrate how they, in order of preference:~~ ~~a. avoid adverse impacts on future potential aggregate extraction in those areas; and/or~~ ~~b. minimise impacts where they cannot be avoided; and/or~~ ~~c. mitigate impacts where they cannot be minimised; and~~ ~~should present a clear and convincing justification for proceeding where (a-c) are not possible.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_02.
AQU_01: Aquaculture (supporting)	**AQU_01a:** Proposals for new aquaculture ~~activities~~ developments will be supported where they contribute to the objectives of this plan ~~in Strategic Resource Areas are encouraged.~~ Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **AQU_01b:** Relevant public authorities ~~should~~ and the sector are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities for the sustainable use of aquaculture resources including the identification of: • natural resources that provide aquaculture potential ~~aquaculture Strategic Resource Areas; and~~	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	• opportunities to define and, once in place, further develop and refine Strategic Resources Areas for aquaculture ~~wider natural resources that provide aquaculture potential;~~ in order to support the sustainable growth of the aquaculture sector through marine planning.		
~~AQU_02: Aquaculture (Safeguarding)~~	~~Proposals potentially affecting areas where:~~ ~~• an application for a Several Order or production rights for aquaculture has been granted or formally applied for;~~ ~~• a documented formal agreement is in place between the sea-bed owner and an aquaculture operator; or~~ ~~• an Aquaculture Production Business registration is in place or has been applied for,~~ ~~should not be authorised unless compatibility with the existing, authorised or proposed aquaculture activity can be satisfactorily demonstrated or there are exceptional circumstances.~~ ~~Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in new overarching safeguarding policy SAF_01.
~~AQU_03: Aquaculture (Safeguarding)~~	~~Proposals potentially affecting Strategic Resource Areas for aquaculture should demonstrate how they, in order of preference:~~ ~~a. avoid adverse impacts on future potential aquaculture activity in those areas; and/or~~ ~~b. minimise impacts where they cannot be avoided; and/or~~ ~~c. mitigate impacts where they cannot be minimised; and~~ ~~should present a clear and convincing justification for proceeding where (a-c) are not possible.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_02.
DEF_01: Defence (safeguarding)	Proposals that:	No.	No change.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	• potentially affect Ministry of Defence (MoD) Danger Areas, Exercise Areas or strategic defence interests; and/or • potentially interfere with communication, surveillance and navigation facilities necessary for defence and national security; should only be authorised with the agreement of MoD.		
D&D_01: Dredging and disposal (supporting)	Proposals that maintain navigable channels and long term access to open at-sea disposal sites for appropriate material will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~are encouraged~~.	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.
~~**D&D_02: Dredging and Disposal (Safeguarding)**~~	~~Proposals potentially affecting areas where a consent or authorisation for:~~ ~~• navigation dredging; or~~ ~~• at-sea disposal of dredged material;~~ ~~has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed dredging or disposal activity can be satisfactorily demonstrated or there are exceptional circumstances.~~ ~~Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
~~**D&D_03: Dredging and Disposal (Safeguarding)**~~	~~Proposals potentially affecting areas undergoing investigation for capital dredging or disposal site characterisation should not be authorised unless compatibility with the existing, authorised or proposed aggregate activity can be satisfactorily demonstrated.~~ ~~Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on the areas undergoing investigation; and/or~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~		
ELC_01: Low carbon energy (supporting) wind	**ELC_01 a:** Proposals for **offshore wind** energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for **wind >350MW** will be considered by UK Government in accordance with relevant national policy. In determining an NSIP for a wind proposal, the decision maker will have regard to this plan. Any determination in relation to energy developments of any scale will be taken in accordance with this plan alongside any other relevant considerations. **ELC_01 b:** In order to understand future opportunities for **offshore wind** development, including floating technologies, this plan supports strategic planning for the sector. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wind energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for offshore wind energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to	Yes.	The amendment presents new policy text on proposals for offshore wind energy. Other sources of renewable energy are now addressed in separate ELC policies.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals for all types of marine renewable energy generation (wind tidal and wave energy) and associated infrastructure are strongly encouraged especially:~~ ~~a) in corresponding wave, tidal stream and any other defined renewable energy technology test and demonstration zones; and~~ ~~b) in corresponding wave, tidal stream and tidal lagoon strategic resources areas.~~ ~~Relevant public authorities should, in liason with the sector and other interested parties, collaborate to understand opportunities for the sustainable use of:~~ ~~a) renewable energy Strategic Resources Areas; and~~ ~~b) wider natural resources that provide renewable energy potential;~~ ~~In order to support the sustainable growth of the renewable energy sector through marine planning.~~ ~~In order to understand future opportunities for **Offshore Wind** development, proposals are encouraged that support strategic planning for the sector. Relevant public authorities should, in liason with the sector and other interested parties, collaborate to:~~ ~~• Collect evidence to support understanding of environmental constraints and opportunities~~ ~~• Support understanding of the optimal siting of offshore wind developments across Wales.~~ ~~Relevant public authorities should make relevant evidence widely available to support planning and decision making.~~		
ELC_02: Low Carbon Energy ~~(supporting)~~ wave ~~(Safeguarding)~~	**ELC_02 a:** Proposals for **wave energy** energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **ELC_02 b** In order to understand future opportunities for **wave energy** development, relevant public authorities and the sector	Yes.	The amendment presents new policy text on proposals for wave energy. Other sources of renewable energy are now addressed in separate ELC policies. The removed safeguarding text is now included in the new safeguarding policy SAF_01.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wave energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for wave energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting areas where a consent or authorisation for renewable energy generation has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed renewable energy activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~		
ELC_03: Low Carbon Energy (supporting) tidal stream ~~(Safeguarding)~~	**ELC_03 a:** Proposals for **tidal stream** energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	Yes.	The amendment presents new policy text on proposals for tidal stream energy. Other sources of renewable energy are now addressed in separate ELC policies.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	ELC_03 b: In order to understand future opportunities for **tidal stream energy** development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of tidal stream energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal stream energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting areas where an exploration or option agreement has been offered or is in place for renewable energy generation, including for demonstration areas, should not be authorised unless compatibility with the intended activity can be satisfactorily demonstrated. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~		The removed safeguarding text is now included in the new safeguarding policy SAF_01.
ELC_04: Low Carbon Energy (supporting) tidal range ~~(Safeguarding)~~	**ELC_04:** In order to understand future opportunities for **tidal range** development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to:	Yes.	The amendment presents new policy text on proposals for tidal lagoon energy. Other sources of renewable energy are now addressed in separate ELC policies.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	• collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; • support understanding of the optimal siting of tidal lagoon developments across Wales as part of a wider, UK perspective; and • identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so. ~~Proposals potentially affecting Strategic Resource Areas for renewable energy (including those within the UK Offshore Energy SEA process) should demonstrate how they, in order of preference:~~ ~~a. avoid adverse impacts on future potential renewable energy activities in those areas; and/or~~ ~~b. minimise impacts where they cannot be avoided; and/or~~ ~~c. mitigate impacts where they cannot be minimised; and~~ ~~should present a clear and convincing justification for proceeding where (a-c) are not possible.~~		The removed safeguarding text is now included in the new safeguarding policy SAF_02.
O&G_01: Oil and gas (supporting)	**O&G_01 a:** Proposals that maximise the ~~long term supply~~ economic recovery of oil and gas ~~are encouraged, provided they~~ will be supported where they comply with the objectives of this plan and ~~of~~ fully meet the environmental safeguards contained within the statutory process of awarding production licences and subsequent activity specific approvals. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **O&G_01 b:** Welsh Government policy is to avoid the continued extraction of fossil fuels in intertidal areas and estuaries and coastal inlet waters that fall within the Welsh onshore licence area. Applications for new petroleum licenses in these areas	Yes.	O&G_01b is a new sub-policy. The additional policy text for O&G_01a is for clarification and is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	should not be supported, unless required for mine safety or scientific purposes. Proposals for the development and extraction of oil and gas in these areas with land based elements must provide robust and credible evidence to demonstrate how they conform to the Planning Policy Wales Energy Hierarchy for Planning, including how they make a necessary contribution towards decarbonising the energy system.		
O&G_02: Oil and gas (supporting)	Proposals that support the long term development of carbon capture and storage technology will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~are encouraged~~.	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.
~~**O&G_03: Oil and Gas (Safeguarding)**~~	~~Proposals in areas where approval for oil and gas infrastructure has been granted or formally applied for should only be authorised where compatibility with the existing, authorised or proposed activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~In exceptional circumstances, if adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
~~**O&G_04: Oil and Gas (Safeguarding)**~~	~~Proposals potentially affecting future potential activity in areas (blocks) offered for oil and gas licensing should avoid sterilisation of that area for future oil and gas extraction and demonstrate how they, in order of preference:~~ ~~a. avoid potential adverse impacts on those activities; and/or~~ ~~b. minimise potential impacts where they cannot be avoided; and/or~~ ~~c. mitigate potential impacts where they cannot be minimised; and~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	~~should present a clear and convincing justification for proceeding where (a-c) are not possible.~~		
FIS_01: Fisheries (supporting)	**FIS_01 a:** Proposals that support and enhance sustainable fishing activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~are encouraged~~. **FIS_01 b:** Relevant public authorities and the sector are encouraged, ~~should~~ in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities to develop a strategic evidence base to improve understanding of opportunities for the sustainable development of fisheries~~; and support the development and refinement of strategic resource Areas;~~ in order to support the sustainable development ~~growth~~ of the fisheries sector through marine planning.	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.
~~**FIS_02: Fisheries (Safeguarding)**~~	~~Proposals potentially displacing commercial fishing activities should demonstrate how they, in order of preference: a. avoid displacing those activities; and/or b. minimise impacts where they cannot be avoided; and/or c. mitigate impacts where they cannot be minimised; and should present a clear and convincing justification for proceeding the where (a-c) are not possible.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
~~**FIS_03: Fisheries (Safeguarding)**~~	~~Proposals potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key species of commercial or ecological importance should demonstrate that they, in order of preference: a. avoid adverse impacts on those areas; and/or b. minimise impacts where they cannot be avoided; and/or c. mitigate impacts where they cannot be minimised; and should present a clear and convincing justification for proceeding where (a-c) are not possible.~~	No.	Whilst the sector policy has been removed, the policy has been moved and renamed as the new ENV_07. As such the SA of the new policy is likely to be very closely aligned with the findings of the SA of the draft FIS_03.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
P&S_01: Ports and shipping (supporting)	**P&S_01 a:** Proposals for ports, harbours and shipping activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~in strategic Resources Areas (SRAs) are encouraged~~. **P&S_01 b:** Relevant public authorities ~~should~~ and the sector are encouraged, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities ~~for~~ to support the sustainable ~~use~~ development of ~~port and shipping strategic resources areas in order to support the sustainable growth of~~ the ports and shipping sector through marine planning.	Yes.	The amendment removes reference to supporting proposals in the Strategic Resource Area (SRA). The SRA did not preclude proposals from coming forward anywhere within the Marine Plan area; however, it provided a degree of policy guidance over the location of potential future development and activity. Whilst in practice, taking into account the nature of the policy, proposals are likely to be more geographically restricted, there is increased uncertainty without the guidance provided by the SRA. The range of effects previously identified is likely to be unaffected; however, there is a need to ensure that the increased uncertainty is reflected in the accompanying SA. In consequence, the amendment is screened into the SA.
P&S_02: Ports and shipping (supporting)	Proposals that provide for the maintenance, repair, development and diversification of port and harbour facilities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~are encouraged~~.	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.
~~**P&S_03: Ports and Shipping (Safeguarding)**~~	~~Proposals potentially affecting Strategic Resource Areas for:~~ ~~• established commercial navigation routes;~~ ~~• pilot boarding areas and commercial anchorages; or~~ ~~• existing port, harbour and marina activities and their potential for future expansion;~~ ~~including where a consent or authorisation has been granted or formally applied for, should not be authorised except where compatibility with the existing, authorised or proposed activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
CAB_01: Subsea Cabling (supporting)	Proposals that facilitate the growth of digital communications networks and/or the optimal distribution of electricity will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations ~~are encouraged~~.	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.
~~**CAB_02: Subsea Cabling (Safeguarding)**~~	~~Proposals potentially affecting existing and planned subsea cables and their landfall sites where a consent or authorisation or lease has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed subsea cable activity can be satisfactorily demonstrated or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised.~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
~~**SWW_01: Surface Water run-off and Waste Water Treatment and Disposal (Safeguarding)**~~	~~Proposals potentially affecting existing and planned wastewater management and treatment infrastructure where a consent or authorisation or lease has been granted or formally applied for should not be authorised unless compatibility with the existing, authorised or proposed activity can be satisfactorily demonstrated, or there are exceptional circumstances. Compatibility should be achieved, in order of preference, through:~~ ~~a. avoiding adverse impacts on those activities; and/or~~ ~~b. minimising impacts where they cannot be avoided; and/or~~ ~~c. mitigating impacts where they cannot be minimised;~~ ~~If adequate compatibility cannot be achieved, proposals should present a clear and convincing justification for proceeding.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
T&R_01: Tourism and recreation (supporting)	**T&R_01 a:** Proposals ~~are encouraged~~ that demonstrate a positive contribution to tourism and recreation opportunities and policy objectives (for the sector) around the Welsh coast will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and	No.	The additional policy text is for clarification and is not considered significant for the purposes of the SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	sector safeguarding policies of this plan and any other relevant considerations. **TAR_01 b:** Relevant public authorities and the sector are encouraged ~~should~~, in liaison with ~~the sector and~~ other interested parties, to collaborate to understand opportunities for sustainable tourism and recreation around the Welsh coast, including: a) developing a strategic evidence base to improve understanding of current and potential tourism and recreation activities, including eco-tourism and other low impact activities; and ~~b) support the development and refinement of Strategic Resource Areas;~~ b) opportunities to define areas of future opportunity for tourism and recreation; in order to support the sustainable ~~growth~~ development of the tourism and recreation sector through marine planning.		
~~**T&R_02: Tourism and Recreation (Safeguarding)**~~	~~Proposals should demonstrate that they have taken appropriate measures to avoid, minimise or mitigate adverse effects on existing and known planned tourism and recreation activities. Proposals that would have a significant adverse effect on Welsh Government's recreation, sport and tourism objectives should not be authorised unless there are exceptional circumstances.~~	No.	Whilst the sector policy has been removed, the policy intent has been included in the new overarching safeguarding policy SAF_01.
SAF_01: Safeguarding existing activity	a: Proposals likely to have significant adverse impacts upon an established activity covered by a formal application or authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for the proposal to progress under exceptional circumstances. b: Proposals likely to have significant adverse impacts upon an established activity not subject to a formal authorisation must	Yes.	SAF_01 is a new policy that brings together and replaces the sector-specific safeguarding policies of the Draft WNMP and has been screened in for SA.

Policy number	Draft WNMP Policy	Is the change significant for the purposes of the SA?	Comment
	demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Under SAF 01 a and b, compatibility should be demonstrated through, in order of preference: • Avoiding significant adverse impacts on those activities, and/or • Minimising significant adverse impacts where these cannot be avoided; and/or • Mitigating significant adverse impacts where they cannot be minimised		
SAF_02: Safeguarding strategic resources	Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Compatibility should be demonstrated through, in order of preference: • Avoiding significant adverse impacts on this potential strategic resource use, and/or • Minimising significant adverse impacts where these cannot be avoided; and/or • Mitigating significant adverse impacts where they cannot be minimised	Yes.	SAF_02 is a new policy that brings together and replaces the sector-specific safeguarding policies of the Draft WNMP and has been screened in for SA.

Appendix C
Detailed Appraisal Matrices

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
SOC_06: Designated Landscapes Proposals should demonstrate how potential impacts on the purposes and special qualities for which National Parks or Areas of Outstanding Natural Beauty have been designated have been taken into consideration and should, in order of preference: a) avoid adverse impacts on designated landscapes; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Opportunities to enhance designated landscapes are encouraged.	++	0	+	0	++	0	++	+	++	0	+	+	0	0
Significant Effects:														

The WMER highlights that Wales has 4,067 km^2 of land on or near the coast designated as National Park (20% of total Welsh land area) and 844 km^2 as AONB (4%). The main purposes of National Parks and AONB are conserving and enhancing natural beauty, wildlife and cultural heritage, and the promotion of enjoyment of the protected areas. Further purposes include having regard for the interests of those who live and work there, and fostering the economic and social well-being of local communities[39,40].

Development and use of the marine environment can have adverse impacts on designated landscapes. These impacts may be direct (for example, where development introduces new built form that affects character) or indirect (for example, where development leads to increased visitor pressure on assets). In this context, Policy SOC_06 seeks to ensure that proposals avoid, minimise or mitigate impacts on designated landscapes. The policy also supports the enhancement of such landscapes. This is expected to support their conservation, and in consequence, the policy has been assessed as having a significant positive effect on landscape and seascape (SA Criteria 5).

Reflecting the purposes of National Parks and AONBs (as highlighted above), it is anticipated that the identification and minimisation of adverse impacts on the purposes and special qualities will support the conservation of wildlife. Habitats and species will be protected through the mitigation hierarchy, and potentially also enhanced. The policy has therefore been assessed as having significant positive effects on SA Criteria 1.

Numerous historic assets are situated within designated landscapes and so the setting of these assets is expected to be protected and potentially enhanced as a result of the implementation of Policy SOC_06, as conserving cultural heritage is one of the purposes of National Parks. This has been assessed as having a significant positive effect on heritage (SA Criteria 7).

Part of the purpose of National Parks and AONBs includes the enjoyment of such areas. Their protection and enhancement is therefore likely to help promote tourism and recreation, which has been assessed as having a significant positive effect on SA Criteria 9. This would also have benefits for well-being and, additionally, the economy. In consequence, positive effects have been identified in respect of SA Criteria 11 and 12.

The policy is expected to protect coastal features which contribute to designated landscapes. This has been assessed as having a positive effect on the physical environment (SA Criteria 3). The landscape of Wales is also important in the nation's sense of identity and culture, having played an important role in its history and development. In this regard, a positive effect has been identified in respect of Welsh language and culture (SA Criteria 8).

While the intent of the policy is the protection of designated landscapes, proposals which may adversely affect landscapes could be supported where a convincing case for proceeding is presented. However the nature and scale of these proposals and any associated effects is not yet known.

Effects on the remaining SA criteria have been assessed as neutral.

No significant negative effects or negative effects have been identified.

Mitigation/Enhancement:

- The policy wording could make specific reference to Heritage Coasts and Registered Historic Landscapes (although it is noted that these non-statutory designations are referred to in the supporting text to the policy).

Assumptions:

- It is assumed that protection and enhancement of designated landscapes would result in greater recreational use of the marine area.
- It is assumed that the setting of coastal and marine historic assets would be protected and enhanced as a result of this policy.

[39] National Parks (2018) *The Aims and Purposes of National Parks*. Available from http://www.nationalparks.gov.uk/students/whatisanationalpark/aimsandpurposesofnationalparks [Accessed May 2019].

[40] The National Association Areas of Outstanding Natural Beauty (2018) *About AONBs.* Available from https://landscapesforlife.org.uk/about-aonbs/about-aonbs [Accessed May 2019].

Uncertainties:

- The final effects and scale of enhancement of designated landscapes as a result of this policy is not certain at this stage.
- The nature and scale of effects associated with proposals which present a convincing case to proceed, despite adversely affecting designated landscapes, is not known.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
SOC_11: Resilience to Climate Change Proposals should demonstrate that they have considered the impacts of climate change and have incorporated appropriate adaptation measures, taking into account Climate Change Risk Assessments for Wales. Proposals that contribute to climate change adaptation and/or mitigation are encouraged.	+/-	+	+	+/?	+/-	++	+/-	0	+	++/-/?	+	+	+	+

Significant Effects:
Future development and activities in the marine environment have the potential to both affect and be affected by the impacts of climate change. Policy SOC_11 seeks to ensure that proposals have considered the future effects of climate change and included appropriate adaptation measures to increase the resilience of the proposal. The policy also supports proposals that contribute more broadly to climate change adaptation and/or mitigation**.** The supporting text also makes clear that decision makers should be satisfied that adequate risk management or contingency plans are in place to increase the resilience of developments to climate change. Overall, the provisions of Policy SOC_11 and its supporting text have been assessed as having a significant positive effect on climate change (SA Criteria 6).

The WMER identifies that ecological impacts from climate change may arise due to seawater temperature changes and ocean acidification, in addition to damage or loss of habitats from increased flooding or sea level rise. Adaptation measures in proposals such as managed realignment would allow coastal habitats to respond naturally to sea level rise, creating habitats and contributing to the positive biodiversity effects. Adaptation may also include the use of managed wetlands to act as additional buffers to flood risk, and in doing so can create or extend habitats for wading birds. Additionally, proposals encouraged by this policy that contribute to climate change mitigation could include low carbon energy sources as part of the transition away from fossil fuels. These may have longer term benefits in terms of habitats and species associated with improvement in air quality, as the release of polluting combustion products would be reduced. These measures, which could be supported through the implementation of Policy SOC_11, are considered to have an overall positive effect on biodiversity (SA Criteria 1), although it is recognised that coastal squeeze is likely to continue over the plan period.

This policy may support offshore renewable energy development and contribute significantly towards renewable energy targets due to the encouragement of mitigation proposals. As part of possible climate change adaptation measures, the WMER notes that marine aggregates are used for the maintenance of coastal defences that are likely to be required for adaptation. There are often no practicable alternative sources to marine aggregate for this, so it is possible that existing marine resources will not be used sustainably if there was increased demand with no alternatives. In consequence, Policy SOC_11 has been assessed as having a mixed significant positive and minor negative effect on SA Criteria 10. However, there is considerable uncertainty over whether the negative effect would arise and the extent to which marine aggregates would be affected.

The Climate Change Risk Assessment for Wales identifies that climate change may cause reductions in water availability and increases in frequency and severity of summer droughts. In this context, Policy SOC_11 could facilitate adaptation proposals and measures which promote water efficiency and enhance the availability of water resources. Additionally, water quality may improve as adaptation measures could be implemented to respond to the potential increases in sewerage overflows. Overall, this policy has been assessed as a positive effect on water (SA Criteria 2).

Sea level rise and increased frequency of storm events as a result of climate change could increase the risk of coastal erosion through flooding and wave action, and affect seascapes, coastal character and heritage assets. Mitigation and adaptation to climate change and the potential avoidance of coastal change could result in positive effects on these SA criteria (SA Criteria 3, 5 and 7).

Mitigation proposals involving increased energy efficiency or the transition away from the combustion of fossil fuels to low carbon energy sources may lead to improvements in air quality, as the release of polluting combustion products would be reduced. This has been assessed as a positive effect on SA Criteria 4 (air quality), with some uncertainty relating to the unknown nature of the supported proposals.

Climate change adaptation measures may protect tourist sites and recreational activities which would otherwise be disrupted by flood incidents and adverse coastal change, with the coastline an important attraction to visitors. Additionally, the Climate Change Risk Assessment for Wales identifies the potential for a longer tourist season with more visitors, and enhanced opportunities to promote outdoor activities as a result of higher summer temperatures. Capitalising on these changes to increase coastal tourism would result in a positive effect against the tourism and recreation criteria (SA Criteria 9).

Climate change adaptation proposals and measures are expected to improve business continuity and resilience in the event of extreme weather or flood events, or in longer term economic considerations, such as designing more robust vessels / structures and changing behaviours to target new fish species. Adapting to higher summer temperatures to promote tourism is also important for the Welsh economy. In addition, the potential expansion of the renewables sector in Wales that could be supported through Policy SOC_11 would promote the Welsh economy. In this context, Policy SOC_11 has been assessed as having a positive effect on the economy (SA Criteria 11).

The risk of severe flood incidents could increase due to climate change, so adaptation proposals and measures to reduce flood risk would have a positive effect on the safety and attractiveness of communities and individuals who may otherwise suffer from flooded properties. Adapting to climate change could also protect and improve human health, for example by managing the effects of extreme heat in proposal locations. Climate change mitigation proposals could have further incidental human health benefits as a result of reductions in emissions from combustion, if a transition to low carbon energy is supported. Additionally, mitigation proposals which support the expansion of the renewables sector could promote employment creation and enhance the well-being of local communities. However, the scale of additional jobs created for Welsh residents is not certain, and specific skill-sets may be brought in from elsewhere. The social, well-being and health benefits associated with this policy have been assessed as having a positive effect on SA Criteria 12 and 13.

Proposals taking the Climate Change Risk Assessments for Wales into account will also contribute towards good governance, with integrated decisions across marine and terrestrial boundaries. By supporting reductions in greenhouse gas emissions through climate change mitigation proposals, this policy will also help to ensure that development and activities in the marine environment contribute towards climate change targets, supporting collaboration across marine and terrestrial boundaries. This has been assessed as having a positive effect on governance (SA Criteria 14).

It is important to note that there is the potential for impacts on biodiversity, landscape/seascape and heritage to be negative if proposals to reduce risks of flooding/coastal change require the creation of hard structures that adversely affect ecology, landscape/seascape and the setting of historic assets or result in habitat loss. In consequence, the potential for negative effects has also been identified in respect of SA Criteria 1, 5 and 7.

Effects on the remaining SA criteria have been assessed as neutral.

No significant negative effects have been identified.

Mitigation/Enhancement:

- The supporting text to Policy SOC_11 could stipulate that adaptation or mitigation measures requiring construction or engineering should seek to avoid adverse effects on local communities and the natural environment.

Assumptions:

- It is assumed that proposals may include project-specific actions such as energy efficiency measures and incorporation of renewable energy, in addition to larger proposals in the clean energy sector such as wind farms, wave and tidal energy or Carbon Capture and Storage, which would significantly contribute to greenhouse gas mitigation.
- While Policy SOC_11 is expected to make a contribution to reducing global greenhouse gas levels through the support for climate change mitigation proposals, the global context for emissions and scale of effects associated with Welsh emissions means that direct effects relating to the impacts of climate change have not been identified.

Uncertainties:

- The nature and location of adaptation proposals and measures, and the extent of their benefits, is not known at this stage.
- The nature of mitigation proposals supported under the policy, and the extent of their benefits, is not known at this stage.
- The extent of low carbon energy development as a result of this policy is uncertain.
- The requirement for the use of marine aggregates as an adaptation material is not known.
- The scale of additional employment opportunities as a result of this policy is not certain at this stage.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ENV_01: Resilient Marine Ecosystems Proposals should demonstrate how potential impacts on marine ecosystems have been taken into consideration and should, in order of preference: a) avoid adverse impacts; and/or b) minimise impacts where they cannot be avoided; and/or c) mitigate impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding. Proposals that contribute to the protection, restoration and/or enhancement of marine ecosystems are encouraged.	++	++	++	+	+	+	0	0	+	0	+/- /?	+	+	0

Significant Effects:

The WMER notes that "*Marine habitats and species provide a range of ecosystem services and benefits of significant value to UK society.*" It highlights that Wales is biologically diverse as a result of the variety of habitats and species. However, the WMER states that historically, the marine environment around Wales has suffered significant habitat loss, with key examples being coastal habitat (particularly saltmarsh) and subtidal native oyster beds. The State of Natural Resources Report (SoNaRR) (2016) prepared by Natural Resources Wales (NRW), meanwhile, highlights that marine habitats are in variable condition (although they are able to support healthy populations of many species of seabirds and marine mammals).

Policy ENV_01 seeks to protect and enhance marine ecosystems, with the supporting text highlighting the protection of both biological and geological components of ecosystems. Development in, and use of, the marine environment can have adverse impacts on biodiversity and geodiversity. These impacts may be direct (for example, where a construction activity results in the loss of habitat or species) or indirect (for example, where development results in changes to coastal processes which affect species and habitats or results in disturbance due to noise and vibration). There is also the potential for positive impacts where, for example, development/activities improve or restore habitats. The provisions of Policy ENV_01 in this regard are expected to help ensure

that proposals avoid, minimise or mitigate adverse effects, and generate positive effects on biodiversity and geodiversity as part of wider improvements to ecosystem resilience. In consequence, the policy has been assessed as having a significant positive effect on biodiversity (SA Criteria 1) and the physical environment (SA Criteria 3).

SoNaRR notes that there have been improvements in water quality in recent years. It highlights that Wales has contributed to the good progress made towards achieving Good Environmental Status for UK waters by 2020 (as defined in the UK Marine Strategy Part One) and that 100% of bathing waters currently comply with the Water Framework Directive (WFD). However, coastal and marine water quality is fair with only 29% of Wales' estuarine and coastal waters being of good or better ecological status and only 3 of 22 Shellfish Waters meeting guideline quality standards in 2014. By seeking to protect and enhance marine ecosystems, Policy ENV_01 is likely to maintain and support improvements to water quality. For example, proposals that improve or restore marine habitats can help to support ecosystem functions, such as nutrient cycling and water filtration. This has been assessed as having a significant positive effect on water (SA Criteria 2).

Atmospheric pollutants can have detrimental impacts on biodiversity and the wider environment, causing effects such as acidification and eutrophication. In this context, the protection and enhancement of biodiversity may indirectly help to maintain and enhance air quality by reducing emissions to air associated with development and activities in the marine environment. Further, marine ecosystems can help to regulate air quality and therefore any enhancement could generate air quality benefits. Policy ENV_01 has therefore been assessed as having a positive effect on air quality (SA Criteria 4).

As much of the Welsh coast is designated for landscape importance, the protection and enhancement of habitats and physical features under Policy ENV_01 is also expected to support the protection of landscape/seascape character and designated areas. A positive effect on SA Criteria 5 has therefore been identified.

The avoidance of adverse impacts and enhancement of marine ecosystems could help to support their resilience to the effects of climate change. Further, proposals that, for example, enhance habitat could provide opportunities for increased flood protection. Policy ENV_01 has therefore been assessed as having a positive effect on climate change (SA Criteria 6).

SoNaRR highlights that the importance of marine ecosystems to the resilience of Wales goes beyond environmental factors to include social and economic benefits. The WMER states that "*Marine habitats and species provide a range of ecosystem services and benefits of significant value to UK society. The quality of the marine environment has a direct effect on the way we benefit from it – as a source of food, energy and building materials, and as a place where we live, work and play*." For example, marine ecosystems provide seafood, support fishing (and associated industries), aquaculture and tourism and provide opportunities for recreation. However, SoNaRR concludes that the benefits of marine ecosystem services are not currently being optimised. By requiring that proposals demonstrate how they avoid, minimise or mitigate adverse impacts, and potentially restore and enhance ecosystems, Policy ENV_01 may indirectly help to protect and optimise these benefits. In this context, the policy has been assessed as having a positive effect on tourism and recreation (SA Criteria 9), the economy (SA Criteria 11), well-being (SA Criteria 12) and health (SA Criteria 13). It is recognised that, in the short term in particular, measures to protect marine ecosystems could limit activities and development in the marine environment such as commercial fishing. Additionally, minimising or mitigating impacts on marine ecosystems in proposals has the potential for additional costs for businesses, and in consequence, a negative effect has also been identified in respect of SA Criteria 11. However, this is uncertain and in the longer term, if protection aids the recovery of marine fauna/flora, activities such as sustainable fishing could increase.

While the intent of the policy is the protection of marine ecosystems, proposals which may adversely affect ecosystems could be supported where a convincing case for proceeding is presented. However the nature and scale of these proposals and any associated effects is not yet known.

Neutral effects have been identified with respect to the other remaining SA criteria.

No significant negative effects have been identified.

Mitigation/Enhancement:

- None identified.

Assumptions:

- It is assumed that air quality and landscape features would be enhanced as a result of this policy.

Uncertainties:

- The scale and location of action taken to enhance biodiversity and geodiversity is not certain at this stage.
- The extent to which proposals to protect marine ecosystems may limit activities and development in the marine environment is uncertain.
- The nature and scale of effects associated with proposals which present a convincing case to proceed, despite adversely affecting ecosystems, is not known.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ENV_03: Invasive Non-native Species Proposals should demonstrate how they avoid or minimise the risk of introducing and spreading invasive non-native species. Where appropriate, proposals should include biosecurity measures to reduce the risk of introducing and spreading of invasive non-native species.	++	+	+	0	0	0	0	0	+	0	++	0	+/?	0

Significant Effects:
The ecological impacts of invasive non-native species are a major threat to biodiversity worldwide. Invasive species may prey on, out-compete or displace native wildlife, changing the ecology of aquatic ecosystems.[41] The WMER identifies invasive species as a specific concern for Welsh habitats, with 16 species of non-native marine plants and 32 species of animals recorded on Welsh coasts. The Special Sites Database developed by NRW identifies invasive species as a key issues impacting upon MPAs.

Invasive species can be spread by a range of human activities including (inter alia) ships (e.g. taking in and later discharging ballast water and hull fouling), infrastructure development, accidental or intentional release of non-natives species, translocation by recreational activity and aquaculture. In this context, Policy ENV_03 requires proposals to help control the introduction and spread of invasive species arising from the development and use of the marine area. The supporting text for the policy specifies that proposals should assess the likely risk of introducing or spreading invasive species, and put in place reasonable biosecurity measures where necessary to reduce or stop their introduction or spread. In light of the importance of this issue for marine ecosystems in Wales, the policy has been assessed as having a significant positive effect on biodiversity (SA Criteria 1) and a positive effect on the physical environment (SA Criteria 3).

Invasive species can have detrimental economic effects. For example, they can result in the decline in existing fish stocks whilst the presence of non-native mussel species can affect aquaculture. This is in addition to the financial costs which may arise associated with the management of invasive species. It is therefore considered that preventing the introduction and spread of invasive species under Policy ENV_03 would have a significant positive effect on the economy (SA Criteria 11).

The introduction and spread of invasive species can affect water quality. In consequence, Policy ENV_03 has been assessed as having a positive effect on water (SA Criteria 2).

[41] GB Non-Native Species Secretariat (2019) *Why are Non-Native Invasive Species a Problem?* Available from http://www.nonnativespecies.org/checkcleandry/why-are-non-native-species-a-problem.cfm [Accessed May 2019].

A positive effect is likely to arise for tourism and recreation (SA Criteria 9) as a result of the implementation of Policy ENV_03. Without a reduction in the introduction and spread of invasive species, there could be detrimental effects on recreational sea angling from changing fish stocks, as well as impacts on ecotourism due to predation of seabird eggs, leading to reductions in bird colony numbers.

Invasive species can spread disease[41] and result in harmful algal blooms leading to diarrhetic shellfish poisoning (DSP) and paralytic shellfish poisoning (PSP)[42] so avoidance of their introduction as supported by Policy ENV_03 could have a positive effect on human health (SA Criteria 13). However, as it is not known whether species harmful to health would be introduced in Wales, some uncertainty remains.

Neutral effects have been identified with respect to the other remaining SA criteria.

No significant negative effects or negative effects have been identified.

Mitigation/Enhancement:
- None identified.

Assumptions:
- It is assumed that tourist destinations and activities which focus on marine species would be protected by this policy.

Uncertainties:
- It is not certain whether species harmful to health may be introduced to Wales.

[42] Natural Scotland (2006) *Harmful Algal Bloom Communities in Scottish Coastal Waters: Relationship to Fish Farming and Regional Comparisons – A Review*. Available from http://www.gov.scot/resource/doc/92174/0022031.pdf [Accessed May 2019].

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ENV_07: Fish Species and Habitats Proposals potentially affecting important feeding, breeding (including spawning & nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: a) avoid adverse impacts on those areas; and/or b) minimise adverse impacts where they cannot be avoided; and/or c) mitigate adverse impacts where they cannot be minimised. If significant adverse impacts cannot be avoided, minimised or mitigated, proposals must present a clear and convincing case for proceeding.	+	0	0	0	0	0	0	0	0	0	+/?	+/?	0	0

Significant Effects:
Policy ENV_07 aims to avoid, minimise and mitigate adverse impacts upon important fish and shellfish feeding and breeding grounds and habitats. This has been assessed as having a positive effect on biodiversity (SA Criteria 1) through the protection of commercial fish and shellfish species and associated species of ecological importance. Such measures may also provide wider benefits for ecological resilience for any coincident species (e.g. benthic organisms, seabirds, marine mammals) supported by these feeding, breeding (including spawning & nursery) and migration areas or habitats.

The WMER identifies that two of the most valuable fishing activities in the Celtic Sea are beam trawling for demersal fish (bottom feeders), and pot fishing for crabs, lobsters and whelks. It also highlights that cockle fisheries are some of the most valuable fisheries in Wales. This policy may therefore generate positive effects on the economy (SA Criteria 11) and well-being (SA Criteria 12) due to the protection afforded to fish and shellfish stocks which should support the fishing industry and help protect associated jobs. Other sectors may experience negative economic effects as a result of safeguarding key fish and shellfish habitats. However, taking into account the potential for mitigation to resolve conflicts, any negative effects are not expected to be significant, although some uncertainty remains.

While the intent of the policy is the safeguarding of fish and shellfish species, proposals which may adversely affect feeding and breeding grounds and habitats could be supported where a convincing case for proceeding is presented. However the nature and scale of these proposals and any associated effects is not yet known.

Effects on the remaining SA criteria have been assessed as neutral.

No significant negative effects or negative effects have been identified.

Mitigation/Enhancement:
- None identified.

Assumptions:
- It is assumed that proposals would not be permitted if significant negative effects would arise, as the intent of the policy is safeguarding of fish and shellfish species.

Uncertainties:
- The scale and location of protection of feeding and breeding grounds and habitats are currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- The nature and scale of effects associated with proposals which present a convincing case to proceed, despite adversely affecting feeding, breeding and migration habitats, is not known.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
AGG_01: Aggregates (Supporting) **AGG_01 a:** Proposals for new aggregate extraction will be supported, within any tonnage limits, where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **AGG_01 b:** Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities: • for the sustainable use of wider marine aggregate natural resources; • to define and, once in place, further develop and refine Strategic Resource Areas for aggregates in order to support the sustainable development of the aggregate sector through marine planning.	-/?	-/?	-/?	-/?	0	+/-/?	-/?	?	0	++/--	++/?	+/?	0/-	+

Significant Effects:
Commercially viable deposits of aggregates occur in spatially discrete areas as a result of geological processes. Marine aggregate resources are widely distributed across Welsh waters; however the majority of extraction has historically taken place in the Bristol Channel, Severn Estuary and off North Wales.

Marine aggregates form an important component of the national and local supply of aggregates. Wales' Marine Evidence Report (October 2015) (WMER) highlights that marine sand and gravel in particular provide an essential contribution to meeting the nation's demand for construction material whilst the UK Marine Policy Statement (MPS) (2011) notes that Wales is highly dependent on marine-dredged sand, which meets more than 80% of the demand. Recognising that marine sourced aggregate is expected to continue to dominate supplies of sand and gravel in Wales when compared to other sources, Policy AGG_01 seeks to maintain an adequate and continuing source of supply by supporting new aggregate extraction, where this contributes to the objectives of the plan and complies with relevant safeguarding policies. This is consistent with the requirements of the MPS which sets out that marine plan authorities "*should as a minimum make*

provision within Marine Plans for a level of supply of marine sand and gravel that ensures that marine aggregates … contribute to the overarching Government objective of securing an adequate and continuing supply to the UK market for various uses."

There is uncertainty around the location of any new extractions, as proposals could come forward for anywhere within the Marine Plan area. However, proposals are likely to be more geographically restricted around areas of current licensed reserves (in the Bristol Channel, Severn Estuary and off North Wales), reflecting proximity to markets and the presence of infrastructure as well as the availability of reserves to meet known demand over the plan period and beyond.

Reflecting the importance of marine dredged sand and gravel, and taking into account the potential for new extraction to meet demand for aggregates over the plan period, Policy AGG_01 has been assessed as having a significant positive effect on resources (SA Criteria 10). However, the winning of marine aggregates will unavoidably result in the depletion of a non-renewable resource. Further, the activity itself will require resources and generate waste. In consequence, a significant negative effect has also been identified in respect of SA Criteria 10, although Policy AGG_01 is expected to lead to the more sustainable management of marine aggregates including through support for the identification and review of permitted tonnage limits. In this regard, the supporting text to the policy states that "*not more than 800,000 tonnes (exclusive of licensed roll-over tonnage) of annual licensed aggregate will be allowed from Welsh waters in the Severn Estuary…To ensure an adaptive approach to management of the resource and delivery of sustainable development this limit may be reviewed from time to time and may be updated through a Cabinet statement*", and that "*Any tonnage limit may be established or reviewed at any time through inclusion in this plan or through issue of a Cabinet Statement (and subsequent inclusion in any amendment of this plan). In all cases, setting or amending tonnage limits should involve full engagement and consultation with interested parties before any statement is made. Any Cabinet Statement will be a relevant consideration in decision making*."

The winning of marine aggregates such as sand and gravel will support development including housing and infrastructure as well as providing fill for major coastal infrastructure projects such as ports. The sector therefore makes an important contribution to the Welsh economy. As an example, the WMER highlights that, at a UK scale, total construction aggregate extraction is worth £2.4 billion, total construction products are worth £5.3 billion and downstream markets are worth £400 billion (although marine aggregate extraction and use will only represent a small proportion of these values). The WNMP highlights that the marine aggregates sector in Wales makes a critical contribution to the Welsh economy. In this context, Policy AGG_01 is expected to have a significant positive effect on the economy (SA Criteria 11) by supporting the growth of the aggregates industry and by providing confidence and security to the sector to encourage future investment. There is also the potential for aggregates extraction supported by Policy AGG_01 to adversely affect other economic activities in the marine area including, for example, oil and gas exploration, commercial fishing, navigation and subsea cabling. However, as part of the licensing procedure, new proposals for licensed aggregate dredging sites must avoid, minimise or mitigate their impacts on existing or planned activities in other sectors under safeguarding policies SAF_01 and SAF_02. On balance, the positive effects of this policy are considered to outweigh potential adverse impacts on other economic activities, although some uncertainty remains relating to the location of new aggregate extractions and its effects on other sectors.

The aggregates sector provides both direct and indirect employment opportunities. As an example, the WMER sets out that minerals extraction represents 6-7,000 jobs and construction products 19,000-23,000 jobs at the UK scale (although marine aggregates extraction will only represent a small proportion of this figure). The WNMP identifies that the aggregates sector provides both direct employment and secondary employment in supporting activities including ship building and repair, processing of aggregates at wharves, transportation and manufacture of products such as ready-mixed concrete and concrete products, asphalt and mortar from marine aggregate. By supporting proposals for aggregate extraction and in providing confidence and security to the sector to encourage further investment, Policy AGG_01 could support local jobs creation. Further, through supporting construction, the policy may have indirect employment benefits. However, the scale of employment growth related to aggregate extraction over the plan period is considered unlikely to be significant and the extent to which it benefits local communities will be dependent on the recruitment practices of employers and the availability of required skills in local labour markets. Overall, Policy AGG_01 has been assessed as having a positive effect on well-being (SA Criteria 12), although some uncertainty remains.

Policy AGG_01 sets out that relevant public authorities and the sector should, in liaison with other interested parties, collaborate to understand opportunities for the sustainable use of wider marine aggregate natural resources, and to define and further develop Strategic Resource Areas for aggregates. This will help to promote engagement, integrated decision making and research in marine planning and in consequence, the policy has been assessed as having a positive effect on governance (SA Criteria 14).

Aggregates extraction will result in energy use and generate emissions to air (including greenhouse gases) associated with the use of vessels and equipment which could contribute to climate change and affect human health. A study[43] of the carbon footprint of marine aggregates extraction in the UK found that, on average, the total footprint per tonne of aggregate landed was 10.01 kg CO_2-eq with over 75% of the carbon footprint related to vessel activities. The study also highlights that distribution of aggregates to market can have a significant impact on the overall carbon footprint and that proximity to market is an important factor. While current licensed reserves are located in close proximity to markets, it is not known whether future resources will be extracted from the same locations, resulting in uncertainty over future emissions to air including greenhouse gas emissions. A negative effect with some uncertainty has therefore been identified in respect of air quality (SA Criteria 4).

With specific regard to climate change, excessive or inappropriate aggregates extraction could exacerbate flood risk and coastal change (as a result of increased erosion and changes to coastal processes). However, aggregates may be used in flood defences and beach recharge schemes helping to increase resilience to the effects of climate change. Overall, mixed positive and negative effects has been identified in respect of climate change (SA Criteria 6), with some uncertainty relating to the scale of transport emissions.

Aggregates extraction can cause the direct loss of and/or damage to habitats and species due to sediment removal as well as localised disturbance to marine ecology due to noise and vibration (although relative to land-won supplies, environmental impacts are likely to be less). The WMER also sets out that aggregate extraction can create sediment plumes caused by draghead disturbance, overflow when loading sediment and by screening of aggregate for end user requirements. This can result in decreased water quality and associated impacts on marine ecology and ecosystems and may also give rise to suspended sediments. The settlement of these suspended sediments can result in the smothering or blanketing of subtidal communities and/or adjacent intertidal communities. Indirectly, aggregates extraction may cause physical changes to bathymetry and hydrodynamic processes which could further affect water quality and coastal habitats and species. Effects on biodiversity could be significant where they affect designated nature conservation sites. The availability of resources, proximity to markets and presence of infrastructure suggests that marine sand resources in the Bristol Channel, Severn Estuary and off North Wales are likely to provide for a good level of supply of marine aggregates to meet anticipated demand over the term of the plan. These locations of aggregates extraction are within/in close proximity to a number of European designated sites including (inter alia): Liverpool Bay Special Protection Area (SPA); The Dee Estuary Special Area of Conservation (SAC)/SPA/Ramsar; Carmarthen Bay and Estuaries SAC; Carmarthen Bay SPA; and the Severn Estuary SAC/SPA/Ramsar, which have the potential to be affected if future extraction is focussed in these areas. Mobile species such as marine mammals forming features of more distant conservation sites may also be affected by aggregate activity, including:

- changes in habitat or prey distributions due to the physical and physio-chemical changes;
- underwater noise and vibration due to turbine operation, particularly for fish and marine mammals;
- collisions with vessels and structures, particularly for marine mammals;
- introduction of lighting (although generally not likely to be substantial)
- changes in foraging success / predation risk as a result of effects on prey distributions.

However, potential adverse effects on ecology, and specifically protected sites, would be assessed at the project stage as part of any marine licence, EIA, CIS and Habitats Regulations Assessment (HRA) (if required) and proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policy ENV_01) and avoid adverse impacts on Marine Protected Areas (MPAs) (Policy ENV_02). Further, it is noted that the supporting text to the policy states that relevant public authorities should balance the benefits of near-shore aggregates supply in terms of reduced transport movement and practical considerations that constrain the sector, against the wider potential environmental costs and constraints of near-shore activity. In this regard, the findings of the HRA indicate that that the policy (when taken together with the protective General Policies in the WNMP) is sufficiently caveated and flexible to ensure that adverse effects are not an unavoidable or inevitable outcome of its implementation and that project-level mitigation and avoidance measures are available, achievable and likely to be effective in preventing adverse effects on European sites from occurring. In consequence, noting the potential effects on other designated and not designated sites and features outside the scope of the HRA, overall, Policy AGG_01 has been assessed as having a negative effect on biodiversity (SA Criteria 1) as well as water quality (SA Criteria 2) and the physical environment (SA Criteria 3), although some uncertainty remains.

[43] The Crown Estate/ERM (2010) *Marine Estate Research Report: Carbon Footprint of Marine Aggregate Extraction*. Available from https://www.thecrownestate.co.uk/media/2481/ei-carbon-footprint-of-marine-aggregate-extraction.pdf [Accessed May 2019].

Aggregates extraction can result in disturbance to, or loss of, underwater heritage assets. The magnitude of effect will be dependent on the location and scale of development as well as the significance of any heritage asset(s) affected. The areas surrounding current aggregate activity contain a number of wrecks, however the locations of new extractions are not known. Impacts on heritage assets would be assessed and considered at the project stage and marine licence determination with proposals determined in accordance with Policy SOC_05 of the WNMP which seeks to conserve and enhance heritage assets. Policy AGG_01 has therefore been assessed as having a negative effect on heritage (SA Criteria 7), with some uncertainty remaining.

Emissions to air and any change in water quality associated with aggregates extraction could have adverse impacts on human health. However, the probability of any negative effects occurring in this regard, and their magnitude, would be low given the short term nature of the activity and its distance from the shore. Further, it is anticipated that potential impacts on air and water quality would be considered at the consenting stage (including through EIA, if required) with proposals determined in accordance with those policies of the WNMP that seek to maintain the well-being of communities (Policy SOC_02) and protect water and air quality (Policy ENV_06). Overall, Policy AGG_01 has been assessed as having a neutral/negative effect on health.

The potential creation of local employment opportunities associated with the implementation of Policy AGG_01 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Effects on the remaining SA criteria have been assessed as neutral.

Mitigation/Enhancement:

- Maintaining aggregate supplies close to the point of use would help minimise the length of movements associated with the transportation of aggregates, and therefore reduce associated emissions to air including greenhouse gases.

Assumptions:

- It is assumed that the revocation of the Interim Marine Aggregates Dredging Policy following adoption of the WNMP would not result in the loss of policy effect/coverage.
- It is assumed that aggregate extraction is likely to be focussed around areas of current licensed reserves (in the Bristol Channel, Severn Estuary and off North Wales), reflecting proximity to markets and the presence of infrastructure as well as the availability of reserves to meet known demand over the plan period and beyond.

Uncertainties:

- The exact scale and location of future proposals is currently unknown.
- The scale of emissions to air associated with aggregate transportation is not certain, and depends on the location of extractions.
- The scale of additional jobs created for Welsh communities is not certain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
AQU_01: Aquaculture (Supporting) **AQU_01 a:** Proposals for new aquaculture developments will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **AQU_01 b:** Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of aquaculture resources including the identification of: • natural resources that provide aquaculture potential • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for aquaculture in order to support the sustainable development of the aquaculture sector through marine planning.	+/-/?	+/?	-/?	+/-/?	-/?	+/-/?	-/?	0	+/-/?	0	++/?	+/?	+/?	+

Significant Effects:
This policy seeks to support aquaculture activities, where this contributes to the objectives of the plan and complies with relevant safeguarding policies. Aquaculture is the rearing or cultivation of aquatic organisms, i.e. finfish, shellfish and algae (including support feeds etc.) to increase their production beyond the natural capacity of the species in their natural environment. Aquaculture may produce livestock for direct commercial purposes (e.g. seafood for human or animal consumption, pharmaceuticals, or algae for fertiliser or energy-stock) or for restocking and enhancing wild populations i.e. 'ocean ranching'. Supporting activities include the processing, distribution and sale of fish/shellfish for consumption, the manufacture of prepared feed for the farms and the specialised construction and installation of fish farms and associated equipment. Marine aquaculture commonly requires additional infrastructure on land to support it, such as purification and processing facilities, storage areas and transport (vessels and vehicles).

Aquaculture is a sector with significant growth opportunity in Welsh waters. Wales' Marine Evidence Report (October 2015) (WMER) identifies that total estimated GVA associated with aquaculture activities in the plan area was £3.70M in 2013-14 and this is forecast to increase to £5.24M by 2032-33. In this context, Policy AQU_01 is expected to have a significant positive effect on the economy (SA Criteria 11) by supporting the growth of aquaculture and associated infrastructure and by providing greater certainty to developers. There is the potential for aquaculture supported by Policy AQU_01 to adversely affect other economic activities in the marine area including, for example, commercial fishing (including fish spawning and nursery grounds) and navigation. However, the (offshore) footprint of aquaculture development is small whilst modified sea bed and structures may provide opportunities to enhance fish production. Further, Policy AQU_01 requires proposals to comply with the sector safeguarding policies in this plan (SAF_01 and SAF_02), which require new aquaculture proposals to avoid, minimise or mitigate their impacts on existing or planned activities in other sectors. On balance, the positive effects of this policy are considered to outweigh potential adverse impacts on other economic activities, although some uncertainty remains.

Shellfish aquaculture requires good water quality and so there is the potential for Policy AQU_01 to support water quality improvements in Welsh waters. This is particularly pertinent given that only 3 of 22 Shellfish Waters in Wales met guideline quality standards in 2014 (as reported in the State of Natural Resources Report (SoNaRR) (2016) prepared by Natural Resources Wales (NRW). Whilst there is the potential for aquaculture to also have adverse impacts on water quality (associated with, for example, copper antifoulants used on cage nets and the release of medicines), on balance Policy AQU_01 has been assessed as having a positive effect on water (SA Criteria 2), although some uncertainty remains.

Many of Wales' coastal communities are rural and the nature of aquaculture activity lends itself well to supporting rural coastal communities. The development of the aquaculture sector under Policy AQU_01 could therefore support local employment creation in such communities. However, the scale of aquaculture employment growth over the plan period is considered unlikely to be significant (the WMER highlights that the Welsh aquaculture sector currently supports only 23 direct full time equivalent (FTE) jobs). Overall, a positive effects has been identified in respect of well-being (SA Criteria 12).

The WMER states that "*Aquaculture could become the greatest source of the required increase in fish and shellfish production that will be needed in the coming decades to bridge the gap between diminishing food resources and the increasing demand for food*." Opportunities also exist at a smaller scale to grow algae closer inshore to supply pharmaceutical or food related industries. Support to the growth of the aquaculture sector could therefore generate positive effects on health (SA Criteria 13) both in terms of the supply of food and medicines. There is the potential for onshore development to generate localised adverse health impacts (for example, emissions to air during the construction and operation of related onshore facilities). However, these effects are considered to be unlikely given existing regulation, although some uncertainty remains.

There is the potential that growth of the aquaculture sector could support research and development in fields such as pharmaceuticals as well as innovation in aquaculture operations and engagement on associated marine planning issues. In this regard, an Aquaculture Advisory Group has been established to inform policy development through collaboration with industry and it is noted that the supporting text to Policy AQU_01 "*encourages the aquaculture industry to work in partnership with businesses, government and academia to support the implementation of this plan*." Additionally, the policy sets out that relevant public authorities and the sector should, in liaison with other interested parties, collaborate to understand opportunities for the sustainable use of aquaculture resources, and to define and further develop Strategic Resource Areas for aquaculture. This will help to promote engagement, integrated decision making and research in marine planning. Overall, the policy has therefore been assessed as having a positive effect on governance (SA Criteria 14).

While shellfish is currently the predominant form of aquaculture in Wales, both finfish and shellfish aquaculture are highlighted in the WMER as having the potential to expand. Finfish aquaculture results in the collection of waste feed and excreted waste on the seabed which can affect seabed biodiversity. The spread of disease from farmed to wild fish, as well as the release of medicines which are toxic to other species such as marine invertebrates, could also have detrimental effects on marine wildlife. Copper antifoulants used on cage nets are another source of potential harm to marine species,[44] all of which could have particularly detrimental effects on designated conservation sites near aquaculture areas. The escape of farmed fish into the wild may also present competition for wild species, and birds may suffer detrimental effects from shellfisheries due to loss of feeding areas and disturbance. The HRA of the WNMP also identifies potential impact pathways as including (inter alia) hydrodynamic changes, loss of/damage to habitat, toxic contamination and biological changes. Mobile species such as marine mammals forming features of more distant conservation areas can also be affected. There is also the potential for both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on

[44] Scottish Government (2002) *Review and Synthesis of the Environmental Impacts of Aquaculture*. Available from https://www2.gov.scot/Publications/2002/08/15170/9409 [Accessed May 2019].

terrestrial ecology associated with the construction and operation of onshore supporting facilities, as a large number of designated sites occur along the coast. However, potential adverse effects on ecology would be assessed at the project stage as part of any HRA (if required) and proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 and ENV_02). The findings of the HRA indicate that that the policy (when taken together with the protective General Policies in the WNMP) is sufficiently caveated and flexible to ensure that adverse effects are not an unavoidable or inevitable outcome of its implementation and that project-level mitigation and avoidance measures are available, achievable and likely to be effective in preventing adverse effects on European sites from occurring. Further, aquaculture can help to improve water quality with associated benefits on marine ecology and ecosystems whilst mussel farms may also attract fish and enhance wild fish populations.[45] Overall, a mixed positive and negative effect has been identified in respect of biodiversity (SA Criteria 1), although the magnitude of effect is uncertain and will be dependent upon the exact scale, type and location of activity.

Mixed positive and negative effects have also been identified in respect of air quality (SA Criteria 4) and climate change (SA Criteria 6). Marine biomass from seaweed harvesting is identified in the WMER as one of the newest prospective aquaculture business sectors for use in energy production. Support for such activity may therefore have a positive effect upon climate change together with benefits associated with reductions in emissions to air (as the release of polluting combustion products could be reduced), although the magnitude of any positive effect is uncertain at this stage given the infancy of the sector. Development of the aquaculture sector would, however, be likely to generate emissions to air including greenhouse gas emissions associated with both the construction of facilities (including the embodied carbon in materials) and operation of vessels and vehicle movements. This could have a negative effect on air quality and climate change**.** Additionally, onshore development associated with aquaculture activities could, if inappropriately sited, be affected by flood risk and coastal change, although it is anticipated that development proposals would be accompanied by a Flood Consequences Assessment (FCA) where appropriate (i.e. in high risk areas) whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

Aquaculture can support long term improvements in water quality and the provision of locally sourced seafood to retailers and restaurants which can help to sustain the tourism industry. Whilst aquaculture activity could also affect tourism and recreation (principally due to space conflicts and potential visual impacts, depending on the location of proposals), any adverse impacts are likely to be manageable and, further, proposals would need to be considered at the project stage with reference to Policy ECON_02 which promotes coexistence. On balance, Policy AQU_01 has been assessed as having a mixed positive and negative effect on SA Criteria 9, with some uncertainty.

The accumulation of waste on the seabed associated with aquaculture activities can affect the nature and chemistry of sediments. In consequence, Policy AQU_01 has been assessed as having a negative effect on the physical environment (SA Criteria 3), although the magnitude of effect is dependent on the exact scale and location of development.

There is the potential for aquaculture which takes place at the surface of water to be visible from land and affect seascapes. In this regard, it is noted that aquaculture resources are located close to the Pembrokeshire Coast National Park and Areas of Outstanding Natural Beauty (AONB) on the north-west coast of Wales (including Anglesey and Llyn) and the Gower which could be affected by the implementation of Policy AQU_01. There is also the potential for the development of associated onshore facilities to have adverse landscape and visual impacts which could be significant if development is located within or close to designated landscapes. Further, it is expected that potential landscape/seascape impacts would be assessed at the project stage and that proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance landscape and seascape (such as Policies SOC_06 and SOC_07). It is also recognised that aquaculture activity can and does operate in sensitive areas such as AONBs with no adverse effects. Overall, Policy AQU_01 has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although the probability of the effect occurring and its magnitude is dependent on the exact scale, type and location of development which is currently unknown.

Onshore development associated with aquaculture could have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. Aquaculture with connections to the seafloor also has the potential to cause harm to cultural heritage receptors such as wrecks, which are present all around the Welsh coast. Policy AQU_01 has therefore been assessed as having a negative effect on heritage (SA Criteria 7), although the probability of the effect occurring and its magnitude is dependent on the exact scale, type and location of development which is currently unknown.

[45] Scottish Parliament Information Centre (SPICe) (2012) *SPICe Briefing: Aquaculture and Fisheries (Scotland) Bill.* Available from http://www.parliament.scot/ResearchBriefingsAndFactsheets/S4/SB_12-68.pdf [Accessed May 2019].

Effects on the remaining SA criteria have been assessed as neutral.

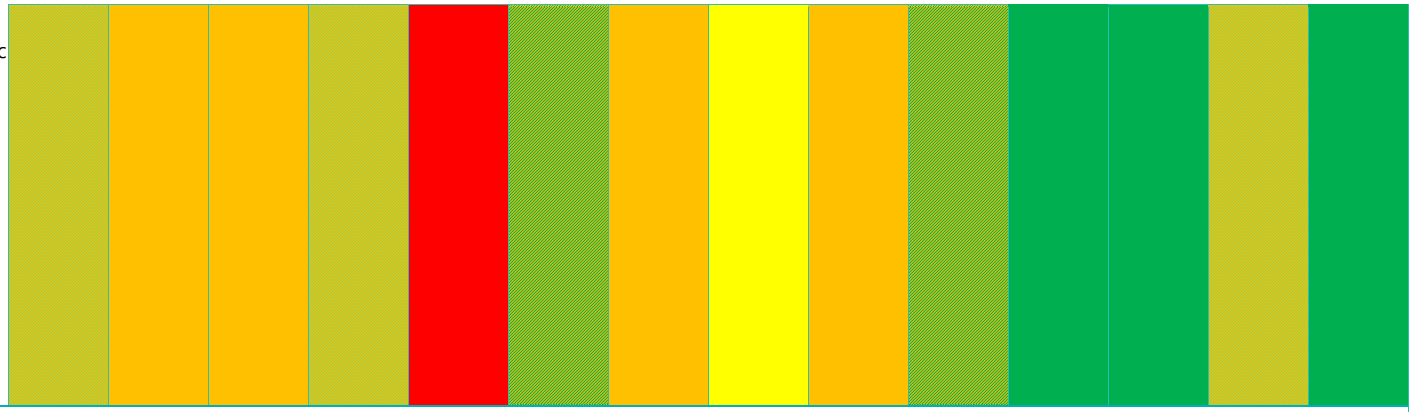
No significant negative effects have been identified.

Mitigation/Enhancement:
- None identified.

Assumptions:
- It is assumed that aquaculture activities will experience growth as a result of this policy.

Uncertainties:
- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_01: Low carbon energy (supporting) wind **ELC_01 a:** Proposals for **offshore wind** energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for **wind >350MW** will be considered by UK Government in accordance with relevant national policy. In determining an NSIP for a wind proposal, the decision maker will have regard to this plan. Any determination in relation to energy developments of any scale will be taken in accordance with this plan alongside any other relevant considerations. **ELC_01 b:** In order to understand future opportunities for **offshore wind** development, including floating technologies, this plan supports strategic planning for the sector. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wind energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and	+/-	-/?	-/?	+/-	--/?	++/-	-/?	?	-/?	++/-	++/?	++/?	+/-	++

• opportunities to define and, once in place, further develop and refine Strategic Resource Areas for offshore wind energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	

Significant Effects:
In 2017, Wales' power sector had a total installed capacity of some 11,090 MW. Approximately 7 TWh (22%) of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables, with 2.1 TWh of electricity generated from 726 MW of installed capacity from offshore wind.[46] The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. Wales currently has three operational offshore wind farms, the largest of which is Gwynt-y-Môr, the third largest in the UK[47] (with 576 MW capacity) along with North Hoyle (60 MW) and Rhyl Flats (90 MW). Current offshore wind development sites are focussed in the shallower waters in the North Sea; however, "floating wind technology offers a significant opportunity for innovation for which the Pembroke demonstration zone and the deeper waters of the outer Bristol Channel and Celtic Sea are prime sites for deployment".[46] The locations offered for future offshore wind leasing (Round 4) have not yet been finalised, but North Wales and Anglesey are under consideration.[48] Supporting text to the policy specifies that '*opportunities for both extending existing developments and for bringing forward new sites are encouraged*'.

Policy ELC_01 supports wind energy generation proposals, where they contribute to the objectives of the plan and comply with other sector safeguarding policies. The policy also supports strategic planning for the sector, and stipulates that relevant public authorities and the sector should, in liaison with other interested parties, collaborate to understand opportunities for the sustainable use of wind energy resources. Overall, the provisions of this policy are expected to help encourage renewable energy development and innovation in the sector together with supporting a long term reduction in greenhouse gas emissions, once projects are operational. The supporting text to the policy highlights that wind energy has considerable scope in the near term for further large-scale development, with significant potential to contribute to renewable energy targets during the lifetime of the WNMP. During construction, energy would be required and greenhouse gases emitted associated with both the construction of facilities (including the embodied carbon in the fabrication of the tower and blades) as well as fuel used in the construction of the base, and the movement and siting of the tower/turbine. In addition, resources would be required for the offshore windfarm construction. In consequence, Policy ELC_01 has been assessed as having an overall mixed significant positive and minor negative effect on climate change (SA Criteria 6) and resources (SA Criteria 10).

The delivery of renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector. A report by the Carbon Trust on the future potential for offshore wind in Wales[49] highlights that UK-wide investment in offshore wind deployment was £30 billion from 2010 to 2017. The largest of the three operational offshore wind farms in Wales,

[46] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed May 2019].
[47] Crown Estate (2018) *Project Listing December 2018*. Available from https://www.thecrownestate.co.uk/media/2806/offshorewindprojectlisting.pdf [Accessed May 2019].
[48] Crown Estate (2018) Proposed Region Refinement (November 2018). Available from https://www.thecrownestate.co.uk/en-gb/media-and-insights/news/2018-the-crown-estate-shares-further-detail-on-plans-for-round-4-including-proposed-locations-to-be-offered-for-new-seabed-rights/ [Accessed May 2019].
[49] Carbon Trust (2018) *Future Potential for Offshore Wind in Wales*. Available from https://gweddill.gov.wales./docs/desh/publications/181213-overview-of-future-potential-for-offshore-wind-in-wales-en.pdf [Accessed May 2019].

Gwynt-y-Môr, represented a £2 billion investment, however the Carbon Trust report highlights that during construction, the project delivered limited benefits to Wales, with only 5% local content. It also notes however, that benefits to businesses and communities in Wales are considerably higher during operation through secured contracts and community funds. More generally the report identifies that the greatest supply chain opportunities for Wales are likely to be in operations and maintenance, and that economic benefits from this could be considerable.

Investment in the renewables sector may also create local employment opportunities which could benefit coastal communities. The three currently operational windfarms are located off the coast of North Wales, although supporting text to Policy ELC_01 highlights the presence of good wind resource in deeper water around the west and south west. The Carbon Trust report also notes that the Bristol Channel and South West Wales have also been identified as possible project locations (albeit with technical challenges). While most of the Welsh coast has wind speeds adequate for energy generation, the report highlights North West and South West Wales as having high wind speeds and being particularly attractive for future development. Pembrokeshire and the deeper waters of the outer Bristol Channel and Celtic Sea are also identified in the supporting text to Policy ELC_01 as possible sites for deployment of floating wind technology, although this technology is at an earlier stage and is less certain. The policy could therefore support development which would benefit the more deprived coastal areas around North Wales, Swansea and South East Wales if projects were developed in other locations, although this is uncertain. Additionally, the company operating the Gwynt-y-Môr offshore windfarm has contributed £1.4m to a community fund in 2018, and is expected to invest £19m over the lifetime of Gwynt-y-Môr.[50] Associated community funds therefore have the potential for a beneficial effect on local communities. Overall, Policy ELC_01 has been assessed as having a significant positive effect on the economy (SA Criteria 11) and well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force.

It is recognised that wind energy development can have adverse impacts on other economic activities in the plan area. In this regard, the Carbon Trust report identifies oil and gas, aggregates, defence, fishing and shipping as potentially interacting with wind developments. However, the policy requires compliance with safeguarding policies SAF_01 and SAF_02, meaning that proposals for wind energy must avoid, minimise or mitigate their impacts on existing or planned activities in other sectors. On balance, the positive effects of this policy are considered to outweigh potential adverse impacts on other economic activities, although some uncertainty remains relating to the location of new wind energy development and its effects on other sectors.

Renewable energy generation would contribute towards UK and Welsh Government climate change targets. Further, making evidence available and support for strategic planning and liaison with the sector and other interested parties on the opportunities for future resources and de-risking consenting for the sector would promote collaboration. In this regard, it is noted that the supporting text to Policy ECL_01 encourages relevant parties to '*collaborate to better understand and identify future opportunities for new development, including working through the Offshore Energy Strategic Environment Assessment (OESEA) and with TCE'* and to '*develop and participate in opportunities to address key evidence gaps and make evidence available in order to better understand opportunities for the sustainable development of the sectors*'. On this basis, Policy ELC_01 has been assessed as having a significant positive effect on governance (SA Criteria 14).

Overall, mixed minor positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). The transition away from the combustion of fossil fuels to low carbon energy sources is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of renewable energy development can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a very small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[51]. With specific regard to human health, there is also the potential for associated onshore development (for example substations) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

Offshore wind developments can be highly visible from the coast, and designated areas such as National Parks and Areas of Outstanding Natural Beauty (AONB) around the coast could be particularly sensitive. It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in or displacement of

[50] OffshoreWIND.biz (2018) *Innogy's Renewables Bring GBP 1.4 Million to Wales.* Available from https://www.offshorewind.biz/2018/12/25/innogys-renewables-bring-gbp-1-4-million-to-wales/ [Accessed May 2019].
[51] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed May 2019].

tourism, although there is no evidence that current windfarm developments off the North Wales coast have had an adverse impact upon tourism and recreation. Overall, Policy ELC_01 has been assessed as having a minor negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of renewable energy developments. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure); construction and operational noise and vibration (e.g. underwater noise due to piling); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations (it is noted that a large number of designated sites including SSSI occur along the coast). Marine SACs and SPAs around the Welsh coast would also be particularly sensitive to effects from development. Evidence shows that construction noise reduces or displaces populations of fish and associated dependent bird species, while there is little evidence to date on effects of electromagnetic fields and marine mammal collisions, however further research is required and effects remain possible.[52] Additional impacts may include collision risks to birds. The UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report[51] highlights that the potential barrier effects of offshore wind farms and displacement of birds from offshore wind farm areas have been extensively recognised with a growing number of publications on this topic, but despite this, the significance of such effects remains uncertain, and it is acknowledged that numerous factors affect such a judgement which will be location specific.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits. In the context of UK and global greenhouse gas emissions, any positive effects on biodiversity as a result of climate change mitigation in this regard are likely to be very limited and uncertain. The presence of renewable energy infrastructure can also act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones. This has the potential to benefit marine ecology (particularly fish and benthic communities) although adverse impacts associated with, for example, fishing may be displaced, however there is limited evidence of this to date. Renewable energy development and associated fixed structures can also serve to create new habitat, attracting key species and enhancing biodiversity.[52]

In conclusion, Policy ELC_01 has been assessed as having a mixed positive and negative effect on biodiversity (SA Criteria 1). However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible.

Offshore wind energy development can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Overall, Policy ELC_01 has therefore been assessed as having a minor negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to protect water quality (Policy ENV_06) such that any significant adverse effects would be minimised and mitigated where possible.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed. The policy references possible future floating turbines, which is currently in the demonstration phase and would avoid a fixed foundation on the seabed.[53] Supporting text to Policy ELC_01 highlights that floating technologies may become commercially viable within the lifetime of the plan, however it is not known whether this type of technology will progress to become operational, and whether it would be installed in Wales. The magnitude of any changes on the physical environment from wind turbines will be project specific as impacts would be dependent on the scale and location of the development. Overall, Policy ELC_01 has been assessed as having a minor negative effect on SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on

[52] Marine Institute Plymouth University and Friends of the Earth (2013) *Marine Renewables, Biodiversity and Fisheries*. Available from https://www.foe.co.uk/sites/default/files/downloads/marine_renewables_biodiver.pdf [Accessed May 2019].
[53] Marine Energy Wales (2019) *State of the Sector 2019: Economic Benefits for Wales*. Available from https://www.marineenergywales.co.uk/wp-content/uploads/2019/04/MEW-State-of-the-Sector-Report-2019.pdf [Accessed May 2019].

coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

Offshore wind energy development could have adverse impacts on landscape/seascape and visual amenity. Supporting text to Policy ELC_01 states that '*it is accepted that the development of marine renewable energy infrastructure will result in changes to the seascape character of Wales and that these changes are an inevitable result of our ambition for marine renewable energy to make an increasingly significant contribution to the overall energy mix*'. These impacts would be principally associated with the introduction of wind turbines into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. The plan identifies that 54% of the Welsh coast is designated as either National Park or AONB, and these areas would be particularly sensitive. The Carbon Trust report highlights that visual impacts would depend on the number of turbines, size of turbine, distance from shore, and onshore topography, and also notes that distance from shore is typically increasing (hence reducing the visibility), albeit with an increase in project sizes. The report further suggests that visibility will be negligible for future developments over 35km from the coast, but that developments closer to shore would still be visible. The magnitude of landscape/seascape and visual effects will therefore be dependent on the exact scale and location of development, distance to shore, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors, which is uncertain. There is at least the potential for adverse effects associated with this policy to be significant where development is visible from protected areas. Overall, Policy ELC_01 has been assessed as having the potential for a significant negative effect on landscape and seascape (SA Criteria 5), although uncertainty remains, and this could be avoided through siting of proposals.

Renewable energy development has the potential to have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. In this regard, it is noted that the Welsh coastline contains a large number of wrecks including Protected Wrecks such as the Resurgam, Royal Yacht Mary and the Smalls Wreck, which could be affected by development, particularly during construction. Offshore development could additionally affect the setting of coastal (terrestrial) cultural heritage assets when turbines are visible from heritage assets. The development of associated onshore facilities could also affect these assets directly. The magnitude of the effect on heritage as a result of the implementation of Policy ELC_01 is, however, uncertain as it is dependent on the nature and location of offshore wind projects as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered and effectively managed during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_01 has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_01 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. The inclusion of Welsh language in wind farm names such as Gwynt y Mor could have the incidental benefit of raising awareness of the Welsh language, however the scale of benefit is not expected to result in a positive effect with respect to the SA criteria. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- The policy wording could make specific reference to encouraging research and development in addition to collaboration in order to understand further the opportunities for renewable energy development including environmental constraints and opportunities as well as the efficacy of mitigation.
- The policy could include wording to increase the local content of projects during construction, such as the use of local labour agreements to create local employment opportunities. This could address the possibility that economic benefits or employment will be sourced outside Wales, and support the employment aims of Policy ECON_01.

Assumptions:

- It is assumed that the location of offshore wind projects could expand to North West and South Wales, although this is uncertain.

Uncertainties:

- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.

- The timescales for floating wind technology to be commercially viable and the scale of future installation in Wales is currently unknown.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_02: Low carbon energy (supporting) wave **ELC_02 a:** Proposals for **wave energy** generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **ELC_02 b:** In order to understand future opportunities for **wave energy** development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of wave energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for wave energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the	+/-/?	-/?	-/?	+/-	-/?	++/-	-/?	?	-/?	++/-	++/?	+/?	+/-	+

sector through marine planning, where it is appropriate to do so.	

Significant Effects:

In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[54] (although as wave energy is in the testing/demonstrator phase, its contribution to the 2017 total was negligible). The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. In this regard, the Welsh Government's Marine Renewable Energy Strategic Framework has identified a scenario to secure 6.4GW through marine tidal stream and wave energy development. The supporting text to Policy ELC_02 highlights that wave technologies are less well progressed than tidal stream, and may take longer to be deployed commercially.

Policy ELC_02 supports wave energy renewable energy generation proposals, where they contribute to the objectives of the plan and comply with safeguarding policies. The policy also stipulates that relevant public authorities and the sector should, in liaison with other interested parties, collaborate to understand opportunities for the sustainable use of wave energy resources. Overall, the provisions of this policy are expected to help encourage renewable energy development and innovation in the sector together with a long term reduction in greenhouse gas emissions. The supporting text to the policy recognises that '*marine energy resources around Wales offer a good opportunity to deliver significant renewable energy generation*'. During construction, energy would be required and greenhouse gases emitted associated with the fabrication of wave devices (including embodied carbon) as well as fuel used in the construction, and the installation of wave developments. In addition, resources would be required for the construction of the wave energy developments. In consequence, Policy ELC_02 has been assessed as having an overall mixed significant positive and minor negative effect on climate change (SA Criteria 6) and resources (SA Criteria 10).

The delivery of wave renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector. In 2019, Marine Energy Wales published[55] the outputs of a survey of the economic contribution from the marine energy sector in Wales. This highlighted that £96.2 million has been spent in Wales on the development of the marine energy industry, a substantial increase from the spending reported in the 2015 survey (£34.5 million[56]), and has created 566 person years of employment. Specifically, wave energy development has contributed £12.5 million of direct investment to the Welsh economy, an increase of £8.9 million from 2017. The figures suggest that every £10 million invested in marine energy has an associated GVA in Wales of £2.5 million (once direct, supply chain and household effects are taken into account). Figures in the supporting text to Policy ELC_02 estimate that a 30 megawatt (MW) wave installation and 30MW tidal stream installation have the potential to support 2,000 person-years of employment in Wales during development and installation, and 50 full-time equivalent (FTE) per annum during generation. Scaling up to commercial arrays of up to 300MW could generate 8,500 person-years of employment during development and installation and 180 FTE per annum during generation.

Investment in the renewables sector may also create local employment opportunities. Marine Energy Pembrokeshire reported that the majority of marine energy investment is focussed around North West and South West Wales. Wave resources specifically are highlighted as being located off the south west coast, which could benefit coastal communities. The report also highlights that at least 50% of the supply chain for current marine energy projects has come from within Wales (and is expected to continue at this rate), with supply chain hubs developing in coastal regions in need of economic regeneration. This has the potential to make a contribution to coastal employment and skill development, particularly in the vicinity of the wave resources.

Overall, Policy ELC_02 has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force. It is recognised that wave energy development can have potential adverse impacts on other economic activities in the plan area, such as shipping routes, subsea cables, fishing areas and related spawning grounds. However, the policy requires compliance with safeguarding policies SAF_01 and SAF_02, meaning that proposals for wave energy must avoid, minimise or mitigate their impacts

[54] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed May 2019].
[55] Marine Energy Wales (2019) *State of the Sector 2019: Economic Benefits for Wales*. Available from https://www.marineenergywales.co.uk/wp-content/uploads/2019/04/MEW-State-of-the-Sector-Report-2019.pdf [Accessed May 2019].
[56] Marine Energy Pembrokeshire (2015) *Marine Energy in Wales*. Available from http://www.marineenergywales.co.uk/wp-content/uploads/2016/03/Marine-Energy-in-Wales-Investment-Jobs-Supply-Chain-2015-m.pdf [Accessed May 2019].

on existing or planned activities in other sectors. On balance, the positive effects of this policy are considered to outweigh potential adverse impacts on other economic activities, although some uncertainty remains relating to the location of new wave energy development and its effects on other sectors.

Renewable energy generation would contribute towards UK and Welsh Government climate change targets, whilst making evidence available and liaison with the sector and other interested parties on the opportunities for future resources and de-risking consenting for the sector would promote collaboration. In this regard, it is noted that the supporting text to Policy ECL_02 states that wave energy proposals *'should consider opportunities to work collaboratively to promote and increase the attractiveness of the demonstration zones for development'* and encourages relevant parties to '*develop and participate in opportunities to address key evidence gaps and make evidence available in order to better understand opportunities for the sustainable development of the sectors'*. On this basis, Policy ELC_02 has been assessed as having a positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). The transition away from the combustion of fossil fuels to low carbon energy sources is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of renewable energy development can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a very small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant.[57] With specific regard to human health, there is also the potential for associated onshore development (for example substations) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in or relocation of tourism, although there is no evidence that other renewable developments such as current windfarms off the North Wales coast have had an adverse impact upon tourism and recreation. Effects would be most likely if small scale, nearshore wave devices are deployed. Devices further offshore are likely to have limited impact except for during maintenance activities. Overall, Policy ELC_02 has been assessed as having a minor negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of wave energy developments. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure, if devices are attached to the seafloor); construction and operational noise and vibration (e.g. operational noise associated with wave energy devices); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; collision; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations (it is noted that a large number of designated sites including SSSI occur along the coast which could be affected). The floating nature of wave devices may result in fish aggregation, therefore attracting potential prey for marine mammals. This could draw predatory species into the area thereby increasing the risk of collision and/or entanglement.[58] However there is currently limited understanding on the effects of wave developments on biodiversity, particularly for multiple array-based wave farms.[59]

Marine SACs and SPAs around St David's peninsular are key receptors that need to be considered with respect to effects from wave energy developments, as this is identified by Marine Energy Wales as a key area of resource. Supporting text to Policy ELC_02 also indicates that projects are most likely in the south west of Wales, expanding beyond the existing Pembrokeshire demonstration zone. Designated nature conservation sites in this area include (inter alia): Pembrokeshire Marine SAC; West Wales Marine SAC; Cardigan Bay SAC; Grassholm SPA; and Skokholm and Skomer SPA. The location of any future wave proposals is not yet known, and so it is not certain whether effects on designated sites would arise. The findings of the HRA indicate that that the

[57] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed May 2019].
[58] Marine Institute Plymouth University and Friends of the Earth (2013) *Marine Renewables, Biodiversity and Fisheries*. Available from https://www.foe.co.uk/sites/default/files/downloads/marine_renewables_biodiver.pdf [Accessed May 2019].
[59] Witt, M.J., et al (2012) *Assessing wave energy effects on biodiversity: the Wave Hub experience. 370. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences.* Available from http://doi.org/10.1098/rsta.2011.0265 [Accessed May 2019].

policy (when taken together with the protective General Policies in the WNMP) is sufficiently caveated and flexible to ensure that adverse effects are not an unavoidable or inevitable outcome of its implementation.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be very limited and uncertain. The presence of wave energy infrastructure can also act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones. This has the potential to benefit marine ecology (particularly fish and benthic communities) although adverse impacts associated with, for example, fishing may be displaced.

In conclusion, Policy ELC_02 has been assessed as having a mixed positive and negative effect on biodiversity (SA Criteria 1). However, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible.

Wave energy development can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction of moorings , the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to protect water quality (Policy ENV_06) such that any significant adverse effects would be minimised and mitigated where possible. Overall, Policy ELC_02 has therefore been assessed as having a minor negative effect on water (SA Criteria 2), although some uncertainty remains.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed, and changes to hydrodynamics and wave conditions with associated effects on sediment transport. Wave devices may include small devices attached to the seabed, or could involve larger structures which reach from the seafloor to the surface or floating structures. Changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures may alter benthic habitats, at least on a local scale. Hydrodynamic changes, including waves and flow speeds, within an estuary or coastal region or around a new development may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. However, the magnitude of any such changes and the sensitivity of the location will be project specific as impacts would be dependent on the scale and location of the development. Overall, Policy ELC_02 has been assessed as having a minor negative effect on SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

Wave energy development could have adverse impacts on landscape/seascape and visual amenity. Supporting text to Policy ELC_02 states that '*it is accepted that the development of marine renewable energy infrastructure will result in changes to the seascape character of Wales and that these changes are an inevitable result of our ambition for marine renewable energy to make an increasingly significant contribution to the overall energy mix*'. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. While some wave devices are fully submerged, others have visible surface components. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain. However, it is noted that wave resources are located close to the Pembrokeshire Coast National Park. In consequence, there is at least the potential for adverse effects associated with this policy to be significant where development is visible. Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Renewable energy development has the potential to have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. In this regard, it is noted that the wave resource area highlighted in the Marine Energy Wales survey contains wrecks including the Smalls Protected Wreck which could be affected by development, particularly during construction. Offshore development could additionally affect the setting of coastal (terrestrial) cultural heritage assets whilst the development of associated onshore facilities could also affect these assets directly. However, development also has the potential to result in the rejuvenation of maritime heritage areas, although this is uncertain. The magnitude of the effect

on heritage as a result of the implementation of Policy ELC_02 is uncertain as it is dependent on the nature and location of renewable energy projects as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_02 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- The policy wording could make specific reference to encouraging research and development in addition to collaboration in order to understand further the opportunities for renewable energy development including environmental constraints and opportunities as well as the efficacy of mitigation.
- The policy could include wording to increase the local content of projects, such as the use of local labour agreements to create local employment opportunities. This could address the possibility that economic benefits or employment will be sourced outside Wales, and support the employment aims of Policy ECON_01.

Assumptions:

- It is assumed that wave energy development is likely to be focussed around the South West coast.

Uncertainties:

- The exact scale, type and location of future proposals is currently unknown.
- The scale and location of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_03: Low carbon energy (supporting) tidal stream **ELC_03 a:** Proposals for **tidal stream** energy generation will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **ELC_03 b:** In order to understand future opportunities for **tidal stream energy** development, relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities for the sustainable use of tidal stream energy resources including identification of: • natural resources that provide potential opportunity for future use; • evidence to de-risk consenting for the sector; and • opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal stream energy resource safeguarding in order to support the sustainable development of the sector through marine planning. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to	+/-	-/?	-/?	+/-	-/?	++/-	-/?	?	-/?	++/-	++/?	++/?	+/-	+

support the sustainable development of the sector through marine planning, where it is appropriate to do so.	

Significant Effects:

In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[60] (although as tidal stream energy is in the testing/demonstrator phase, its contribution to the 2017 total was negligible). The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. In this regard, the Welsh Government's Marine Renewable Energy Strategic Framework has identified a scenario to secure 6.4GW through marine tidal stream and wave energy development. Supporting text to Policy ELC_03 highlights that tidal technologies offer significant potential in the medium to long-term stating: "*Over the next 5-10 years, tidal stream technologies are likely to be focussed on small scale demonstration devices in prime locations, including the West Anglesey demonstration zone, with subsequent larger scale deployment in other areas of suitable resource likely*".

The policy also stipulates that relevant public authorities and the sector should, in liaison with other interested parties, collaborate to understand opportunities for the sustainable use of tidal stream energy resources. Overall, the provisions of this policy are expected to help encourage renewable energy development and innovation in the sector together with a long term reduction in greenhouse gas emissions. Policy ELC_03 supports tidal stream renewable energy generation proposals, where they contribute to the objectives of the plan and comply with safeguarding policies. The supporting text to the policy recognises that '*marine energy resources around Wales offer a good opportunity to deliver significant renewable energy generation*'. During construction, energy would be required and greenhouse gases emitted associated with the fabrication of tidal stream devices (including embodied carbon) as well as fuel used in the construction, and the installation of tidal stream developments. In addition, resources would be required for the construction of the tidal stream devices. In consequence, Policy ELC_03 has been assessed as having a mixed significant positive and minor negative effect on climate change (SA Criteria 6) and resources (SA Criteria 10).

The delivery of renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector. In 2019, Marine Energy Wales published[61] the outputs of a survey of the economic contribution from the marine energy sector in Wales. This highlighted that £96.2 million has been spent in Wales on the development of the marine energy industry, a substantial increase from the spending reported in the 2015 survey (£34.5 million[62]), and has created 566 person years of employment. Specifically, tidal stream energy development has contributed £46.8 million of direct investment to the Welsh economy, an increase of £17.4 million from 2017. The figures suggest that every £10 million invested in marine energy has an associated GVA in Wales of £2.5 million (once direct, supply chain and household effects are taken into account). Figures in the supporting text to Policy ELC_03 estimate that a 30 megawatt (MW) wave installation and 30MW tidal stream installation have the potential to support 2,000 person-years of employment in Wales during development and installation, and 50 full-time equivalent (FTE) per annum during generation. Scaling up to commercial arrays of up to 300MW could generate 8,500 person-years of employment during development and installation and 180 FTE per annum during generation.

Investment in the renewables sector may also create local employment opportunities. Marine Energy Pembrokeshire reported that the majority of marine energy investment is focussed around North West and South West Wales. Tidal stream resources are highlighted around Anglesey, St David's peninsular and along the south Wales coast, which could benefit coastal communities including the more deprived coastal areas around North Wales and Swansea. Supporting text to Policy ELC_03 also highlights the West Anglesey demonstration zone as a good opportunity for tidal energy development. Marine Energy Pembrokeshire identifies that at least 50% of the supply chain for current marine energy projects has come from within Wales (and is expected to continue at this rate), with supply chain hubs developing in coastal regions in need of economic regeneration. Given the large contribution that tidal stream investment makes to the marine energy sector, and the broad distribution of resource, this has the potential to make a significant contribution to coastal employment and skill development.

[60] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed May 2019].
[61] Marine Energy Wales (2019) *State of the Sector 2019: Economic Benefits for Wales*. Available from https://www.marineenergywales.co.uk/wp-content/uploads/2019/04/MEW-State-of-the-Sector-Report-2019.pdf [Accessed May 2019].
[62] Marine Energy Pembrokeshire (2015) *Marine Energy in Wales*. Available from http://www.marineenergywales.co.uk/wp-content/uploads/2016/03/Marine-Energy-in-Wales-Investment-Jobs-Supply-Chain-2015-m.pdf [Accessed May 2019].

Overall, Policy ELC_03 has been assessed as having a significant positive effect on the economy (SA Criteria 11) and on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force. It is recognised that tidal stream energy development can have adverse impacts on other economic activities in the plan area. In this regard, tidal stream energy resources could overlap with existing shipping routes, subsea cables, fishing areas and areas of future potential for aquaculture. However, the policy requires compliance with safeguarding policies SAF_01 and SAF_02, meaning that proposals for tidal stream energy must avoid, minimise or mitigate their impacts on existing or planned activities in other sectors. On balance, the positive effects of this policy are considered to outweigh potential adverse impacts on other economic activities, although some uncertainty remains relating to the location of new tidal stream development and its effects on other sectors.

Renewable energy generation would contribute towards UK and Welsh Government climate change targets, whilst making evidence available and liaison with the sector and other interested parties on the opportunities for future resources and de-risking consenting for the sector would promote collaboration. In this regard, it is noted that the supporting text to Policy ECL_03 states that tidal stream proposals '*should consider opportunities to work collaboratively to promote and increase the attractiveness of the demonstration zones for development*' and encourages relevant parties to '*develop and participate in opportunities to address key evidence gaps and make evidence available in order to better understand opportunities for the sustainable development of the sectors*'. On this basis, Policy ELC_03 has been assessed as having a positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). The transition away from the combustion of fossil fuels to low carbon energy sources is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of renewable energy development can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a very small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[63]. With specific regard to human health, there is also the potential for associated onshore development (for example substations) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in or displacement of tourism, particularly in the Pembrokeshire and Anglesey coastal areas near tidal stream resources, although there is no evidence that other renewable developments such as current windfarms off the North Wales coast have had an adverse impact upon tourism and recreation. Overall, Policy ELC_03 has been assessed as having a minor negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of renewable energy developments. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure); construction and operational noise and vibration (e.g. underwater noise due to piling or the operational noise associated with tidal energy devices); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations (it is noted that a large number of designated sites including SSSI occur along the coast which could be affected).

Marine SACs and SPAs around Anglesey and St David's peninsular are key receptors that need to be considered with respect to effects from tidal stream development. Designated nature conservation sites in these areas include (inter alia): North Anglesey SAC; Liverpool Bay SPA; Menai Strait and Conwy Bay SAC; Pembrokeshire Marine SAC; West Wales Marine SAC; Grassholm SPA; and Skokholm and Skomer SPA. Tidal stream schemes can also (depending on scale) affect water quality and result in changes to hydrodynamics and sediment patterns with impacts potentially felt beyond the plan area and which could be significant. Changes to hydrodynamics can also affect other receptors that rely on the high velocities (foraging, decreased vertical mixing, increased stratification – bloom dynamics) and could affect sectors such as aggregates. In this regard, the HRA of the WNMP notes that Neill (2013) has suggested that far-field effects as a result of changes

[63] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed May 2019].

to sediment dynamics might extend up to 50km from the point of energy extraction based on models of the Bristol Channel. There is also the potential for impacts on mobile species such as marine mammals over wider areas due to, for example:

- changes in habitat or prey distributions due to the physical and physio-chemical changes;
- underwater noise and vibration due to operation, particularly for fish and marine mammals;
- electromagnetic changes associated with the generation and transfer of electricity, particularly for fish (some marine mammals may also be sensitive in certain situations, although this is thought to be less notable);
- collisions with moving structures or entanglement, particularly for marine mammals; and
- the introduction of new structures creating new habitat or reef effects (particularly for fish, which often aggregate around structures, but conceivably for birds and other features).

The findings of the HRA indicate that that the policy (when taken together with the protective General Policies in the WNMP) is sufficiently caveated and flexible to ensure that adverse effects are not an unavoidable or inevitable outcome of its implementation. The HRA also notes that there is evidence from existing schemes and some analogous large-scale marine developments that measures are available and adverse effects are not an inevitable outcome.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be minor and uncertain. The presence of renewable energy infrastructure can also act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones. This has the potential to benefit marine ecology (particularly fish and benthic communities) although adverse impacts associated with, for example, fishing may be displaced. Renewable energy development and associated fixed structures can also serve to create new habitat, attracting key species and enhancing biodiversity.[64]

In conclusion, Policy ELC_03 has been assessed as having a mixed positive and negative effect on biodiversity (SA Criteria 1). However, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible.

Tidal stream energy development can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Overall, Policy ELC_03 has been assessed as having a minor negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to protect water quality (Policy ENV_06) such that any significant adverse effects would be minimised and mitigated where possible.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed, and changes to hydrodynamics and wave conditions with associated effects on sediment transport. Tidal stream devices may involve structures mounted on the seabed. Changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures has the potential to alter benthic habitats, at least on a local scale. Hydrodynamic changes, including waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. However, the magnitude of any such changes and the sensitivity of the location will be project specific as impacts would be dependent on the scale and location of the development. Overall, Policy ELC_03 has been assessed as having a minor negative effect on SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

[64] Marine Institute Plymouth University and Friends of the Earth (2013) *Marine Renewables, Biodiversity and Fisheries*. Available from https://www.foe.co.uk/sites/default/files/downloads/marine_renewables_biodiver.pdf [Accessed May 2019].

Tidal stream energy development could have adverse impacts on landscape/seascape and visual amenity. Supporting text to Policy ELC_03 states that '*it is accepted that the development of marine renewable energy infrastructure will result in changes to the seascape character of Wales and that these changes are an inevitable result of our ambition for marine renewable energy to make an increasingly significant contribution to the overall energy mix*'. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. As tidal stream devices are typically submerged once operational, the longer term impacts are expected to relate to landfall works and the development of associated onshore infrastructure such as substations and grid connections, which could have adverse impacts on landscape character and visual amenity. The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain. However, it is noted that tidal stream resources are located close to the Heritage Coast, Anglesey AONB and the Pembrokeshire Coast National Park. In consequence, there is at least the potential for adverse effects associated with this policy to be significant where development is visible. Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_03 has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Renewable energy development has the potential to have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. In this regard, it is noted that the tidal stream resource area highlighted in the Marine Energy Wales survey contain a large number of wrecks including Royal Yacht Mary Protected Wreck and the Smalls Protected Wreck which could be affected by development, particularly during construction. Offshore development could additionally affect the setting of coastal (terrestrial) cultural heritage assets whilst the development of associated onshore facilities could also affect these assets directly. The magnitude of the effect on heritage as a result of the implementation of Policy ELC_03 is, however, uncertain as it is dependent on the nature and location of renewable energy projects as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_03 has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_03 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- The policy wording could make specific reference to encouraging research and development in addition to collaboration in order to understand further the opportunities for renewable energy development including environmental constraints and opportunities as well as the efficacy of mitigation.
- The policy could include wording to increase the local content of projects, such as the use of local labour agreements to create local employment opportunities. This could address the possibility that economic benefits or employment will be sourced outside Wales, and support the employment aims of Policy ECON_01.

Assumptions:

- It is assumed that tidal stream energy development is likely to be focussed around North West, South West and South Wales.

Uncertainties:

- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_04 Low carbon energy (supporting) tidal range In order to understand future opportunities for **tidal range** development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to: • collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; • support understanding of the optimal siting of tidal lagoon developments across Wales as part of a wider, UK perspective; and • identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sector through marine planning, where it is appropriate to do so.	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+
Significant Effects:														

In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[65] (although as tidal lagoon energy is in its infancy, it made no contribution to the 2017 total). The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[66] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[67] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this regard, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

In this context, Policy ELC_04 supports and encourages further evidence gathering in respect of the potential opportunities associated with Wales' tidal range resource. Whilst the policy does not make provision for the development of tidal lagoon schemes in the plan area *per se*, it could contribute to the future progression of suitable and sustainable projects by (inter alia): encouraging research and innovation in the sector; enhancing understanding of the social, economic and environmental constraints and opportunities associated with tidal lagoon development; identifying optimal siting requirements for tidal lagoons; and defining SRAs to safeguard Wales' tidal resource in the future. In turn, the policy could help to contribute to the realisation of Wales' tidal range resource and support the achievement of the Welsh Government's carbon and renewable energy commitments. The supporting text to the policy highlights the need to take 'a *strategic, evidence based approach to this emerging sector*' and for organisations to '*develop and participate in opportunities to address key evidence gaps and make evidence available in order to better understand opportunities*'. In consequence, Policy ELC_04 has been assessed as having a positive effect on governance (SA Criteria 14) and a positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10), although some uncertainty remains with regard to the effects identified in respect of SA Criteria 6 and 10.

The supporting text to the policy states that '*This plan does not preclude tidal lagoon demonstrator or large scale tidal lagoon projects from coming forward; such projects would be considered on their merits and on a case by case basis'*. However as Policy ELC_04 does not make provision for the development of tidal lagoon schemes in the plan area, and is instead focussed on evidence gathering and strategic planning, it is assumed that implementation of the policy will not result in the potential impacts associated with tidal lagoons. As part of an evidenced-based approach to marine planning, it is anticipated that the policy will enhance understanding of the possible effects of tidal lagoon schemes alongside the measures to avoid, minimise and mitigate adverse effects and enhance benefits. In particular, the policy is expected to help:
-safeguard Wales' tidal range resource and associated benefits in terms of the economy;
-identify opportunities for the co-location of marine activities in the plan area and manage potential conflicts;
-enhance understanding of the marine environment and the effects of tidal lagoon schemes on, in particular, biodiversity, water quality and the physical environment, especially those operational impacts associated with hydrodynamic changes, physio-chemical changes and physical habitat loss / changes.

Additionally, the supporting text for the policy states that '*While significant tidal range resource exists around the Welsh coast, tidal lagoon technology is an emerging sector and considerable complexity and uncertainty remains at this stage in planning for the sector. Specific challenges relate to understanding the potential environmental impacts resulting from large scale tidal lagoon infrastructure and methods by which such impacts could be avoided, mitigated or compensated. Large scale tidal lagoon infrastructure also has the potential to result in further field and potentially cumulative effects, both within the plan area and potentially in neighbouring marine plan areas, indicating a need to take a strategic, evidence based approach to this emerging sector….. Further evidence would enable a better understanding of options for managing potential adverse environmental effects of large scale tidal lagoon schemes including opportunities to identify and secure effective compensatory measures where necessary*'.

Overall this has been assessed as having a positive effect on biodiversity (SA Criteria 1), water (SA Criteria 2), the physical environment (SA Criteria 3), tourism and recreation (SA Criteria 9), the economy (SA Criteria 11) and well-being (SA Criteria 12).

Effects on the remaining SA criteria have been assessed as neutral. No significant negative effects or negative effects have been identified.

[65] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed May 2019].
[66] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed May 2019].
[67] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed May 2019].

Mitigation/Enhancement:

- None identified.

Assumptions:

- It is assumed that the consequences of the policy activities relating to evidence collection and supporting understanding of tidal range resources would have beneficial effects.
- The policy does not support tidal range projects. However, it is noted that the supporting text to the policy states that whilst the plan '*does not preclude tidal lagoon demonstrator or large scale tidal lagoon projects from coming forward; such projects would be considered on their merits and on a case by case basis*'. This approach is consistent for any infrastructure project not explicitly supported by the WNMP. To receive planning consent, the proposed development would need to comply with the relevant general policies and sector safeguarding policies of the plan. Depending on scale, location and nature, further project specific assessments may be needed (such as EIA and/or HRA). However, given that ELC_04 does not support specific tidal range proposals, for the purposes of assessment, it is assumed that that tidal lagoon infrastructure will not come forward and be implemented during the lifetime of the plan.

Uncertainties:

- The extent of any future deployment of tidal lagoon schemes in the plan area and associated greenhouse gas emission savings is uncertain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
O&G_01: Oil and Gas (Supporting) **O&G_01 a:** Proposals that maximise the economic recovery of oil and gas sustainably will be supported where they comply with the objectives of this plan, and fully meet the environmental safeguards contained within the statutory processes of awarding production licences and subsequent activity-specific approvals. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **O&G_01 b:** Welsh Government policy is to avoid the continued extraction of fossil fuels in intertidal areas and estuaries and coastal inlet waters that fall within the Welsh onshore licence area. Applications for new petroleum licenses in these areas should not be supported, unless required for mine safety or scientific purposes. Proposals for the development and extraction of oil and gas in these areas with land based elements must provide robust and credible evidence to demonstrate how they conform to the Planning Policy Wales Energy Hierarchy for Planning, including how they make a necessary contribution towards decarbonising the energy system.	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	+/-/?	?	0	++/--/?	+/?	0/+/?	+/-/?	0
Significant Effects:														

Oil and gas responsibilities in the plan area are divided between the UK and Welsh Governments. Policy O&G_01 reflects UK Government national policy, with the exception of intertidal areas, estuaries and coastal inlet waters which fall within the Welsh Government onshore licence area. The principal activities of the oil and gas sector are the exploration and extraction of petroleum and natural gas from underground wells and the operation of the drilling rigs and production facilities. The WMER highlights that there is currently limited conventional oil and gas exploration or production taking place within Welsh waters (although there are a range of onshore supporting facilities in Wales including: the Point of Ayr Gas Terminal (Prestatyn) which processes gas from the Liverpool Bay gas fields via subsea and land pipeline to the combined cycle gas turbine (CCGT) power station at Connah's Quay; two Liquefied Natural Gas (LNG) terminals; and several oil refineries at Milford Haven). The UK Government's 28th offshore oil and gas licensing round included the award of blocks in Welsh waters, while the subsequent 29th and 30th rounds did not. The current 31st licensing round includes blocks on offer in Welsh waters.

The production of indigenous offshore gas could make an important contribution to meeting Wales', and the UK's, energy demand as a transition fuel as decarbonisation proceeds (whilst the proportion of electricity generated from renewables in Wales has increased, a significant proportion (circa 69% in 2016) continues to be generated from gas[68]). In this context, the supporting text to Policy O&G_01a highlights the alignment with UK Government policy on the continued significance of fossil fuels for the UK's energy mix and energy security. This includes maximising the value of economically recoverable reserves, efficient recovery of reserves, and the exploration of new areas. The policy therefore supports oil and gas activities in existing and future licensed blocks in offshore areas where they comply with the rest of the plan and environmental safeguards.

Policy O&G_01b reflects the Welsh Government's movement towards a low-carbon Wales, and the long-term aim of removing fossil fuels from the energy mix. This section of the policy therefore seeks to avoid the development and extraction of oil and gas in areas that fall within the Welsh onshore licence area, with the exception of proposals for mine safety or scientific purposes. Proposals in areas outside of the Welsh Government's responsibility but which require infrastructure on land are also required to conform to the Planning Policy Wales Energy Hierarchy for Planning, which the supporting text to the policy states *"must include demonstrating how they will make a necessary contribution towards decarbonising the energy system"*. The supporting text also specifies that *"Applications in existing licensed areas to extract petroleum involving hydraulic fracturing will not be supported"*.

The continued extraction of hydrocarbon reserves under Policy O&G_01a would result in the direct loss of a primary natural resource that is non-renewable. The policy aims to maximise the return from existing wells and undertake efficient recovery, however resources including energy, water and aggregates would still be required to support the construction, operation and decommissioning of oil and gas facilities. Additionally, waste will be generated from platforms and vessels (in 2017, the UK Continental Shelf (UKCS) offshore oil and gas industry returned just under 152,200 tonnes of waste material to shore). Waste arisings associated with offshore oil and gas exploration and production would include sewage, cooling water, drainage and drilling wastes. There would also be produced water, with for the UK as a whole, 143 million cubic metres discharged to sea in 2017 and 53 million cubic metres reinjected into the subsurface.[69] Policy O&G_01b seeks to avoid these negative impacts by minimising oil and gas extraction in the Welsh onshore licence area. While this would not secure further UK energy supplies, the policy would avoid unsustainable extraction of a non-renewable resource. Overall, Policy O&G_01 has been assessed as having a mixed significant positive and significant negative effect on resources (SA Criteria 10), although some uncertainty remains as the magnitude of effect will depend on the extent of future oil and gas activity in the plan area which is at present unknown.

Supporting the long term supply of indigenous oil and gas under Policy O&G_01a will help to secure UK energy supplies which are necessary for economic growth and could help reduce energy costs to consumers. Further, the development of the oil and gas sector in Wales would itself generate investment in the economy during the construction, operation and decommissioning of facilities. In this regard, total offshore oil and gas expenditure in the UKCS was £21.7 billion in 2015, although expenditure levels have been falling in recent years[70]. However, it should be noted that economic benefits associated with oil and gas exploration and production are closely linked to the global price of oil and gas and investment and exploration/production activity in the UKCS has decreased since 2014 due to the collapse in oil prices. Policy O&G_01b is not expected to contribute to the growth of the oil and gas sector, and aims to avoid further extraction of oil and gas resources, which may discourage investment in the onshore licence area. Overall, Policy O&G_01 has been assessed as having a minor positive effect on the economy (SA Criteria 11), although some uncertainty remains.

[68] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://www.regen.co.uk/wp-content/uploads/Energy-Generation-in-Wales-2017.pdf [Accessed May 2019]
[69] Oil and Gas UK (2018) *Environment Report 2018*. Available from https://oilandgasuk.co.uk/wp-content/uploads/2019/05/OGUK-Environment-Report-2018.pdf [Accessed May 2019].
[70] Oil and Gas UK (2018) *Economic Report 2018*. Available from https://oilandgasuk.co.uk/wp-content/uploads/2019/03/OGUK-Economic-Report-2018.pdf [Accessed May 2019].

It is recognised that oil and gas exploration and production could have adverse impacts on other economic activities in the plan area and in this regard, it is noted that the provisional blocks awarded under the 28th Licensing Round include military practice areas, Gwynt y Mor Offshore Windfarm, windfarm leases, aggregates production and exploration and option areas, dredging areas and fish spawning and nursery grounds. However, it is assumed that Policy SAF_01a which seeks to safeguard these sectors would not allow for inappropriate negative economic effects to arise from oil and gas development. Further, the footprint of oil and gas activity is small so any interactions could likely be minimised and therefore relatively minor.

Across the UK, around 280,000 jobs are currently supported by the offshore oil and gas industry.[70] Growth of the oil and gas sector in Wales under Policy O&G_01a would therefore be expected to contribute towards employment creation which could benefit coastal communities including more deprived areas along the North Wales coast which are in relative close proximity to provisional blocks awarded under the 28th Licensing Round. However, the potential for any jobs created to directly benefit local communities would depend on the balance between the skilled and unskilled oil and gas posts required and the availability of individuals in the local labour market with the required skills and the relevant experience. Currently, 3% of jobs supported by the offshore oil and gas industry are in Wales,[71] reflecting the location of the majority of oil and gas activity (which is outside Wales). In addition, Policy O&G_01b is not expected to contribute to job creation as it discourages fossil fuel extraction. However as noted above, oil and gas production from offshore sources under Policy O&G_01a could help to maintain secure, affordable energy prices which could benefit the local population of Wales and particularly those on low incomes. Overall, Policy O&G_01 has been assessed as having a neutral or positive effect on well-being (SA Criteria 12), although some uncertainty remains.

The main stages of oil and gas activity are:

- Exploration and appraisal: this involves initial exploratory drilling with well evaluation and testing typically using mobile drilling rigs, possibly preceded by seismic survey. Based on previous experience, typically less than half the wells drilled reveal hydrocarbons, and of that half less than half again will yield an amount significant enough to warrant development.
- Development: includes production facility installation which may be fixed or floating, and generally the installation of pipeline(s), which for major developments could come ashore but are more often "tied back" to existing export infrastructure, and the drilling of producer and injector wells.
- Production and export operations: involves routine supply, return of wastes to shore, power generation, chemical use, flaring, produced water management/reinjection and reservoir monitoring and maintenance.
- Decommissioning: including cleaning and removal of facilities, for reuse, recycling or disposal.[72]

These activities can result in a wide range of adverse environmental impacts with the potential to generate negative effects on a number of the SA criteria, as set out below. By contrast, Policy O&G_01b could have beneficial environmental effects through the avoidance of further extraction in intertidal areas, estuaries or other coastal inlet waters, and the prevention of associated harm in these locations.

Offshore oil and gas exploration and production during all stages of the project lifecycle can cause harm to marine ecology and ecosystems due to loss of habitats and disturbance arising from (inter alia): the introduction of non-native species; the installation of infrastructure on the seabed; noise and vibration associated with seismic and geophysical surveys, drilling and construction; and behavioural disturbance from the presence of infrastructure and barriers to movement. Additionally, exploration and production activities can affect water quality which could have subsequent impacts on marine ecology. Effects on biodiversity could be significant where there are impacts on designated nature conservation sites and in this regard, it is noted that provisional awards under the 28th Licensing Round are located within/in close proximity to a number of European designated sites including: Liverpool Bay SPA; Menai Strait and Conwy Bay SAC; Cardigan Bay SAC; Aberdaron Coast and Bardsey Island SPA; West Wales Marine cSAC; and Pembrokeshire Marine SAC; as well as several Marine Conservation Zones. However, the HRA (Appropriate Assessment) of the 28th round[73] considered the potential for blocks in Welsh waters to result in likely significant effects on European designated nature conservation sites and concluded that, taking into account the mitigation measures that can be imposed through existing permitting mechanisms on the planning and conduct of activities, there would be no adverse effects on the

[71] UK Oil and Gas UK (2018) *Workforce Report 2018*. Available from https://oilandgasuk.co.uk/wp-content/uploads/2019/03/OGUK-Workforce-Report-2018.pdf [Accessed May 2019].

[72] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed May 2019].

[73] Department of Energy and Climate Change (2015) *Offshore Oil & Gas Licensing 28th Seaward Round Irish Sea and St George's Channel. Habitats Regulations Assessment Stage 2 - Appropriate Assessment*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/444928/28th_Round_Irish_Sea_Blocks_AA.pdf [Accessed May 2019].

integrity of European designated sites. The specific provisions to avoid intertidal areas, estuaries or other coastal inlet waters would have a positive effect on ecology and ecosystems by preventing further exploration and drilling in the onshore licence area. Overall, Policy O&G_01 has therefore been assessed as having a mixed negative and positive effect on biodiversity (SA Criteria 1).

Negative effects associated with oil and gas recovery are also expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed such as the anchoring of rigs and laying of pipeline. Policy O&G_01b, however, would protect intertidal areas and estuaries and coastal inlet waters from further exploration and recovery, resulting in positive effects on SA Criteria 3. However, the magnitude of effects on SA Criteria 1 and 3 is uncertain and will be dependent upon the exact scale, type and location of oil and gas activity. The potential for adverse effects from recovery activities would be considered during the award of licences (any application for new licences must be supported by an Environmental Sensitivity Assessment whilst the blocks applied for are subject to HRA) and also during the consenting process including as part of any EIA/HRA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Proposals would also be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 and ENV_02). It should also be noted that the oil and gas sector is heavily regulated and in this regard, Policy O&G_01 makes clear that proposals will only be encouraged where they meet fully the environmental safeguards contained within the statutory processes of awarding production licences and subsequent activity specific approvals.

As noted above, oil and gas exploration and production under Policy O&G_01a could have adverse impacts on water quality. Sources of water pollution from oil and gas exploration and production activity include discharges of drilling wastes and production wastes such as produced water (which may contain naturally occurring radioactive materials and traces of oil) as well as the accidental spillage of hazardous chemicals. In 2017, 256 tonnes of chemicals were accidentally released to the marine environment from the offshore oil and gas industry, however 96% of these were classified as being low hazard.[69] Strict regulations also apply to discharges to water. For example, there are strict controls implemented over the discharge of oil-based drilling fluids and chemical additives used in water-based fluids. Proposals would also be determined in accordance with Policy ENV_06 of the WNMP regarding impacts on water quality. Policy O&G_01b specifically excludes intertidal areas, estuaries or other coastal inlet waters from extraction, which would have a positive effect on water quality in these areas. Overall, Policy O&G_01 has been assessed as having a mixed negative and effect on water, although some uncertainty remains relating to the location and scale of future activity.

Oil and gas activity will generate emissions to air during construction, operation and decommissioning. Additionally, there would be emissions from flaring, which would primarily result in the production of CO_2 but also NOX, SO_2, CO, Volatile Organic Compounds (VOCs) and particulate matter (PM_{10}), and from methane within any flowback water, although methane emissions will vary depending on the completion method implemented. Further sources of emissions to air include fugitive releases from equipment. Emissions from this sector have gradually fallen between 2000 and 2017, with the most dramatic reduction in VOCs alongside a drop in production.[69] As a proportion of total UK atmospheric emissions, those directly emitted from rigs would be small. Further, the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality and health are not likely to be significant[Error! Bookmark not defined.]. Emissions would also be regulated with adverse impacts considered at the licensing and consenting stages and in accordance with Policy ENV_06 of the WNMP which concerns air quality impacts. The combustion of fossil fuels derived from offshore oil and gas activity could contribute to poor air quality with associated impacts on human health, although the magnitude of effect in this regard is uncertain and will be dependent on the future scale of oil and gas activity in Welsh waters and energy consumption trends. The prevention of oil and gas activity in the onshore license area would avoid these impacts, and have associated benefits on local air quality. Overall, Policy O&G_01 has been assessed as having a mixed negative and positive effect on air quality (SA Criteria 4) and health (SA Criteria 13), although some uncertainty remains.

Oil and gas development will introduce new built form into seascapes (a rig/platform) and landfall works could affect coastal landscapes. The magnitude of resulting landscape/seascape and visual effects will be dependent on the scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors. In this regard, it is noted that some awarded blocks under the 28th Licensing Round are in close proximity to the Heritage Coast and Pembrokeshire Coast National Park. However, associated impacts are unlikely to be significant given the distance of operations from the shore. Further, the potential for negative landscape/seascape and visual effects would be considered during the licensing and consenting processes (with proposals determined in accordance with those policies of the WNMP that concern landscape and seascape and coastal character) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Policy O&G_01b includes specific provision to avoid the continued extraction of fossil fuels in intertidal areas, estuaries and coastal inlet waters, which would protect landscapes and seascapes in these more sensitive locations closer to the shore. Overall, Policy O&G_01 has been assessed as having a mixed negative and positive effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Oil and gas exploration and production activity will generate greenhouse gas emissions at all stages of the lifecycle with CO_2 accounting for the greatest proportion of emissions to air from offshore oil and gas installations (around 30Mt were emitted in the OSPAR area in 2011).[72] Sources of emissions will include, for example, vessels and helicopters, generators for power and drilling as well as the embodied carbon in materials used during construction. Additional sources of emissions could include methane from flaring, flowback water and fugitive emissions. Indirectly, the combustion of extracted hydrocarbons would also generate greenhouse gas emissions. However, any emissions from exploration, production and transport of hydrocarbons in Wales would be relatively small in the context of wider UK emissions (UK-wide upstream oil and gas operations released 15.7Mt CO_2e in 2017, contributing 3% of total UK GHG emissions) and emissions from this sector have broadly declined since 2000, although there has been a slight rise from 2014 onwards.[69]

The extent to which production and consumption of oil and gas affect greenhouse gas emissions would vary subject to changes in the UK fuel mix and shifts between gas and coal usage. For the purposes of this assessment, it has been assumed that consumption of oil and gas derived from indigenous sources would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within Wales or the UK. In consequence, oil and gas production and consumption would not be expected to displace energy generation from renewable and low carbon sources, nor disincentivise investment in renewable and low carbon technologies, particularly given the objectives and other energy policies of the WNMP. Domestic oil and gas production and consumption could, however, help to reduce net greenhouse gas emissions associated with reduced imports of LNG in particular, although the scale of any benefits would be uncertain. However, if LNG or other fossil fuel displaced from Wales/the UK is used elsewhere, that could lead to an increase in global greenhouse gas emissions (although this is dependent on global energy policy and market demand).

Policy O&G_01b emphasises Welsh Government's commitment to moving to a low carbon energy system by not supporting applications for new petroleum licenses in the Welsh onshore licence area. The supporting text for the policy specifies that *"extraction of oil and gas in areas that fall within the Welsh onshore licence area does not align with the Welsh Government's long-term vision of a low-carbon Wales or the [Planning Policy Wales] policy which seeks to minimise the extraction of carbon intensive energy materials"*. While only applying to the Welsh onshore licence area, this policy has the potential for a significant positive effect on climate change through the avoidance of further oil and gas extraction and support for the Welsh Government's long-term aim of removing fossil fuels from the energy mix. Overall, Policy O&G_01 has been assessed as having a mixed minor positive and negative effect on climate change (SA Criteria 6), although some uncertainty remains.

Physical damage may occur to underwater cultural heritage assets such as wrecks which surround the Welsh coast from seabed construction and the anchoring of rigs and vessels. Whilst there is also the potential for the installation of rigs and landfall works to affect terrestrial heritage assets and their settings, given the distance of operations from the shore and the fact that impacts on heritage assets would be considered during consenting in particular (in accordance with Policy SOC_05 of the WNMP and as part of any EIA), this is considered to be unlikely. The avoidance of continued extraction of fossil fuels in intertidal areas, estuaries and coastal inlet waters would help protect marine assets and their settings in these areas. Overall, Policy O&G_01 has been assessed as having a mixed negative and positive effect on heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy O&G_01 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Effects on the remaining SA criteria have been assessed as neutral.

Mitigation/Enhancement:
- None identified.

Assumptions:
- It is assumed that oil and gas exploration or production will take place in Welsh waters, with the exclusion of intertidal areas, estuaries and coastal inlet waters.
- It is assumed that consumption of oil and gas derived from indigenous sources would replace other currently imported hydrocarbons and that there would be no net change to the energy mix within Wales/the UK.

Uncertainties:

- The scale, type and specific location of oil and gas activities that may ultimately take place is not currently known.
- The scale of additional jobs created for Welsh communities is not certain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
P&S_01: Ports and Shipping (Supporting) **P&S_01 a:** Proposals for ports, harbours and shipping activities will be supported where they contribute to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. **P&S_01 b:** Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to support the sustainable development of the ports and shipping sector through marine planning.	-/?	-/?	-/?	+/-/?	-/?	+/-/?	-/?	?	+/?	-/?	++/?	++/?	+/-/?	+

Significant Effects:
Policy P&S_01 seeks to encourage port development and shipping, where this contributes to the objectives of the plan and complies with relevant safeguarding policies. The WMER states that there are 14 commercial ports in Wales, the largest of which is Milford Haven, which handles approximately 75% of all traffic. Ports are a vital economic driver and a key component of Welsh transportation infrastructure. Ports, together with associated shipping activities, enable international trade, generate foreign direct investment and can deliver agglomeration benefits, supporting a wide range of sectors including oil and gas, renewable energy, manufacturing and tourism. The WMER sets out that in 2012, total freight traffic through Welsh ports was 54.6 million tonnes (Mt); of this, 36.5 Mt were goods inwards and 18.1 Mt were goods outwards. Welsh ports accounted for 11% of the total UK port traffic of 500.9 Mst. The WNMP estimates that the sector generated £219M GVA in 2014. In addition to the value generated by the operation of ports, the development of existing/construction of new ports and marinas can generate significant economic benefits.

Policy P&S_01 will support the further development of port infrastructure in Wales and shipping activities which in-turn is expected to help ensure Welsh ports remain competitive, meet growing demand for the import and export of goods and support a wide range of sectors in the Welsh economy. In this regard, the policy is consistent with the UK National Policy Statement (NPS) for Ports (2012) which seeks to support the sustainable development of ports to meet long-term forecast growth in volumes of imports and exports by sea. Proposals are also required to comply with the sector safeguarding policy (SAF_01) which seek to avoid, minimise or mitigate adverse impacts on the activities of other sectors. The supporting text under the heading, 'Sector Safeguarding Policy Aim' also highlights that the safeguarding policies seek to ensure freedom of navigation and navigational safety which are provided under international law, and recognises the significant potential for coexistence of compatible activities with ports and shipping. It also specifies that *"Displacement of shipping should be avoided where possible"*. Policy P&S_01 has therefore been assessed as having a significant positive effect on the economy (SA Criteria 11), although as the type, scale and location of development that could come forward under this policy is unknown, some uncertainty remains.

Policy P&S_01 has also been assessed as having a significant positive effect on well-being (SA Criteria 12). Ports and shipping provide both direct and indirect employment opportunities and in this regard, the WNMP estimates that Welsh ports support almost 3,400 jobs as well as 11,000 wider jobs. Ports, harbours and marinas can also be a catalyst for regeneration and enhanced service provision. By supporting the development of this sector, Policy P&S_01 is expected to help protect existing jobs and generate further employment opportunities (during construction and operation) whilst potentially delivering wider regeneration benefits. However, the magnitude of effect in this regard will be dependent on (inter alia) the number of jobs created and the extent to which posts are filled by the local workforce. In view of the potential scale of activity associated with port-related development, there is also the potential for adverse impacts on communities including, for example, increased pressure on community services and facilities or changes to community cohesion associated with an influx of workers, although these effects are uncertain.

Wales' ports, harbours and shipping activities have an important role in supporting tourism and recreation. In particular, ports that include a passenger or cruise terminal can increase the accessibility of an area to international markets and in this regard, several Welsh ports provide passenger ferry services including Pembroke and Fishguard (which offer services to Rosslare in Ireland) and Holyhead (which offers services to Dublin) and a number also provide cruise ship terminals. In this regard, the supporting text for the policy highlights the increasing importance of facilities to support cruise visits, and that future investment in infrastructure to support Welsh cruise tourism is important. Harbours also offer a range of leisure and recreational opportunities such as sailing and fishing and are often a visitor attraction in their own right. By supporting proposals for ports, harbour and shipping related activities/development, Policy P&S_01 therefore has the potential to generate positive effects in respect of tourism and recreation (SA Criteria 9). It is recognised that port-related development can have both direct and indirect adverse impacts on tourism and recreation for example, where development results in the loss of, or damage to an asset, where an activity has adverse effects on the built and natural environment (including landscape/seascape, wildlife and water quality) or where development restricts access to open space and recreational opportunities. On balance, it is considered that the effects on SA Criteria 9 would be positive, particularly given the other policies of the WNMP which seek to protect the activities of other sectors (under SAF_01) and the natural environment (for example, Policies ENV_01 to ENV_07) which are expected to help minimise the potential for adverse impacts, although some uncertainty remains.

Policy P&S_01 sets out that relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to understand opportunities to support the sustainable development of the ports and shipping sector through marine planning. This will help to promote engagement, integrated decision making and research in marine planning and in consequence, the policy has been assessed as having a positive effect on governance (SA Criteria 14).

As set out above, Wales' harbours have an important role in supporting recreation which in-turn can promote healthy lifestyles. The development of marinas can also provide new opportunities for recreation. However, there is the potential for the construction and operation of ports, harbours and marinas to have both direct and indirect adverse impacts on human health including, for example, the loss of existing formal and informal recreational facilities to accommodate development, emissions to air associated with construction activity as well as any increase in the number of vessels and road vehicles during operation, water pollution and nuisance. Emissions from shipping activities may also have adverse air quality impacts. These impacts could be locally significant if development is located in close proximity to sensitive receptors although other policies contained in the WNMP (such as Policies SOC_03 and ENV_06) will help to minimise the potential for significant adverse impacts in this regard, although some uncertainty remains. Overall, a mixed positive and negative effect has been identified in respect of health (SA Criteria 13).

Port-related development can have a range of adverse impacts on marine and terrestrial ecology. Adverse impacts are likely to be principally felt during the construction stage and could include (inter alia): damage/disturbance to intertidal habitats and species due to the installation of infrastructure or dredging; noise and vibration associated with the use of equipment, piling and vessels; behavioural disturbance from the presence of infrastructure and barriers to movement; air quality impacts related to emissions from equipment and vessels/HGVs; sediment transport and settlement of sediments on marine flora and fauna; and pollution of water from, for example, accidental spills. There could also be adverse impacts during the operation of ports and associated with shipping activities including the introduction on non-native species (via the hulls of ships or ballast water), noise, emissions to air, water pollution and erosion of habitats by vessel movements.

Adverse impacts during the construction and operation of ports and shipping activities could be significant where they affect designated nature conservation sites. In this regard, it is noted that the HRA identified 54 ports in Wales that are within 5km of European sites including (for example): North Anglesey Marine SAC, Holy Island Coast SAC and SPA and Anglesey Terns SPA (adjacent to Holyhead Port); Pembrokeshire Marine SAC and Limestone Coast of South West Wales SAC (which is adjacent to Milford Haven); and Severn Estuary SAC/SPA/Ramsar (at Cardiff). Other harbours/marinas as well as shipping routes are also affected by European and national nature conservation designations. The HRA of the WNMP also notes that more distant sites with mobile species such as marine mammals could be affected.

Taking into account the range of potential impacts identified above, Policy P&S_01 has been assessed as having a negative effect on biodiversity (SA Criteria 1), although the magnitude of effect is uncertain and will be dependent upon the exact scale, type and location of activity. The potential for adverse effects on biodiversity would be considered during the award of licences/planning consents (including as part of any EIA/HRA (as required)) and through the Environmental Permitting regime such that any significant adverse effects would be minimised and mitigated where necessary. Proposals would also be determined in accordance with those policies of the WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 and ENV_03) and avoid adverse impacts on MPAs (Policy ENV_02).

As highlighted above, the construction and operation of ports and shipping activities can have detrimental impacts on water quality. Sources of potential impact are varied but include the accidental spillage or leakage of pollutants from vessels or from construction sites, unlawful discharges such as oil, waste or sewage and the mobilisation of sediment associated with the construction of port infrastructure or capital and maintenance dredging. Construction activities and the operation of ports will also require water resources and generate wastewater requiring treatment. These impacts could lead to adverse impacts on health or on protected species and habitats and could, in particular, result in surface waters, groundwaters or protected areas failing to meet environmental objectives established under the Water Framework Directive (WFD). Overall, Policy P&S_01 has therefore been assessed as having a negative effect on water (SA Criteria 2), although the magnitude of effect is uncertain and will be dependent on the exact type, scale and location of development/activities. Whilst there is some uncertainty with regard to the magnitude of effect on SA Criteria 2, it is noted that other policies in the WNMP (such as Policy ENV_06) seek to ensure that adequate consideration is given to water quality impacts and that adverse impacts are avoided/minimised/mitigated where possible. Discharges will also be subject to pollution prevention control such as regulation under the International Convention for the Prevention of Pollution from Ships, 1973 (as modified by the Protocol of 1978 (MARPOL) which covers operational and accidental oil pollution and pollution from chemicals, sewage and litter) whilst any abstraction will be subject to licensing. In consequence, significant negative effects are considered to be unlikely.

The construction and operation of port infrastructure would result in emissions to air including greenhouse gas emissions associated with, in particular, the use of machinery and equipment on site and HGV/vessel movements during construction and vehicle/vessel movements during operation. Shipping also results in the release of emissions to air such as nitrogen oxides, sulphur oxides and particulate matter[74] whilst certain cargoes such as cements and aggregates can cause local dust pollution. With specific regard to climate change, there would also be greenhouse gas emissions associated with the embodied carbon in construction materials and in the energy used once schemes are operational. Infrastructure development could also affect and be affected by flood risk and coastal change. However, air quality and climate change impacts including flood risk and coastal change would be considered as part of any design and EIA (as required and including a Flood Risk Assessment). It is also noted that other policies contained in the WNMP (see, for example, Policies SOC_08 to SOC_11 and ENV_06) seek to ensure that air quality and climate change impacts are assessed and mitigated. Finally, the development of port infrastructure and facilities could generate positive effects on air quality and climate change where, for example, proposals would involve the replacement of existing facilities with more energy efficient development, would facilitate a modal shift away from the transportation of goods by road to shipping or where proposals would support the construction of offshore renewable energy schemes. Overall, Policy P&S_01 has been assessed as having a mixed positive and negative effect on air quality (SA Criteria 4) and climate change (SA Criteria 6), with some uncertainty as the magnitude of effect will be dependent on the exact type, scale and location of future development/shipping activities.

Port construction may have direct and indirect impacts on the seabed and coastline. Directs impacts may be associated with, for example, capital or maintenance dredging whilst indirect impacts could arise as a result of changes to coastal hydrology which could lead to localised or more widespread coastal erosion or accretion. In this context, Policy P&S_01 has been assessed as having a negative effect on the physical environment (SA Criteria 3). However, the magnitude of effect on SA Criteria 3 is uncertain and will be dependent on the exact type, scale and location of development. Further, the potential for adverse effects on coastal processes would be considered during the award of licences/planning consents and as part of any EIA (as required) such that any significant adverse effects would be minimised and mitigated where necessary. Proposals would also be determined in accordance with those policies of the WNMP that seek to avoid adverse impacts on coastal processes (see, for example, Policy SOC_09).

Port and harbour construction would result in changes to landscape/seascape and could affect visual amenity as a result of, for example, landtake (including the loss of greenfield land), the introduction of new built form into views or increased lighting with impacts felt in both the short term during construction and in the longer term once development is complete. The magnitude of resulting landscape/seascape and visual effects will be dependent on the type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of

[74] OSPAR Commission (2009) *Assessment of the Impacts of Shipping on the Marine Environment*. Available from https://qsr2010.ospar.org/media/assessments/p00440_Shipping_Assessment.pdf [Accessed May 2019].

sensitive receptors. In this regard, it is noted that the Port of Milford Haven, the largest in Wales, is located adjacent to the Pembrokeshire Coast National Park whilst Holyhead Port is situated next to an AONB, which could be particularly sensitive to development. However, any expansion of existing port infrastructure would be within the context of the existing built form of port development and landscape/seascape and visual impacts would be fully assessed at the project stage and as part of any EIA (as required) with decisions made in accordance with those policies of the WNMP that seek to conserve and enhance landscape/seascape character including designated sites (see, for example, Policies SOC_06 and SOC_07). There is also the potential for landscape/seascape and visual impacts arising from port development to be positive where, for example, development involves the reuse of brownfield/derelict land or the redevelopment of existing facilities. Overall, Policy P&S_01 has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

The construction and operation of ports could have both direct adverse impacts (e.g. loss of, or damage to an asset) and indirect adverse impacts (e.g. impacts on setting) on heritage assets such as listed buildings, scheduled monuments and sections of Heritage Coast. There is also the potential for port construction and shipping activities to affect submerged heritage assets and in this regard, there are a number of wrecks in close proximity to existing ports (although none are protected). In consequence, negative effects have been identified in respect of heritage (SA Criteria 7), although it is expected that the potential for these adverse effects to be significant will be reduced through the application of other WNMP policies (such as Policy SOC_05) at the project stage. There is also the potential for ports development to generate positive effects on this criteria where, for example, it results in the sensitive restoration of cultural heritage assets (although this is uncertain).

The construction and operation of ports and shipping activities would require land and resources and result in energy consumption which, depending on the nature of proposals, could be significant. Development and shipping activities would also generate waste including construction/demolition wastes, spoil from capital and maintenance dredging, commercial/industrial wastes and operational (shipping) wastes such as sewage and litter. However, proposals could present an opportunity to utilise sustainably sourced/recycled materials, improve the energy efficiency of existing facilities, support onsite renewable and low carbon energy generation and reuse previously developed land and buildings which may help to offset adverse impacts associated with new development. With regard to waste, under the Waste (England and Wales) Regulations 2011, OSPAR Convention and London Protocol, applications to dispose of wastes must demonstrate that appropriate consideration has been given to the internationally agreed hierarchy of waste management options for sea disposal. On balance, Policy P&S_01 has been assessed as having a negative effect on resources (SA Criteria 10), although the exact magnitude of effect is uncertain and there is also the potential for effects at the project level to be positive.

The potential creation of local employment opportunities associated with the implementation of Policy P&S_01 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:
- None identified.

Assumptions:
- None identified.

Uncertainties:
- The exact type, location, scale and nature of activity is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
SAF_01: Safeguarding existing activity a: Proposals likely to have significant adverse impacts upon an established activity covered by a formal application or authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for the proposal to progress under exceptional circumstances. b: Proposals likely to have significant adverse impacts upon an established activity not subject to a formal authorisation must demonstrate how they will address compatibility issues with that activity. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Under SAF 01 a and b, compatibility should be demonstrated through, in order of preference: • Avoiding significant adverse impacts on those activities, and/or • Minimising significant adverse impacts where these cannot be avoided; and/or • Mitigating significant adverse impacts where they cannot be minimised.	+/-/?	++/?	+/?	+/?	+/?	++/-?	+/?	+/?	++/?	++/--?	++/?	+/?	++/?	+

Significant Effects:
Policy SAF_01 aims to ensure that proposals avoid, minimise or mitigate adverse effects on existing marine activities, in order to safeguard activities from incompatible development. This applies to established marine activities, whether or not they are covered by formal authorisation. It also safeguards activities with formal applications in place. The policy applies to all sectors other than Defence.

Policy SAF_01 has been assessed as having a significant positive effect on resources (SA Criteria 10) due to effects associated with aggregates, oil and gas and low carbon energy. A number of sectors have the potential to adversely affect aggregates extraction and in particular those that establish fixed or permanent structures such as oil and gas platforms, renewable energy structures, telecommunications cables and pipelines, or which lead to the sterilisation of resources. Impacts arising from activities which may sterilise or contaminate an aggregate resource are expected to be avoided, minimised or mitigated under this policy. The safeguarding of existing oil and gas activities (and future potential activity in areas (blocks) offered for oil and gas licensing) will also help to ensure that oil and gas resources are protected from inappropriate development which could affect their recovery. Additionally, safeguarding low carbon energy generation projects would result in a significant positive effect on resources by helping to ensure that renewable energy is generated. However, in safeguarding the resources for future use, the policy may also lead to the future use of non-renewable resources with associated negative effects. In consequence, the policy has been assessed as having a mixed significant positive and negative effect on resources (SA Criteria 10), although some uncertainty remains as the magnitude of effect will depend on the extent of future activities which are at present unknown.

The WMER highlights that Welsh Water's sewer network has to deal with increasing flows of surface water and that occasionally, the capacity of the network is exceeded in some areas and results in incidents of sewage flooding homes, gardens and roadways and which can cause pollution incidents in streams and rivers. Failures to achieve Good Ecological Status are primarily due to elevated concentrations of nutrients derived from diffuse and point sources and in this regard, wastewater discharges are one of the key contributors to poor water quality in Wales. The treatment and disposal of surface water run-off and wastewater, and the frequency of overflows leading to the release of untreated wastewater, therefore play an important role in water quality. By safeguarding existing and planned wastewater management and treatment infrastructure (as set out in the supporting text for Surface Water and Wastewater Treatment and Disposal (SWW)), SAF_01 will help to ensure that water quality is maintained and enhanced. The policy has therefore been assessed as having a significant positive effect on water (SA Criteria 2).

The various marine sectors make important contributions to the Welsh economy. Aggregates support construction and also support businesses and jobs. Dredging and disposal is essential for maintaining and developing unimpeded and safe navigation of ports, harbours and waterways for shipping. Ports are a vital economic driver and a key component of Welsh transportation infrastructure, and the ports and shipping sector is also an important employer. Protection of the oil and gas sector, together with associated jobs, will help enhance energy security. Aquaculture and the low carbon energy sector are both important sectors in the Welsh marine economy with the potential to expand, and the fisheries and tourism sectors in Wales support large numbers of businesses and jobs. Communications infrastructure further supports the Welsh economy. By safeguarding existing, established activity, Policy SAF_01 will support the protection of existing businesses and jobs whilst providing the confidence sectors needs for further investment. A significant positive effect has therefore been identified in respect of the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12). Additionally, adverse conditions associated with poor water quality can impact on many marine related economic sectors, including fishing, aquaculture and tourism and recreation. By safeguarding wastewater treatment infrastructure and helping to maintain and enhance water quality, Policy SAF_01 is expected to have an indirect positive effect on the economy, and positive effects on well-being as good water quality will contribute to safe and attractive local communities.

Safeguarding existing tourism and recreation activities is expected to support the protection and enhancement of the coastal tourism and recreation sector in Wales and in consequence, the policy has been assessed as having a significant positive effect on tourism and recreation (SA Criteria 9). Additionally the maintenance of safe navigation of ports, harbours and waterways under dredging and disposal activities has been assessed as having positive effect on tourism and recreation due to the benefits for recreational boating. Good water quality is fundamental to the success and enjoyment of numerous activities conducted in the marine environment, and sewage solids can also damage commerce by making beach and riverside resorts unattractive to potential visitors. The implementation of Policy SAF_01 is therefore also expected to have a positive effect on tourism and recreation associated with water quality.

The strong coastal links to Welsh culture and identity such as seafaring traditions, past industrial and maritime features and literary and spiritual connections contribute to tourism and recreational activity that is distinctive to Wales and could be protected through the implementation of Policy SAF_01 by safeguarding tourism. The policy has therefore been assessed as having a positive effect on Welsh language (SA Criteria 8). The fisheries sector in Wales and its numerous small businesses also form an important part of Welsh culture, heritage and sense of place in many coastal towns and villages, which also contributes to a positive effect on Welsh language, in addition to a positive effect on landscape and seascape (SA Criteria 5) and heritage (SA Criteria 7).

Safeguarding low carbon energy generation projects by preventing incompatible development will help ensure that reductions in greenhouse gas emissions associated with the projects are realised. The protection of wastewater management and treatment infrastructure will also help to ensure that there is effective drainage of storm water and runoff to the sea, supporting resilience to the effects of climate change, such as flooding. Additionally the electricity transmission network supports renewable energy schemes in the Welsh marine area. In seeking to safeguard these activities, the policy has been assessed as having a significant positive effect on climate change (SA Criteria 6). However, the policy will also safeguard offshore hydrocarbon activity, where exploration and production activity would generate greenhouse gas emissions at all stages of the lifecycle. Indirectly, the combustion of extracted hydrocarbons would also generate greenhouse

gas emissions. Overall, the policy has therefore been assessed as having a mixed significant positive and minor negative effect on climate change (SA Criteria 6), although some uncertainty remains.

Several marine sectors would have positive effects on health if activities are safeguarded. Given the relationship between recreation and the promotion of healthy lifestyles, a significant positive effect on health (SA Criteria 13) has been identified. Changes in water quality also have the potential to affect human health. The WMER highlights that there are potential health risks from water-borne pathogens from discharges to waters used for recreational activities, such as swimming and canoeing. There are also risks associated with the ingestion of algal toxins which can accumulate in edible shellfish. Only 3 of 22 Shellfish Waters met guideline quality standards in 2014 so water quality improvements could have substantial benefits in this area. Policy SAF_01 will help to maintain and enhance water quality and has therefore been assessed as having a positive effect on health. Commercial fishing provides an important source of food and the protection of this sector would also have a positive effect on health.

Good water quality is essential to ecosystem resilience in coastal and offshore areas, and untreated wastewater can cause damage to ecosystems and marine ecology. Safeguarding existing and planned wastewater treatment infrastructure is expected to help minimise these impacts; however, it is also recognised that any future infrastructure (depending on siting and footprint) could also have adverse effects. Further that future resource use of resources such as aggregates could be associated with negative effects (see SA of AGG_01) and in this context, Policy SAF_01 has been assessed as having a mixed positive and negative effect on biodiversity (SA Criteria 1) with some uncertainty.

The existing distribution of aggregates activities in Welsh waters is in part influenced by proximity to market. By safeguarding existing and future aggregate activities in these areas, Policy SAF_01 may help to ensure that the sector continues to benefit from being in close proximity to markets thereby helping to minimise emissions to air including greenhouse gas emissions associated with the transportation of aggregates. As a result, the policy has been assessed as having a positive effect on air quality (SA Criteria 4) and contributes to the minor positive effect on climate change (SA Criteria 6).

Coastal tourism and recreation in Wales is heavily reliant upon the natural environment and built heritage of the marine area. By seeking to safeguard tourism and recreation activities, Policy SAF_01 could help to conserve these assets and the policy has therefore been assessed as having a positive effect on the physical environment (SA Criteria 3). Safeguarding tourism and recreation would also support positive effects on biodiversity (SA Criteria 1), water (SA Criteria 2), landscape and seascape (SA Criteria 5) and heritage (SA Criteria 7). There is the potential for these effects to be significant if the implementation of Policy SAF_01 leads to the conservation of designated assets. In this regard, the WMER highlights that 70% of Wales' coastline is designated for its environmental quality. However, in theory the policy may also support the continuation of existing tourism and recreation activities that are already harmful to these assets and as a result, some uncertainty remains.

The requirement to consider the compatibility of proposals with current or proposed activities could help to promote proactive sector – sector engagement and engagement on marine planning. This has been assessed as having a positive effect on governance (SA Criteria 14).

Whilst the policy would support existing activities within sectors, it is recognised that proposals for development in other sectors which conflict with existing activity or applications may not be permitted in some areas. This could be to the detriment of development activities in other sectors. However, taking into account the potential for mitigation to resolve conflicts, any negative effects are not expected to be significant, although some uncertainty remains.

Additionally, this policy could allow the development of proposals which may adversely affect existing activities or proposals, where a convincing case for proceeding has been made. However, as the intent of the policy is the safeguarding of existing activity, it is assumed that proposals would not, overall, result in significant negative effects upon a safeguarded sector but this is again uncertain.

It is not yet known whether proposals would be put forward which result in safeguarding across all marine sectors, in which case some of the potential positive effects identified may not be realised.

No other significant negative effects or negative effects have been identified.

Mitigation/Enhancement:

- Consideration could be given to the inclusion, in the supporting Sector Safeguarding Policy Aims, of example measures that could be adopted to address incompatibilities between proposals and existing activities.

Assumptions:

- It is assumed that proposals would not be permitted if significant negative effects would arise, as the intent of the policy is safeguarding of existing activities.
- It is assumed that projects with formal applications would progress to become operational.
- It is assumed that the safeguarding as a result of this policy would be beneficial for passenger ferries and recreational boating.
- It is assumed future aggregate activity will remain in close proximity to markets.

Uncertainties:

- It is uncertain whether incompatible new activities will present a convincing case for proceeding, which could give rise to negative effects on existing activities.
- It is uncertain whether new activities which are not permitted as a result of the policy would proceed elsewhere or would not take place at all, which may have negative effects on the sector through lack of development.
- It is uncertain whether safeguarding of activities would arise across all sectors, in which case some of the potential positive effects identified may not be realised.
- The scale, type and location of future activities within the sectors is not yet known.
- The scale of additional jobs created for Welsh communities is not certain.
- It is uncertain whether safeguarding tourism and recreation activities would result in the protection of designated assets.
- It is uncertain whether safeguarding tourism and recreation activities would support the continuation of existing activities that are harmful to designated assets.
- Improvements in air quality associated with a reduction in the release of polluting combustion products would generally be expected as a result of renewable energy generation (in addition to incidental human health benefits). As this policy relates to safeguarding consented renewables developments, the scale of which is not yet known, these indirect benefits have not been identified as effects.

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
SAF_02: Safeguarding strategic resources Proposals which may have significant adverse impacts upon the prospects of any sector covered by this plan to engage in sustainable future strategic resource use (of resources identified by an SRA) must demonstrate how they will address compatibility issues with that potential resource use. Proposals unable to demonstrate adequate compatibility must present a clear and convincing case for proceeding. Compatibility should be demonstrated through, in order of preference: • Avoiding significant adverse impacts on this potential strategic resource use, and/or • Minimising significant adverse impacts where these cannot be avoided; and/or • Mitigating significant adverse impacts where they cannot be minimised.	**0**	**0**	**0**	**0/?**	**0**	**+/?**	**0**	**0**	**0**	**+/?**	**+/?**	**+/?**	**0**	**+**

Significant Effects:
Policy SAF_02 seeks to safeguard the prospects of specific sectors to engage in sustainable future strategic resource use within areas (SRAs). The Plan makes provision for the establishment of SRAs and sets out the priorities for establishing SRAs as the aggregates and low carbon energy sectors, followed by the aquaculture sector. For the purposes of this assessment, it is therefore assumed that future resource use of these sectors will be safeguarded under this policy during the lifetime of the plan. The supporting text to Policy SAF_02 specifies that a lower weight of safeguarding is appropriate for future resources (compared to existing resource use) due to the greater uncertainty with regards to resource distribution and constraints, and variable information on sector needs.

The effects associated with this policy would broadly be similar to those identified with respect to aggregates, aquaculture and low carbon energy for Policy SAF_01 above, however there is greater uncertainty over the scale and location of future resource use as the SRAs have not yet been defined. It is also not known whether sector activities will go ahead in these areas once defined, and whether the associated safeguarding benefits would be realised.

Safeguarding future low carbon energy projects by preventing incompatible development in SRAs is likely to result in a positive effect on climate change (SA Criteria 6) by helping to ensure that renewable energy is generated in future. A positive effect has also been identified with respect to resources (SA Criteria 10) due to the reductions in greenhouse gas emissions associated with future low carbon energy and the safeguarding of aggregate resources from other activities. Significant effects have not been identified due to the lower weight of safeguarding under SAF_02, and uncertainty remains.

Aggregates, aquaculture and the low carbon energy sector make important contributions to the Welsh economy, and support businesses and jobs. By safeguarding resources in SRAs, Policy SAF_02 will support the protection of businesses and jobs whilst providing the confidence the sectors need for further investment. A positive effect has therefore been identified in respect of the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12). As above, the scale of effect is uncertain, although is not expected to be significant due to the lower weight of safeguarding given to future resources.

The requirement to consider the compatibility of proposals with future resources in SRAs could help to promote engagement on marine planning. More broadly, this policy will support the identification and development of SRAs that will, through an evidence-based approach, enable better understanding of the distribution of resources across the plan area together with associated constraints and opportunities. Overall, Policy SAF_02 has therefore been assessed as having a positive effect on governance (SA Criteria 14).

The existing distribution of aggregates activities in Welsh waters is in part influenced by proximity to market, however it is not yet know where the SRA for aggregates will be located. The supporting text under the 'Sector Safeguarding Policy Aim' heading for aggregates does however highlight that SRAs are likely to be located close to supporting infrastructure and existing licensed and exploration / option areas. Potential effects on air quality associated with emissions to air from aggregate transportation is therefore assessed as neutral with some uncertainty (SA Criteria 4).

Whilst the policy will support future activities within sector SRAs, it is recognised that proposals for development in other sectors which conflict with SRAs may not be permitted. This could be to the detriment of development in other sectors. However, taking into account the potential for mitigation to resolve conflicts, any negative effects are not expected to be significant, although some uncertainty remains.

Additionally, this policy could allow the development of proposals which may adversely affect future SRA resources, where a convincing case for proceeding has been made. However, as the intent of the policy is the safeguarding of resources, it is assumed that proposals would not result in significant negative effects, but this is again uncertain.

It is not yet known whether proposals would result in safeguarding in SRAs for all three sectors, in which case some of the potential positive effects identified may not be realised.

Effects on the remaining SA criteria have been assessed as neutral.

No significant negative effects or negative effects have been identified.

Mitigation/Enhancement:
- None identified.

Assumptions:
- It is assumed that proposals would not be permitted if significant negative effects would arise, as the intent of the policy is safeguarding of SRAs.
- It is assumed that there will be SRAs for the aggregates, aquaculture and low carbon energy sectors, as set out in the Plan sector policies.

Uncertainties:
- It is not known where the SRAs will be located.
- It is uncertain whether any aggregates, aquaculture or low carbon energy projects will take place in SRAs.
- The scale, type and location of activities that may take place in SRAs is not known.
- It is uncertain whether incompatible new activities will present a convincing case for proceeding, which could give rise to negative effects on future activities in SRAs.

- It is uncertain whether new activities which are not permitted as a result of the policy would proceed elsewhere or would not take place at all, which may have negative effects on the sector through lack of development.
- It is uncertain whether safeguarding of activities would arise in SRAs for all three sectors, in which case some of the potential positive effects identified may not be realised.
- The scale of additional jobs created for Welsh communities is not certain.
- The proximity to markets of future aggregate activity in SRAs is not yet known.

Appendix D
Screening of Plans and Programmes for In-combination Effects with the Draft WNMP

Plan/Programme	Likely Significant Cumulative Effects In-combination with the Draft WNMP? (Yes – Y, No- N)	Related SA Criteria (where likely significant effects have been identified)	Relationship - significant positive effect (++) / significant negative effect (--)
UK Plans and Programmes			
Environment Agency (2008) Better Sea Trout and Salmon Fisheries: Our Strategy for 2008-2021	**N**	N/A	**~**
Defra (2007) The Air Quality Strategy for England, Scotland, Wales and Northern Ireland	**N**	N/A	**~**
Defra (2007) Fisheries 2027: A long-term vision for sustainable fisheries	**N**	N/A	**~**
Defra (2009) Our Seas – a Shared Resource: High Level Marine Objectives	**N**	N/A	**~**
Defra (2012) National Policy Statement for Waste Water	**Y**	SA Criteria 2	**++**
Defra (2013) The National Adaptation Programme: Making the Country Resilient to a Changing Climate	**Y**	SA Criteria 3, 6, 11, 12, 13	**++**
Defra (2018) A Green Future: Our 25 Year Plan to Improve the Environment	**Y**	SA Criteria 1, 2, 3, 4, 5, 6, 10	**++**
Defra (2018) Draft National Policy Statement for Water Resources	**N**	N/A	**~**
DECC (2010) Marine Energy Action Plan	**Y**	SA Criteria 6, 10, 11	**++**
DECC (2011) Carbon Plan: Delivering our Low Carbon Future	**Y**	SA Criteria 6, 10, 11	**++**
DECC (2011) National Policy Statements for Energy Infrastructure	**Y**	SA Criteria 6, 10, 11	**++**
Oil and Gas Authority (2017) Offshore Energy Licensing Rounds	**Y**	SA Criteria 6, 10, 11	**++/--**
Department for Transport (2011) National Policy Statement for Ports	**Y**	SA Criteria 11, 12	**++**
HMG, NI Executive, Scottish Government, Welsh Government (2011) UK Marine Policy Statement	**Y**	SA Criteria 1, 2, 3, 5, 6, 7, 9, 10, 11, 13, 14	**++**

Plan/Programme	Likely Significant Cumulative Effects In-combination with the Draft WNMP? (Yes – Y, No- N)	Related SA Criteria (where likely significant effects have been identified)	Relationship - significant positive effect (++) / significant negative effect (--)
Infrastructure and Projects Authority (2016) National Infrastructure Delivery Plan 2016–2021	Y	SA Criteria 6, 11, 12	++
Joint Nature Conservation Committee and Defra (2012) UK Post-2010 Biodiversity Framework	Y	SA Criteria 1	++
Joint Nature Conservation Committee (1994) UK Biodiversity Action Plan	Y	SA Criteria 1	++
Strategic Plan for Biodiversity 2011-2020 (2010)	Y	SA Criteria 1	++
National (Wales) Plans and Programmes			
Welsh Assembly Government (2007) Welsh Coastal Tourism Strategy	Y	SA Criteria 9, 11, 12	++
Wales Biodiversity Partnership (2010) Wales Biodiversity Framework	Y	SA Criteria 1	++
Welsh Government (1997) Technical Advice Note 13: Tourism	Y	SA Criteria 9, 11, 12	++
Welsh Government (1998) Technical Advice Note 14: Coastal Planning	Y	SA Criteria 1, 2, 3, 5, 6, 7, 9	++
Welsh Government (2005) Technical Advice Note 8: Planning for Renewable Energy	Y	SA Criteria 6, 10, 11	++
Welsh Government (2007) Coastal Access Improvement Programme	N	N/A	~
Welsh Government (2007) Technical Advice Note 18: Transport	Y	SA Criteria 11	++
Welsh Government (2008) Wales Transport Strategy	Y	SA Criteria 11	++
Welsh Government (2008) Wales Fisheries Strategy	N	N/A	~
Welsh Government (2008) People, Places, Future – The Wales Spatial Plan	Y	SA Criteria 8, 11, 12	++
Welsh Government (2009) Technical Advice Note 5: Nature Conservation and Planning	Y	SA Criteria 1	++
Welsh Government (2010) Valuing the Welsh Historic Environment	N	N/A	~
Welsh Government (2010) Climate Change Strategy for Wales	Y	SA Criteria 3, 6, 10	++
Welsh Government (2010) Low Carbon Revolution – the Welsh Government Energy Policy Statement	Y	SA Criteria 6, 10, 11	++

Plan/Programme	Likely Significant Cumulative Effects In-combination with the Draft WNMP? (Yes – Y, No- N)	Related SA Criteria (where likely significant effects have been identified)	Relationship - significant positive effect (++) / significant negative effect (--)
Welsh Government (2011) Marine Renewable Energy Strategic Framework	**Y**	SA Criteria 6, 10, 11	**++**
Welsh Government (2011) Understanding the risks, empowering communities, building resilience: The national flood and coastal erosion risk management strategy for Wales	**Y**	SA Criteria 3, 6, 11, 12, 13	**++**
Welsh Government (2013) The Historic Environment Strategy for Wales	**N**	N/A	**~**
Welsh Government (2012) Preparing Wales for Climate Change. Energy Wales A Low Carbon Transition	**Y**	SA Criteria 6, 10, 11	**++**
Welsh Government (2012) Wales Infrastructure Investment Plan	**Y**	SA Criteria 3, 6, 11, 12	**++**
Welsh Government (2012) A living language: a language for living – Welsh language strategy 2012 to 2017	**N**	N/A	**~**
Welsh Government (2013) Partnership for Growth: The Welsh Government Strategy for Tourism 2013 – 2020	**Y**	SA Criteria 9, 11, 12	**++**
Welsh Government (2013) National Flood and Coastal Erosion Strategy for Wales	**Y**	SA Criteria 3, 6, 11, 12, 13	**++**
Welsh Government (2013) Wales Marine and Fisheries Strategic Action Plan	**Y**	SA Criteria 1, 11, 12	**++**
Welsh Government (2014) Technical Advice Note 23: Economic Development	**Y**	SA Criteria 11, 12	**++**
Welsh Government (2014) Technical Advice Note 15: Development and Flood Risk	**Y**	SA Criteria 3, 6, 11, 12, 13	**++**
Welsh Government (2015) Water Strategy for Wales	**Y**	SA Criteria 2	**++**
Welsh Government (2016) Planning Policy Wales – Edition 9	**Y**	SA Criteria 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13	**++**
Welsh Government (2017) Natural Resources Policy	**Y**	SA Criteria 1, 2, 3, 5, 6, 10, 11, 12	**++**
Welsh Government (2017) Technical Advice Note 20: Planning and the Welsh Language	**N**	N/A	**~**
Welsh Government (emerging) National Development Framework	**Y**	SA Criteria 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13	**++**

Plan/Programme	Likely Significant Cumulative Effects In-combination with the Draft WNMP? (Yes – Y, No- N)	Related SA Criteria (where likely significant effects have been identified)	Relationship - significant positive effect (++) / significant negative effect (--)
Welsh Government (2018) Planning Policy Wales – Edition 10	**Y**	SA Criteria 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 13	**++**
Regional/Local Plans and Programmes			
AONB Management Plans (various)	**Y**	SA Criteria 1, 3, 5, 7	**++**
Biodiversity Action Plans	**Y**	SA Criteria 1	**++**
Local Development Plans (various)	**Y**	SA Criteria 1, 2, 3, 5, 6, 8, 9, 11, 12, 13	**++**
National Park Management Plans (various)	**Y**	SA Criteria 1, 3, 5, 7 9, 11	**++**
Shoreline Management Plans (various)	**Y**	SA Criteria 3, 6, 11, 12, 13	**++**

Appendix E
Appraisal of Tidal Lagoon Policy Options

Technical note:
Welsh National Marine Plan Sustainability Appraisal and Habitats Regulations Assessment: Appraisal of Tidal Lagoon Policy Options

1. Introduction

1.1 Overview

The Welsh National Marine Plan (WNMP) is currently being prepared by the Welsh Government in accordance with the Marine and Coastal Access Act 2009 (MCAA)[1]. Building on the UK Marine Policy Statement[2] (UK MPS), the WNMP will enable the Welsh Government to plan for, and guide, the management of marine activities in a sustainable way; integrating economic, social and environmental considerations and engaging with communities to help shape the future of the plan area.

The Welsh Government published the Draft Welsh National Marine Plan[3] (Draft WNMP) for formal, public consultation over a 16-week period between 7th December 2017 and 29th March 2018. The development of the Draft WNMP was informed by relevant evidence on the state and current use of Welsh seas and coastal waters and the potential opportunities for future use alongside the views of stakeholders obtained through a process of sustained engagement.

As part of the marine plan-making process, and as required by Schedule 6 (Part 10) of the MCAA, the Welsh Government has carried out a Sustainability Appraisal (SA) to assess the likely effects of the proposed plan policies and help optimise the contribution of the WNMP to sustainable development. An SA Report[4] presenting the findings of this appraisal was published alongside the Draft WNMP for consultation. The Welsh Government also determined that the SA should incorporate the requirements of the Strategic Environmental Assessment (SEA) Directive[5] and transposing regulations[6] (the SEA Regulations).

In accordance with The Conservation of Habitats and Species Regulations 2017 (SI 2017 No. 1012) ('the Habitats Regulations'), there is also a need to consider whether the WNMP is likely to have a significant effect (alone, or in-combination with other plans) on any European designated nature conservation site, a process

[1] HM Government (2009) *Marine and Coastal Access Act 2009*. Available from http://www.legislation.gov.uk/ukpga/2009/23/pdfs/ukpga_20090023_en.pdf [Accessed September 2018].
[2] HM Government (2011) *UK Marine Policy Statement*. Available from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69322/pb3654-marine-policy-statement-110316.pdf [Accessed September 2018].
[3] Welsh Government (2017) *Draft Welsh National Marine Plan*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/draft-plan-en.pdf
[4] Welsh Government (2017) *Welsh National Marine Plan Sustainability Appraisal Report*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-02/sustainability-en.pdf [Accessed January 1019].
[5] EU (2001) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment
[6] HM Government (2004) *The Environmental Assessment of Plans and Programmes Regulations 2004 (SI 1633)*

known as Habitats Regulations Assessment (HRA). A report[7] presenting the HRA of the WNMP was published alongside the draft plan in December 2017.

Taking into account the representations received to the consultation (a summary of consultation responses is available via the Welsh Government's website[8]), the findings of accompanying assessments, as well as ongoing stakeholder engagement, the Welsh Government is currently revising the Draft WNMP prior to independent investigation (if required) and adoption.

As part of the preparation of the revised WNMP, the proposed policy approach to tidal lagoons currently set out in Policy ELC_01 of the consultation Draft WNMP (presented in **Box 1**) is being reviewed.

Box 1: ELC_01: Low carbon energy (supporting) (taken from the consultation Draft WNMP, 2017)

Proposals for all types of marine renewable energy generation (wind, tidal and wave energy) and associated infrastructure are strongly encouraged, especially:

a. in corresponding wave, tidal stream and any other defined renewable energy technology test and demonstration zones; and

b. in corresponding wave, tidal stream and tidal lagoon Strategic Resource Areas.

Relevant public authorities should, in liaison with the sector and other interested parties, collaborate to understand opportunities for the sustainable use of:

a. renewable energy Strategic Resource Areas; and

b. wider natural resources that provide renewable energy potential; in order to support the sustainable growth of the renewable energy sector through marine planning.

In order to understand future opportunities for offshore wind development, proposals are encouraged that support strategic planning for the sector. Relevant public authorities should, in liaison with the sector and other interested parties, collaborate to:

- collect evidence to support understanding of environmental constraints and opportunities
- support understanding of the optimal siting of offshore wind developments across Wales.

Relevant public authorities should make relevant evidence widely available to support planning and decision making.

A Tidal Lagoon Policy and Sustainability Appraisal and Habitats Regulations Assessment Technical Working Group (TWG) has been established in order to provide advice and guidance on the developing marine plan tidal lagoon policy (and associated Sustainability Appraisal (SA) and Habitats Regulations Assessment (HRA))[9]. In liaison with the TWG, a number of potential policy options have been identified and are currently being considered by the Welsh Government (the policy options are outlined in **Section 1.2**).

To meet the Welsh Government's responsibilities under the MCAA and SEA Regulations, ensure that the likely significant effects of the WNMP and reasonable alternatives are identified, described and evaluated and to inform the selection of the preferred WNMP tidal lagoon policy approach, the tidal lagoon policy options identified by the Welsh Government have been subject to appraisal. The findings of the appraisal (including

[7] Welsh Government (2017) *Welsh National Marine Plan Habitats Regulations Assessment*. Available from https://beta.gov.wales/draft-welsh-national-marine-plan [Accessed January 2019].
[8] Welsh Government (2018) *Draft Welsh National Marine Plan: Consultation – summary of response*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/draft-welsh-national-marine-plan-summary-of-responses.pdf [Accessed September 2018].
[9] Further detail relating to the role and purpose of the TWG is set out in the *Marine Planning Wales Stakeholder Reference Group: Tidal Lagoon Policy and Sustainability Appraisal and Habitats Regulations Assessment Technical Working Group - Terms of Reference* (August 2018)

the effects on the well-being goals established in the Well-being of Future Generations (Wales) Act 2015 and the objective for Sustainable Management of Natural Resources (SMNR) set out in the Environment (Wales) Act 2016 are presented in this Technical Note alongside initial commentary on the possible HRA implications of the options.

1.2 Tidal Lagoon Policy Options

Following discussion at the TWG meetings held on 10th September and 11th October 2018, a total of seven options for the WNMP tidal lagoon policy were initially identified for further consideration:

- Option 1: Consultation Draft WNMP policy;
- Option 2: Generic 'supporting' policy decoupled from SRA + evidence focus;
- Option 3a: Wales / pathfinder focussed policy decoupled from SRA + evidence focus;
- Option 3b: Wales / pathfinder focussed policy decoupled from SRA with caveats + evidence focus;
- Option 4: Evidence focus;
- Option 5: No policy reference to tidal lagoons; and
- Option 6: Policy that does not support lagoons.

It should be noted that all of the options listed above relate to projects under 350MW as this will be within Welsh Ministers competence following April 2019. For developments above 350MW, a general policy is being developed.

The further consideration of these options included an initial high-level view on the reasonableness of each, reflecting the requirements of the SEA Directive to "*identify, describe and evaluate the likely significant effects on the environment of implementing the plan or programme and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme*". Guidance[10] suggests only alternatives that are realistic, relevant and distinct should be considered reasonable. In consequence, after further consideration by the Welsh Government, Options 5 and 6 above were not considered reasonable within the context of the WNMP and its objectives for the following reasons:

- Option 5 'No policy reference to tidal lagoons' is not realistic. The WNMP should reflect current and potential future activity in Welsh waters over the lifetime of the plan period and offer policy guidance to support sustainable development. Tidal lagoon technology is considered technically viable and has been proposed for development in the plan area. As such, the WNMP should not be silent on tidal lagoon policy nor leave a policy vacuum.
- Option 6 'Policy that does not support lagoons' is not realistic. There is insufficient evidence to rule out tidal lagoons. The Welsh Government is clear that given the imperative of addressing climate change and meeting carbon emission reduction targets, all marine renewable options should be retained and none ruled out in their entirety.

A paper[11] describing the basis for the tidal lagoon policy options outlined above and including associated, alternative wording in respect of Policy ELC_01 was presented to the TWG for discussion at the working group meeting held on 23rd November 2018. The Welsh Government subsequently confirmed that Options 2, 3a, 3b and 4 are to be taken forward for further consideration and subject to SA in order to help identify

[10] European Commission (2001) *Implementation of Directive 2001/42 on the assessment of the effects of certain plans and programmes on the environment and Office of the Deputy Prime Minister et al (2005) A Practical Guide to the Strategic Environmental Assessment Directive.*

[11] Welsh Government (2018) *WNMP Tidal Lagoon policy option refinement considerations for Agreement by Tidal Lagoon SA and HRA technical working group* (dated 12.11.18).

the relative merits and implications associated with each approach and inform revisions to the Draft WNMP. Option 1 has also been retained as a reasonable alternative in order to provide a comparator against which the relative performance of the other options can be considered; however, this option has not been subject to further appraisal as this would duplicate the work already presented in the SA Report which accompanied the Draft WNMP. Additionally, a variant of Option 2 (Option 2b), which includes the Option 3b caveat in respect of European sites, has been considered and appraised. Whilst this option was not included as a specific policy in the options paper, it was identified as a possible sub-option.

In reviewing the tidal lagoon policy options, the Welsh Government is minded to sub-divide Policy ELC_01 into three components:

- ELC_01: Low carbon energy (supporting) wind, tidal stream and wave;
- ELC_02: Low carbon energy (supporting) tidal lagoons; and
- ELC_03: Low carbon energy (supporting) understanding future opportunities, with ELC_03d specifically relating to evidence in relation to tidal lagoons. (ELC_03 a), b), c) relate to evidence requirements on wave, wind and stream).

Options 2a, 2b, 3a and 3b comprise of both variants to Policy ELC_02 and Policy ELC_03d. Under Option 4, Policy ELC_02 would be removed leaving only an evidence focussed policy (Policy ELC_03d) remaining (should this option be taken forward, it is anticipated that Policy ELC_03d would be renumbered accordingly).

On the basis of the above, **Table 1.1** presents a summary of the tidal lagoon policy options taken forward for appraisal. It should be noted that the Welsh Government will draft a separate policy that provides the basis for decisions relating to the remaining renewable technology types previously covered by Policy ELC_01 in the Draft WNMP.

Table 1.1 WNMP Tidal Lagoon Policy Options

Option	Description	Policy ELC_02	Policy ELC_03_d (applies to Options 2a to 4)
Option 1	Consultation Draft WNMP Policy	As per Policy ELC_01 of the Draft WNMP.	As per Policy ELC_01 of the Draft WNMP.
Option 2a	Generic 'supporting' policy decoupled from SRA + evidence focus	Proposals for tidal lagoon projects <350MW[12] will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	In order to understand future opportunities for tidal lagoon development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to: -collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; -support understanding of the optimal siting of tidal range developments across Wales as part of a wider, UK perspective; and -identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to support the sustainable development of the sectors through marine planning, where it is appropriate to do so.
Option 2b	Generic 'supporting' policy decoupled from SRA with specific environmental caveats + evidence focus	Proposals for tidal lagoon projects <350MW will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for tidal lagoon projects will be supported where it can be demonstrated that they will have no adverse effects on European protected sites. Proposals will not benefit from the support of this plan if adverse effects on European protected sites cannot be excluded.	
Option 3a	Option 3a: Wales / pathfinder focussed policy decoupled from SRA + evidence focus	Proposals for a single tidal lagoon demonstrator project[13] will be supported where it contributes to the objectives of this plan.	

[12] Energy consenting powers for projects up to 350MW are being devolved to Wales under Section 39 of The Wales Act 2017. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02 (Options 2a/b).
[13] It is assumed that a tidal demonstrator project would have a capacity of <350MW. As se out above, energy consenting up to 350MW is being devolved to Wales. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02 (Options 3a/b).

Option	Description	Policy ELC_02	Policy ELC_03_d (applies to Options 2a to 4)
		Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	
Option 3b	Wales / pathfinder focussed policy decoupled from SRA with specific environmental caveats + evidence focus	Proposals for a single tidal lagoon demonstrator project[13] will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for a tidal lagoon demonstrator project will be supported where it can be demonstrated that the proposed scheme will have no adverse effects on European protected sites. Proposals will not benefit from the support of this plan if adverse effects on European protected sites cannot be excluded.	
Option 4	Evidence focus	N/A	

1.3 This Technical Note

This Technical Note describes the approach to the SA of the tidal lagoon policy options identified by the Welsh Government (**Section 2**) before presenting the findings of the appraisal (**Section 3**). Initial commentary on the HRA implications of the options is provided in **Section 4**; **Section 5** then sets out the next steps in the development of the WNMP tidal lagoon policy.

A draft version of this Technical Note was shared with the TWG on 14th January 2019 and was subsequently discussed at the TWG meeting held on 17th January 2019. The deadline for the receipt of written responses to the Technical Note from the TWG was 31st January 2019 and comments were received from Natural Resources Wales (NRW) and the Royal Society for the Protection of Birds (RSPB). These comments have been taken into account, as appropriate, in preparing this final Technical Note; **Appendix B** contains a schedule of the comments received together with the Welsh Government's response including the actions taken in preparing this report.

The views in this Technical Note reflect work in progress and are intended to inform the ongoing revision of the Draft WNMP and SA and HRA thereof. They are provided without prejudice.

2. Appraisal Approach

2.1 Overview

The SA of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP set out in Section 3 of the SA Report; this is to ensure consistency in the treatment of reasonable alternatives. This section presents a brief overview of the adopted methodology.

2.2 SA Framework

The SA Framework adopted to assess the Draft WNMP and subsequent tidal lagoon policy options comprises of criteria and associated guide questions which broadly present the preferred social, economic and environmental outcome. By appraising the policy options against the criteria, it is apparent where they will contribute to sustainability, where they might have an adverse effect, and where any positive effects could be enhanced.

Table 2.1 presents the SA Framework including the SA criteria and guide questions. For each SA criteria, the relevant well-being goals of the Well-being of Future Generations (Wales) Act 2015[14] are identified and an indication provided of the relevance to the objective for the sustainable management of natural resources (SMNR) established in the Environment (Wales) Act 2016[15].

[14] Available from http://www.legislation.gov.uk/anaw/2015/2/contents/enacted [Accessed January 2019].
[15] Available from http://www.legislation.gov.uk/anaw/2016/3/contents/enacted [Accessed January 2019].

Table 2.1 SA Framework

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
1. To protect and enhance biodiversity (habitats, species and ecosystems).	*Protect and enhance designated nature conservation sites (e.g. SACs, SPAs, Ramsar and SSSIs), habitats and species?* *Protect and enhance the structure and function of marine and coastal ecosystems?* *Avoid adverse impacts on marine ecology from underwater noise?* *Provide opportunities for people to come in to contact with and appreciate wildlife and wild places?* *Maintain and restore key ecological processes, and in particular coastal and marine processes?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A globally responsible Wales	Yes
2. To protect and enhance the quality of surface, ground, estuarine and coastal water.	*Affect demand for water resources and the availability of water to meet the demand?* *Affect groundwater or freshwater, estuarine or marine water quality?* *Promote high quality surface water management and waste water treatment and disposal?*	• A prosperous Wales • A resilient Wales • A healthier Wales	Yes
3. To protect and enhance the physical features of the marine environment.	*Affect marine and coastal processes and/or erosion rates?* *Protect and enhance designated coastal features or sites e.g. geological SSSIs?* *Ensure the protection of the seabed in designated or sensitive areas?* *Support the policies and actions of Shoreline Management Plans?*	• A prosperous Wales • A resilient Wales • A healthier Wales	Yes
4. To protect and enhance air quality.	*Help to reduce emissions of air pollutants associated with marine or coastal activities and developments?*	• A healthier Wales • A resilient Wales • A globally responsible Wales	Yes
5. To protect and enhance landscape and seascape character and other protected features.	*Recognise and respect non-designated landscape and seascape character?* *Help to protect designated coastal landscapes and/or townscapes, such as National Parks, AONBs, Heritage Coast or conservation areas?*	• A resilient Wales • A healthier Wales • A Wales of cohesive communities	Yes
6. To limit the causes and effects of climate change and promote adaptation.	*Contribute to a reduction, directly or indirectly, in greenhouse gas emissions?* *Contribute positively to resilience and/or adaptation to climate change, helping to ensure that forecast*	• A prosperous Wales • A resilient Wales	Yes

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
	changes are considered over the lifetime of any proposed development or activity?	• A healthier Wales • A globally responsible Wales	
7. To protect and enhance cultural, historic and industrial heritage resources.	*Help to protect the site and setting of marine and coastal historic sites and assets including scheduled monuments and protected wrecks, landscapes and seascapes?* *Help to avoid or minimise damage to onshore and offshore archaeologically important sites?* *Help to protect and enhance culturally important sites?*	• A prosperous Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
8. To support and enhance the Welsh language and culture.	*Protect Welsh language and culture?* *Promote and enhance opportunities for the promotion and development of Welsh language and culture?*	• A prosperous Wales • A more equal Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
9. To support appropriate tourism in Wales and protect and enhance opportunities for recreation.	*Help to protect and promote the attractiveness of the coastal and marine environment for visitors?* *Help to protect and promote the distinctiveness of landscapes and seascapes?* *Help to protect and promote sustainable opportunities for recreation in the coastal and marine environment for residents and visitors?* *Help to promote the health and well-being of local communities through supporting appropriate opportunities for recreation?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A more equal Wales • A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language	Yes
10. To promote the sustainable use of natural resources.	*Promote the protection and accessibility of the seabed for the winning of marine aggregates?* *Promote the sustainable use of natural resources including oil and gas?*	• A prosperous Wales • A resilient Wales	Yes

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
	Help to support the development of low carbon energy and thereby contribute towards meeting renewable energy targets? *Promote the sustainable management of waste?"*	• A globally responsible Wales	
11. To support sustainable development of marine and coastal economy.	*Contribute to the growth of any marine activity without detriment to another?* *Help to ensure that capacity is provided for shipping needs, including sea space, water depth and port facilities?* *Support the protection and conservation of marine fish stocks and ensure the continuation a sustainable fishing industry in Wales?* *Help to promote the sustainable growth of aquaculture in Wales?* *Help ensure appropriate defence activities can be undertaken in sustainable manner?* *Facilitate telecommunications including cable laying in appropriate areas?*	• A prosperous Wales • A resilient Wales • A globally responsible Wales	Yes
12. To maintain and enhance the well-being of local communities.	*Help to promote employment creation and thereby support the local and Welsh economy?* *Help to address social needs such as the retention of high skill levels and achieving a balance of full and part-time work, where appropriate?* *Help to promote attractive, viable, safe and well-connected communities?* *Help to promote equality?*	• A prosperous Wales • A healthier Wales • A more equal Wales • A Wales of cohesive communities • A globally responsible Wales	Yes
13. To protect and enhance human health with special regard to vulnerable groups in society.	*Promote the maintenance and enhancement of human health, and minimise the adverse effects on any vulnerable groups in particular?*	• A more equal Wales • A heathier Wales • A Wales of cohesive communities	Yes
14. To promote good governance.	*Support integrated decision making and collaboration across marine and terrestrial interfaces and boundaries?* *Promote engagement in marine planning?* *Support continued research and policy development in marine planning?*	• A prosperous Wales • A resilient Wales • A healthier Wales • A more equal Wales	Yes

Criteria	Guide Questions: *Will the proposed WNMP policies…*	Well-being Goals	Relevant to the Objective for SMNR?
		• A Wales of cohesive communities • A Wales of vibrant culture and thriving Welsh language • A globally responsible Wales	

2.3 Methodology

For each option, the constituent policy has been appraised against each of the criteria that comprise the SA Framework with the findings presented in a matrix to identify the likely significant effects on the criteria (see **Appendix A**). The combined effects of each policy have then been summarised (see **Section 3.2**).

In considering the likely effects of the policy options on the SA criteria, the following factors have been taken into account:

- the nature of the potential effect (what is expected to happen);
- the probability of the potential effect occurring;
- the timing of the potential effect;
- the magnitude of the potential effect;
- the potential effect on vulnerable communities, sensitive habitats and/or ecosystems;
- the geographic scale of the potential effect (e.g. local, regional, national);
- the location of the potential effect;
- the duration of the potential effect (e.g. short, medium or long term);
- the permanence of the potential effects; and
- the reasons for any uncertainty and any assumptions needed to complete the appraisal.

The definitions of significance contained in Appendix C to the SA Report have been used to ensure a consistent approach to interpreting the significance of effects. Where appropriate, measures to mitigate adverse effects and enhance positive effects are identified.

Secondary, Cumulative and Synergistic Effects

An assessment of the potential for the policies contained within the Draft WNMP to act in-combination both with each other and with other plans and programmes to generate cumulative (including synergistic and secondary) effects is contained in Section 4.6 of the SA Report.

As part of the analysis presented in this Technical Note, consideration has been given as to whether the proposed tidal lagoon policy options would affect the findings of the cumulative effects assessment presented in the SA Report. This is contained in **Section 3.3**.

Cross-border Effects

In Section 4.7 of the SA Report consideration is given to whether the Draft WNMP is likely to give rise to cross-border effects (i.e. effects beyond the plan area). Commentary on the implications of the proposed tidal lagoon policy options for the findings of this existing assessment is contained in **Section 3.4**.

Contribution to the Well-being Goals for Wales and Objective for SMNR

Section 4.8 of the SA Report includes an assessment of the contribution that the Draft WNMP is likely to make to the achievement of the well-being goals established in the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR set out in the Environment (Wales) Act 2016.

In **Section 3.5**, consideration is given to whether, and the extent to which, the proposed tidal lagoon policy options would affect the findings presented in the SA Report in terms of the WNMP's contribution to the well-being goals and objective for SMNR.

2.4 Uncertainties and Assumptions

In undertaking the appraisal of the tidal lagoon policy options, a number of uncertainties have been identified and assumptions made. These assumptions and uncertainties are documented in the appraisal matrices contained at **Appendix A** and include the following:

Uncertainties

- The exact scale, type of technology and location of future tidal lagoon projects is currently unknown;
- The number of tidal lagoon projects that may come forward as a result of the WNMP, and the possible environmental implications, is currently unknown (Options 1, 2a and 2b);
- The scale of additional jobs created for Welsh communities is not certain;
- Effects on Welsh language are uncertain;
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of mitigation;
- The extent to which a demonstrator project would facilitate the deployment of further tidal lagoon schemes is uncertain (Options 3a and 3b);
- The extent of any future deployment of tidal lagoon schemes in the plan area and associated greenhouse gas emission savings is uncertain (Option 4).

Assumptions

- It is assumed that tidal lagoon deployment will take place in Strategic Resource Areas (SRAs), albeit with uncertainty over the exact type, location and scale of the proposals (Option 1);
- It is assumed that a tidal demonstrator project would have a capacity of <350MW. Energy consenting up to 350MW is being devolved to Wales. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02 (Options 3a and 3b);
- It is assumed that the provisions of Policy ELC_02 with regard to the protected afforded to European sites will reduce the likelihood of significant adverse effects on nationally designated nature conservation sites and local biodiversity occurring. However, some uncertainty remains and where schemes affect nationally designated nature conservation sites or result in substantial impacts on local biodiversity, effects could be significant (Options 2b and 3b);

- It is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) will reduce the likelihood of significant effects occurring and their magnitude. However, some uncertainty remains (Option 3a and 3b).

3. SA of Tidal Lagoon Policy Options

3.1 Overview

This section summarises the findings of the SA for the five proposed tidal lagoon policy options that have been taken forward for appraisal, in addition to the Consultation Draft WNMP policy (Option 1) (**Section 3.2**). Consideration is also given to whether, and the extent to which, the proposed options would affect the findings of the SA Report in terms of the identified cumulative effects (**Section 3.3**) and cross-border effects (**Section 3.4**) of the Draft WNMP. Commentary on the implications of the proposed tidal lagoon policy options for the assessment of the Draft WNMP's contribution to the achievement of Wales' well-being goals and the objective for SMNR is contained in **Section 3.5**.

3.2 Appraisal of Proposed Tidal Lagoon Policy Options

Each of the five tidal lagoon policy options identified by Welsh Government have been appraised against the SA criteria with commentary provided describing the potential effects. The findings of the appraisal are presented at **Appendix A**. For comparison purposes, the assessment of Policy ELC_01 contained in Appendix E to the SA Report (2017) has also been reproduced and forms Option 1.

Table 3.1 presents a summary of the findings of the appraisal; commentary on the likely significant effects of the policy options is provided below. As highlighted in **Section 1.2**, Options 2a, 2b, 3a and 3b comprise of both variants to Policy ELC_02 in addition to Policy ELC_03d. For these options, the summary presents the findings of the appraisal of each constituent policy and the cumulative effects of implementing both policies in order to provide a robust basis for the comparison of policy options.

Table 3.1 Summary of tidal lagoon policy options appraisal

Option	Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Option 1: Consultation Draft WNMP Policy*	ELC_01	+/--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
Option 2a: Generic 'supporting' policy decoupled from SRA + evidence focus	ELC_02	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
	ELC_03d	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+
	Cumulative Effects[16]	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
Option 2b: Generic 'supporting' policy decoupled from SRA with specific environmental caveats + evidence focus	ELC_02	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
	ELC_03d	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+
	Cumulative Effects	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++

[16] Please note that the scoring of the cumulative effects of the options does not include the minor positive effects of ELC_03d. Such effects were not identified in the scoring for ELC_01 and the approach taken to the SA of the options has been to ensure consistency and an equal treatment, where possible.

Option	Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
Option 3a: Wales / pathfinder focussed policy decoupled from SRA + evidence focus	ELC_02	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
	ELC_03d	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+
	Cumulative Effects	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
Option 3b: Wales / pathfinder focussed policy decoupled from SRA with specific environmental caveats + evidence focus	ELC_02	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
	ELC_03d	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+
	Cumulative Effects	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++
Option 4: Evidence focus	ELC_03d	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+

* The positive effects identified in respect of biodiversity (SA Criteria 1) under Option 1 reflects the policy's wider consideration of renewable technologies.

Likely Significant Positive Effects

Tidal range has the potential to represent a strategically important source of renewable energy for Wales and the UK as a whole, particularly associated with the Severn Estuary which has the second highest tidal range in the world. On this matter, the findings of the Hendry (2016)[17] review into tidal lagoons (the Hendry Review) concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*", although as noted below, the UK Government[18] has since stated that, in respect of the proposed Swansea Bay Tidal Lagoon, other low carbon alternatives present greater value for money and a more economic route to decarbonisation.

In this context, Options 1, 2a/b and 3a/b provide policy support for the development of tidal lagoon schemes in the plan area. Such projects could deliver substantial carbon reductions, helping to reduce emissions from the power sector and support the achievement of Wales' carbon budgets as set out in The Climate Change (Carbon Budgets) (Wales) Regulations 2018[19,20] and the Welsh Government's target for Wales to generate 70% of its electricity from renewable sources by 2030 (although it is recognised that the construction of tidal lagoon schemes would result in resource and energy use although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation). Additionally, all policy options require that relevant public authorities should, in liaison with the sector and other interested parties, collaborate to understand opportunities for tidal lagoon development in the plan area which could contribute to the future progression of suitable and sustainable projects, helping to contribute to the realisation of Wales' tidal resource. Notwithstanding the positive effects outlined above, as highlighted in the appraisal matrices contained in **Appendix A**, there remains some uncertainty in terms of the number and scale of development that may come forward under these options and, therefore, the generating capacity to be created and any carbon emission reduction.

With the exception of Option 4, all of the tidal lagoon policy options identified by the Welsh Government (including Option 1) have been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). Whilst Options 3a and 3b support the development of a single demonstrator project only, it is considered that such a scheme would still deliver substantial carbon reductions, although it is recognised that the scale of any such effects may be reduced relative to Options 1, 2a and 2b (similarly, a policy approach that prohibits significant effects on European designated sites as proposed under Options 2b and 3b may limit opportunities for tidal lagoon development in the plan area and associated carbon reduction benefits). Option 4 does not make provision for the development of tidal lagoon schemes in the plan area *per se* and in consequence, effects on SA Criteria 6 and 10 have been assessed as positive.

The delivery of tidal lagoon schemes is likely to generate considerable investment in local economies and the supply chain. Investment may also create local employment opportunities which could benefit coastal communities including those in the more deprived coastal areas of Wales. In this regard, the Hendry Review highlights that schemes can provide significant opportunities for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. However, it is also noted that the UK Government commissioned a value for money analysis[21] of the specific proposals of Tidal Lagoon Power's (TLP) proposed programme of tidal lagoons including Swansea Bay. This concluded that "*the value for money assessment demonstrates that the costs to consumers of reducing the emissions associated with the electricity system would be higher under scenarios where the programme of tidal lagoons is delivered compared*

[17] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].
[18] Statement by the Secretary of State Greg Clark, 25 June 2018.
[19] S.I 2018 No. 1303 (W. 257).
[20] Carbon budgets are consistent with the targets contained in the Environment (Wales) Act 2016 to ensure that net Welsh emissions for the year 2050 are at least 80% lower than 1990 baseline emissions).
[21] BEIS (2018) TLP *Tidal Lagoon Programme: Summary value for money assessment.* Available from https://www.gov.uk/government/publications/swansea-bay-tidal-lagoon-value-for-money-assessment [Accessed January 2019].

to one where other low carbon alternatives are deployed". Predictability of tidal lagoons and costs to consumers was also highlighted in an assessment by the National Infrastructure Commission (NIC)[22]. In implementing any tidal lagoon schemes in accordance with policy contained in the WNMP, the developer will need to address such issues to the satisfaction of the Welsh Government.

Overall, Options 1, 2a/b and 3a/b have been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created, the availability of relevant skills in the local labour force and the resolution of the value for money concerns. In this regard, it is anticipated that the likely scale of economic benefits derived from any tidal lagoon policy would be commensurate with the number of schemes that come forward and on this basis, benefits may be reduced under Options 3a and 3b (which make provision for a single demonstrator project only). Similarly, a policy approach that prohibits significant effects on European designated sites may limit opportunities for tidal lagoon development in the plan area and associated economic benefits. Whilst Option 4 does not make provision for the deployment of tidal lagoon schemes, it would be expected to help safeguard Wales' tidal range resource for future use and support the identification of opportunities for the co-location of marine activities in the plan area. This has been assessed as having a positive effect on SA Criteria 11 and 12.

Renewable energy generation associated with the deployment of tidal lagoons would contribute towards UK and Welsh Government climate change targets. Further, specific support for strategic planning for the sector contained in Policy ELC_03d is expected to facilitate continued research and development, enhancing understanding of the potential opportunities for tidal lagoon development in the plan area as part of an adaptive management approach. On this basis, all policy options have been assessed as having a positive effect on governance (SA Criteria 14) with those effects being assessed as significant for Options 1, 2a/b and 3a/b.

No further significant positive effects have been identified during the appraisal of the tidal lagoon policy options.

Option 4 (which comprises of Policy ELC_03d only), as part of an evidenced-based approach to marine planning, is anticipated to enhance understanding of the possible effects of tidal lagoon schemes alongside the measures to avoid, minimise and mitigate adverse effects and enhance benefits. In particular, the policy is expected to help:

- safeguard Wales' tidal range resource and associated benefits in terms of the economy;
- identify opportunities for the co-location of marine activities in the plan area and manage potential conflicts; and
- enhance understanding of the marine environment and the effects of tidal lagoon schemes on, in particular, biodiversity, water quality and the physical environment, especially those operational impacts associated with hydrodynamic changes, physio-chemical changes and physical habitat loss / changes.

In addition to the positive effects noted above, this has been assessed as having a positive effect on biodiversity (SA Criteria 1), water (SA Criteria 2), the physical environment (SA Criteria 3) and tourism and recreation (SA Criteria 9).

[22] NIC (2018) *Technical Annex: Tidal Lagoons to National Infrastructure Assessment*. Available from https://www.nic.org.uk/wp-content/uploads/Tidal-power.pdf [Accessed January 2019].

Likely Significant Negative Effects

Negative effects on biodiversity could arise during the construction, operation and decommissioning of tidal lagoon developments due to (inter alia): the introduction of non-native species; physical damage to habitats during construction; construction and operational noise and vibration (e.g. underwater noise due to piling or the operational noise); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. Both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) could also occur on terrestrial ecology associated with the construction of onshore supporting facilities such as substations. Additionally, the operation of a tidal lagoon scheme could (depending on location and scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but larger-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift, and can cause river sedimentation/potential changes to river catchments;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

The assessment contained in **Appendix A** highlights that there is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond), particularly in respect of habitats, fish and birds and on this basis, Options 1, 2a and 3a have been assessed as having a significant negative effect on biodiversity, although considerable uncertainty remains and it is assumed that the provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) under Option 3a would reduce the likelihood of such significant effects occurring and their magnitude.

Recognising the potential for adverse effects on European designated nature conservation sites, Options 2b and 3b set out that proposals for tidal lagoon projects will only be supported where it can be demonstrated that they will have no adverse effects on European protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded. In consequence, these options would not have any adverse effects on the interest features of any European sites in the plan area and beyond and effects on SA Criteria 1 have therefore been assessed as negative. Whilst the potential for effects on nationally designated nature conservation sites, non-designated sites and local biodiversity interests remains, the policy requirement is likely to reduce the potential that such effects will occur and their magnitude; however, some uncertainty remains and where schemes affect nationally designated nature conservation sites or result in substantial impacts on local biodiversity, effects could be significant. Like Option 3a, it is also assumed that the provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes under Options 2a and 2b which could result in cumulative adverse impacts on biodiversity) under Option 3b will further reduce the likelihood of significant effects on biodiversity occurring and their magnitude (this assumption also applies to effects on the other SA criteria).

Notwithstanding the potential negative effects identified above, it should be noted that adverse impacts associated with proposals for tidal lagoon schemes on ecology would be assessed at the project stage and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible, though recognising that in some cases mitigation may not be possible.

The development of tidal lagoon schemes can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located[23]. In this regard, the HRA of the Draft WNMP highlighted that the operation of tidal lagoon schemes can result in changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations.

The assessment contained in **Appendix A** highlights that, where these water quality impacts affect designated nature conservation sites, effects could be significant and on this basis, Options 1, 2a and 3a have been assessed as having a significant negative effect on water (SA Criteria 2), although some uncertainty remains. Options 2b and 3b only support proposals for tidal lagoon projects where it can be demonstrated that they will have no adverse effects on European protected sites and the actions required to meet this condition are expected to reduce the likelihood of significant adverse effects on water quality occurring. In consequence, these options have been assessed as having a negative effect on SA Criteria 2 (although again, some uncertainty remains).

It should be noted that the potential adverse effects of tidal lagoon schemes on water quality would be assessed at the project stage as part of any Environmental Impact Assessment (EIA) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06) such that any adverse effects would be minimised and mitigated where possible.

Options 1, 2a/b and 3a/b have been assessed as having a negative effect on the physical environment (SA Criteria 3). This primarily reflects the likely changes to hydrodynamics, wave conditions and sediment transport related to the operation of tidal lagoon schemes, although again some uncertainty remains. Where these impacts affect designated nature conservation sites in particular, effects may be significant and in this regard, Options 1, 2a and 3a have been assessed as having a significant negative effect on SA Criteria 3. Again, as Options 2b and 3b only support proposals for tidal lagoon projects where it can be demonstrated that they will have no adverse effects on European protected sites, effect on this SA criteria have been assessed as negative (although again, some uncertainty remains).

Notwithstanding the potential adverse effects on the physical environment outlined above, it should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and Coastal Impact Study (CIS) (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

No further significant negative effects have been identified during the appraisal of the tidal lagoon policy options.

The development of tidal lagoons could have adverse impacts on landscape/seascape and visual amenity due principally to the introduction of built form into landscapes/seascapes and views. Additionally, the operation of tidal lagoon schemes could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks). Options 1, 2a/b and 3a/b have therefore been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

[23] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Tidal lagoon schemes can also have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. In consequence, Options 1, 2a/b and 3a/b have been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential for adverse impacts on landscape and seascape and the historic environment would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Proposals would also need to comply with other plan policies (which include policies relating to the protection and enhancement of landscape and seascape and heritage assets). Despite this, there remains some residual uncertainty with respect to the probability of adverse effects occurring and their magnitude (i.e. whether effects are significant or minor) which will be in part dependent on the exact type, scale and location of future development in the context of the sensitivity/capacity of the receiving environment.

Cumulative mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). Whilst there is the potential for adverse air quality impacts (and related human health effects) associated with the construction of tidal lagoon schemes in the short term, they are likely to be mitigated and air quality benefits may be derived from a long-term transition away from the combustion of fossil fuels to low carbon energy sources.

It is possible that adverse landscape, seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, although there is no evidence that current windfarm developments off the North Wales coast have had an adverse impact upon tourism and recreation. Further, it should be noted that tidal lagoon schemes can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing. Overall, Options 1, 2a/b and 3a/b have therefore been assessed as having a cumulative mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

As Option 4 (which comprises of Policy ELC_03d only) does not make provision for the development of tidal lagoon schemes in the plan area, its implementation will not result in any adverse effects.

3.3 Secondary, Cumulative and Synergistic Effects

In determining the significance of effects of a plan or programme, the SEA Directive requires that consideration is given to the cumulative nature of the effects. Section 4.6 of the SA Report considered the potential for the policies contained within the Draft WNMP to act in-combination both with each other and with other plans and programmes to generate cumulative (including synergistic and secondary) effects.

It is not currently predicted that the tidal lagoon policy option ultimately taken forward will affect the type and range of cumulative effects already identified in the SA Report; however, the option selected could influence the magnitude of these effects, particularly in terms of cumulative effects on biodiversity (SA Criteria 1), water quality (SA Criteria 2) and the physical environment (SA Criteria 3).

The SA Report identified that Policy ELC_01 of the Draft WNMP would be likely to have cumulative significant negative effects on SA Criteria 1, 2 and 3 because of the potential impacts associated with the deployment and operation of tidal lagoon schemes and the possibility that these impacts could affect designated sites including European sites in and beyond the plan area. This conclusion would be unlikely to change should Options 1, 2a or 3a be taken forward as these options do not provide any spatial specificity in respect of possible locations for tidal lagoon schemes (although the likelihood of adverse effects occurring and their magnitude could theoretically be reduced under Option 3a, which provides for a single tidal lagoon demonstrator project as opposed to multiple tidal lagoon schemes).

As highlighted in **Section 3.2** above, Options 2b and 3b set out that proposals for tidal lagoon projects will only be supported where it can be demonstrated that they will have no adverse effects on European

protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded. Should either of these options be taken forward it is likely that the cumulative significant negative effects identified in respect of SA Criteria 1, 2 and 3 would be reduced; this is because the implementation of the policy would not have any adverse effects on the interest features of any European sites in the plan area (and beyond).

Under Option 4, meanwhile, cumulative negative effects associated with the tidal lagoon aspect of the WNMP would be removed as this option does not make provision for the development of tidal lagoon schemes.

It is not currently anticipated that the choice of preferred tidal lagoon policy option would influence the findings of the SA Report in respect of the cumulative effects of the Draft WNMP in-combination with other plans and programmes.

3.4 Cross-border Effects

Section 4.7 of the SA Report sets out that the construction, operation and decommissioning of renewable energy development including tidal lagoon schemes could give rise to cross-boundary impacts, particularly in respect of biodiversity (SA Criteria 1), due to (inter alia) effects on mobile species and loss of habitat, and water (SA Criteria 2) and the physical environment (SA Criteria 3), due to changes to hydrodynamics and sediment transport and discharges. The report concluded that these effects could be significant where they affect designated nature conservation sites.

This conclusion would likely be unaffected by the adoption of an approach comprising of Options 1, 2a or 3a. However, should Options 2b, 3b or 4 be taken forward, it is anticipated that the likelihood of significant adverse cross-boundary effects occurring would be reduced (and in the case of Option 4, removed).

3.5 Contribution of the Draft WNMP to Wales' Well-being Goals and the Objective for SMNR

Section 4.8 of the SA Report includes an assessment of the contribution that the WNMP is likely to make to the achievement of the well-being goals established in the Well-being of Future Generations (Wales) Act 2015 and the objective for SMNR set out in the Environment (Wales) Act 2016.

It is not currently predicted that the tidal lagoon option ultimately taken forward will affect the overall conclusions of the SA Report in this regard. However, as per the assessment of cumulative effects, the option selected could influence the overall level of contribution that the plan makes to the well-being goals, particularly in relation to the well-being goal 'A resilient Wales'. In particular, should Options 2b, 3b or 4 be taken forward, it is anticipated that the contribution and compatibility of the options with the well-being goal and SMNR objective would be improved.

4. Initial HRA Commentary

4.1 Overview

As set out in **Section 1**, HRA has been undertaken in support of the development of the WNMP and a report documenting the assessment was published alongside the Draft WNMP for consultation.

This section provides initial views on the likely implications of the five new tidal lagoon policy options identified by the Welsh Government from a HRA perspective, alongside Option 1 for comparison purposes.

Specifically, for each option in-turn, it sets out how the policy approach could influence the findings of the HRA Report (2017) published for consultation alongside the Draft WNMP in terms of the likely significant effects of the tidal lagoon policy element of the plan on European sites.

It should be noted that, once the preferred tidal lagoon policy option has been selected, it will be subject to more detailed assessment with the findings presented in the final HRA Report to be published alongside the adopted WNMP.

4.2 Option 1: Current Draft WNMP Policy

The HRA undertaken in support of the Draft WNMP concluded (following Appropriate Assessment including detailed technical assessment[24]) that the nature of tidal lagoons is such that adverse effects on European sites or interest features, particularly habitats, fish and birds, could not clearly be avoided. As a result, the HRA Report published alongside the Draft WNMP progressed to an assessment of alternative solutions and, ultimately, Imperative Reasons of Overriding Public Interest (IROPI).

4.3 Option 2a: Generic 'supporting' policy decoupled from SRA + evidence focus

As currently drafted, it is likely that Policy ELC_02 (Option 2a) would still require that the WNMP proceeds to the IROPI stage. This is because tidal lagoon schemes up to 350MW would still be supported, and the available data do not provide the certainty that one or more schemes of this scale could be accommodated without unavoidable adverse effects on the integrity of European sites. Additionally, the potential for multiple developments under this policy could lead to cumulative effects across projects that could amplify the risk of adverse effects. The policy option does not provide any specificity or constraints regarding location, or any additional layers of protection (e.g. conditions relating to adverse effects).

In terms of assessment, the issues that remain with the tidal lagoon elements of Policy ELC_01 as currently presented in the Draft WNMP (Policy Option 1 for the purposes of this paper) would largely remain if the policy was interpreted as primarily 'supporting'; i.e. the HRA would require revisions to address technical comments / observations by consultees and improve the clarity of the HRA including the technical appendices; however, it would not be possible (in any likely anticipated timeframe) to undertake a more detailed analysis (i.e. modelling etc.) of specific effects on specific European sites / features under one or more future 'tidal lagoon' scenarios.

4.4 Option 2b: Generic 'supporting' policy decoupled from SRA with specific environmental caveats + evidence focus

Policy Option 2b contains a caveat requiring no adverse effects on European sites stating that proposals for tidal lagoon projects will only be supported where it can be demonstrated that they will have no adverse effects on European protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded.

As highlighted in **Section 3.2**, this option would ensure that implementation of Policy ELC_02 (Option 2b) would not have any adverse effects on the interest features of any European sites in the plan area and

[24] Institute of Estuarine and Coastal Studies University of Hull (2017) *Plan Level HRA of the Welsh National Marine Plan Tidal Lagoon Policy: Bird Features. Report to the Welsh Government*; Royal Haskoning DHV (2017) *Draft Welsh National Marine Plan - Plan level Habitats Regulation Assessment for Tidal Lagoon Policy – Marine Mammals*; ABPMer and THA Aquatic (2017) *Plan Level HRA of Welsh National Marine Plan Tidal Lagoon Policy: Fish and Supporting Environs*.

beyond. In consequence, it would arguably prevent the WNMP having to proceed to the IROPI stage (as adverse effects on the integrity of European sites could be ruled out).

In terms of assessment, the HRA for this policy option would arguably be quite limited (when compared to Option 1); if proposals with adverse effects are not supported by the plan then there is no potential effect to be assessed and in this instance, most of the technical amendments required included in respect of the technical appendices would be unnecessary.

4.5 Option 3a: Wales / pathfinder focussed policy decoupled from SRA + evidence focus

Policy Option 3a would support the development of a single tidal demonstrator project. Whilst it is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes as under Options 1 and 2a) would reduce the likelihood of significant effects on European sites occurring, as currently drafted, it is likely that Policy ELC_02 (Option 3a) would still need to proceed to the IROPI stage. This is because the scale / location etc. of the demonstrator are not defined and the available data do not provide certainty that a scheme of any reasonable scale could be accommodated without unavoidable adverse effects.

In terms of assessment, the issues that remain with the tidal lagoon elements of Policy ELC_01 as currently presented in the Draft WNMP (Policy Option 1 for the purposes of this paper) would largely remain if the policy was interpreted as primarily 'supporting'; i.e. the HRA would require revisions to address technical comments / observations by consultees and improve the clarity of the HRA including the technical appendices; however, it would not be possible (in any likely anticipated timeframe) to undertake a more detailed analysis (i.e. modelling etc.) of specific effects on specific European sites / features.

4.6 Option 3b: Wales / pathfinder focussed policy decoupled from SRA with caveats + evidence focus

Policy Option 3b would also support the development of a single tidal demonstrator project. Additionally, this policy option introduces a caveat requiring no adverse effects on European sites stating that proposals for a demonstrator project will only be supported where it can be demonstrated that they will have no adverse effects on European protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded.

Like Policy Option 2b, this policy provision would be expected to ensure that implementation of Policy ELC_02 (Option 3b) would not have any adverse effects on the interest features of any European sites in the plan area and beyond. In consequence, it would arguably prevent the WNMP having to proceed to the IROPI stage (as adverse effects on the integrity of European sites could be ruled out).

In terms of assessment, the HRA for this aspect of the plan would arguably be quite limited (when compared to Option 1); if proposals with adverse effects are not supported by the plan then there is no potential effect to be assessed and in this instance, most of the technical amendments required included in respect of the technical appendices would be unnecessary.

4.7 Option 4: Evidence focus

Option 4, which comprises of Policy ELC_03d only, supports and encourages further evidence gathering in respect of the potential opportunities associated with Wales' tidal range resource. The policy approach does

not make provision for the development of tidal lagoon schemes in the plan area and is therefore essentially neutral in HRA terms.

In consequence, the policy would almost certainly be 'screened out' as being a policy that does not direct, support or control development and therefore it is anticipated that the WNMP would not proceed to the IROPI stage.

5. Next Steps

This Technical Note, alongside the comments received from the TWG and consultation responses to the Draft WNMP, will be considered by the Welsh Government in selecting its preferred tidal lagoon policy option. The preferred tidal lagoon policy option, alongside other changes made to the Draft WNMP, will be considered in completing the SA[25] and HRA of the Marine Plan.

[25] In accordance with the approach detailed in Wood (2019) *Technical note: Sustainability Appraisal of the Welsh National Marine Plan: What constitutes a significant change that would need further appraisal?*

Appendix A
Detailed Appraisal Matrices

Option 1: Current Draft WNMP Policy[26]

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_01: Low Carbon Energy (Supporting) Proposals for all types of marine renewable energy generation (wind, tidal and wave energy) and associated infrastructure are strongly encouraged, especially: a. in corresponding wave, tidal stream and any other defined renewable energy technology test and demonstration zones; and b. in corresponding wave, tidal stream and tidal lagoon Strategic Resource Areas. Relevant public authorities should, in liaison with the sector and other interested parties, collaborate to understand opportunities for the sustainable use of: a. renewable energy Strategic Resource Areas; and	+/--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++

[26] For comparison purposes, the assessment of Policy ELC_01 contained in Appendix E to the SA Report (2017) has been reproduced here and forms Option 1. The assessment has not been updated since the SA Report was published and whilst information and data referenced in the assessment may have been superseded/updated, this has not affected the findings of the assessment in terms of the likely significant effects identified.

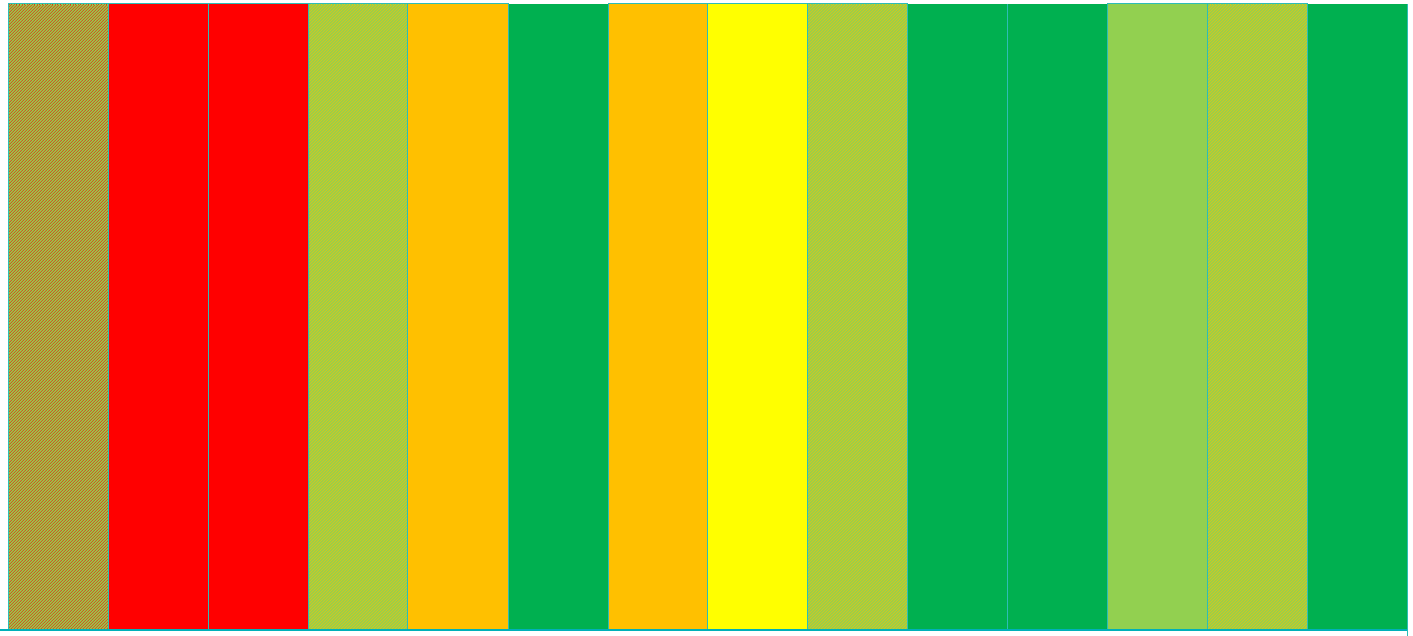
b. wider natural resources that provide renewable energy potential;

in order to support the sustainable growth of the renewable energy sector through marine planning.

In order to understand future opportunities for offshore wind development, proposals are encouraged that support strategic planning for the sector. Relevant public authorities should, in liaison with the sector and other interested parties, collaborate to:

- collect evidence to support understanding of environmental constraints and opportunities
- support understanding of the optimal siting of offshore wind developments across Wales.

Relevant public authorities should make relevant evidence widely available to support planning and decision making.



Significant Effects:

The amount of electricity generated from renewable sources in Wales has been steadily increasing. Since 2004, generation from renewable sources has more than doubled with the vast majority of additional renewable electricity generated in recent years being due to an increase in wind generation (including offshore wind).[27] The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. In this regard, the Welsh Government's Marine Renewable Energy Strategic Framework has identified a scenario to secure 6.4GW through marine tidal stream and wave energy development. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[28] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[29] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this context, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

Policy ELC_01 supports the development of renewable energy generation, particularly in test and demonstration zones and SRAs (currently) identified for tidal stream, tidal lagoon and wave technologies. The policy also stipulates that relevant public authorities should, in liaison with the sector and other interested parties, collaborate to understand opportunities for the sustainable use of renewable energy SRAs and wider natural resources that provide renewable energy potential. With specific regard to offshore wind, the policy encourages proposals that support strategic

[27] Welsh Government (2015) *Energy Generation and Consumption for Wales, 2013*. Available from http://gov.wales/docs/statistics/2015/150225-energy-generation-consumption-2013-en.pdf [Accessed November 2016].

[28] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].

[29] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].

planning for this technology. Overall, the provisions of this policy are expected to help encourage renewable energy development and innovation in the sector together with a long term reduction in greenhouse gas emissions. In consequence, Policy ELC_01 has been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). It is recognised that the construction of renewable energy schemes would result in resource and energy use although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation.

It should be noted that the operation of tidal lagoon schemes in particular can adversely affect coastal flooding, although this would be dependent on the location of schemes. However, as highlighted in the Hendry Review, there may also be opportunities for proposals to provide coastal flood and erosion protection associated with reductions in storm surges, wave size, tide level, erosion to existing defences and tide-locking. In this regard, the supporting text to Policy ELC_01 states that consideration should be given to the opportunity presented by tidal lagoon schemes to provide positive coastal defence benefits. Some uncertainty in terms of the positive effects identified in respect of SA Criteria 6 therefore remains, although it is anticipated that coastal change impacts associated with tidal lagoon (and other renewable energy) proposals would be considered as part of any design and EIA at the project stage whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

The delivery of renewable energy schemes is likely to generate considerable investment in local economies and the supply chain. The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector. In March 2015, Marine Energy Pembrokeshire published[30] the outputs of a survey of the economic contribution from the marine energy sector in Wales, for wave, tidal stream and tidal lagoon. This highlighted that technology and project developers have spent £34.5 million, directly creating 99 person years of employment. The figures suggest that every £10 million invested in wave power and tidal stream has an associated GVA in Wales of £2.5 million and 75 person years of employment (once direct, supply chain and household effects are taken into account). Investment in the renewables sector may also create local employment opportunities which could benefit coastal communities including the more deprived coastal areas around North Wales, Swansea and South East Wales which are in the vicinity of tidal lagoon, tidal stream and/or wave SRAs. In this context, the supporting text to Policy ELC_01 sets out that proposals should clearly demonstrate how they will support the Welsh economy and provide benefits for local coastal communities and that they should be supported by (inter alia):

- developing, locating and investing in marine renewable energy businesses and nearby communities;
- training and employing people and businesses in the planning, construction, maintenance and supply of materials for equipment and infrastructure; and
- enabling training providers to provide a workforce with the skills needed to support the sector.

With specific regard to tidal lagoon technologies, the Hendry Review highlights that such schemes provide a significant opportunity for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. In this context, the Draft WNMP sets out that, given the scale and proximity of tidal lagoons to coastal communities, "*policy and planning should include careful consideration of how to ensure additional local benefits and long term legacies can be secured. Welsh Government would expect projects to contribute positively across Wales' well-being goals.*"

Overall, Policy ELC_01 has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created and the availability of relevant skills in the local labour force.

It is recognised that renewable energy development can have adverse impacts on other economic activities in the plan area. In this regard, the SRAs for tidal stream energy overlap with existing shipping routes, subsea cables, fishing areas, fish nursery grounds and areas of potential aquaculture whilst the wave energy SRA is within the area of fish spawning grounds. Tidal lagoons in particular would be large scale projects established in near-shore waters which could have extensive interactions with many other sectors such as ports and shipping, fishing and tourism and recreation by constraining established activities as well as limiting new opportunities including the deployment of other renewable technologies such as tidal stream. In this regard, it is noted that the tidal lagoon SRA overlaps with military practice areas, blocks licensed for oil and gas, aggregate option areas, dumping grounds, shipping routes, subsea cables, fish nursery and spawning grounds and areas of potential aquaculture. However, it is assumed that other Draft WNMP policies which seek to safeguard these sectors would not allow for inappropriate negative economic

[30] Marin Energy Pembrokeshire (2015) *Marine Energy in Wales*. Available from http://www.marineenergywales.co.uk/wp-content/uploads/2016/03/Marine-Energy-in-Wales-Investment-Jobs-Supply-Chain-2015-m.pdf [Accessed September 2017].

effects to arise from renewable energy development. The supporting text to Policy ELC_01 states that proposals should be supported by optimising the use of marine space through encouraging multiple activities that can co-exist (for example, there are potential synergies with tidal lagoon schemes and aquaculture, tourism and recreation and aggregates). The supporting text also highlights that marine sectoral strategies can be developed at the planning stage and sectoral mitigation strategies at the project assessment and application stage to ensure that all affected sectors are aware of developer activities and timetables thereby allowing other sectoral activities to be planned to minimise impacts as much as possible and for mutual benefits to be maximised.

Renewable energy generation would contribute towards UK and Welsh Government climate change targets whilst liaison with the sector and other interested parties on the opportunities for offshore renewables would promote collaboration. Further, support for development in test and demonstration zones and the policy's specific emphasis on the collection of evidence in respect of offshore wind will facilitate continued research and development in the marine renewables field. In this regard, it is noted that the supporting text to Policy ECL/01 states that proposals should be supported by (inter alia):

- supporting research and development to address evidence gaps and facilitate timely consenting of projects;
- leading the development of a competitive marine energy sector in Wales by helping businesses, academia and the public sector work together;
- benefitting from the experience and knowledge of institutions like Marine Energy Wales and the Low Carbon Research Institute (LCRI) to develop expertise and technologies; and
- providing focussed, proactive information and guidance on development opportunities.

On this basis, Policy ELC_01 has been assessed as having a significant positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). The transition away from the combustion of fossil fuels to low carbon energy sources is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of renewable energy development can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes and where schemes such as tidal lagoon proposals are shore connected. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[31]. With specific regard to human health, there is also the potential for associated onshore development (for example substations and tidal lagoon schemes that are shore connected) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the Draft WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, particularly in the Pembrokeshire and Anglesey coastal areas near tidal stream SRAs, although there is no evidence that current windfarm developments off the North Wales coast have had an adverse impact upon tourism and recreation. Further, it should be noted that tidal lagoon schemes in particular can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing and, as noted above, the supporting text to Policy ELC_01 sets out that proposals should be supported by optimising the use of marine space through encouraging multiple activities that can coexist. Overall, Policy ELC_01 has been assessed as having a mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of renewable energy developments. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure); construction and operational noise and vibration (e.g. underwater noise due to piling or the operational noise associated with wave and tidal energy devices); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations (it is noted that a large number of designated sites including SSSI occur along the coast and in close proximity to the SRAs for this sector).

[31] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Marine SACs and SPAs around Anglesey, St David's peninsular and the Bristol Channel are likely to be particularly sensitive to effects from development within the tidal stream SRAs. These designated nature conservation sites include (inter alia): North Anglesey cSAC; Liverpool Bay SPA; Menai Strait and Conwy Bay SAC; Pembrokeshire Marine SAC; West Wales Marine pSAC; Grassholm SPA; Skokholm and Skomer SPA (including the proposed extensions); and the Severn Estuary SAC and SPA (and Ramsar Site). In addition to the generalised effects on biodiversity associated renewable energy development outlined above, tidal stream schemes can (depending on scale) affect water quality and result in changes to hydrodynamics and sediment patterns with impacts potentially felt beyond the plan area and which could be significant. Changes to hydrodynamics can also affect other receptors that rely on the high velocities (foraging, decreased vertical mixing, increased stratification – bloom dynamics) and could affect sectors such as aggregates. In this regard, the HRA of the Draft WNMP uses a precautionary 50km marine ZoI for wave and tidal stream proposals based on tidal stream modelling for the Bristol Channel (e.g. Neill 2013) which suggests that sediment dynamics may be influenced up to 50km from the point of energy extraction. There is also the potential for impacts on mobile species such as marine mammals over wider areas due to, for example:

- changes in habitat or prey distributions due to the physical and physio-chemical changes;
- underwater noise and vibration due to operation, particularly for fish and marine mammals;
- electromagnetic changes associated with the generation and transfer of electricity, particularly for fish (some marine mammals may also be sensitive in certain situations, although this is thought to be less notable);
- collisions with moving structures or entanglement, particularly for marine mammals; and
- the introduction of new structures creating new habitat or reef effects (particularly for fish, which often aggregate around structures, but conceivably for birds and other features).

With regard to offshore wind, meanwhile, additional impacts may include collision risks to birds. The UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report[32] highlights that the potential barrier effects of offshore wind farms and displacement of birds from offshore wind farm areas have been extensively recognised with a growing number of publications on this topic but that there is still little convincing data showing significant effects.

The potential range of effects on biodiversity associated with the development and operation of tidal lagoon schemes are similar to the impacts already identified above but are likely to be of greater significance with limited or no opportunity for the scope or extent of impacts to be significantly moderated to avoid effects (in contrast to, say, a wind farm scheme which may have multiple location options); and any large-scale tidal lagoon is likely to have far-field effects. In particular, tidal lagoon schemes can (depending on scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but large-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

The tidal lagoon SRA includes several marine SACs and SPAs (including Liverpool Bay SPA, Severn Estuary SPA/SAC/Ramsar Site, the Dee Estuary SPA/SAC/Ramsar Site, Great Orme`s Head SAC, Kenfig SAC, Menai Strait and Conwy Bay SAC and Dunraven Bay SAC) and it is in relative close proximity to a number of other European sites. Due to the potential for significant effects on European sites, an appropriate assessment of the tidal lagoon aspects of Policy ELC_01 has been undertaken as part of the HRA of the Draft WNMP and this is supported by three technical assessments concerning birds[33], marine mammals[34] and fish and marine habitats[35].

[32] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].
[33] Institute of Estuarine and Coastal Studies University of Hull (2017) *Plan Level HRA of the Welsh National Marine Plan Tidal Lagoon Policy: Bird Features. Report to the Welsh Government*.
[34] Royal HaskoningDHV (2017) *Draft Welsh National Marine Plan - Plan level Habitats Regulation Assessment for Tidal Lagoon Policy – Marine Mammals.*
[35] ABPMer and THA Aquatic (2017) *Plan Level HRA of Welsh National Marine Plan Tidal Lagoon Policy: Fish and Supporting Environs*.

The assessment of effects on birds has identified a total of 56 SPA and Ramsar Sites with interest features potentially exposed to the effects of Policy ELC_01 and where adverse effects on integrity cannot not be excluded. These adverse effects are associated with, in particular (although not exclusively): barrier to movement; collision below water with non-natural objects; habitat structural changes (removal of substratum); physical loss of habitat; visual disturbance; and wave exposure change.

The technical assessment for marine mammals, meanwhile, has considered effects on harbour porpoise, bottlenose dolphin, grey seal, harbour (or common) seal and otter. This assessment concludes that adverse (alone) effects cannot be excluded for:

- harbour porpoise associated with Bristol Channel Approaches cSAC and North Anglesey Marine cSAC; and
- otter associated with Carmarthen Bay and Estuaries SAC.

In addition, adverse effects 'in combination' cannot not be excluded for:

- bottlenose dolphin associated with Cardigan Bay SAC and Llyn Peninsula and the Sarnau SAC;
- harbour porpoise associated with West Wales Marine cSAC;
- grey seal associated with Cardigan Bay SAC, Isles of Scilly Complex SAC; Lundy SAC; Pembrokeshire Marine SAC and Llyn Peninsula and the Sarnau SAC.

Impact pathways with the potential to give rise to adverse effects on the integrity of these features (or where uncertainty remains) include: disturbance from underwater noise; collision risk with vessels; collision risk with operational turbines; barrier effects to movements; and changes to prey availability.

For a total of 39 European sites, the technical assessment of effects associated with the tidal lagoon element of Policy ELC_01 on fish and marine habitats concludes that adverse effects on integrity (alone and / or in combination) cannot be excluded at the plan level due to the inherent uncertainties associated with:

- the location of tidal lagoon activities (both within and outside the SRA);
- the scale of tidal lagoon development;
- the proposed technologies to be used and future advances in these technologies;
- the scale of the effects arising via some of the defined impact pathways;
- the detailed baseline ecology of the development locations;
- the sensitivities of species to impacts; and
- the efficacy of some project-level mitigation options.

The key impact pathways identified in this assessment for which it might not be possible to avoid adverse effects include: direct changes in habitat extent, type and quality; indirect changes in habitat extent, type and quality (including sediment transport, tidal regime and species assemblage/interaction); barrier to movement through presence of infrastructure and habitat fragmentation for aquatic species; and collision risk (including vessels and static/ rotating structures and entrainment).

Overall, the HRA of the Draft WNMP concludes that the nature of tidal lagoons are such that adverse effects on European sites or interest features, particularly habitats, fish and birds, cannot clearly be avoided at the project level, regardless of the policy controls or known project-level measures.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be minor and uncertain. The presence of renewable energy infrastructure can also act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones. This has the potential to benefit marine ecology (particularly fish and benthic communities) although

adverse impacts associated with, for example, fishing may be displaced. Renewable energy development and associated fixed structures can also serve to create new habitat, attracting key species and enhancing biodiversity.[36]

In conclusion, Policy ELC_01 has been assessed as having a mixed positive and significant negative effect on biodiversity (SA Criteria 1). The potential for significant negative effects to occur on this criteria reflects in particular the possible magnitude and range of impacts associated with the tidal lagoon element of the policy. However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible. In this regard, it is noted that the supporting text to Policy ELC_01 sets out that the Welsh Government does not encourage developments that do not comply with the Habitats Directive. Nevertheless, where impacts affect designated sites in particular, there is the potential for negative effects to be significant.

Renewable energy development can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Tidal stream and tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located.[37] In this regard, the HRA highlights that the operation of tidal lagoon schemes can result in changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations and that where these impacts affect designated nature conservation sites, effects could be significant. Overall, Policy ELC_01 has therefore been assessed as having a significant negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06)) such that any significant adverse effects would be minimised and mitigated where possible. Further, the operation of tidal lagoon schemes in particular could help to improve water quality, for example, through the installation of treatment processes.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed, and for tidal and wave energy, changes to hydrodynamics and wave conditions with associated effects on sediment transport. The HRA of the tidal lagoon element of Policy ELC_01 highlights that the operation of tidal lagoon schemes can cause scour effects in soft sediment systems and changes to rates of sedimentation. It also notes that changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures will alter benthic habitats, at least on a local scale. Hydrodynamic changes, including water levels, waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. These in turn have the potential to affect habitat quality and result in changes to diversity, abundance and biomass of habitats and species. The outflow of water will also delay or alter the timing of the falling tide given the need to generate a tidal 'head'. Therefore, the presence of these structures could influence habitats upstream and downstream of the facility, specifically altering exposure of tidal flats. However, the magnitude of any such changes will be project specific as impacts would be dependent on the scale of the development; where designated sites are affected, there is the potential for effects to be significant. Overall, Policy ELC_01 has been assessed as having a significant negative effect SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

Renewable energy development could have adverse impacts on landscape/seascape and visual amenity. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. As tidal lagoon schemes would be shore-connected and potentially in areas of high coastal populations, effects in this regard may be more likely when compared to other types of renewable energy development. Additionally, the operation of tidal lagoon schemes could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are

[36] Marine Institute Plymouth University and Friends of the Earth (2013) *Marine Renewables, Biodiversity and Fisheries*. Available from https://www.foe.co.uk/sites/default/files/downloads/marine_renewables_biodiver.pdf [Accessed January 2017].

considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks).[37] The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain. However, it is noted that the SRAs such as those for tidal stream are close to the Heritage Coast, Anglesey AONB and the Pembrokeshire Coast National Park whilst the SRA for tidal lagoons is close to the Gower AONB. In consequence, there is at least the potential for adverse effects associated with this policy to be significant where development is visible. Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_01 has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Renewable energy development has the potential to have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. In this regard, it is noted that the SRAs contain a large number of wrecks including Royal Yacht Mary Protected Wreck and Resurgam Protected Wreck which could be affected by development, particularly during construction. Offshore development could additionally affect the setting of coastal (terrestrial) cultural heritage assets whilst the development of associated onshore facilities could also affect these assets directly. As tidal lagoon schemes would be shore-connected, effects in this regard may be more likely when compared to other types of renewable energy development. The magnitude of effect on heritage as a result of the implementation of Policy ELC_01 is, however, uncertain as it is dependent on the nature and location of renewable energy projects as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_01 has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_01 could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- The policy wording could make specific reference to encouraging research and development in addition to collaboration in order to understand further the opportunities for renewable energy development including environmental constraints and opportunities as well as the efficacy of mitigation. This may help to refine the extent of the SRAs identified for this sector in future marine plans and resolve the uncertainties identified in the assessment of Policy ELC_01

Assumptions:

- It is assumed that renewables deployment will take place in the SRAs, albeit with uncertainty over the exact type, location and scale of the proposals.

Uncertainties:

- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of renewable energy schemes and in particular tidal lagoon technologies.

[37] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Option 2a: Generic 'supporting' policy decoupled from SRA + evidence focus

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_02: Low Carbon Energy (Supporting) Tidal Lagoons Proposals for tidal lagoon projects <350MW will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++

Significant Effects:

In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[38]. The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[39] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[40] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this context, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

Policy ELC_02 (Option 2a) supports the development of tidal lagoon projects below a generating capacity of 350MW[41]. Power generation was responsible for 16.2 $MtCO_{2e}$ in 2016, equivalent to some 34% of total carbon emissions[42] (47.8 $MtCO_{2e}$) which was an increase of 5% on 2015. The overall rise in emissions was largely driven by the increase in emissions from energy generation (2.9

[38] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed January 2019].
[39] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].
[40] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].
[41] Energy consenting powers for projects up to 350MW are being devolved to Wales under Section 39 of The Wales Act 2017. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02.
[42] Welsh Government (2018) *Achieving our Low Carbon Pathway to 2030*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/low-carbon-pathway-to-2030-consultation.pdf [Accessed January 2019].

$MtCO_{2e}$)[43]. In this context, depending on the number and scale of schemes that come forward, tidal lagoon projects could deliver substantial carbon reductions, helping to reduce emissions from the power sector and support the achievement of Wales' carbon budgets as set out in The Climate Change (Carbon Budgets) (Wales) Regulations 2018[44,45] and the Welsh Government's target for Wales to generate 70% of its electricity from renewable sources by 2030. However, it is recognised that the construction of tidal lagoon schemes would result in resource and energy use although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation.

Indirectly, the implementation of tidal lagoon schemes would be expected to support further research and development in tidal lagoon technology, enhance understanding of the opportunities for the sustainable use of Wales' tidal range resource and assist in identifying SRAs. In-combination with Policy ELC_03, this could help to realise the full potential of Wales' tidal range resource and meet Wales', and the UK's, decarbonisation commitments.

Overall, given the potential reduction in greenhouse gas emissions, Policy ELC_02 (Option 2a) has been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). However, some uncertainty remains relating to the scale of development/number of schemes that may come forward and, therefore, the generating capacity to be created and any carbon emission reduction.

The operation of tidal lagoon schemes can adversely affect coastal flooding, although this would be dependent on the location of schemes. However, as highlighted in the Hendry Review, there may also be opportunities for proposals to provide coastal flood and erosion protection associated with reductions in storm surges, wave size, tide level, erosion to existing defences and tide-locking. Some uncertainty in terms of the positive effects identified in respect of SA Criteria 6 therefore remains, although it is anticipated that coastal change impacts associated with tidal lagoon (and other renewable energy) proposals would be considered as part of any design and EIA at the project stage whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector and in this context, the delivery of tidal lagoon schemes would be likely to generate considerable investment in local economies and the supply chain. The Hendry Review highlights that such schemes provide a significant opportunity for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. Investment may also create local employment opportunities which could benefit coastal communities including the more deprived coastal areas of Wales. However, it is also noted that the UK Government commissioned a value for money analysis[46] of the specific proposals of Tidal Lagoon Power for a programme of tidal lagoons and concluded that "*the value for money assessment demonstrates that the costs to consumers of reducing the emissions associated with the electricity system would be higher under scenarios where the programme of tidal lagoons is delivered compared to one where other low carbon alternatives are deployed*". Predictability of tidal lagoons and costs to consumers was also highlighted in an assessment by the National Infrastructure Commission (NIC)[47]. In implementing any tidal lagoon schemes in accordance with this policy, the developer will need to address such issues to the satisfaction of the Welsh Government.

Overall, Policy ELC_02 (Option 2a) has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created, the availability of relevant skills in the local labour force and the resolution of the value for money concerns.

[43] Committee on Climate Change (2018) *Reducing UK emissions 2018 Progress Report to Parliament.* Available from https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf [Accessed January 2019].
[44] S.I 2018 No. 1303 (W. 257).
[45] Carbon budgets are consistent with the targets contained in the Environment (Wales) Act 2016 to ensure that net Welsh emissions for the year 2050 are at least 80% lower than 1990 baseline emissions).
[46] BEIS (2018) TLP *Tidal Lagoon Programme: Summary value for money assessment.* Available from https://www.gov.uk/government/publications/swansea-bay-tidal-lagoon-value-for-money-assessment [Accessed January 2019]
[47] NIC (2018) *Technical Annex: Tidal Lagoons to National Infrastructure Assessment*. Available from https://www.nic.org.uk/wp-content/uploads/Tidal-power.pdf [Accessed January 2019]

Tidal lagoons would be large scale projects established in near-shore waters which could have extensive interactions with many other sectors such as ports and shipping, fishing and tourism and recreation by constraining established activities as well as limiting new opportunities including the deployment of other renewable technologies such as tidal stream. However, Policy ELC_02 (Option 2a) states that proposals should comply with the relevant general policies and sector safeguarding policies of the plan and any other relevant considerations; allied with the provisions of Policy ELC_03 (which support strategic planning in the sector), this would be expected to not allow for inappropriate negative economic effects to arise from tidal lagoon development.

Renewable energy generation associated with tidal lagoon schemes would contribute towards UK and Welsh Government climate change targets whilst liaison with the sector and other interested parties on the opportunities for offshore renewables would promote collaboration. Further, support for development would be expected to facilitate continued research and development in the marine renewables field. On this basis, and allied with the provisions of Policy ELC_03, Policy ELC_02 (Option 2a) has been assessed as having a significant positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). Tidal lagoon development will support the transition away from the combustion of fossil fuels which is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of tidal lagoon schemes can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes and where schemes are shore connected. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[48]. With specific regard to human health, there is also the potential for associated onshore development (for example substations and where tidal lagoon schemes connect to the shore) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the Draft WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, particularly where tidal lagoon schemes are located in areas popular with visitors. However, tidal lagoon schemes can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing. Overall, Policy ELC_02 (Option 2a) has been assessed as having a mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of tidal lagoon schemes. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure); construction and operational noise and vibration (e.g. underwater noise due to piling or operational noise); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations. Additionally, the operation of tidal lagoon schemes can (depending on scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but large-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

[48] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

There is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond) such that adverse effects on European sites or interest features, particularly habitats, fish and birds, cannot clearly be avoided at the project level, regardless of the policy controls or known project-level measures. In this regard, Policy ELC_02 (Option 2a) does not provide specificity in terms of possible locations for, or number of, tidal lagoons and there remains inherent uncertainties associated with:

- the proposed technologies to be used and future advances in these technologies;
- the scale of the effects arising via some of the defined impact pathways;
- the detailed baseline ecology of the development locations;
- the sensitivities of species to impacts; and
- the efficacy of some project-level mitigation options.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions, any positive effects in this regard are likely to be very minor, if not negligible. The presence of renewable energy infrastructure such as tidal lagoons can act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones which has the potential to benefit marine ecology (particularly fish and benthic communities), although adverse impacts associated with, for example, fishing may be displaced. Tidal lagoons can also serve to create new habitat, attracting key species and enhancing biodiversity (although this is uncertain). Overall, these benefits (should they occur) are likely to be very minor and would be unlikely to outweigh the negative effects identified above.

In conclusion, Policy ELC_02 (Option 2a) has been assessed as having a significant negative effect on biodiversity (SA Criteria 1). However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible (though recognising that in some cases, mitigation may not be achievable). Nevertheless, where impacts affect designated sites in particular, there is the potential for negative effects to be significant.

Tidal lagoon schemes can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located.[48] In this regard, the HRA (in respect of Policy Option 1) has highlighted that the operation of tidal lagoon schemes can result in changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations and that where these impacts affect designated nature conservation sites, effects could be significant. Overall, Policy ELC_02 (Option 2a) has therefore been assessed as having a significant negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06)) such that any significant adverse effects would be minimised and mitigated where possible. Further, the operation of tidal lagoon schemes could help to improve water quality, for example, through the installation of treatment processes.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed and changes to hydrodynamics with associated effects on sediment transport. The operation of tidal lagoon schemes can cause scour effects in soft sediment systems and changes to rates of sedimentation whilst changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures can alter benthic habitats, at least on a local scale. Hydrodynamic changes, including water levels, waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. These in turn have the potential to affect habitat quality and result in changes to diversity, abundance and biomass of habitats and species. The outflow of water will also delay or alter the timing of the falling tide given the need to generate a tidal 'head'. Therefore, the presence of these structures could influence habitats upstream and downstream of the facility, specifically altering exposure of tidal flats. However, the magnitude of any such changes will be project specific as impacts would be dependent on the scale of the development; where designated sites are affected, there is the potential for effects to be significant. Overall, Policy ELC_02 (Option 2a) has been assessed as having a significant negative effect on

SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

The development of tidal lagoons could have adverse impacts on landscape/seascape and visual amenity. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. As tidal lagoon schemes would be shore-connected and potentially in areas of high coastal populations, effects in this regard may be more likely when compared to other types of renewable energy development. Additionally, the operation of tidal lagoon schemes could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks)[49]. The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain; where schemes are located within or in close proximity to designated landscapes such as National Parks and AONBs, effects could be significant. Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 2a) has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Tidal lagoon schemes can have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. As tidal lagoon schemes would be shore-connected, effects in this regard may be more likely when compared to other types of renewable energy development. The magnitude of effect on heritage as a result of the implementation of Policy ELC_02 (Option 2a) is, however, uncertain as it is dependent on the nature and location of the project as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 2a) has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_02 (Option 2a) could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:
- It is recommended that the supported text currently contained in the Draft WNMP is carried forward.

Assumptions:
- None identified.

Uncertainties:
- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of related mitigation.

[49] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Option 2b: Generic 'supporting' policy decoupled from SRA with specific environmental caveats + evidence focus

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_02: Low Carbon Energy (Supporting) Tidal Lagoons Proposals for tidal lagoon projects <350MW will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for tidal lagoon projects will be supported where it can be demonstrated that they will have no adverse effects on European protected sites. Proposals will not benefit from the support of this plan if adverse effects on European protected sites cannot be excluded.	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++	++/?	+/?	+/-/?	++

Significant Effects:
In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[50]. The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[51] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[52] concludes that "*power from tidal lagoons*

[50] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed January 2019].
[51] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].
[52] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].

could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply". In this context, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

Policy ELC_02 (Option 2b) supports the development of tidal lagoon projects below a generating capacity of 350MW where they have no adverse effects on European protected sites[53]. Power generation was responsible for 16.2 $MtCO_{2e}$ in 2016, equivalent to some 34% of total carbon emissions[54] (47.8 $MtCO_{2e}$) which was an increase of 5% on 2015. The overall rise in emissions was largely driven by the increase in emissions from energy generation (2.9 $MtCO_{2e}$)[55]. In this context, depending on the number and scale of schemes that come forward, tidal lagoon projects could deliver substantial carbon reductions, helping to reduce emissions from the power sector and support the achievement of Wales' carbon budgets as set out in The Climate Change (Carbon Budgets) (Wales) Regulations 2018[56,57] and the Welsh Government's target for Wales to generate 70% of its electricity from renewable sources by 2030. However, it is recognised that the construction of tidal lagoon schemes would result in resource and energy use although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation.

Indirectly, the implementation of tidal lagoon schemes would be expected to support further research and development in tidal lagoon technology, enhance understanding of the opportunities for the sustainable use of Wales' tidal range resource and assist in identifying SRAs. In-combination with Policy ELC_03, this could help to realise the full potential of Wales' tidal range resource and meet Wales', and the UK's, decarbonisation commitments.

Overall, given the potential reduction in greenhouse gas emissions, Policy ELC_02 (Option 2b) has been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). However, some uncertainty remains relating to the scale of development/number of schemes that may come forward and, therefore, the generating capacity to be created and any carbon emission reduction.

The operation of tidal lagoon schemes can adversely affect coastal flooding, although this would be dependent on the location of schemes. However, as highlighted in the Hendry Review, there may also be opportunities for proposals to provide coastal flood and erosion protection associated with reductions in storm surges, wave size, tide level, erosion to existing defences and tide-locking. Some uncertainty in terms of the positive effects identified in respect of SA Criteria 6 therefore remains, although it is anticipated that coastal change impacts associated with tidal lagoon (and other renewable energy) proposals would be considered as part of any design and EIA at the project stage whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector and in this context, the delivery of tidal lagoon schemes would be likely to generate considerable investment in local economies and the supply chain. The Hendry Review highlights that such schemes provide a significant opportunity for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. Investment may also create local employment opportunities which could benefit coastal communities including the more deprived

[53] Energy consenting powers for projects up to 350MW are being devolved to Wales under Section 39 of The Wales Act 2017. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02.
[54] Welsh Government (2018) *Achieving our Low Carbon Pathway to 2030*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/low-carbon-pathway-to-2030-consultation.pdf [Accessed January 2019].
[55] Committee on Climate Change (2018) *Reducing UK emissions 2018 Progress Report to Parliament.* Available from https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf [Accessed January 2019].
[56] S.I 2018 No. 1303 (W. 257).
[57] Carbon budgets are consistent with the targets contained in the Environment (Wales) Act 2016 to ensure that net Welsh emissions for the year 2050 are at least 80% lower than 1990 baseline emissions).

coastal areas of Wales. However, it is also noted that the UK Government commissioned a value for money analysis[58] of the specific proposals of Tidal Lagoon Power for a programme of tidal lagoons and concluded that "*the value for money assessment demonstrates that the costs to consumers of reducing the emissions associated with the electricity system would be higher under scenarios where the programme of tidal lagoons is delivered compared to one where other low carbon alternatives are deployed*". Predictability of tidal lagoons and costs to consumers was also highlighted in an assessment by the National Infrastructure Commission (NIC)[59]. In implementing any tidal lagoon schemes in accordance with this policy, the developer will need to address such issues to the satisfaction of the Welsh Government.

Overall, Policy ELC_02 (Option 2b) has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created, the availability of relevant skills in the local labour force and the resolution of the value for money concerns.

Tidal lagoons would be large scale projects established in near-shore waters which could have extensive interactions with many other sectors such as ports and shipping, fishing and tourism and recreation by constraining established activities as well as limiting new opportunities including the deployment of other renewable technologies such as tidal stream. However, Policy ELC_02 (Option 2b) states that proposals should comply with the relevant general policies and sector safeguarding policies of the plan and any other relevant considerations; allied with the provisions of Policy ELC_03 (which support strategic planning in the sector), this would be expected to not allow for inappropriate negative economic effects to arise from tidal lagoon development.

Renewable energy generation associated with tidal lagoon schemes would contribute towards UK and Welsh Government climate change targets whilst liaison with the sector and other interested parties on the opportunities for offshore renewables would promote collaboration. Further, support for development would be expected to facilitate continued research and development in the marine renewables field. On this basis, and allied with the provisions of Policy ELC_03, Policy ELC_02 (Option 2b) has been assessed as having a significant positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). Tidal lagoon development will support the transition away from the combustion of fossil fuels which is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced. It is also recognised that the construction of tidal lagoon schemes can cause temporary, short term emissions to air (e.g. associated with the movement of vessels) which could have adverse impacts on sensitive receptors along transport routes and where schemes are shore connected. However, as a proportion of UK atmospheric emissions, those directly emitted from development sites would form a small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[60]. With specific regard to human health, there is also the potential for associated onshore development (for example substations and where tidal lagoon schemes connect to the shore) to affect the amenity of receptors. However, it should be noted that proposals would be considered against other policies that comprise the Draft WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, particularly where tidal lagoon schemes are located in areas popular with visitors. However, tidal lagoon schemes can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing. Overall, Policy ELC_02 (Option 2b) has been assessed as having a mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of tidal lagoon schemes. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction (e.g. as a result of the anchoring of infrastructure); construction and operational noise and vibration (e.g.

[58] BEIS (2018) TLP *Tidal Lagoon Programme: Summary value for money assessment*. Available from https://www.gov.uk/government/publications/swansea-bay-tidal-lagoon-value-for-money-assessment [Accessed January 2019]
[59] NIC (2018) *Technical Annex: Tidal Lagoons to National Infrastructure Assessment*. Available from https://www.nic.org.uk/wp-content/uploads/Tidal-power.pdf [Accessed January 2019]
[60] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

underwater noise due to piling or operational noise); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations. Additionally, the operation of tidal lagoon schemes can (depending on scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but large-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

There is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond), particularly in respect of habitats, fish and birds. Recognising this, Policy ELC_02 (Option 2b) sets out that proposals for tidal lagoon projects will only be supported where it can be demonstrated that they will have no adverse effects on European protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded. In consequence, the implementation of Policy ELC_02 (Option 2b) would not have any adverse effects on the interest features of any European sites in the plan area and beyond. Whilst the potential for effects on nationally designated nature conservation sites, non-designated sites and local biodiversity interests remains, the requirement of Policy ELC_02 (Option 2b) vis-à-vis European sites is likely to reduce the potential that such effects will occur and their magnitude; however, some uncertainty remains and where schemes affect nationally designated nature conservation sites or result in substantial impacts on local biodiversity, effects could be significant.

The generation of low carbon energy and associated reductions in greenhouse gas emissions would support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions, any positive effects in this regard are likely to be very minor, if not negligible. The presence of renewable energy infrastructure such as tidal lagoons can act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones which has the potential to benefit marine ecology (particularly fish and benthic communities), although adverse impacts associated with, for example, fishing may be displaced. Tidal lagoons can also serve to create new habitat, attracting key species and enhancing biodiversity, though this is uncertain. Overall, the benefits of tidal lagoon schemes (should they occur) are likely to be very minor and would be unlikely to outweigh the negative effects identified above.

In conclusion, Policy ELC_02 (Option 2b) has been assessed as having a negative effect on biodiversity (SA Criteria 1). However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any adverse effects would be minimised and mitigated where possible (though recognising that in some cases, mitigation may not be achievable).

Tidal lagoon schemes can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located[60] including changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations. Where these impacts affect designated nature conservation sites, effects could be significant; however, Policy ELC_02 (Option 2b) only supports proposals for tidal lagoon projects where it can be demonstrated that they will have no adverse effects on European protected sites and in consequence, the actions required to meet this condition are expected to reduce the likelihood of significant adverse effects on water quality occurring. Overall, Policy ELC_02 (Option 2b) has been assessed as having a negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06)) such that any adverse

effects would be minimised and mitigated where possible. Further, the operation of tidal lagoon schemes could help to improve water quality, for example, through the installation of treatment processes.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed and changes to hydrodynamics with associated effects on sediment transport. The operation of tidal lagoon schemes can cause scour effects in soft sediment systems and changes to rates of sedimentation whilst changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures can alter benthic habitats, at least on a local scale. Hydrodynamic changes, including water levels, waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. These in turn have the potential to affect habitat quality and result in changes to diversity, abundance and biomass of habitats and species. The outflow of water will also delay or alter the timing of the falling tide given the need to generate a tidal 'head'. Therefore, the presence of these structures could influence habitats upstream and downstream of the facility, specifically altering exposure of tidal flats. Whilst the magnitude of any such changes will be project specific (as impacts would be dependent on the scale and location of the development); Policy ELC_02 (Option 2b) only supports proposals for tidal lagoon projects where it can be demonstrated that they will have no adverse effects on European protected sites. In consequence, the likelihood of significant adverse effects on the physical environment occurring is expected to be reduced and Policy ELC_02 (Option 2b) has therefore been assessed as having a negative effect on SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09).

The development of tidal lagoons could have adverse impacts on landscape/seascape and visual amenity. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. As tidal lagoon schemes would be shore-connected and potentially in areas of high coastal populations, effects in this regard may be more likely when compared to other types of renewable energy development. Additionally, the operation of tidal lagoon schemes could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks)[61]. The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain; where schemes are located within or in close proximity to designated landscapes such as National Parks and AONBs, effects could be significant. Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 2b) has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Tidal lagoon schemes can have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. As tidal lagoon schemes would be shore-connected, effects in this regard may be more likely when compared to other types of renewable energy development. The magnitude of effect on heritage as a result of the implementation of Policy ELC_02 (Option 2b) is, however, uncertain as it is dependent on the nature and location of the project as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 2b) has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_02 (Option 2b) could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

[61] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Report*. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Mitigation/Enhancement:

- It is recommended that the supported text currently contained in the Draft WNMP is carried forward.

Assumptions:

- It is assumed that the provisions of Policy ELC_02 with regard to European sites will reduce the likelihood of significant adverse effects on nationally designated nature conservation sites and local biodiversity occurring, though some uncertainty remains.

Uncertainties:

- The exact scale, type and location of future proposals is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of related mitigation.

Option 3a: Wales / pathfinder focussed policy decoupled from SRA + evidence focus

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_02: Low Carbon Energy (Supporting) Tidal Lagoons Proposals for a single tidal lagoon demonstrator project will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations.	--/?	--/?	--/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++/?	++/?	+/?	+/-/?	++

Significant Effects:
In 2017, Wales power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[62]. Policy ELC_02 (Option 3a) supports the development of a single tidal lagoon demonstrator project. The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[63] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[64] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this context, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

[62] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed January 2019].
[63] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].
[64] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].

Power generation was responsible for 16.2 $MtCO_{2e}$ in 2016, equivalent to some 34% of total carbon emissions[65] (47.8 $MtCO_{2e}$) which was an increase of 5% on 2015. The overall rise in emissions was largely driven by the increase in emissions from energy generation (2.9 $MtCO_{2e}$)[66]. In this context, depending on the size of the scheme, a single demonstrator project could deliver substantial carbon reductions, helping to reduce emissions from the power sector and support the achievement of Wales' carbon budgets as set out in The Climate Change (Carbon Budgets) (Wales) Regulations 2018[67,68] and the Welsh Government's target for Wales to generate 70% of its electricity from renewable sources by 2030. As an example, a single demonstrator project with a capacity of circa 300MW would increase Wales' current installed capacity from renewables by around 10% (in 2017, renewables installed capacity in Wales was 3,087MW which generated an estimated 7.05TWh, approximately 22% of all electricity generated in Wales). It is estimated that the Swansea Bay Tidal Lagoon Project (which has a planned capacity of 320MW) would generate a saving of circa 236,000 tonnes of CO_2 per year of operation[69] (approximately 1.4% of the carbon emissions from the Welsh power sector in 2017). However, it is recognised that the construction of a tidal lagoon demonstrator project would result in resource and energy use, although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation.

Indirectly, the implementation of a demonstrator project would be expected to support further research and development in tidal lagoon technology, enhance understanding of the opportunities for the sustainable use of Wales' tidal range resource and assist in identifying SRAs. In-combination with Policy ELC_03, this could provide a pathway for the deployment of additional schemes, helping to realise the full potential of Wales' tidal range resource and meet Wales', and the UK's, decarbonisation commitments. This is consistent with the Hendry Review which states that "*There is a very strong case for a small scale pathfinder project…as soon as is reasonably practicable…This clear commitment would deliver earlier benefits and accelerate a future programme*."

Overall, given the potential reduction in greenhouse gas emissions associated with a demonstrator project (both directly and indirectly), Policy ELC_02 (Option 3a) has been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). However, some uncertainty remains relating to the scale of any proposed project (and, therefore, the generating capacity to be created and any carbon emission reduction) and the extent to which a demonstrator project would facilitate the deployment of further schemes.

The operation of tidal lagoon schemes can adversely affect coastal flooding, although this would be dependent on the location of schemes. However, as highlighted in the Hendry Review, there may also be opportunities for proposals to provide coastal flood and erosion protection associated with reductions in storm surges, wave size, tide level, erosion to existing defences and tide-locking. Some uncertainty in terms of the positive effects identified in respect of SA Criteria 6 therefore remains, although it is anticipated that coastal change impacts associated with a tidal lagoon demonstrator project would be considered as part of any design and EIA at the project stage whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector and in this context, the delivery of a tidal lagoon demonstrator project would be likely to generate considerable investment in the local economy in which it is located and the supply chain. The Hendry Review highlights that such schemes provide a significant opportunity for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. Investment may also create local employment opportunities which could benefit coastal communities including the more deprived coastal areas. However, it is also noted that the UK Government commissioned a value for money analysis[70] of the specific proposals of Tidal Lagoon

[65] Welsh Government (2018) *Achieving our Low Carbon Pathway to 2030*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/low-carbon-pathway-to-2030-consultation.pdf [Accessed January 2019].
[66] Committee on Climate Change (2018) *Reducing UK emissions 2018 Progress Report to Parliament.* Available from https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf [Accessed January 2019].
[67] S.I 2018 No. 1303 (W. 257).
[68] Carbon budgets are consistent with the targets contained in the Environment (Wales) Act 2016 to ensure that net Welsh emissions for the year 2050 are at least 80% lower than 1990 baseline emissions).
[69] See http://www.tidallagoonpower.com/projects/swansea-bay/key-statistics/ [Accessed January 2019].
[70] BEIS (2018) TLP *Tidal Lagoon Programme: Summary value for money assessment.* Available from https://www.gov.uk/government/publications/swansea-bay-tidal-lagoon-value-for-money-assessment [Accessed January 2019]

Power for a programme of tidal lagoons and concluded that "*the value for money assessment demonstrates that the costs to consumers of reducing the emissions associated with the electricity system would be higher under scenarios where the programme of tidal lagoons is delivered compared to one where other low carbon alternatives are deployed*". Predictability of tidal lagoons and costs to consumers was also highlighted in an assessment by the National Infrastructure Commission (NIC)[71]. In implementing any tidal lagoon schemes in accordance with this policy, the developer will need to address such issues to the satisfaction of the Welsh Government.

Overall, Policy ELC_02 (Option 3a) has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created, the availability of relevant skills in the local labour force and the resolution of the value for money concerns.

A tidal lagoon demonstrator project could have extensive interactions with many other sectors such as ports and shipping, fishing and tourism and recreation by constraining established activities as well as limiting new opportunities including the deployment of other renewable technologies such as tidal stream. However, Policy ELC_02 (Option 3a) states that proposals should comply with the relevant general policies and sector safeguarding policies of the plan and any other relevant considerations that would be expected to not allow for inappropriate negative economic effects to arise from tidal lagoon development. Further, a demonstrator project would, allied with the support for strategic planning provided by Policy ELC_03, help to ensure the effective coexistence of tidal lagoon projects with other marine activity.

Renewable energy generation associated with a tidal lagoon demonstrator project would contribute towards UK and Welsh Government climate change targets. Further, support for the development of a demonstrator project would, allied with the specific support for strategic planning for the sector contained in Policy ELC_03, be expected to facilitate continued research and development, enhancing understanding of the potential opportunities for tidal lagoon development in the plan area as part of an adaptive management approach. On this basis, Policy ELC_02 (Option 3a) has been assessed as having a significant positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). A tidal lagoon demonstrator project will support the transition away from the combustion of fossil fuels which is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced (indirectly, this positive effect may be enhanced should a demonstrator project lead to the deployment of further lagoon schemes). It is also recognised that the construction of a tidal lagoon demonstrator project could cause temporary, short term emissions to air (e.g. associated with the movement of vehicles and vessels) which could have adverse impacts on sensitive receptors along transport routes and where the scheme is shore connected. However, as a proportion of UK atmospheric emissions, those directly emitted from the development of a single scheme would form a small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[72]. With specific regard to human health, there is also the potential for associated onshore development (for example substations and where the scheme connects to the shore) to affect the amenity of receptors. However, it should be noted that any proposal would be considered against other policies that comprise the Draft WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, particularly where a tidal lagoon demonstrator project is located in an area popular with visitors. However, tidal lagoon schemes can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing. Overall, Policy ELC_02 (Option 3a) has been assessed as having a mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of a tidal lagoon demonstrator project. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction; construction and operational noise and vibration (e.g. underwater noise due to piling or operational noise); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be

[71] NIC (2018) *Technical Annex: Tidal Lagoons to National Infrastructure Assessment*. Available from https://www.nic.org.uk/wp-content/uploads/Tidal-power.pdf [Accessed January 2019]
[72] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations. Additionally, the operation of a tidal lagoon demonstrator project could (depending on location and scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but larger-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

There is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond) such that adverse effects on European sites or interest features, particularly habitats, fish and birds, cannot clearly be avoided at the project level, regardless of the policy controls or known project-level measures. Whilst Policy ELC_02 (Option 3a) supports the development of a single demonstrator project only which may reduce the likelihood of adverse impacts occurring and their magnitude, the policy does not provide specificity in terms of possible locations for a scheme, its design or scale and in consequence, adverse effects on the integrity of European sites cannot be ruled out. Further, there remains inherent uncertainties associated with:

- the proposed technologies to be used and future advances in these technologies;
- the scale of the effects arising via some of the defined impact pathways;
- the detailed baseline ecology of the development location;
- the sensitivities of species to impacts; and
- the efficacy of some project-level mitigation options.

A demonstrator project would help to enhance understanding of the ecological impacts of tidal lagoon schemes and possible mitigation which could help facilitate the future sustainable use of the tidal range resource as part of an adaptive management approach. The generation of low carbon energy and associated reductions in greenhouse gas emissions would also support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be very minor, if not negligible. The presence of renewable energy infrastructure such as tidal lagoons can act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones which has the potential to benefit marine ecology (particularly fish and benthic communities) although adverse impacts associated with, for example, fishing may be displaced. Tidal lagoons can also serve to create new habitat, attracting key species and enhancing biodiversity, although this is uncertain. Overall, the ecological benefits of a demonstrator project (should they occur) are likely to be very minor and would be unlikely to outweigh the negative effects identified above.

In conclusion, Policy ELC_02 (Option 3a) has been assessed as having a significant negative effect on biodiversity (SA Criteria 1). However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any significant adverse effects would be minimised and mitigated where possible (though recognising that in some cases, mitigation may not be achievable). Nevertheless, where impacts affect designated sites in particular, there is the potential for negative effects to be significant.

Tidal lagoon schemes can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution prevention and control. Tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located.[72] In this regard, the HRA (in respect of Policy Option 1) has highlighted that the operation of tidal lagoon schemes can result in changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations and that where these impacts affect designated nature conservation sites, effects could be significant.

Policy ELC_02 (Option 3a) supports a single demonstrator project only which may reduce the likelihood of adverse effects on water quality occurring and their magnitude, depending on the scale, design and location of the scheme. However, the policy does not provide specificity in terms of possible locations for a demonstrator project and in consequence, there is the potential for significant negative effects. Overall, Policy ELC_02 (Option 3a) has therefore been assessed as having a significant negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06)) such that any significant adverse effects would be minimised and mitigated where possible. Further, the operation of a tidal lagoon demonstrator project could help to improve water quality, for example, through the installation of treatment processes. It may also help to enhance understanding of the impacts of tidal lagoon schemes and possible mitigation, enabling the future sustainable use of the tidal range resource in Wales.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed and changes to hydrodynamics with associated effects on sediment transport. The operation of tidal lagoon schemes can cause scour effects in soft sediment systems and changes to rates of sedimentation whilst changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures can alter benthic habitats, at least on a local scale. Hydrodynamic changes, including water levels, waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. These in turn have the potential to affect habitat quality and result in changes to diversity, abundance and biomass of habitats and species. The outflow of water will also delay or alter the timing of the falling tide given the need to generate a tidal 'head'. Therefore, the presence of these structures could influence habitats upstream and downstream of the facility, specifically altering exposure of tidal flats. The magnitude of any such changes will be project-specific as impacts would be dependent on the scale of the development and the sensitivity of the receiving environment; as Policy ELC_02 (Option 3a) supports the development of a single demonstrator project, the magnitude and geographic extent of impacts on the physical environment may be reduced, although this is uncertain and where designated sites are affected, there is the potential for effects to be significant.

Overall, Policy ELC_02 (Option 3a) has been assessed as having a significant negative effect on SA Criteria 3, although some uncertainty remains. It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09). Further, the operation of a tidal lagoon demonstrator project could help to enhance understanding of the impacts of tidal lagoon schemes on the physical environment and possible mitigation as part of an adaptive management approach which could help facilitate the future sustainable use of the tidal range resource.

The development of single tidal lagoon demonstrator project could have localised impacts on landscape/seascape and visual amenity. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. As the tidal lagoon scheme would be shore-connected and potentially be in an area of high coastal population, effects in this regard may be more likely when compared to other types of renewable energy development. Additionally, the operation of the tidal lagoon scheme could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks).[73] The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain; should the project be located within or in close proximity to designated landscapes such as National Parks and AONBs, effects could be significant.

Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 3a) has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

[73] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Tidal lagoon schemes can have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. As tidal lagoon schemes would be shore-connected, effects in this regard may be more likely when compared to other types of renewable energy development. The magnitude of effect on heritage as a result of the implementation of Policy ELC_02 (Option 3a) is, however, uncertain as it is dependent on the nature and location of the project as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 3a) has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_02 (Option 3a) could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- It is recommended that the supporting text currently contained in the Draft WNMP is carried forward.

Assumptions:

- It is assumed that a tidal demonstrator project would have a capacity of <350MW. Energy consenting up to 350MW is being devolved to Wales. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02.
- It is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) will reduce the likelihood of significant effects occurring and their magnitude. However, some uncertainty remains.

Uncertainties:

- The exact scale, type and location of a future demonstrator project is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of related mitigation.
- The extent to which a demonstrator project would facilitate the deployment of further tidal lagoon schemes is uncertain.

Option 3b: Wales / pathfinder focussed policy decoupled from SRA with specific environmental caveats + evidence focus

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_02: Low Carbon Energy (Supporting) Tidal Lagoons Proposals for a single tidal lagoon demonstrator project will be supported where it contributes to the objectives of this plan. Proposals should comply with the relevant general policies and sector safeguarding policies of this plan and any other relevant considerations. Proposals for a tidal lagoon demonstrator project will be supported where it can be demonstrated that the proposed scheme will have no adverse effects on European protected sites. Proposals will not benefit from the support of this plan if adverse effects on European protected sites cannot be excluded.	-/?	-/?	-/?	+/-/?	-/?	++/?	-/?	?	+/-/?	++/?	++/?	+/?	+/-/?	++

Significant Effects:
In 2017, Wales power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[74]. Policy ELC_02 (Option 3b) supports the development of a single tidal lagoon demonstrator project. The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would further increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[75] and the findings of the Hendry

[74] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed January 2019].
[75] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].

(2016) review into tidal lagoons (the Hendry Review)[76] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this context, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

Power generation was responsible for 16.2 $MtCO_{2e}$ in 2016, equivalent to some 34% of total carbon emissions[77] (47.8 $MtCO_{2e}$) which was an increase of 5% on 2015. The overall rise in emissions was largely driven by the increase in emissions from energy generation (2.9 $MtCO_{2e}$)[78]. In this context, depending on the size of the scheme, a single demonstrator project could deliver substantial carbon reductions, helping to reduce emissions from the power sector and support the achievement of Wales' carbon budgets as set out in The Climate Change (Carbon Budgets) (Wales) Regulations 2018[79,80] and the Welsh Government's target for Wales to generate 70% of its electricity from renewable sources by 2030. As an example, a single demonstrator project with a capacity of circa 300MW would increase Wales' current installed capacity from renewables by around 10% (in 2017, renewables installed capacity in Wales was 3,087MW which generated an estimated 7.05TWh, approximately 22% of all electricity generated in Wales). It is estimated that the Swansea Bay Tidal Lagoon Project (which has a planned capacity of 320MW) would generate a saving of circa 236,000 tonnes of CO_2 per year of operation[81] (approximately 1.4% of the carbon emissions from the Welsh power sector in 2017). However, it is recognised that the construction of a tidal lagoon demonstrator project would result in resource and energy use, although any adverse effects in this regard are expected to be offset by the benefits associated with renewable energy generation.

Indirectly, the implementation of a demonstrator project would be expected to support further research and development in tidal lagoon technology, enhance understanding of the opportunities for the sustainable use of Wales' tidal range resource and assist in identifying SRAs. In-combination with Policy ELC_03, this could provide a pathway for the deployment of additional schemes, helping to realise the full potential of Wales' tidal range resource and meet Wales', and the UK's, decarbonisation commitments. This is consistent with the Hendry Review which states that "*There is a very strong case for a small scale pathfinder project…as soon as is reasonably practicable…This clear commitment would deliver earlier benefits and accelerate a future programme*."

Overall, given the potential reduction in greenhouse gas emissions associated with a demonstrator project (both directly and indirectly), Policy ELC_02 (Option 3b) has been assessed as having a significant positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10). However, some uncertainty remains relating to the scale of any proposed project (and, therefore, the generating capacity to be created and any carbon emission reduction) and the extent to which a demonstrator project would facilitate the deployment of further schemes.

The operation of tidal lagoon schemes can adversely affect coastal flooding, although this would be dependent on the location of schemes. However, as highlighted in the Hendry Review, there may also be opportunities for proposals to provide coastal flood and erosion protection associated with reductions in storm surges, wave size, tide level, erosion to existing defences and tide-locking. Some uncertainty in terms of the positive effects identified in respect of SA Criteria 6 therefore remains, although it is anticipated that coastal change impacts associated with a tidal lagoon demonstrator project would be considered as part of any design and EIA at the project stage whilst other plan policies (see Policies SOC_08 and SOC_09) seek to ensure that development is not affected by/does not affect flood risk and coastal change such that the probability of this risk occurring would be reduced.

The WMER highlights that the renewables sector in the plan area generated approximately £127 million GVA in 2013 with 1,149 direct employees and a further 862 indirectly employed in the sector and in this context, the delivery of a tidal lagoon demonstrator project would be likely to generate considerable investment in the local economy in which it is located and the supply chain.

[76] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].
[77] Welsh Government (2018) *Achieving our Low Carbon Pathway to 2030*. Available from https://beta.gov.wales/sites/default/files/consultations/2018-07/low-carbon-pathway-to-2030-consultation.pdf [Accessed January 2019].
[78] Committee on Climate Change (2018) *Reducing UK emissions 2018 Progress Report to Parliament.* Available from https://www.theccc.org.uk/wp-content/uploads/2018/06/CCC-2018-Progress-Report-to-Parliament.pdf [Accessed January 2019].
[79] S.I 2018 No. 1303 (W. 257).
[80] Carbon budgets are consistent with the targets contained in the Environment (Wales) Act 2016 to ensure that net Welsh emissions for the year 2050 are at least 80% lower than 1990 baseline emissions).
[81] See http://www.tidallagoonpower.com/projects/swansea-bay/key-statistics/ [Accessed January 2019].

The Hendry Review highlights that such schemes provide a significant opportunity for investment and employment as well as regeneration benefits associated with the unlocking of land for development (through increased flood protection) and the use of seawalls for recreation and tourism. Investment may also create local employment opportunities which could benefit coastal communities including the more deprived coastal areas. However, it is also noted that the UK Government commissioned a value for money analysis[82] of the specific proposals of Tidal Lagoon Power for a programme of tidal lagoons and concluded that "*the value for money assessment demonstrates that the costs to consumers of reducing the emissions associated with the electricity system would be higher under scenarios where the programme of tidal lagoons is delivered compared to one where other low carbon alternatives are deployed*". Predictability of tidal lagoons and costs to consumers was also highlighted in an assessment by the National Infrastructure Commission (NIC)[83]. In implementing any tidal lagoon schemes in accordance with this policy, the developer will need to address such issues to the satisfaction of the Welsh Government.

Overall, Policy ELC_02 (Option 3b) has been assessed as having a significant positive effect on the economy (SA Criteria 11) and a positive effect on well-being (SA Criteria 12), although the magnitude of effects is to some extent uncertain and will depend on the exact scale and location of development, the number of local jobs created, the availability of relevant skills in the local labour force and the resolution of the value for money concerns.

A tidal lagoon demonstrator project could have extensive interactions with many other sectors such as ports and shipping, fishing and tourism and recreation by constraining established activities as well as limiting new opportunities including the deployment of other renewable technologies such as tidal stream. However, Policy ELC_02 (Option 3b) states that proposals should comply with the relevant general policies and sector safeguarding policies of the plan and any other relevant considerations that would be expected to not allow for inappropriate negative economic effects to arise from tidal lagoon development. Further, a demonstrator project would, allied with the support for strategic planning provided by Policy ELC_03, help to ensure the effective coexistence of tidal lagoon projects with other marine activity.

Renewable energy generation associated with a tidal lagoon demonstrator project would contribute towards UK and Welsh Government climate change targets. Further, support for the development of a demonstrator project would, allied with the specific support for strategic planning for the sector contained in Policy ELC_03, be expected to facilitate continued research and development, enhancing understanding of the potential opportunities for tidal lagoon development in the plan area as part of an adaptive management approach. On this basis, Policy ELC_02 (Option 3b) has been assessed as having a significant positive effect on governance (SA Criteria 14).

Mixed positive and negative effects have been identified in respect of air quality (SA Criteria 4) and health (SA Criteria 13). A tidal lagoon demonstrator project will support the transition away from the combustion of fossil fuels which is expected to lead to an improvement in air quality, as the release of polluting combustion products would be reduced (indirectly, this positive effect may be enhanced should a demonstrator project lead to the deployment of further lagoon schemes). It is also recognised that the construction of a tidal lagoon demonstrator project could cause temporary, short term emissions to air (e.g. associated with the movement of vehicles and vessels) which could have adverse impacts on sensitive receptors along transport routes and where the scheme is shore connected. However, as a proportion of UK atmospheric emissions, those directly emitted from the development of a single scheme would form a small proportion, and the distance of most point sources from shore allows for significant dispersal and so effects on coastal and terrestrial air quality are not likely to be significant[84]. With specific regard to human health, there is also the potential for associated onshore development (for example substations and where the scheme connects to the shore) to affect the amenity of receptors. However, it should be noted that any proposal would be considered against other policies that comprise the Draft WNMP which seek to minimise noise (Policy ENV_05) and air quality impacts (Policy ENV_06) such that effects would be minimised and mitigated where possible.

[82] BEIS (2018) TLP *Tidal Lagoon Programme: Summary value for money assessment*. Available from https://www.gov.uk/government/publications/swansea-bay-tidal-lagoon-value-for-money-assessment [Accessed January 2019]
[83] NIC (2018) *Technical Annex: Tidal Lagoons to National Infrastructure Assessment*. Available from https://www.nic.org.uk/wp-content/uploads/Tidal-power.pdf [Accessed January 2019]
[84] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

It is possible that adverse landscape/seascape and visual impacts alongside obstruction to recreational activities such as sailing could result in a decline in tourism, particularly where a tidal lagoon demonstrator project is located in an area popular with visitors. However, tidal lagoon schemes can provide new opportunities for tourism and recreation such as walking, open water swimming and sailing. Overall, Policy ELC_02 (Option 3b) has been assessed as having a mixed positive and negative effect on tourism and recreation (SA Criteria 9), although some uncertainty remains.

There is the potential for adverse effects on biodiversity during the construction, operation and decommissioning of a tidal lagoon demonstrator project. These effects can arise due to (inter alia): the introduction of non-native species; physical damage to habitats during construction; construction and operational noise and vibration (e.g. underwater noise due to piling or operational noise); entrainment of marine species; behavioural disturbance from the presence of infrastructure and barriers to movement; discharges to water; and the use of antifouling materials. There may also be both direct impacts (e.g. loss of habitat or species) and indirect impacts (e.g. disturbance) on terrestrial ecology associated with the construction and operation of onshore supporting facilities such as substations. Additionally, the operation of a tidal lagoon demonstrator project could (depending on location and scale) result in:

- hydrodynamic changes - large impoundments alter tidal regimes, the tidal currents (around the impoundment, and locally around turbines), and wave exposure. The habitats enclosed by the impoundment will have the greatest exposure to change but larger-scale schemes also have the potential to substantially alter coastal processes locally and regionally, particularly far-afield longshore drift;
- physio-chemical changes - physio-chemical changes would be expected in conjunction with the hydrodynamic changes, as tidal currents and fluxes are altered; the extent would depend on the scale of the scheme, but may result in pressures such as localised changes in salinity or temperature, or accumulation of nutrients where dispersal is limited;
- physical loss / changes - the hydrodynamic changes are likely to result in the physical loss of some habitats and maintenance dredging is a likely operational requirement due to increased siltation within and around any impoundment.

There is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond), particularly in respect of habitats, fish and birds. Recognising this, Policy ELC_02 (Option 3b) sets out that proposals for a tidal lagoon demonstrator project will only be supported where it can be demonstrated that it will have no adverse effects on European protected sites and that proposals will not benefit from the support of the plan if adverse effects on European protected sites cannot be excluded. In consequence, the implementation of Policy ELC_02 (Option 3b) would not have any adverse effects on the interest features of any European sites in the plan area and beyond. Whilst the potential for effects on nationally designated nature conservation sites, non-designated sites and local biodiversity interests remains, Policy ELC_02 (Option 3b) supports the development of a single demonstrator project only which, allied with the requirement of Policy ELC_02 (Option 3b) vis-à-vis European sites, is likely to reduce the potential that such effects will occur and their magnitude. However, some uncertainty remains and where a scheme affects nationally designated nature conservation sites or results in substantial impacts on local biodiversity, effects could be significant.

A demonstrator project would help to enhance understanding of the ecological impacts of tidal lagoon schemes and possible mitigation which could help facilitate the future sustainable use of the tidal range resource as part of an adaptive management approach. The generation of low carbon energy and associated reductions in greenhouse gas emissions would also support climate change mitigation and contribute to associated biodiversity benefits, although in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be very minor, if not negligible. The presence of renewable energy infrastructure such as tidal lagoons can act to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones which has the potential to benefit marine ecology (particularly fish and benthic communities) although adverse impacts associated with, for example, fishing may be displaced. Tidal lagoons can also serve to create new habitat, attracting key species and enhancing biodiversity, although this is uncertain. Overall, the ecological benefits of a demonstrator project (should they occur) are likely to be very minor and would be unlikely to outweigh the negative effects identified above.

In conclusion, Policy ELC_02 (Option 3b) has been assessed as having a negative effect on biodiversity (SA Criteria 1). However, as highlighted above, some uncertainty remains and it should be noted that potential adverse effects on ecology would be assessed at the project stage as part of any EIA and HRA (if required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to conserve and enhance biodiversity (such as Policies ENV_01 to ENV_03) such that any adverse effects would be minimised and mitigated where possible (though recognising that in some cases, mitigation may not be achievable).

Tidal lagoon schemes can adversely affect water quality as a result of, for example, the mobilisation of sediment during construction, the release of chemicals associated with maintenance, accidental release of hydraulic fluids and the release of antifouling coatings. However, it is uncertain whether these various releases would take place as they are dependent on the type of technology used and it is also assumed that construction, operation and decommissioning activities would be undertaken in accordance with relevant regulation and guidance on pollution

prevention and control. Tidal lagoon schemes can also cause permanent changes to the physical nature and associated ecology of the estuary/river basin where they are located[84] including changes to temperature, salinity, dissolved oxygen and suspended sediment concentrations. Where these impacts affect designated nature conservation sites, effects could be significant; however, Policy ELC_02 (Option 3b) only supports proposals for a single demonstrator project where it can be demonstrated that it will have no adverse effects on European protected sites and in consequence, the likelihood of significant adverse effects on water quality occurring is expected to be reduced.

Overall, Policy ELC_02 (Option 3b) has been assessed as having a negative effect on water (SA Criteria 2), although some uncertainty remains. It should be noted that potential adverse effects on water quality would be assessed at the project stage as part of any EIA (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to protect water quality (Policy ENV_06)) such that any adverse effects would be minimised and mitigated where possible. Further, the operation of a tidal lagoon demonstrator project could help to improve water quality, for example, through the installation of treatment processes. It may also help to enhance understanding of the impacts of tidal lagoon schemes and possible mitigation, enabling the future sustainable use of the tidal range resource in Wales.

Negative effects are expected to arise on the physical environment (SA Criteria 3) due to impacts associated with infrastructure construction and decommissioning on the seabed and changes to hydrodynamics with associated effects on sediment transport. The operation of tidal lagoon schemes can cause scour effects in soft sediment systems and changes to rates of sedimentation whilst changes in water velocities and sediment transport, erosion and deposition caused by the presence of new structures can alter benthic habitats, at least on a local scale. Hydrodynamic changes, including water levels, waves and flow speeds, within an estuary or coastal region, or around a new development, may lead to changes in the pattern of erosion or accretion of marine sedimentary habitats such as mudflats and sandbanks. These in turn have the potential to affect habitat quality and result in changes to diversity, abundance and biomass of habitats and species. The outflow of water will also delay or alter the timing of the falling tide given the need to generate a tidal 'head'. Therefore, the presence of these structures could influence habitats upstream and downstream of the facility, specifically altering exposure of tidal flats. Whilst the magnitude of any such changes will be project specific (as impacts would be dependent on the scale and location of the development); Policy ELC_02 (Option 3b) only supports proposals for single tidal lagoon demonstrator project where it can be demonstrated that they will have no adverse effects on European protected sites. In consequence, the likelihood of significant adverse effects on the physical environment occurring is expected to be reduced and Policy ELC_02 (Option 3b) has therefore been assessed as having a negative effect on SA Criteria 3, although some uncertainty remains.

It should be noted that potential adverse effects on coastal processes would be assessed at the project stage as part of any EIA and CIS (where required) and proposals would be determined in accordance with those policies of the Draft WNMP that seek to minimise impacts on coastal processes (Policy SOC_09). Further, the operation of a tidal lagoon demonstrator project could help to enhance understanding of the impacts of tidal lagoon schemes on the physical environment and possible mitigation as part of an adaptive management approach which could help facilitate the future sustainable use of the tidal range resource.

The development of single tidal lagoon demonstrator project could have localised impacts on landscape/seascape and visual amenity. These impacts would be principally associated with the introduction of built form into landscapes/seascapes and views and may be felt in the short term during construction and in the longer term once development is complete. Landfall works and the development of associated onshore infrastructure such as substations and grid connections could also have adverse impacts on landscape character and visual amenity. As the tidal lagoon scheme would be shore-connected and potentially be in an area of high coastal population, effects in this regard may be more likely when compared to other types of renewable energy development. Additionally, the operation of the tidal lagoon scheme could have indirect impacts on coastal landscape and seascapes associated with physical changes to intertidal areas (and/or displacement if compensatory measures are considered) and related alteration of the fauna and flora, changes in tidal regime, and alterations to the pattern of vessel movements (e.g. if requiring traffic separation through locks).[85] The magnitude of landscape/seascape and visual effects will be dependent on the exact type, scale and location of development, the sensitivity of the receiving landscape/seascape and the proximity of sensitive receptors which is uncertain; should the project be located within or in close proximity to designated landscapes such as National Parks and AONBs, effects could be significant.

[85] Department of Energy and Climate Change (2016) *UK Offshore Energy Strategic Environmental Assessment: OESEA3 Environmental Repor*t. Available from https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3 [Accessed November 2016].

Notwithstanding the adverse impacts identified above, the potential for negative landscape/seascape and visual effects would be considered during the consenting process and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 3b) has been assessed as having a negative effect on landscape and seascape (SA Criteria 5), although some uncertainty remains.

Tidal lagoon schemes can have both direct impacts (e.g. loss of, or damage to, assets) and indirect impacts (e.g. adverse effects on setting) on cultural heritage assets. As tidal lagoon schemes would be shore-connected, effects in this regard may be more likely when compared to other types of renewable energy development. The magnitude of effect on heritage as a result of the implementation of Policy ELC_02 (Option 3b) is, however, uncertain as it is dependent on the nature and location of the project as well as the sensitivity/significance of the receiving environment. Again, however, it is expected that the potential for adverse effects would be considered during the consenting process (in the context of other plan policies) and as part of any EIA (where appropriate) such that any significant adverse effects would be minimised and mitigated where necessary. Overall, Policy ELC_02 (Option 3b) has been assessed as having a negative effect on cultural heritage (SA Criteria 7), although some uncertainty remains.

The potential creation of local employment opportunities associated with the implementation of Policy ELC_02 (Option 3b) could help to retain populations of local, Welsh speakers and attract Welsh speakers back to coastal communities. However, there is also the potential that development could result in an influx of non-Welsh speakers to Welsh speaking communities which could adversely affect Welsh language and culture. On balance, this policy has been assessed as having an uncertain effect on Welsh language (SA Criteria 8).

Mitigation/Enhancement:

- It is recommended that the supporting text currently contained in the Draft WNMP is carried forward.

Assumptions:

- It is assumed that a tidal demonstrator project would have a capacity of <350MW. Energy consenting up to 350MW is being devolved to Wales. Projects larger than this fall to UK Government to consider and would not, therefore, be explicitly supported by Policy ELC_02.
- It is assumed that the provisions of Policy ELC_02 with regard to European sites will reduce the likelihood of significant adverse effects on nationally designated nature conservation sites and local biodiversity occurring, though some uncertainty remains.
- It is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) will reduce the likelihood of significant effects occurring and their magnitude. However, some uncertainty remains.

Uncertainties:

- The exact scale, type and location of a future demonstrator project is currently unknown.
- The scale of additional jobs created for Welsh communities is not certain.
- Effects on Welsh language are uncertain.
- There are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of related mitigation.
- The extent to which a demonstrator project would facilitate the deployment of further tidal lagoon schemes is uncertain.

Option 4: Evidence focus[86]

Policy	1. Biodiversity	2. Water	3. Physical Environment	4. Air Quality	5. Landscape and Seascape	6. Climate Change	7. Heritage	8. Welsh Language	9. Tourism and Recreation	10. Resources (incl Waste)	11. Economy	12. Well-being	13. Health	14. Governance
ELC_03d Low carbon energy (supporting) understanding future opportunities In order to understand future opportunities for tidal lagoon development, strategic planning for the sector is encouraged. Relevant public authorities and the sector are encouraged, in liaison with other interested parties, to collaborate to: -collect evidence to support understanding of environmental constraints and opportunities for the sustainable use of the tidal range resource; -support understanding of the optimal siting of tidal range developments across Wales as part of a wider, UK perspective; and -identify opportunities to define and, once in place, further develop and refine Strategic Resource Areas for tidal lagoon safeguarding purposes. Relevant public authorities should make appropriate evidence available to support planning and decision making in order to	+	+	+	0	0	+/?	0	0	+	+/?	+	+	0	+

[86] It should be noted that Policy ELC_03d, which forms Option 4, would also be taken forward under Options 2a, 2b, 3a and 3b, alongside the preferred Policy ELC_02 wording. Should Option 4 be taken forward as the preferred tidal lagoon policy option, however, Policy ELC_02 would be removed leaving only an evidence focussed policy (Policy ELC_03d) remaining. In this case, it is anticipated that Policy ELC_03d would be renumbered accordingly.

support the sustainable development of the sectors through marine planning, where it is appropriate to do so.																

Significant Effects:
In 2017, Wales' power sector had a total installed capacity of some 11,090 MW and approximately 22% of the total 32.5 TWh of electricity generated in Wales in 2017 was from renewables[87]. The WMER sets out that Wales is ideally suited for the establishment of a successful and competitive marine energy industry which would increase the proportion of electricity generated from renewable sources in Wales. With specific regard to tidal lagoon technologies, studies have estimated the UK's total theoretical tidal range resource at between 25 and 30GWs which is enough power to supply around 12% of current UK electricity demand[88] and the findings of the Hendry (2016) review into tidal lagoons (the Hendry Review)[89] concludes that "*power from tidal lagoons could make a strong contribution to UK energy security, as an indigenous and completely predictable form of supply*". In this regard, the WMER highlights that there is significant potential for tidal lagoon projects in Wales and, with the second highest tidal range in the world, the Severn Estuary represents a strategically important source of renewable energy.

In this context, Policy ELC_03d supports and encourages further evidence gathering in respect of the potential opportunities associated with Wales' tidal range resource. Whilst the policy does not make provision for the development of tidal lagoon schemes in the plan area *per se*, it could contribute to the future progression of suitable and sustainable projects by (inter alia): encouraging research and innovation in the sector; enhancing understanding of the social, economic and environmental constraints and opportunities associated with tidal lagoon development; identifying optimal siting requirements for tidal lagoons; and defining SRAs to safeguard Wales' tidal resource in the future. In turn, the policy could help to contribute to the realisation of Wales' tidal range resource and support the achievement of the Welsh Government's carbon and renewable energy commitments. In consequence, Policy ELC_03d has been assessed as having a positive effect on governance (SA Criteria 14) and a positive effect on climate change (SA Criteria 6) and resources (SA Criteria 10), although some uncertainty remains with regard to the effects identified in respect of SA Criteria 6 and 10.

As Policy ELC_03d does not make provision for the development of tidal lagoon schemes in the plan area, its implementation will not result in any of the associated potential impacts outlined above. However, as part of an evidenced-based approach to marine planning, it is anticipated that the policy will enhance understanding of the possible effects of tidal lagoon schemes alongside the measures to avoid, minimise and mitigate adverse effects and enhance benefits. In particular, the policy is expected to help:
-safeguard Wales' tidal range resource and associated benefits in terms of the economy;
-identify opportunities for the co-location of marine activities in the plan area and manage potential conflicts;
-enhance understanding of the marine environment and the effects of tidal lagoon schemes on, in particular, biodiversity, water quality and the physical environment, especially those operational impacts associated with hydrodynamic changes, physio-chemical changes and physical habitat loss / changes.

[Please note that, should Policy ELC_03d be taken forward as the only WNMP policy relating to tidal lagoons then detail relating to the potential impacts of tidal lagoon schemes (based on the text contained in the assessment of Policy ELC_02) could be usefully included here. At this stage the text has not been included to avoid unnecessary duplication].

This has been assessed as having a positive effect on biodiversity (SA Criteria 1), water (SA Criteria 2), the physical environment (SA Criteria 3), tourism and recreation (SA Criteria 9), the economy (SA Criteria 11) and well-being (SA Criteria 12).

Effects on the remaining SA criteria have been assessed as neutral. No significant negative effects or negative effects have been identified.

Mitigation/Enhancement:

[87] Welsh Government (2018) *Energy Generation in Wales 2017*. Available from https://gov.wales/docs/desh/publications/181212-energy-generation-in-wales-2017-en.pdf [Accessed January 2019].
[88] BEIS (2013) *Guidance - wave and tidal energy: part of the UK's energy mix*. Available from https://www.gov.uk/guidance/wave-and-tidal-energy-part-of-the-uks-energy-mix [Accessed September 2017].
[89] Hendry, C. (2016) *The Role of Tidal Lagoons*. Available from https://hendryreview.wordpress.com/ [Accessed September 2017].

- None identified.

Assumptions:
- None identified.

Uncertainties:
- The extent of any future deployment of tidal lagoon schemes in the plan area and associated greenhouse gas emission savings is uncertain.

Appendix B
Schedule of Responses

Natural Resources Wales (NRW)

Section	Comment	Response including action taken in the final technical note
General (Policy Options)	The Technical note and the final assessment will provide important evidence about the potential impacts of the tidal lagoon policy options that are being considered for inclusion within the marine plan. We have provided comment on the Technical note to assist with the final assessments and would welcome the opportunity to comment on the final version of these once they have been completed. NRW would also be happy to provide any further advice on the final policy wording or associated narrative within the plan should that be helpful.	Comment noted. The Welsh Government will continue to engage with NRW during the preparation of the final HRA and ongoing SA process. No change
General (Policy Options)	As the technical note recognises, tidal lagoons may have a wide range of effects, some of which may be felt over large areas, especially when acting cumulatively across multiple projects. Activities that result in such effects will of course be subject to the general policies of the plan. However, it may not be possible to mitigate for some effects at all, and, where this is the case, legal derogations will be needed if projects are to proceed, which in themselves will prove challenging: for example, numerous derogations from formal Water Framework Directive assessment procedures are likely to be required, and it may not be possible to design compensatory measures that satisfy accepted current interpretations of the Habitats Directive.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the Welsh National Marine Plan (WNMP). No change.
General (Policy Options)	NRW strongly believes therefore that, should Welsh Government decide to promote tidal lagoon development, a strategic, spatial and evidence-based approach to planning and assessment will be needed. In particular, although the Welsh National Marine Plan (WNMP) needs	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP.

Section	Comment	Response including action taken in the final technical note
	to provide the overall framework for lagoon development, additional policy and planning for lagoons will be needed to reduce the risks to the environment, de-risk the consenting process and ensure the efficiency of the decision-making process.	Any necessary policy, planning and guidance in relation to tidal lagoons would be developed as appropriate. Welsh Government has made provision to introduce SRAs outside of the WNMP, along with associated guidance (in line with recommendations from the SA report). Welsh Government are committed to publishing a marine evidence strategy to help support sustainable development. No change.
General (Policy Options)	Technological development needs to be in step with the evidence and should be innovating to mitigate or avoid impact. The avoidance of impact requires consideration of when, where and also how any development takes place, and the policy selected should reflect the need to consider this. To achieve the Sustainable Management of Natural Resources (SMNR) there is a need to work collaboratively to establish what an acceptable proposal would look like. We should seek decarbonisation which drives wider intended consequences for healthy and resilient marine ecosystems, delivers additional SMNR benefits and reduces consenting complexity/risk.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	The adoption of policy option 4 in this iteration of the plan, and in advance of any development, would provide the basis of such an approach. We recognise that this is not a simple task, and would require significant commitment from government, authorities, industry and others. However, we advise that this will be an important part of enabling SMNR in relation to tidal lagoon development in Welsh waters. We have provided more detailed comments on each of the policy options below.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	It is clear from the analysis presented in the Technical note that adoption of policy options 1, 2a and 3a would represent a significant risk to biodiversity, water and the physical environments of Wales.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.

Section	Comment	Response including action taken in the final technical note
General (Policy Options)	The scale of development that would be supported under policy option 2b could range from two lagoons to many. The uncertainty about the scale of development that will arise under this policy option prevents the assessment from fully specifying the range and extent of potential effects, but clearly there is potential for large scale development under this policy which would represent an environmental risk overall.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. The plan SA and HRA note the inherent uncertainty in assessing a high-level plan with a low level of specificity. No change.
General (Policy Options)	By limiting the scale of development to a pathfinder and combining this with a caveat that seeks to protect European sites, option 3b clearly reduces the environmental risk, especially in terms of meeting the requirements of the Habitats Directive. Some significant risks remain however, and it is possible that achieving consent for such a development could be difficult depending on the exact size and location.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP and in developing the associated policy narrative. No change.
General (Policy Options)	In addition, NRW recognises that a policy that combines a pathfinder with caveats that strengthen the protection for European sites, would support significantly better understanding of the evidence about impacts. However, there are uncertainties about how quickly the outcomes of the monitoring of a pathfinder would become available - some impacts may take many years to be fully understood - and consent for a pathfinder may in itself take a significant period of time to achieve.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	It is also worth noting that the European sites caveat applied to policy options 2b and 3b means that a proposal considered to have an adverse effect would not be supported by the plan. There is therefore the potential for this policy to have significant impacts on the determination of any permissions, such as Marine Licences, for projects that are considered to have an adverse effect on site integrity.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the Welsh National Marine Plan. This policy approach would not preclude such developments but individual proposals would need to be considered on their merits without the benefit of specific policy support in the WNMP. No change.

Section	Comment	Response including action taken in the final technical note
General (Policy Options)	Notably, the assessment of the effects that would arise from the different WNMP tidal lagoon policy options has been severely hampered by a lack of evidence about the impacts. Adoption of policy option 4 (evidence only) would enable these effects to be better understood. This would pave the way for the more comprehensive policy development and planning that NRW believes is necessary. It is NRW's view that pursuing policy option 4 as the sole focus of WNMP tidal lagoon policy in this iteration of the plan would be a sensible step, and one which clearly avoids environmental and consenting risks from an assessment point of view.	Comment. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the Welsh National Marine Plan. The assessment of effects is challenging in relation to a high level plan with a low level of specificity. No change.
General	We welcome the circulation of this technical note, which we believe is very helpful in bringing together much of the discussion that has taken place in the Tidal Lagoon Policy Sustainability Appraisal and Habitats Regulation Assessment Technical Working Group over the last few months, as well as moving the process forward, and which we recognise is a complex piece of work. It is also clear and easy to read!	Comment noted. No change.
Section 3	There is understandably a considerable amount of uncertainty about the implications of plan policies. Development may or may not come forward at all, or at scales or with impacts that cannot be predicted with great confidence. This means that the assessments cannot easily conclude the magnitude or effects from one source or another, and cannot easily compare the relative significance of positive or negative effects. Whilst we broadly agree with the summary of benefits and risks described in the report (but see our comments relating to biodiversity in the following paragraph), these are hard to summarise accurately and, whilst the qualitative summaries are helpful in understanding the range of effects, they could be misleading.	Comment noted. The summary of effects presented in Section 3 of the report (including Table 3.1) is consistent with that adopted in the 2017 SA Report, using the same scoring methodology and approach that was confirmed following consultation as part of the draft Strategic Scoping Exercise. Importantly, the appraisal does not seek to compare the relative significance of effects or balance/reconcile positive and negative effects; the purpose of the SA is to identify, describe and evaluate the likely significant effects of the WNMP and to present these; the appraisal has been undertaken on this basis (identifying both positive and negative effects in some cases, as appropriate). Detailed commentary on identified effects is contained in the appraisal matrices at Appendix A to the Technical Note. The Technical Note will be revised including clear cross referencing to ensure the reader is able to supplement understanding of the SA findings from the

Section	Comment	Response including action taken in the final technical note
		summary presented in Section 3 with the more detailed appraisal in Appendix A. The appraisal acknowledges that there is uncertainty with regard to the exact scale, type and location of future tidal lagoon proposals that may come forward (and for Options 1, 2a and 2b, the number of schemes is unknown) and, further, that there are a number of uncertainties with regard to the potential type and magnitude of effects associated with the deployment of tidal lagoon schemes and the effectiveness of related mitigation. This uncertainty is fully reflected in the appraisal commentary and scoring.
Section 3	More specifically, NRW believes that the assessment overstates the value of the benefits of lagoon developments to biodiversity. The report describes the benefits of climate change mitigation and the exclusion of fishing as minor and/or uncertain. It is our view that these benefits might more accurately be described as minimal or even negligible when compared with the risks of the development impacts to biodiversity.	Comment noted. Taking into account the feedback received during the Technical Working Group meeting held on 17.01.19, this response, and others, the scoring against biodiversity for Policy ELC_02 (under all policy options, as appropriate) has been revised. In accordance with the comments received, the scoring against SA Criteria 1 (Biodiversity) has been amended from a mixed positive and negative effect to a negative effect (with uncertainty remaining). Notwithstanding this, reference to the potential benefits of tidal lagoon schemes (however negligible) has been retained in the detailed appraisal matrices (and appropriately caveated).
Section 3	If the above point is accepted, then the colour for the relevant cells in Table 3.1 (first populated column) should change to red. If the above point is not accepted, given the disparity between the negative and positive effects, it is our view (put crudely) that the colour of the relevant cells should be redder. It is Table 3.1 that most people will refer to, rather than the detailed appraisal matrices provided in Appendix A, and therefore the magnitude of potential	Comment noted. Please see the response above.

Section	Comment	Response including action taken in the final technical note
	effects needs to be clearly illustrated, including to those potentially less familiar with SEA.	
Section 3	The matrices, with their broad banding of effects, tend to over-generalise the assessment on a first reading. It is important to read the text alongside the matrix categories to understand the difference in impacts between options, when these differences are noticeable but not large enough to cross over the boundary into another assessment band. For example, Option 3a (pathfinder only) includes the assumption that 'It is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) will reduce the likelihood of significant effects occurring and their magnitude.' But despite this, and similar wording throughout the assessment (pgs. 45-50) the changes are not enough to assign any of the impacts to different colour categories. Hence an unfamiliar reader might assume that there was no real difference in the impact of 3a compared to 2a or 1.	Comment noted. The assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology including scoring mechanism and definitions of significance, were confirmed following consultation as part of the draft Strategic Scoping Exercise. In accordance with the requirements of the SEA Directive to identify, describe and evaluate the likely significant effects of the WNMP, the scoring mechanism adopted enables the reader to readily understand the significant effects of the plan. Notwithstanding the above, the reader should consider the scoring and summary contained in Section 3 of the report alongside the detailed commentary in the assessment matrices presented at Appendix A. Cross referencing between Section 3 and Appendix A will be strengthened in the revision to the Technical Note. The summary contained in Section 3 does highlight the assumptions with regard to the likelihood/magnitude of effects for each of the policy options considered. For Policy Option 3a, the summary states: "*There is the potential for these impacts to affect marine SACs and SPAs across the plan area (and, possibly, beyond), particularly in respect of habitats, fish and birds and on this basis, Options 1, 2a and 3a have been assessed as having a significant negative effect on biodiversity, although considerable uncertainty remains and it is assumed that the provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) under Option 3a would reduce the likelihood of such significant effects occurring and their magnitude.*" Overall, it would not be appropriate to amend the appraisal approach at this stage.

Section	Comment	Response including action taken in the final technical note
Section 3	Within the summary of likely significant effects there are a number of references to the need for adverse effects to be minimised or mitigated (e.g. penultimate paragraph on pg.17). It should be noted that it may not be possible to mitigate for some effects, which for some features will need to be avoided altogether. It should also be recognised that projects may be refused consent if certain adverse effects are identified that cannot be mitigated.	Comment noted. It is agreed that, for Options 1, 2a and 3a, it may not be possible to fully mitigate effects on European designated sites, depending on particular proposal(s) that come forward; although in respect of Options 2b and 3b (which include a caveat requiring that proposals avoid adverse effects on European sites) the need for such mitigation would be avoided (though the potential for effects on nationally designated sites and local biodiversity remains and in these instances mitigation may still be required). The commentary contained in Section 3 and the detailed matrices at Appendix A includes the statement "where possible" when referring to the potential for adverse effects to be minimised or mitigated. However, in response to this comment, the commentary has been revised to more clearly highlight that, in some instances, it may not be possible to mitigate some effects.
Section 3	Furthermore, explanation of the effects of policies 2b and 3b suggest that the effects of development on nationally and locally protected sites, species and habitats are likely to be reduced by the inclusion of the caveat regarding no adverse effects on European sites. The text in 3.2 implies that ruling out projects which would have adverse effects on European sites will automatically reduce the impact on biodiversity from Significantly negative to Negative in the assessment. Whilst this is true to a degree, the illustrative guidance in Appendix C of the Draft Plan makes clear that other impacts outside European sites could lead to a significant negative assessment, citing 'significant negative effects on local biodiversity (e.g. through considerable loss of habitat leading to long-term loss of ecosystem structure and function)', and it should therefore be recognised in 3.2 that there will be a range of sites, species and habitats that will not be protected by the caveat.	Comment noted. The assessment and assumptions made in respect of nationally designated sites and local biodiversity reflect the linkages between European designated sites and other sites designated at the national/local level. However, the potential for adverse effects on nationally designated sites and local biodiversity (and, therefore, for significant effects to arise) is recognised in the summary presented in Section 3.2 and in the detailed matrices. In this regard, the text in Section 3.2 currently states "*Whilst the potential for effects on nationally designated nature conservation sites, non-designated sites and local biodiversity interests remains, the policy requirement is likely to reduce the potential that such effects will occur and their magnitude, although some uncertainty remains*." The assessment already recognises the possibility for effects on sites, species and habitats that are not designated at the European level. Notwithstanding, additionally commentary will be included to make clear that, in such instances, there is the potential for adverse effects to be significant.

Section	Comment	Response including action taken in the final technical note
Section 3	Citing of the FOE report into Marine Renewables, Biodiversity and Fisheries as evidence that tidal range schemes can serve to create new habitat and enhance biodiversity is misleading. This report specifically excludes barrages which, the report makes clear, are subject to a different range and scale of issues. Although some of the benefits that the report discusses may apply to lagoons, there is considerable uncertainty about the value of interventions seeking to enhance biodiversity, and the degree to which such interventions can be relied upon to predictably enhance or compensate for protected species is not well understood.	Comment noted. It is considered that the operation of tidal lagoons can create new habitat leading to positive effects on biodiversity; their development may also present opportunities for ecological enhancement. For example, in respect of the Proposed Tidal Lagoon Swansea Bay Project the accompanying Environmental Statement[90] highlights that "*the Project will also result in a minor benefit to certain marine features, such as macroalgae and mussels, through the introduction of new intertidal and subtidal rocky habitat*". However, on reflection and taking into account this response, it is clear that any such benefits would likely be very minor and unlikely to outweigh the possible loss of habitat associated with the construction and operation of tidal lagoon projects. The Marine Institute Plymouth University and Friends of the Earth (2013) report 'Marine Renewables, Biodiversity and Fisheries' scope is defined in its introduction as providing the "*key main issues in terms of environmental impact of MRE (marine renewable energy) devices and farms and the likely concerns. It assesses the biological impacts of offshore wind, tidal turbines and wave energy converters*". Whilst it provides useful information for the SA of the policies as it relates to other marine renewables, its reference within the context of the SA of the options for tidal lagoons has been removed.
Section 3	We query whether the BEIS (2018) TLP Tidal Lagoon Programme: Summary value for money assessment has been considered in this latest assessment. This is new information since the original assessment of the Draft WNMP, but the economic impact of the new policies remains uniformly positive.	Comment noted. Reference is made to the conclusions of the BEIS assessment in the report and the document is clearly referenced. No change
Section 3	Positive or very positive effects on Criteria 14 (Governance) - in Appendix A Options 2a and 2b are described as having 'a positive effect on governance (SA criteria 14)' (pgs. 35	Comment noted. The wording in Appendix A has been revised to confirm that the positive effects identified in respect of SA Criteria 14 for Policy Options 2a/2b are significant.

[90] Tidal Lagoon Swansea Bay (2014) *The Proposed Tidal Lagoon Swansea Bay (Generating Station) Order: Environmental Statement*. Available from http://www.tidallagoonpower.com/wp-content/uploads/2018/01/6.1_Environmental-Statement-Non-Tech-Summary.pdf [Accessed February 2019].

Section	Comment	Response including action taken in the final technical note
	and 41), whereas the matrix for both records a significant positive effect, as does the text in 3.2 (pg. 16, paragraph 2 '… all policy options have been assessed as having a positive effect on governance (SA Criteria 14) with those effects being assessed as significant for Options 1, 2a/b and 3a/b.'). If this is not a typo, it represents an SA criteria against which the Pathfinder options (3a and 3b) score differently to the 'generic' options (2a and 2b), and should be discussed appropriately in Section 3.2 - Appraisal of Proposed Tidal Lagoon Policy Options. Policy ELC-03d is assessed as having a positive effect on governance, but reading the assessment text (pg. 58, paragraph 2) and guide questions ('Will the proposed policy: support integrated decision making and collaboration across marine and terrestrial interfaces and boundaries; promote engagement in marine planning; support continued research and policy development in marine planning?') it appears that a very positive assessment could be justified.	
Section 3	Whilst we agree with the statement in the second paragraph of section 3.5 that 'should Options 2b, 3b or 4 be taken forward, it is anticipated that the contribution and compatibility of the options with the well-being goal and SMNR objective would be improved' when compared to option 1, it is also true that option 3b would be an improvement over 2b, and in all probability option 4 an improvement over option 3b in this respect.	Comment noted. Both Options 2b and 3b include environmental caveats that would avoid adverse effects on European sites. In consequence, it remains arguable whether either performs better in terms of its compatibility with the SMNR objective. When the well-being goals for Wales, which includes 'a prosperous Wales', are considered, it could be argued that Option 3b would not deliver the same socio-economic benefits as Option 2b (as Option 3b supports a single scheme only). Whilst Option 4 would remove the potential for adverse environmental effects associated with tidal lagoons, this would not directly result in the sustainable use of Wales' tidal lagoon resource and would reduce the associated socio-economic benefits. In consequence, it could be argued that Option 4 would not necessarily constitute a clear improvement over Option 3b in this regard.

Section	Comment	Response including action taken in the final technical note
		Overall, there are a number of competing factors that could be referenced when discussing the contributions of the options considered against the SMNR objective and well-being goals, and all reflect both assumptions and uncertainties. The view that 'should Options 2b, 3b or 4 be taken forward, it is anticipated that the contribution and compatibility of the options with the well-being goal and SMNR objective would be improved' is valid and no further change is proposed. No change.
Section 4	We believe that the report correctly identifies the likely outcome of a Habitats Regulations Assessment of the policy options, namely that a conclusion that options 1, 2a and 3a would be unable to rule out adverse effects on European sites and would require Article 6(4) assessment if they were to be pursued. In these cases, we refer you to our previous advice on the HRA of the draft plan (29th March 2018), and in particular our view on the scale of the impacts identified on certain groups, and challenges in securing the compensatory measures likely to be necessary.	Comment noted. No change.
Section 4	We agree that the caveats in Policy options 2b and 3b will ensure adverse effects on European sites are avoided. This strengthens these policies significantly, and we agree that it would allow the HRA to conclude no adverse effects on the integrity of European sites. However, in reaching a decision about the most appropriate policy option to pursue, it should be made clear that there are a wide range of other environmental receptors that are not protected by this caveat and that may be significantly affected by lagoon development(s) (e.g. European and nationally protected species, flood risk assets, water quality, shellfish and Bathing waters, landscape etc.).	Comment noted. The wider range of effects are identified through the SA of the policy options. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
Section 4	The analysis of policy option 2a should recognise that the potential for multiple developments under this policy	Agreed. Additional commentary has been included in response to this comment, noting that there remains

Section	Comment	Response including action taken in the final technical note
	could lead to cumulative effects across projects that would in all probability amplify the risk of adverse effects.	uncertainty with regard to the number of schemes that may come forward under Policy Option 2a.
Section 4	We are concerned that the final paragraph in 4.1 suggests that there may not be an opportunity for us to formally provide advice on a revised HRA following a decision by Welsh Government on which policy option they intend to include within the WNMP, as required under Regulation 63(3) of the Habitats Regulations 2017. Whilst we recognise that the selection of options 4, 3b or 2b would make the HRA relatively straightforward, the selection of options 3a, 2a or 1 would require a not insignificant assessment, both in terms of the potential impacts of the option selected, and also in terms of the advice we gave to the earlier HRA consultation on option 1 on 29th March 2018.	Comment noted. The Welsh Government will continue to engage with NRW during the preparation of the final HRA and ongoing SA process. No change
Section 1	Table 1.1 – the <350MW limit also applies to option 3b.	Agreed. The footnote (17) has been revised.
Section 3	Pg.16 paragraph 1 – 'In this regard, it is anticipated that the likely scale of economic benefits derived from any tidal lagoon policy would be commensurate with the number of schemes that come forward and, on this basis, benefits may be reduced under Options 2b and 3b (which make provision for a single demonstrator project only)'. Option 2b does not make provision for a single demonstrator.	Agreed. This is a typo and has been amended.
Section 3	There appear to be some errors in the numbering of the options in the text on Likely Significant Positive Effects (pg. 15-16): • Option 2 refers to lagoons, whereas Option 3 refers to a single demonstrator project, and the b options for both includes the environmental caveat of no adverse effects on European sites. • Pg.15, paragraph 3 - 'Whilst Options 2b and 3b support the development of a single lagoon...' (paragraph 3) - should be 3a and 3b. Similarly, '... relative to Options 2a and 3a...' - should be 2a and 2b.	Agreed. These errors are typos and have been amended where appropriate.

Section	Comment	Response including action taken in the final technical note
	• Pg. 16, paragraph 1 …'Options 2b and 3b (which make provision for a single demonstrator project only)'.	

Royal Society for the Protection of Birds (RSPB)

Section	Comment	Response including action taken in the final technical note
General	We welcome the draft paper which we think is clearly written and helpful.	Comment noted. No change.
General (Policy Options)	Of the lagoon options selected for comparison we conclude that Option 4 provides the best fit with the available evidence and presents the lowest risk to achieving the requirements of the Habitats Regulations, the Marine Policy Statement, well-being and SMNR.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	Although it is outside the scope of this paper we believe that Option 4 is most likely to resolve representations on the tidal lagoon element of policy ELC_01.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	If Option 3b is selected by Welsh Government we suggest that the policy and/or supporting text be developed to encourage maximise the value of a demonstrator through research, monitoring and knowledge transfer.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
General (Policy Options)	We have reservations about the approach taken to the selection of reasonable alternatives which we outline in this response.	Please see the responses below.
General (Policy Options)	Current tidal lagoon technology is high ecological risk and other forms of low carbon energy provide a better alternative for de-carbonising Wales and meeting our environmental and Well-being goals.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.

Section	Comment	Response including action taken in the final technical note
	It remains our view that Welsh Government has not demonstrated that option 1 can satisfy the requirements of Article 6(4).	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. Should Policy Option 1 be taken forward as the preferred tidal lagoon policy approach then the Article 6(4) case will be reviewed as appropriate. No change.
	Options 1, 2a and 3a would need considerable additional work to conclude a Habitats Regulations Assessment. If any of these options were selected by Welsh Government we recommend that the Technical Working Group is used to provide advice.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. Should Policy Options 1, 2a or 3a be taken forward as the preferred tidal lagoon policy approach then the requirement or otherwise for additional assessment work will be considered and the views of the Technical Working Group taken into account at that point. The role of the Technical Working Group would be reviewed should further assessment work be necessary. No change.
General (Policy Options)	Several of these options should be subject to an Independent Investigation if they were selected by Welsh Government.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.
	Options 2b and 3b could still result in significant negative environmental effects as they only provide safeguarding for EU sites.	Comment noted. The assessment and assumptions made in respect of nationally designated sites and local biodiversity reflect the linkages between European designated sites and other sites designated at the national/local level. However, the potential for adverse effects on nationally designated sites and local biodiversity (and, therefore, for significant effects to arise) is recognised in the summary presented in Section 3.2 and in the detailed matrices. In this regard, the text in Section 3.2 currently states "*Whilst the potential for effects on nationally*

Section	Comment	Response including action taken in the final technical note
		designated nature conservation sites, non-designated sites and local biodiversity interests remains, the policy requirement is likely to reduce the potential that such effects will occur and their magnitude, although some uncertainty remains." In consequence, it is considered that the assessment already recognises the possibility for effects on sites, species and habitats that are not designated at the European level. Notwithstanding this, additionally commentary will be included to make clear that, in such instances, there is the potential for adverse effects to be significant.
Section 1	The options are referred to as 'Tidal Lagoon Policy options. These would be better described as options for the tidal lagoon element of policy ELC_01.	Disagree. The use of the term 'tidal lagoon policy options' is deliberate as Policy Option 4 does not include Policy ELC_02. No change.
Section 1	The text should make clear that the exclusion of Option 5 from further consideration as a reasonable alternative was not agreed by the Technical Working Group.	Comment noted. The exclusion of Policy Option 5 from the appraisal was a decision taken by Welsh Government following consideration of comments and discussions relating to this option. Through the Technical Note, the group has had an opportunity to provide comment on this alternative. The text in Section 1.2 of the report has been revised to make clear that the Welsh Government does not consider the option to be a reasonable alternative (as opposed to the Technical Working Group).
Section 1	The WNMP draft policy is not a tidal lagoon policy but a low carbon energy policy covering a range of technologies. The objective of the plan is to maximise the opportunity to sustainably develop marine renewable energy resources, helping to achieve the UK's energy security and carbon reduction objectives. Using non-lagoon marine energy to achieve this objective appears a realistic alternative policy and a 'feasible alternative solution' for the purposes of Habitats Regulations Assessment. The HRA reporting of no plan level Adverse Effect on Integrity for the other	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. No change.

Section	Comment	Response including action taken in the final technical note
	technologies would support this. Compared with the other technologies it is much more uncertain that tidal lagoon energy projects will come forward between now and the first review of the WNMP. There is no UK NPS for tidal lagoons. The BEIS value for money assessment published in June 2018 and failure to accept the Hendry Review strategic case for tidal lagoons adds to this uncertainty.	
Section 1	Given the removal of the SRA from the plan we think that Options 1 and 2a could be accommodated within a single ELC_01 policy. Options 2b, 3a and 3b would require a separate policy.	Comment noted. Welsh Government will consider combining the policy if the preferred policy option is 1 or 2a. No change.
Section 1	We draw your attention to representations on the need for a strategic consideration of compensation and of how trans-national and cross-border effects would be addressed by Welsh Government if ELC_01 is retained or 'new ELC_02 option 1' was taken forward. This would require additional policy particularly around trans-national effects (raised as a concern by conservation bodies in the Republic of Ireland and France) and compatibility with other Marine Plans.	Comment noted. Potential transboundary issues are an important consideration. Welsh Government agrees that there would be merit in a strategic understanding of compensation requirements in the marine and coastal area in relation to potential large scale development. No change.
Section 2	While we see the value of the SA Framework as an assessment tool and acknowledge the helpful work presented, there are significant limitations to this approach as a way of understanding the consequences of the different options. We think it would be helpful to supplement the SA criteria to reflect the following issues:	Comment noted.
Section 2	-Compared to other policies the scale of negative effect on biodiversity is exceptional. The SA criteria do not sufficiently differentiate levels of risk. For example, an option with a negative effect on 1 SSSI would be scored the same as option 1 which could have a negative effect on 70+ European Sites. (The effects would only be differentiated by reading the detailed text.)	Comment noted. The assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology including scoring mechanism and definitions of significance, were confirmed following consultation as part of the draft Strategic Scoping Exercise. In accordance with the requirements of the SEA Directive to identify, describe and evaluate the likely significant effects of the WNMP, the scoring mechanism

Section	Comment	Response including action taken in the final technical note
		adopted enables the reader to readily understand the significant effects of the plan. It would not be appropriate to amend the appraisal approach at this stage. In any case, providing greater granularity within the current scoring mechanism would require the inclusion of further effect levels or bandings (for example, significant effect, very significant effect etc.). To be effective, these would then need definitions, comparable with those already provided. To make such a change to the methodology, without further consultation, at such a late stage in the plan development would raise other questions, could be inconsistent with the appraisal work already undertaken and could potentially increase the risk of challenge. In consequence, no action is proposed. Notwithstanding the above, the summary contained in Section 3 of the report has sought to highlight where there are possible differences between the options considered and appraised in terms of the likelihood of significant negative effects on biodiversity and their magnitude. No change.
Section 2	-Risk and scale of cross-border and trans-national effects should be covered as an additional appraisal criterion and related to the requirements of the Marine Policy Statement and Marine and Coastal Access Act including compatibility with adjoining Marine Plans. (We note that the MMO said that the knowledge gap currently surrounding the potential impact of tidal energy developments, combined with the high level of support within the draft Welsh Marine Plan policies, this sector represents a significant risk to cross-border compatibility.) This would enable option selection to consider the risk they pose to the environment beyond the WNMP plan area including compatibility with other Marine Plans.	Comment noted. As set out above, the assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology was confirmed following consultation as part of the draft Strategic Scoping Exercise. In consequence, it would not be appropriate to revise the SA criteria or assessment methodology at this stage in the SA process. Notwithstanding the above, Section 3.4 of the report considers the possible implications of the different tidal lagoon policy options for the assessment of cross-border effects contained in the 2017 SA Report. It states:

Section	Comment	Response including action taken in the final technical note
		"*Section 4.7 of the SA Report sets out that the construction, operation and decommissioning of renewable energy development including tidal lagoon schemes could give rise to cross-boundary impacts, particularly in respect of biodiversity (SA Criteria 1), due to (inter alia) effects on mobile species and loss of habitat, and water (SA Criteria 2) and the physical environment (SA Criteria 3), due to changes to hydrodynamics and sediment transport and discharges. The report concluded that these effects could be significant where they affect designated nature conservation sites.* *This conclusion would likely be unaffected by the adoption of an approach comprising of Options 1, 2a or 3a. However, should Options 2b, 3b or 4 be taken forward, it is anticipated that the likelihood of significant adverse cross-boundary effects occurring would be reduced (and in the case of Option 4, removed).*" Importantly, it is not the role of the SA to assess the compatibility of the tidal lagoon policy options (and, by extension, the WNMP), with other Marine Plans per se. The SA does, however, consider the cumulative effects of the WNMP in-combination with other plans and programmes, although at the time of drafting the 2017 SA Report, no adjacent Marine Plans were sufficiently developed to permit such an assessment. The assessment of cross-border and cumulative effects will be reviewed and amended as appropriate following the selection of the preferred tidal lagoon policy option. This will include an assessment of the effects of the WNMP in-combination with other relevant Marine Plans (as appropriate). No change at this stage.
Section 2	-Compensation is challenging. The level of challenge for compensation and the extent to which options might depend on compensation outside Wales should be included as a criterion. As should the possible requirement to compensate for trans-national effects.	Comment noted. We would agree that the identification, consideration and provision of compensation is potentially challenging, particularly when applied to planning policy as opposed to projects; however, note that the issue is usually explored within the context of the HRA.

Section	Comment	Response including action taken in the final technical note
		Within the context of the SA and as set out above, the assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology was confirmed following consultation as part of the draft Strategic Scoping Exercise. In consequence, it would not be appropriate to revise the SA criteria or assessment methodology at this stage in the SA process. It is unclear how compensations requirements could be meaningfully determined at this stage when the exact scale and locations of projects that may come forward is unknown. No change.
Section 2	A challenge for this assessment is forming assumptions about what level of implementation might be enabled by each of the options. This has a bearing on the magnitude of effects arising from each option and the application of the SA criteria. It may be more realistic to include a range of 'scores' in the assessment and/or record your assumptions on level of implementation for each option. This may not be straightforward!	Disagree. As set out above, the assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology was confirmed following consultation as part of the draft Strategic Scoping Exercise. In consequence, it would not be appropriate to revise the approach to scoring at this stage in the SA process. In the detailed appraisal of the reasonable alternative options for ELC_01 contained in Appendix A to the Technical Note, within the commentary provided, both assumptions and uncertainties are outlined for the appraisal of each option. For example, Options 3a/3b would clearly support a single demonstrator project and this is outlined in the assumptions for these appraisals "*it is assumed that the policy provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) will reduce the likelihood of significant effects occurring and their magnitude. However, some uncertainty remains*". The number of schemes that could come forward under Options 2a/2b is unknown and it is unclear on what basis an assumption regarding levels of delivery could be made. This uncertainty is recognised in the assessment.

Section	Comment	Response including action taken in the final technical note
		Further, the assessment makes clear that "*although considerable uncertainty remains and it is assumed that the provision for a single tidal demonstrator project (as opposed to multiple tidal lagoon schemes) under Option 3a would reduce the likelihood of such significant effects occurring and their magnitude*". No change.
Section 2	This is just one area of uncertainty when considering tidal range policies. For example, there is uncertainty about baseline ecology, modelling of physical response of estuaries and coasts. There is uncertainty about whether significant implementation of some options (eg 1 and 2a) would be possible because projects may not be able to achieve satisfactory compensation. Many of the project level mitigation and compensation measures set out in the HRA are themselves judged to be uncertain or unlikely to be feasible. The paper would benefit from a section specifically on sources of uncertainty to help Welsh Government interpret the conclusions.	Comment noted. It is agreed that there remains uncertainty with regard to the deployment of tidal lagoon projects. These uncertainties are set out in the appraisal matrices contained at Appendix A to the report. In response to this comment, a summary of these uncertainties has been included in Section 2 of the updated Technical Note.
Section 2	As noted in our comments on section 1, for the purposes of the SA of the Marine Plan in relation to its objectives we think an assessment of reasonable alternatives should be of ELC_01 in its entirety.	Comment noted. The purpose of the report and appraisal contained therein is to consider the performance of the tidal lagoon policy options and therefore, it is not considered to be necessary to assess Policy ELC_01. In any case, at this stage, the wording of the Policy ELC_01 is continuing to be developed and Policy ELC_02 is expected to be a separate policy (as opposed to being integrated with Policy ELC_01). No change.
Section 2	Option 1 is retained as a comparator against which to assess the relative performance of other options, but has not been subject to further appraisal. This gives rise to the following issues: -Option 1 is a composite assessment covering all the technologies in existing ELC_01.	Comment noted. As set out in the report, Option 1 has been retained as a reasonable alternative in order to provide a comparator against which the relative performance of the other tidal lagoon policy options can be considered. This option was not subject to further appraisal as this would duplicate the work already presented in the 2017 SA Report which accompanied the Draft WNMP. Further, in advance of

Section	Comment	Response including action taken in the final technical note
	-Option 1 has not been revised to take account of representations on the HRA and does not therefore represent an agreed evidence base. It understates potential negative impacts. (We note that the Technical Working Group has not so far looked at all the issues set out in its Terms of Reference.) -Including assessments of 'new ELC_01' and new 'ELC_02' option 1 in the tables would improve clarity.	the selection of the preferred tidal lagoon policy option, it would be premature to update the assessment to take account of the representations received to the consultation on the Draft WNMP. As noted above, at this stage, the wording of the Policy ELC_01 is continuing to be developed and Policy ELC_02 is expected to be a separate policy (as opposed to being integrated with Policy ELC_01). In consequence, an assessment of Policy ELC_01 for each option would not be possible at this stage. If the final decision were to be taken by Welsh Government to retain Option 1 for Policy ECL_01, the appraisal would be revisited in light of the further work undertaken, additional evidence provided and the consultee feedback. With specific regard to the positive effects identified in respect of biodiversity, commentary has now been included in Section 3 to explain why the scoring in this regard differs from the other tidal lagoon policy options considered (i.e., because the policy includes a wider consideration of renewable technologies).
Section 2	The positive biodiversity effects referenced in the SA for option 1 are derived from the FoE/Plymouth Uni Report – my understanding is that this specifically excludes tidal range and therefore doesn't apply to an SA for a stand-alone tidal lagoon policy. In our response to the WNMP the RSPB (NRW and NE) referenced the DECC 2010 STP study as a valuable source of evidence. For example, the Welsh Grounds Lagoon which was assessed and modelled by this study is an example of an option within the WNMP area that would be supported by the existing policy. It therefore serves as an analogue for one type of tidal lagoon project that would be supported under the policy. The headline conclusions can be taken from table on page in the STP report. This also provides an insight into the scale of other potential impacts such as land drainage.	Comment noted. The Marine Institute Plymouth University and Friends of the Earth (2013) report 'Marine Renewables, Biodiversity and Fisheries' scope is defined in its introduction as providing the "*key main issues in terms of environmental impact of MRE (marine renewable energy) devices and farms and the likely concerns. It assesses the biological impacts of offshore wind, tidal turbines and wave energy converters*". The minor positive effects identified in respect of SA Criteria 1 reflect several factors and not just the Marine Institute Plymouth University and Friends of the Earth (2013) report. These factors include: • the generation of low carbon energy and associated reductions in greenhouse gas emissions that would support climate change mitigation and contribute to associated biodiversity benefits (although recognising

Section	Comment	Response including action taken in the final technical note
	The negative effects of option 1 (and others) should refer to the evidence from the DECC 2010 particularly in relation to migratory fish impacts.	that in the context of UK and global greenhouse gas emissions any positive effects in this regard are likely to be minor and uncertain); • the potential for tidal lagoon schemes to restrict/preclude other activities such as fishing thereby creating exclusion (no take) zones; and • reflecting the Marine Institute Plymouth University and Friends of the Earth (2013) report, the creation of new habitat. It is appropriate for the SA to have identified the potential positive effects outlined above. However, on taking into account this and the response from NRW, it is agreed that any benefits in this regard would be very minor and in consequence, the scoring against SA Criteria 1 (Biodiversity) has been amended from a mixed minor positive and significant negative effect to a significant negative effect (with uncertainty remaining). Notwithstanding this, reference to the potential benefits of tidal lagoon schemes (however negligible) has been retained in the detailed appraisal matrices (through appropriately caveated). Where appropriate, reference to the Marine Institute Plymouth University and Friends of the Earth (2013) report 'Marine Renewables, Biodiversity and Fisheries' has been removed.
Section 3	We suggest that paragraph 1 which cites the conclusions of the Hendry Review as context for options 1,2a/b and 3a/b needs qualification. The case set out by Hendry was not accepted by BEIS in their June 2018 announcement on tidal lagoons. The UK Government is responsible for UK energy security and in the absence of UK strategic support for tidal lagoons the case for a series of Wales lagoons is weakened and is likely to be unachievable.	Comment noted. The text referred to in this response has been amended to reflect the UK Government's June 2018 announcement.
Section 3	We agree with the statement that tidal lagoons could contribute to the target to generate the equivalent of 70% of Wales's electricity consumption from renewable sources by 2030. However, it should be noted that carbon payback	Comment noted. The assessment has not sought to compare the effects (including in respect of greenhouse gas emission savings) of tidal lagoons with other forms of renewable energy technologies. This is outside the scope of the SA which seeks

Section	Comment	Response including action taken in the final technical note
	on lagoons is much longer than for other sources of renewable energy and that alternatives would be likely to enable emission reductions sooner. The effects of tidal lagoons on achieving emissions reduction by 2030 is therefore less certain.	to identify, describe and evaluate the effects of the WNMP and the policy contained therein. No change.
Section 3	Reference to BEIS value for money analysis should emphasise that this applied to all TLP lagoons not just to SBTL. The Hendry Review thought that maximising supply chain benefits would require a clear signal by UK Government – the BEIS announcement has done exactly the opposite. This has implications for how realistic some of the positive benefits recorded in the SA tables would be.	Comment noted. The reference has been revised to make clear that the BEIS (2018) analysis relates to all Tidal Lagoon Power proposals. However, it is not considered that this change affects the assessment as presented in the report.
Section 3	The extent to which option 2a or 2b could deliver significant carbon reductions is uncertain. We are not aware of any studies of the possible effects of a suite of 'small' lagoons.	Comment noted. The assessment has identified that there remains some uncertainty with regard to the level of potential greenhouse gas emission reductions associated with the tidal lagoon policy options. For example, the detailed option appraisals contained in Appendix A to the report state that some uncertainty remains relating to the scale of development that may come forward and, therefore, the generating capacity to be created and any carbon emission reduction. In response to this comment, additional commentary has been included in Section 3 of the report to reflect the uncertainties identified in the assessment. Notwithstanding the above, it is considered that greenhouse gas emissions reductions associated with even a single project would be significant. For example (as noted in Appendix A to the report), it is estimated that the Swansea Bay Tidal Lagoon Project (which has a planned capacity of 320MW) would generate a saving of circa 236,000 tonnes of CO_2 per year of operation[91] (approximately 1.4% of the carbon emissions from the Welsh power sector in 2017).

[91] See http://www.tidallagoonpower.com/projects/swansea-bay/key-statistics/ [Accessed January 2019].

Section	Comment	Response including action taken in the final technical note
Section 3	We are concerned that this section does not adequately illustrate the magnitude of the negative effects likely to arise from option 1 and how unparalleled and exceptional adoption of such a policy would be. This is in part because the representations on the HRA have not yet been addressed. We suggest that any discussion of option 1 might refer to the following points to illustrate the scale of negative effect: • The HRA could not rule out adverse effects on 70+ EU sites in all four parts of the UK and in the Republic of Ireland and France. • Evidence from the DECC Severn Tidal Power Study 2010 for a single lagoon option near Newport: • Predicted risk of migratory fish extinction or population collapse across designated rivers • Loss of 25% of the Severn Estuary inter-tidal habitat. • Significant declines in 13 species of bird.	Disagree. With reference to the HRA, the assessment has clearly identified the potential for significant negative effects on SA Criteria 1, 2 and 3. As noted above, Option 1 was not subject to further appraisal as this would duplicate the work already presented in the 2017 SA Report which accompanied the Draft WNMP. No change.
Section 3	An HRA of options 2a and 3a would be needed to inform a view on the likely scale negative effects from these options.	Comment noted. Should either Policy Options 2a or 3a be taken forward as the preferred tidal lagoon policy option then the HRA would be revised as appropriate. Unlike SA, there is no requirement for the HRA to assess reasonable alternatives and in consequence, no further assessment is proposed at this stage. No change.
Section 3	Options 2b and 3b do not safeguard SSSIs, local biodiversity sites or protected species and could therefore give rise to significant negative effects.	Comment noted. The assessment and assumptions made in respect of nationally designated sites and local biodiversity reflect the linkages between European designated sites and other sites designated at the national/local level. However, the potential for adverse effects on nationally designated sites and local biodiversity (and, therefore, for significant effects to arise) is recognised in the assumptions outlined in the summary presented in Section 3.2 and in the detailed matrices. In this regard, the text in Section 3.2 currently states "*Whilst the potential for effects on nationally designated nature*

Section	Comment	Response including action taken in the final technical note
		conservation sites, non-designated sites and local biodiversity interests remains, the policy requirement is likely to reduce the potential that such effects will occur and their magnitude, although some uncertainty remains." In consequence, it is considered that the assessment already recognises the possibility for effects on sites, species and habitats that are not designated at the European level. Notwithstanding this, additionally commentary will be included to make clear that, in such instances, there is the potential for adverse effects to be significant.
Section 3.4	This section should be expanded to consider the implications of cross-border effects in terms of compatibility with adjoining Marine Plans. We note that the MMO said in their response: "Given the knowledge gap currently surrounding the potential impact of tidal energy developments, combined with the high level of support within the draft Welsh Marine Plan policies, this sector represents a significant risk to cross-border compatibility".	Comment noted. It is not the role of the SA to assess the compatibility of the tidal lagoon policy options (and, by extension, the WNMP), with other Marine Plans per se. The SA does, however, consider the cumulative effects of the WNMP in-combination with other plans and programmes, although at the time of drafting the 2017 SA Report, no adjacent Marine Plans were sufficiently developed to permit such an assessment. The assessment of cross-border and cumulative effects will be reviewed and amended as appropriate following the selection of the preferred tidal lagoon policy option. This will include an assessment of the effects of the WNMP in-combination with other relevant Marine Plans (as appropriate). No change at this stage.
Section 3.4	This paper is an opportunity to address weaknesses in the presentation of the consultation draft of the HRA on the level of risk and extent of possible trans-national effects. We are disappointed that this section does not specifically mention the risk of trans-national effects and the need to address these.	Comment noted. The detailed appraisal contained in Appendix A identifies the potential for tidal lagoon projects to have adverse effects on marine SACs and SPAs across the plan area "*and, possibly, beyond*". The commentary contained in Section 3.4 also identifies the potential for cross-border effects. The HRA and its conclusions will be reviewed as necessary following the selection of the preferred tidal lagoon policy option. The findings will be reflected in the SA as appropriate.

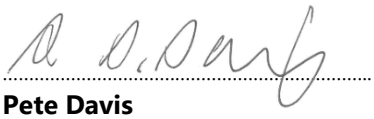
Section	Comment	Response including action taken in the final technical note
		No change.
Section 3.4	As noted in section 2 we suggest that cross-border effects and compatibility should be used as a supplementary criterion in evaluating options.	Comment noted. As set out above, the assessment of the tidal lagoon policy options has been undertaken in accordance with the approach to the appraisal of the Draft WNMP contained in the 2017 SA Report. Importantly, the appraisal methodology was confirmed following consultation as part of the draft Strategic Scoping Exercise. In consequence, it would not be appropriate to revise the SA criteria or assessment methodology at this stage in the SA process. Notwithstanding the above, Section 3.4 of the report considers the possible implications of the tidal lagoon policy options for the assessment of cross-border effects contained in the 2017 SA Report whilst Section 3.3 of the report considers the possible implications of the tidal lagoon policy options for the assessment of cumulative effects contained in the 2017 SA Report. The assessment of cross-border and cumulative effects will be reviewed and amended as appropriate following the selection of the preferred tidal lagoon policy option. No change.
Section 3.5	We welcome the inclusion of section 3.5.	Comment noted. No change.
Section 3.5	Compared with option 1, we agree that options 3b and 4 are likely to improve compatibility with the well-being goal and SMNR objective. We think it is possible that option 2b might improve compatibility with the well-being goal.	Comment noted. No change.
Section 3.5	This should be caveated that option 2b and 3b only safeguard EU sites and do not address negative effects on SSSIs, local biodiversity WFD, and MSFD. As noted above the SA assessment criteria	Agreed. Additional commentary has been provided to recognise the potential for adverse effects on nationally designated sites and local biodiversity.

Section	Comment	Response including action taken in the final technical note
Section 4	We suggest that this section should include more of a commentary on the implications for compensation of the different options.	Comment noted. It is unclear how compensation requirements could be meaningfully determined at this stage when the exact scale and locations of projects that may come forward is unknown. In consequence, further more detailed commentary on compensatory measures is considered premature at this stage. No change.
Section 4	We note that the Technical Working Group has not so far discussed or agreed a position on the representations raised on the draft HRA and supporting evidence base.	Comment noted. The Welsh Government's response to representations on the HRA will be dependent on the tidal lagoon policy option ultimately taken forward. No change.
Section 4	The RSPB's position is that Welsh Government had not demonstrated that it could satisfy any of the tests required by Article 6(4) for option 1.	Comment noted. Should Policy Option 1 be taken forward as the preferred tidal lagoon policy approach then the Article 6(4) case will be set out as appropriate. No change.
Section 4	In our view Options 1, 2A and 3A would require substantial additional work to conclude a satisfactory Habitats Regulations Assessment. If either of these were taken forward we suggest that the Technical Working Group should be extended with a view to identifying an agreed evidence base.	Comment noted. This response will be considered by the Welsh Government in selecting the preferred tidal lagoon policy option for the WNMP. Should Policy Options 1, 2a or 3a be taken forward as the preferred tidal lagoon policy approach then the requirement or otherwise for additional assessment work will be considered and the views of the Technical Working Group taken into account at that point. The role of the Technical Working Group would be reviewed should further assessment work be necessary. No change.

Issued by

Alex Melling

Approved by



Pete Davis

Copyright and non-disclosure notice

Third party disclaimer

Management systems

This document has been produced by Wood Environment & Infrastructure Solutions UK Limited in full compliance with the management systems, which have been certified to ISO 9001, ISO 14001 and OHSAS 18001 by LRQA.