

ORJIP Ocean Energy

Supporting good practice in consenting for
tidal stream and wave technologies in Wales

Report to Welsh Government

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1 INTRODUCTION

1.1 STUDY OVERVIEW AND REPORT STRUCTURE

This report presents the main outputs from work carried out by the Offshore Renewables Joint Industry Programme Ocean Energy (ORJIP Ocean Energy – see Section 1.2.8) on behalf of Welsh Government, to explore practice related to certain marine renewable energy consenting in Wales. The overall aim was to review existing evidence and experience and identify good practice and opportunities to address any challenges with consenting novel marine renewable technologies in Wales, specifically tidal stream and wave energy technologies. A series of recommendations and associated actions are made to address key issues and opportunities.

A number of consents can be required for marine renewable energy projects in Wales, administered by a range of regulatory bodies, including some undergoing a period of transition and devolution through measures provided by the Wales Act (2017). Marine Licences required under the Marine and Coastal Access Act (2009) are a key requirement; Marine Licensing in Wales is carried out by Natural Resources Wales (NRW), acting on behalf of the Welsh Ministers¹. NRW also provides a range of statutory and discretionary advice in relation to marine renewable energy. The study therefore focusses on marine licensing and relevant functions within NRW.

1.2 POLICY PERSPECTIVE AND BACKGROUND

Wales has a range of progressive and supportive policies for marine renewable energy that are of relevance to consenting, in addition to a number of supportive strategic initiatives and other measures. An overview of those of key relevance to the marine energy sector in Wales and this study is provided below.

1.2.1 Welsh Government energy policy and targets

Energy Wales: A Low Carbon Transition (Welsh Government, March 2012) sets out the Welsh Government's aim to enhance the economic, social and wellbeing of the people and communities of Wales. Energy Wales sets out the priorities for leading the transition to a low carbon economy in a way that delivers long term benefit for the people of Wales.

In 2017, Lesley Griffiths, the Welsh Government Minister for Environment, Energy and Rural Affairs set a target for Wales to generate 70% of its electricity needs from renewable energy by 2030. In April 2019, she declared a 'Welsh climate emergency' and pledged Welsh Government's commitment and support for tackling climate change.

1.2.2 The Well-Being of Future Generations Act

The Well-Being of Future Generations (Wales) Act 2015 describes the kind of Wales that Welsh Government wish to see. The Act sets seven well-being goals that public bodies must work to achieve, through five ways of working (Table 1-1). Welsh Government wish to see a prosperous Wales that has an innovative, productive and low carbon society, which recognises the limits of the global environment and therefore uses resources efficiently and proportionately.

Table 1-1 Well-being goals and ways of working identified within the Well-Being of Future Generations (Wales) Act 2015

Seven Well-being Goals	Five Ways of Working
A prosperous Wales	Long-term: balancing short-term needs with safeguarding the ability to also meet long-term needs
A resilient Wales	Prevention: acting to prevent to problems occurring or getting worse to help meet public body objectives
A more equal Wales	Integration: consider how the public body objectives may impact on well-being goals
A healthier Wales	Collaboration: act in collaboration to help meet the well-being goals and public body objectives
A Wales of cohesive communities	Involvement: involve people with an interest in achieving the well-being goals
A Wales of vibrant culture and Welsh language	
A globally responsible Wales	

¹ Pursuant to the Marine Licensing Delegation of Functions (Wales) Order 2013 and the Marine Licensing Delegation of Functions (Wales) Order 2017.

1.2.3 European Regional Development Funding

For the period 2014 to 2020, €100,428,444 EU structural funds have been prioritised for marine energy in Wales, with a maximum intervention rate of 69.43% (WEFO, 2014)². Under Priority Axis 3 (Renewable Energy and Energy Efficiency) of these funds, strategic objective 3.1 is to...“*increase the number of wave and tidal stream devices being tested in Welsh waters and off the Welsh coast, including multi-device array deployments, establishing Wales as a Centre of Excellence for marine energy production*”. The funds which are administered by the Welsh European Funding Office (WEFO), provide a significant incentive to attract the marine energy sector to Wales. Projects benefiting from the funding have a final target of 2023, meaning all project milestones must be fully signed off by WEFO by this date.

1.2.4 Welsh National Marine Plan

Under the MCAA, the UK Marine Policy Statement (MPS; HM Government, 2011) provides the high-level context for marine planning and the framework for preparing national and regional marine plans, including the Welsh National Marine Plan (WNMP).

Welsh Government is currently developing the first WNMP. A draft was released for consultation in 2018 and the current timetable is for plan adoption Autumn 2019. The draft WNMP identified marine renewable energy as a priority sector for blue growth and included a series of general and sector specific supportive policies. The overall policy rationale set out in the WNMP is to:

- Ensure the sustainable management of natural resources by taking account of cumulative effects
- Encourage economically productive activities in areas of good opportunity including support the sustainable development of marine renewable energy resources
- Supporting existing and future co-location of activities and reducing avoidable displacement of activities
- Support the achievement and maintenance of Good Environmental Status (GES)
- Protect and enhance marine biodiversity including Marine Protected Areas (MPAs) and enhance the resilience of marine ecosystems

The WNMP aims to deliver the objectives above by setting out Welsh Government’s policy for the next twenty years for the sustainable development of the Welsh marine planning area for both the inshore and offshore regions. The WNMP will set out ambitions for the future use of marine natural resources and how various users of Welsh seas should interact and consider each other’s activities and future plans. By setting out Wales’ marine planning policy, WNMP will ensure that Welsh seas are used sustainably and support “blue growth” (Welsh Government, 2017)³. Once the WNMP has been published, regulators must ensure their decisions are made in accordance with the plan unless relevant considerations indicate otherwise. To support such considerations, developers will need to demonstrate their proposals are compliant with the WNMP’s policies.

1.2.5 The Sustainable Management of Marine Natural Resources Project

The Sustainable Management of Marine Natural Resources (SMMNR) project (managed by Welsh Government and funded by the European Maritime and Fisheries Fund, EMFF) is being undertaken to support WNMP implementation.

The SMMNR project seeks to develop, and make available, a targeted environmental evidence base on the marine environment to support implementation of marine planning. The three activities selected as a priority for this project (referred to as focus activities) include aquaculture, tidal stream energy and wave energy, identified on the basis of:

- Being of strategic importance; but
- Lacking an existing easily accessible, applied, fit for purpose and coherently structured evidence base; and
- The collation and interpretation of datasets and new evidence achievable within scope and budget.

The overall project, as defined in the EMFF grant, is divided into two Work Packages (WPs):

² Welsh European Funding Office (2014). West Wales and the Valleys Operational Programme 2014 to 2020.

³ Welsh Government (2017). Marine Planning for Welsh Seas: An overview of the developing Welsh National Marine Plan (WNMP).

Available at: <https://gov.wales/sites/default/files/consultations/2018-02/overview-leaflet-en.pdf>

1. **Work Package 1 (WP1):** Consolidating the marine environmental evidence base for Wales. This WP identified areas for investigation; identified knowledge needs; gathered, collated and processed available data; and identified key knowledge gaps. The outputs from WP were detailed in a final report (ABPmer, 2019)⁴.
2. **Work Package 2 (WP2):** (commenced March 2019). Aiming to enhance and apply marine evidence to support sustainable development. This WP will collect data; produce and disseminate guidance; and produce constraints and opportunity maps for sustainable development and activities within target resource areas.

1.2.6 The Environment (Wales) Act

The Environment (Wales) Act 2016 introduced a number of measures to improve and protect the environment in Wales, by enabling the environment to be managed in a more “proactive, sustainable and joined-up way”. It allows Wales’ natural resources to be managed at both a national and local level through different frameworks. It introduced a change in approach for environmental issues; encouraging a systemic approach and integration with the Well-being of Future Generations (Wales) Act 2015, Planning (Wales) Act 2015 and, once adopted, the Wales National Marine Plan.

In 2017 the Welsh Government published its Natural Resources Policy (NRP), required under the Environment (Wales) Act 2016. The NRP sets out the Welsh Ministers’ general and specific policies for contributing to achieving the Sustainable Management of Natural Resources (SMNR) in relation to Wales. The NRP identifies three national priorities:

1. Delivering nature-based solutions;
2. Increasing renewable energy and resource efficiency; and,
3. Taking a place-based approach.

NRW has a corresponding duty under the Environment (Wales) Act to produce Area Statements, which will use evidence to consider the relevance of these NRP priorities within defined parts of Wales. A single marine Area Statement will be produced for Welsh waters.

1.2.7 NRW 2019/20 remit letter, Business Plan and operations

NRW is committed to supporting sustainable marine renewable energy development in its advisory and decision-making roles (NRW, 2019a)⁵. In March 2019 NRW received its annual ‘remit letter’ from the Minister for Environment, Energy and Rural Affairs (EERA). The remit letter sets NRW’s budget and priorities for 2019/20 (Welsh Government, 2019)⁶, including a number of priorities in relation to marine renewable energy and NRW’s functions, including:

- Supporting the Welsh Government’s targets for [marine] renewable energy;
- Ensuring Wales makes the most of marine energy opportunities by supporting the delivery of the Marine Plan;
- Taking a timely approach to advising on and consenting [marine] renewable energy applications;
- Providing advice that is proportionate to the potential impacts, and balancing risk and reward; and,
- Providing up to date guidance and support to applicants.

NRW’s corresponding 2019/2020 Business Plan (NRW, 2019b)⁷ sets out how the organisation will deliver these Welsh Government priorities. Providing advice on the delivery and implementation of the Wales National Marine Plan and ensuring its advice on marine renewables is proportionate to the potential impact is identified as a priority.

As part of a process of restructuring, NRW has created a Marine Operational Service which combines technical teams with case management teams within a single service dedicated to marine project across all sectors. Bringing these teams together enhances the ability of NRW to deliver advice on offshore renewable energy projects. NRW is also developing

⁴ ABPmer (2019). Sustainable Management of Marine Natural Resources, Work Package 1, ABPmer Report No. R.3065. A report produced by ABPmer for Welsh Government, July 2019. Available at: <https://gov.wales/sites/default/files/publications/2019-08/sustainable-management-of-marine-natural-resources-work-package-1.pdf>

⁵ NRW (2019a). Briefing note on supporting sustainable offshore renewable energy development. Provided for July 2019 consenting meetings. Not currently available online.

⁶ Welsh Government (2019). Natural Resources Wales (NRW) remit letter 2019 to 2020. Available at: <https://gov.wales/natural-resources-wales-nrw-remit-letter-2019-2020>

⁷ Natural Resources Wales (2019b). Business Plan 2019/2020. Available at: <https://naturalresources.wales/about-us/strategies-and-plans/business-plan/?lang=en>

a Marine Advice Framework that will set the principles and approaches for advice to further support timely and proportionate management appropriate to the level of risk to the environment⁵.

1.2.8 Offshore Renewables Joint Industry Programme Ocean Energy

The Offshore Renewables Joint Industry Programme Ocean Energy (ORJIP OE) was established in 2015 following recognition amongst marine energy stakeholders (including government, developers, The Crown Estate, regulators, their advisors and the research community) that a coordinated and strategic approach was needed to address key consenting risks for wave and tidal stream projects in the UK.

A Secretariat function is run by Aquatera and delivery partners MarineSpace and the European Marine Energy Centre (EMEC), funded by The Crown Estate (TCE), Marine Scotland, Welsh Government, NRW and Scottish Natural Heritage (SNH).

One of the key outputs of the programme is the 'Forward Look' detailing a prioritised list of EIA/HRA issues for the wave and tidal sectors and corresponding strategic research projects to address these evidence gaps. This facilitates a strategic, coordinated and prioritised approach to monitoring and research which is endorsed by industry, regulators and statutory nature conservation bodies. The most recent iteration of the Forward Look was completed in 2017 with the next iteration planned for 2020.

1.2.9 Marine Energy Wales consenting workstream

Marine Energy Wales brings together technology developers, the supply chain, academia and the public sector to promote Wales as a global leader in sustainable marine energy generation. One of MEW's core strategic workstreams is to facilitate the streamlining of consenting processes and in 2013 and 2015 produced a series of recommendations on measures to streamline consenting in Wales that were shared with Welsh Government and NRW.

In July 2019, a series of consenting-focused meetings was coordinated by Marine Energy Wales at the request of the First Minister, Mark Drakeford and the Minister for Environment, Energy and Rural Affairs, Lesley Griffiths. The meetings were attended by representatives from NRW (including the CEO and senior management), Welsh Government and industry (including members of the Project Team for this study). The aim of the meetings was to discuss consenting experience in Wales and elsewhere and identify opportunities to improve and streamline the process to help deliver the Welsh Government's marine renewable energy and low carbon targets and ambitions.

1.2.10 Marine Energy Task and Finish Group

In 2015 the Welsh Government established a Marine Energy Task and Finish Group to provide advice to the Minister for Business, Energy and Transport on a sustainable approach to deliver jobs, growth and wealth from the emerging marine energy sector. The key output was a Marine Energy Plan for Wales, published 2016, providing strategic recommendations⁸. The following relevant recommendations were made in relation to consenting and leasing:

Recommendations from Marine Energy Task and Finish Group (2015)

- A stronger marine energy policy should be introduced that enables NRW to take a more risk-based, proportionate and phased approach to consenting;
- Specific policy support should be adopted for wave, tidal stream and tidal lagoons including best practice guidelines and clarity on advice given at pre-application;
- Adequate resourcing should be put in place to ensure there is timely robust advice and consenting approval for marine energy projects as well as developing any necessary guidance;
- Adequate resourcing should be put in place to ensure NRW is able to properly engage with and steer future environmental research, prioritising research and development (R&D) to de-risk consenting uncertainties, address potential barriers and share lessons learnt;
- Steps should be taken to improve coordination of terrestrial and offshore consents;
- A single consenting route should be secured for Nationally Significant Infrastructure Projects so that Marine Licence requirements are addressed through the Development Consent Order process; and
- Target timeframes to determine both planning and Marine Licence applications should be adopted.

⁸ Marine Energy Task & Finish Group (2016). Marine Energy Plan for Wales – Unlocking the Energy in Our Seas. Available at: <https://gov.wales/docs/desh/publications/161215-marine-task-and-finish-group-final-report-en.pdf>

2 AIMS AND OBJECTIVES

2.1 PROJECT AIM

The aim of this study is to identify Wales specific opportunities and solutions to address the key consenting challenges for marine renewable energy projects in Wales for wave energy and tidal stream energy renewable technologies.

As part of the study Welsh Government wished to understand the views from those involved in marine energy consenting in Welsh waters and more widely to inform an appropriate policy response. The outputs of the study are intended to support proportionate, consistent, timely and integrated decision making whilst ensuring marine ecosystem resilience.

The study will identify the key issues, challenges and opportunities relating to the consenting of tidal stream and wave energy projects in Wales and propose solutions and recommendations.

2.2 SPECIFIC OBJECTIVES

The specific objectives of the study are to:

1. Identify the main challenges for developers/applicants and regulators/advisors in consenting marine energy projects in Wales through an industry survey, direct stakeholder engagement and a review of the consenting regimes in Wales and elsewhere.
2. Review the consenting regime in Wales and identify key issues or challenges that are currently perceived to limit the development of the marine renewable energy sector in Wales.
3. Identify and assess any relevant measures, policies etc which have been (or are planned to be) implemented in other regimes to streamline marine energy consenting and evaluate their impact.
4. Identify any measures that could be adopted in Wales in the short term to improve the consenting process for developers/applicants/regulators/advisors.
5. Propose recommendations and associated actions to support the consenting process in Wales.

3 METHODOLOGY

3.1 THE PROJECT TEAM

The Project Team included members of the ORJIP OE secretariat as well as key invited experts, detailed in Table 3-1.

Table 3-1 The Project Team and key experience relevant to the current study.

Team member	Summary of relevant experience & input to study
Jonny Lewis (ORJIP secretariat)	Significant experience in EIA and consenting for offshore sectors including marine aggregates, ports and harbours, oil and gas and offshore renewables. Led on and supported EIA and consenting for numerous Round 1, 2 and 3 offshore wind farm projects in UK waters and a number of wave and tidal projects including Tidal Energy Limited's DeltaStream project in Ramsey Sound and Pembrokeshire WaveHub demonstration zone.
Ian Hutchison (ORJIP secretariat)	Managed EIA and consenting for demonstration and commercial scale wave and tidal developments including at the European Marine Energy Centre (EMEC) and in the Pentland Firth and Orkney Waters (PFOW) Strategic Area. Led and supported strategic projects to de-risk wave and tidal project consenting, including for the Scottish Government, The Crown Estate and the US Department of Energy's Pacific Northwest National Laboratory.
Jennifer Fox (ORJIP secretariat)	Supported EIA and consenting for wave and tidal projects throughout Scotland. Led and supported strategic projects to de-risk wave and tidal project consenting, including for the Scottish Government, The Crown Estate and the US Department of Energy's Pacific Northwest National Laboratory.

Team member	Summary of relevant experience & input to study
Kate Smith (ORJIP secretariat)	Significant experience in EIA and consenting for wave and tidal projects working across the private and public sectors, including within NRW, consultancy and industry. Led on and supported EIA and consenting for numerous wave and tidal projects including Nova Innovation's Shetland Tidal Array and projects in Wales (Ynys Enlli) and Canada, TEL DeltaStream, MCT Anglesey Skerries, Minesto DeepGreen, Morlais demonstration zone, Pembrokeshire WaveHub demonstration zone, Milford Haven META and Bombora mWave. While at NRW led on input to strategic planning for W&T including Crown Estate seabed leasing, DECC OESEA and Welsh Government W&T policy and planning.
Liz Foubister (key expert)	Significant experience in EIA and consenting for wave and tidal (in addition to offshore wind) projects throughout all UK jurisdictions. Led on and supported EIA and consenting for numerous wave and tidal demonstration and commercial scale projects including various EMEC developers; the MeyGen Tidal Energy Project, Brims Tidal Array and Westray South Tidal Array amongst others in Scotland; Tidal Ventures and Fair Head Tidal in Northern Ireland; Minesto Holyhead Deep in Wales; Race Tidal in Alderney.
Ruth De Silva (key expert)	Significant experience in the marine renewables sector including advising on the set-up and consenting of EMEC and project managing the consenting and EIA of the META project in Pembrokeshire. Significant experience in marine renewables EIA, HRA and consenting across both the private and public sectors, including within SNH and environmental consultancy. Whilst at SNH Ruth lead SNH statutory advice on wave and tidal projects in Scottish Waters, provided SNH statutory advice on the Crown Pentland Firth and Orkney Waters W&T leasing round, and inputted on strategic priorities for W&T research and the Scottish Government deploy and monitor strategy.

Combined, the Project Team has extensive experience of marine energy consenting from a developer, regulatory and advisory perspective in Wales, throughout the wider UK and overseas.

3.2 OVERVIEW OF METHODOLOGY

The methodology comprised:

- Task 1:** Stakeholder engagement.
- Task 2:** Collation of views and experience on challenges and good practice.
- Task 3:** Identification of opportunities and solutions (including building on current good practice).
- Task 4:** Development of recommendations and actions (with associated case studies) and next steps.
- Task 5:** Reporting.

Further detail is provided below.

3.3 TASK 1: STAKEHOLDER ENGAGEMENT

3.3.1 Call for Evidence

A questionnaire, issued as a Call for Evidence, was developed and used to gather views from stakeholders on:

- Example(s) of where the current consenting process (in Wales or other jurisdictions) has been useful/supported marine energy project development;
- Challenges related to the sustainable development of the wave and tidal stream energy sector in Wales;
- Opportunities for regulators/advisors and developers/applicants in taking forwards consenting marine energy projects in Wales;
- Experience from other consenting regimes, key lessons learnt, policies or best practice measures;
- Potential measures that could be implemented to help address challenges and deliver opportunities; and
- Key areas of environmental evidence/data which would be beneficial to the consenting process.

The Call for Evidence was disseminated to a wide range of stakeholders with an interest in marine renewable energy consenting issues, via the ORJIP OE Network⁹ and the Marine Energy Wales (MEW) contact database. This approach provided the opportunity for stakeholders including regulatory and advisory bodies, industry, environmental consultants, the academic community and Non-Governmental Organisations (NGOs) to contribute to this study.

3.3.2 Direct consultation

In addition to the general Call for Evidence, ORJIP OE carried out direct consultation with key stakeholders, including:

- Key individuals within NRW (Advisory and Permitting) with a role in marine energy; and
- Project developers and consultants with experience in consenting wave and tidal stream projects in Wales and other regimes including elsewhere in the UK and overseas.

For each, the Call for Evidence questionnaire was used as the basis for structuring discussions. The questions were issued and in the majority of cases, follow-up telephone interviews were held once written responses had been received. The primary aim of these telephone interviews was to provide interviewees with an opportunity to expand on their written responses.

3.3.3 Marine Energy Wales consenting meetings

Draft outputs from the work were shared with attendees of the series of consenting meetings coordinated by MEW, to aid discussions and invite feedback. Key points from the meetings not already captured within questionnaire responses or through direct consultation was captured by members of the Project Team.

3.4 TASK 2: COLLATION OF CONSENTING VIEWS AND EXPERIENCE

The views of project developers, regulators and other key stakeholders were collated to provide an overview of experience of the marine energy consenting process in Wales and elsewhere.

3.5 TASK 3: IDENTIFICATION OF CHALLENGES AND OPPORTUNITIES

Information and evidence on the key challenges, opportunities and examples of existing good practice identified throughout the stakeholder engagement process were reviewed by the Project Team. This included consideration of:

- Key lessons learnt from existing marine energy consenting regimes;
- Examples of relevant policies, including application and implementation; and
- Good practice measures from Wales and elsewhere, including tools and guidance, or evidence initiatives aimed at gathering or collating data to de-risk consenting.

3.6 TASK 4: DEVELOPMENT OF RECOMMENDATIONS & ACTIONS

The review process led to the identification of a series of recommendations to support the consenting process in Wales. This included measures that could be adopted in the short-term, to benefit marine projects within or about to enter the consenting process. It also included opportunities to develop or formalise measures already considered good practice.

'Recommendation fatigue' was raised as a concern in the July 2019 consenting meetings. In 2013 MEW provided a series of recommendations to NRW and Welsh Government on consenting, followed up in 2015 (see Section 1.2.9 for further details). Similarly, the Marine Energy Task and Finish Group's Wales Marine Energy Plan also recommended measures to improve and streamline the consenting process in Wales (see Section 1.2.10). Discussions at the July meetings highlighted the importance of translating recommendations into clear and practical actions that could be taken forward collaboratively. To address this, a series of corresponding actions have been suggested and some key next steps identified. Finally, a series of case studies have been developed to further illustrate the recommendations and actions (Appendix A). Advantages and disadvantages have been highlighted within the case studies to demonstrate how the recommendations and associated actions may be implemented.

⁹ See <http://www.orjip.org.uk/oceanenergy/about/network> for further details on ORJIP OE Network membership.

3.7 TASK 5: REPORTING

A draft report was shared with Welsh Government, NRW and Marine Energy Wales in May 2019 for review. Feedback from the review process has been incorporated into this final report. Release of the final report follows a series of consenting-focused meetings in July 2019 coordinated by Marine Energy Wales and attended by representatives from NRW and Welsh Government and industry (including members of the Project Team). This has enabled considerations from those meetings to be incorporated.

4 KEY FINDINGS

4.1 VIEWS AND EXPERIENCE CAPTURED

A wide range of views were received including from industry, regulators, advisors and wider stakeholders. Significant input was received from across the range of NRW marine energy consenting functions, including:

- NRW Permitting Service:** Marine Licensing Team and Regulatory Policy
- NRW Advisory Service:** Development Planning Advice Service
- NRW Advisory Service:** Marine Energy Technical Specialists
- NRW Advisory Service:** Marine receptor Technical Specialists (e.g. seabirds, marine mammals etc)

4.2 COLLATION OF CHALLENGES AND OPPORTUNITIES

A series of common themes around challenges and opportunities emerged from the feedback received (Table 4-1).

Table 4-1 Main challenges and opportunities for marine energy consenting in Wales

Theme	Overview of challenge / opportunity raised by stakeholders
<p>Policy and implementation guidance for marine energy in Wales</p>	<p>Policy support and guidance</p> <p>Many stakeholders referred to the need for more/improved “policy support”. Reference to policy support related to a number of policy themes, including; sustainable development; energy policy; marine energy policy; and consenting policy. “Policy support” might include additional or supplementary policy, interpretation or implementation guidance, or ‘government steer’, e.g. through remit letters or work programme prioritisation.</p> <p>A number of stakeholders identified the need to distinguish between policy and implementation guidance recognising that new policy may not be the most appropriate solution for all issues.</p> <p>Wales has some progressive, supportive policies for marine renewable energy, including in the draft WNMP, Energy Wales and more recently through Welsh Government’s 2030 renewable energy targets and its Natural Resources Policy. However, there is perceived to be a lack of clear practical or prescriptive policy on marine energy development in Welsh waters or clarity about how existing supportive policies influence or should be taken into account in consenting advice and decisions. The nature of the perceived gap is worthy of further consideration including the extent to which spatial policy can add value to the consenting process.</p> <p>The Welsh National Marine Plan</p> <p>There is concern amongst industry that without clear implementation guidance, the net result of the WNMP may be to increase the regulatory and administrative burden placed on marine energy developers, since applications will need to demonstrate compliance with plan policies. It is important that any implementation guidance for the WNMP helps MRE applications comply with the plan and facilitates sustainable growth of the sector. It is also important that implementation guidance provides clarity on how decision makers will demonstrate compliance with the WNMP.</p> <p>The dispute resolution and appeals process for objections or challenges based on non-compliance with the WNMP needs to be clear to avoid lengthy delays to consenting. It is noted that guidance exists on appeals with regard to marine licensing; applicant have right of appeal; other challenge may be brought through the courts.</p>
<p>Complexity and consistency in the consenting process and EIA</p>	<p>Role of EIA scoping</p> <p>EIA Scoping stage could be used more effectively to retire or scope down impacts, leading to an EIA appropriately focussed on likely significant effects. Scoping should be used to distinguish between possible and probable impacts. There is a need for consideration of scale and type of development at scoping stage (including phased build out), specifically in reference to baseline survey requirements, impact assessment requirements and methodologies.</p>

Theme	Overview of challenge / opportunity raised by stakeholders
	<p>Applicants must ensure that adequate information and evidence are provided to facilitate more effective scoping. Without adequate information, there is a risk that all potential impacts will be scoped into EIA. NRW does provide relevant guidance, for example specific to the scoping of Environmental Impact Assessments for marine developments¹⁰, but further, more sector specific guidance may provide additional value.</p> <p>Uncertainty about impacts and role of 'Deploy and Monitor'</p> <p>There is a need for clarity about the type and level of evidence required for EIA in recognition that carefully managed post-consent monitoring may be a more effective approach to mitigate uncertainty about novel technologies than pre-application survey. Evidence should only be requested where it will have a material influence on the decision-making process and outcome. Pre-application (e.g. site characterisation) surveys should only be required where they are the most appropriate approach to reducing uncertainty and managing risk. For some potential impacts, carefully managed deployments combined with monitoring may be more effective than pre-application survey to manage environmental risk. Adaptive management based on a deploy and monitor approach has already been used in Wales for a number of tidal projects.</p> <p>Marine Scotland has developed tools specifically aimed at informing EIA for wave and tidal projects to ensure that EIA and assessment methodologies are appropriate to determine whether an impact is significant or not, whilst avoiding over analysing impacts if they are not going to change overall findings / assessment.</p> <p>Lack of agreed timeframes for consenting processes</p> <p>Consenting processes with undefined timescales or longer turnaround times can cause significant project schedule issues including problems in achieving critical project milestones for example those linked to the release of the next stage project funding. This is a particular issue with projects benefitting from ERDF funding from WEFO which require full project spend by 2023, along with achieving intermediate milestones. This issue also poses a significant challenge in negotiations with private investors who see consenting as a significant project risk. As a result, this issue can affect the overall pace of development and the need for developers to look to develop their projects elsewhere, outside Wales.</p> <p>Developers also play an important role in ensuring timely consent timeframes, since applications are not formally accepted until the regulator feels the application includes all the information it requires to make a decision (i.e. gate check process). Insufficient information or requests for supplementary information or clarification can also extend or delay the determination period for the application.</p> <p>Complex consenting framework</p> <p>The current marine energy consenting regime is complex with a number of consents required for a marine renewable energy scheme and no single body having regulatory responsibility for marine renewables in Wales.</p> <p>From April 1st, 2019 powers for consenting Electricity Act Section 26 (S.36) consents of between 1-350MW passed to Welsh Government (from the MMO) under the Wales Act (2017).</p>

¹⁰ Natural Resources Wales (2017). Scoping and Environmental Impact Assessment for marine development. Guidance Note 13.

Theme	Overview of challenge / opportunity raised by stakeholders
	<p>The creation of a 'one-stop-shop' for consenting in Scotland, where MS-LOT administers Marine Licensing, European Protected Species Licensing and S.36 Licensing has helped streamline consenting for MRE projects.</p> <p>Lack of guidance on the consenting process and timescales</p> <p>There is a need for guidance on the consenting process which includes cost and timescales for application determination. In the absence of NRW guidance on the consenting process for marine energy projects, MEW has provided guidance on its website¹¹, which a number of stakeholders referred to having used. NRW has also produced guidance on the Marine Licensing and EIA process¹².</p> <p>Given the complexity of most marine energy projects and resourcing issues it can be challenging and potentially counterproductive for the regulator to set timescales for consenting processes potentially increasing the likelihood of project refusal in some cases.</p>
<p>NRW Discretionary Advice Scheme (DAS)</p>	<p>In response to resource constraints, NRW introduced a charging scheme in April 2018 to place the provision of non-statutory advice (including pre-application advice) to marine developers on a stable footing. Some industry stakeholders reported that the costs associated with the DAS discourages early engagement as it adds significant spend to already tight budgets. Additionally, there is a need for accurate estimates of time and costs to be supplied by the regulator within the consenting process, for reasons set out above.</p> <p>WEFO have agreed that the costs of engagement with NRW through the DAS can be incorporated into ERDF budgets. Some industry stakeholders reported that the DAS has enabled the provision of timely advice from NRW into their projects.</p>
<p>Approach to management of risk and uncertainty within decision making and advice</p>	<p>Decision making and advice</p> <p>There is a need for a more proportionate and flexible approach to consenting for marine energy projects where possible and appropriate. This might in part be achieved through a more pragmatic and enabling approach to risk and uncertainty in HRA which can and must still be fully compliant with the Habitats Directive, as demonstrated through the consenting of the DeltaStream project in Ramsey Sound, within a European Special Area of Conservation (SAC) and Special Protection Area (SPA).</p> <p>Lessons learned and evidence from other projects and other jurisdictions</p> <p>There is a clear need for evidence and experience from previous projects including those in other jurisdictions to be applied to consenting in Wales. Industry is generally not good at sharing data and learning from projects, which makes it difficult for NRW to take account of evidence gathered from operational projects into their advice and decisions. Mechanisms for improving sharing of environmental monitoring from operational wave and tidal projects are required, as well as measures which accelerate the incorporation of this evidence into consenting processes.</p>
<p>NRW resourcing for marine energy consenting advice and decision making</p>	<p>Limited dedicated resource appears to be a key issue. Amendments to the EIA Regulations require that 'competent experts' deal with EIA. NRW requires the right expertise within the right parts of the business with adequate capacity to comply with this requirement. It is important for NRW technical specialists to have sufficient time for professional development and learning to ensure that their advice is based on best available evidence.</p> <p>To reach decisions on (wave and tidal stream) consents and consenting issues regulators often seek technical and scientific advice from a range of consultees and advisors. In Scotland, this process involves constructive dialogue and debate around best practice and best available evidence. The</p>

¹¹ <https://www.marineenergywales.co.uk/developers/consenting-guidance/>

¹² <https://cdn.naturalresources.wales/media/687719/marine-licensing-band-3-application-process-flowchart.pdf?mode=pad&rnd=13189870310000000>

Theme	Overview of challenge / opportunity raised by stakeholders
	<p>end result of this process is that the regulator’s (MS-LOT) decision on a consent or issue is not always based on consensus or the recommendations of consultee and advisors, but on what it considers to be best available evidence.</p> <p>For reference; Scotland has three organisations or aspects of organisations each focusing on slightly different parts of the consenting process; SNH delivers advice on environmental and sustainability issues, Marine Scotland Licensing Operations Team deals with the consent process itself and Marine Scotland Science deals with the development of the evidence base and science to inform consenting (and has a corresponding budget to do so). In addition, Marine Scotland draws on the provisions of the Natural Environment Research Council’s Royal Charter to ‘supply advice to the UK Government on matters relating to the management of seals in the UK and its sovereign waters’ to obtain key expert advice and evidence to inform its marine renewables consenting functions and decisions. This provides an important mechanism for independent expert advice.</p> <p>NRW perform all three of the functions carried out by SNH, Marine Scotland Licensing Operations Team and Marine Scotland Science with fewer staff and smaller budget in comparison although the differences in scale and nature of developments in Scotland relative to Wales is also noted. For example., NRW Marine Licensing Team currently has 8 permitting officers who deal with all Marine Licence applications in Wales across all sectors. MS-LOT have 35 licencing officers, of whom 6 are dedicated to dealing with marine energy applications. All functions which contribute to the consenting process (regulatory and advisory) need to be adequately resourced and prioritised.</p>
<p>Consenting and the Marine Protected Area network in Wales</p>	<p>Scale of the Natura 2000 network in Wales</p> <p>Roughly 70% of Welsh inshore waters are designated as European Protected Sites (Special Areas of Conservation and Special Protection Areas) under the Habitats and Birds Directives. Many of the species features of these sites are highly mobile and use areas of sea outside site boundaries. In addition, many areas of wave and tidal energy resource are also used by cetaceans which are European Protected Species subject to strict protection measures. This means that the requirements of the Habitats Directive are often critical to the consenting processes in Wales, requiring NRW to have a high level of confidence/standard of evidence that effects will not have significant effects on site integrity. Consenting marine energy projects which involve technologies about which there is considerable uncertainty about the nature of the effects is therefore challenging for NRW.</p> <p>Role of adaptive management in ensuring Habitats Directive compliance</p> <p>Although the Scottish Government Policy “Survey, Deploy & Monitor” (SDM)¹³ is often mentioned as an approach that could be adopted, it is difficult to mirror exactly in Wales due to the size and location of existing MPAs. In practice, NRW’s use of “adaptive management” to take a deploy and monitor approach to managing environmental risk has been successfully applied to consents for TEL’s DeltaStream project, Minesto’s DeepGreen project and MCT’s Anglesey Skerries project. Adaptive management is therefore a viable and proven mechanism for ensuring consenting in Wales can be in compliance with the requirements of the Habitats Directive.</p>
<p>Environmental uncertainty & evidence gaps</p>	<p>The uncertainty conundrum</p> <p>There is an ongoing ‘catch-22’ situation for marine energy projects globally. Evidence/data on impacts such as collision risk/ displacement, key to granting consent, is lacking and the only way to gather data is to install devices and undertake monitoring of effects to provide evidence.</p>

¹³ <https://www2.gov.scot/Topics/marine/Licensing/marine/Applications/SDM>

Theme	Overview of challenge / opportunity raised by stakeholders
	<p>There is a need for existing evidence on key impacts to be made available for developers, regulators and marine planners, and where relevant for evidence from other jurisdictions to be utilised to reduce uncertainty with regards to potential environmental impacts.</p> <p>Uncertainty about managing and monitoring potential environmental effects</p> <p>There remains uncertainty around the effectiveness of a number of key mitigation and management measures that can be implemented to reduce/mitigate adverse environmental effects of wave and tidal energy projects.</p> <p>Monitoring is often used as a way of facilitating adaptive management of environmental effects of wave and tidal energy projects but there is yet to be a consensus reached on the most appropriate, cost effective and practical monitoring solutions for wave and tidal arrays.</p> <p>A number of stakeholders raised concerns about information and outputs from monitoring not being shared or disseminated in a way that de-risks consenting for other projects. Mechanisms to explore how this might be improved without compromising IP elements of environmental monitoring should be explored.</p> <p>There is a need for monitoring conditions on Marine Licences to be targeted with clear, achievable objectives, i.e. validation of EIA conclusions and/or monitoring to inform adaptive management.</p> <p>The need for a strategic research agenda</p> <p>There is a perceived need for a strategic research agenda specific to Wales which collects evidence on a wide spatial scale compared to that required by individual projects, The research agenda should identify the specific areas of strategic research and data that are required to equip NRW advisory staff in the provision of appropriate and proportionate advice on specific developer project proposals. This should build on that developed through the ORJIP Ocean Energy’s Forward Look¹⁴.</p> <p>The Welsh Government’s ongoing Sustainable Management of Marine Natural Resources Project (see Section 1.2.5) was highlighted as a particular opportunity for progressing a strategic research agenda for wave and tidal energy in Wales provided that the benefits of the projects are appropriately focussed at the project rather than the plan level.</p> <p>Use of existing strategic evidence initiatives</p> <p>Better use could be made of existing strategic evidence initiatives such as ORJIP Ocean Energy (see Section 1.2.8) and OES Environmental, a collaboration of 23 nations brought together under the International Energy Agency. Outputs from OES Environmental include a ‘State of the Science’ report on the environmental effects of marine renewable energy development¹⁵. This provides an up to date and comprehensive review of current information, data and research, available to be used at all stages of project consenting and environmental assessment.</p>

¹⁴ <http://www.orjip.org.uk/documents>

¹⁵ <https://tethys.pnnl.gov/publications/state-of-the-science-2016>

5 RECOMMENDATIONS AND ACTIONS

This section provides recommendations to support good practice in wave and tidal stream consenting in Wales. For each recommendation, corresponding actions are suggested, and key considerations detailed.

The recommendations and actions are based on:

- Stakeholder views and experience provided throughout this study;
- Discussions at the consenting meetings in July 2019 coordinated by Marine Energy Wales attended by representatives of industry, NRW and Welsh Government; and,
- Experience and expert opinion from the Project Team based on extensive experience of the marine energy sector and consenting in the UK and overseas.

Case studies to provide some further illustration around these recommendation and actions are provided in Appendix A. It is not suggested that these case studies should be replicated exactly to deliver the recommendations and actions, but they may be useful as reference points in their implementation.

Recommendation 1: Where appropriate, the focus of evidence gathering should shift from pre-application, baseline survey to post-consent monitoring as a proportionate and effective mechanism for managing risk and uncertainty. The use of carefully managed deployments with integrated monitoring and project phasing as adaptive management tools to deliver a shift in focus should be formalised.

ACTION 1: Production of Wales-specific guidance or policy statement that formally adopts the use of adaptive management¹⁶ to address risk and uncertainty in consenting for marine energy projects, thereby removing the current emphasis on pre-application evidence.

Further considerations:

- Wales National Marine Plan implementation guidance could be a mechanism for delivering steer and guidance.
- Information should only be requested at pre-application where it is needed to make a decision and will have a material influence on the decision outcome.
- NRW 'proportionality' workstream should provide a mechanism for formalising the use of adaptive management and ensuring proportion in pre-application evidence requirements.
- Deploying or phasing projects with integrated monitoring may not always be the right approach, taking such an approach will depend upon the nature of a particular project.

Recommendation 2: Environmental Impact Assessment should be used more effectively and proportionately as a tool to inform consenting. Scoping should enable retiring or 'scoping down' of issues based on an appropriate depth of evidence wherever possible.

ACTION 2: Undertake formal review of tools and guidance (e.g. IMPACT tool) developed by Marine Scotland for use in EIA to establish whether appropriate for marine energy projects in Wales.

Further considerations:

- NRW and Marine Scotland Licensing Operations Team / SNH have established communication channels for experience sharing, which could help deliver this action.
- NRW 'proportionality' workstream should provide a mechanism for achieving proportionate EIA and clarity on depth of evidence required.
- Scoping is a non-statutory developer-led stage in consenting which should be afforded appropriate priority and focus by competent experts to achieve proportionate and effective EIA. Scoping out and scoping down issues needs to be adequately supported by evidence setting out why and where issues have been scoped out / down.

¹⁶ Adaptive management has already been used as a tool to manage risk and uncertainty for tidal stream projects in Wales.

Recommendation 3: Develop a strategic evidence programme specifically to de-risk consenting for projects in Wales.

ACTION 3: Welsh Government, NRW and ORJIP OE Secretariat to review status of existing data/understanding of impacts/issues and need for/scope of a strategic evidence gathering programme.

Further considerations:

- A priority task to progress this action is identifying the key issues and uncertainties for the current WEFO projects to inform the development of a strategic evidence programme and a focus on key issues.

Recommendation 4: A consenting “Strategic Advisory Group” is needed to come to a view/position on key technical consenting issues. The group should include eNGOs, NRW technical specialists and invited experts.

Action 4: Explore scope to modify the Terms of Reference for the Marine Energy Wales Consenting Group to provide consenting Strategic Advisory Group function.

Further considerations:

- A consenting Strategic Advisory Group could provide a collaborative forum to find solutions to key consenting challenges and assist in the delivery of Welsh Government Policy and Ministerial ambitions for MRE.
- The immediate focus for the SAG should be to prioritise action on key technical consenting issues related to WEFO funded projects.
- NGOs should be integral members of any consenting group where appropriate, so that their views and input can be sought on relevant key issues.
- Establishment of such a group should not detract from a clear focus on the timely delivery of consenting against WEFO funded projects.

Recommendation 5: Greater transparency is required on how socio-economic and carbon emission reduction benefits of marine energy projects are incorporated into and influence consent decisions.

ACTION 5: Engage with Welsh National Marine Plan team to ensure marine plan implementation guidance clearly sets out the process for considering socio-economic and carbon reduction benefits in marine decision making (see GEN2 and GEN3 from Scottish Marine Plan and specific para 4.8 (below)).

Further considerations:

- Excerpt from Scottish Marine Plan: para 4.8 *The economic benefit of proposed development and use should be considered carefully and taken into account, appropriately and proportionately, in marine decision making.*
- The First Minister was clear following the July consenting meetings that Wales is in a ‘climate emergency’ and that consent decisions for renewables must take account of this.
- Implementation guidance for the WNMP has a key role and should steer decision makers to taking a solutions-based approach using flexibility and adaptive management to meet requirements of environmental legislation whilst enable socio-economic or carbon reduction benefits to be realised where appropriate.

Recommendation 6: Industry and NRW need to work collaboratively to understand roles and responsibilities in enabling timely and proportionate advice and decisions for projects accessing WEFO grants.

ACTION 6: Heads of Terms / Memorandum of Agreement to be developed setting out industry and NRW measures to ensure consenting does not unnecessarily risk WEFO project milestones.

Further considerations:

- ERDF ring-fenced for marine energy needs to be fully committed by December 2023 at the absolute latest. There is no flexibility in this deadline. Focussed support for consenting for those projects that have been or will be awarded ERDF is crucial and should take priority.
- The Strategic Advisory Group (Recommendation 4) could be a delivery mechanism for this action.

Recommendation 7: NRW needs to be appropriately resourced to deliver Welsh Government’s marine energy priorities. This means having the right expertise, capacity and culture to take a solutions-based approach to delivery of its MRE consenting functions.

ACTION 7: Welsh Government and NRW to identify specific details of areas where more resource is needed, with input from industry if required.

Further considerations:

- NRW has restructured to create a new all-Wales Marine Operations Service to streamline delivery of advice on MRE projects. This combined with the proportionality workstream should provide some benefits.
- Experience sharing with MS-LOT and SNH should help identify key additional resource needs.

Options for providing additional resource in NRW should consider building capacity, confidence and knowledge to deliver benefits in WEFO timeframe (see Recommendation 6). For example, seconding experienced individuals from other organisations has been used by Marine Scotland to secure expertise and build capacity in key areas.

Recommendation 8: Industry and NRW need to work collaboratively to understand how to best share evidence collected from monitoring of deployed technologies, wherever possible, to collectively de-risk the consenting process.

ACTION 8: Develop a protocol for sharing and disseminating learning and evidence from post-installation monitoring programmes.

Further considerations:

- Commercial sensitivity can act as a constraint to sharing evidence and experience. Mechanisms for sharing information without compromising commercial interests or Intellectual Property Rights should be explored.
- The protocol should include consideration of the needs of the consenting process and how independent review and scrutiny of monitoring outputs could support de-risking.

A key output from the consenting meetings in July 2019 was agreement that an Action Plan be developed and progressed collaboratively by Welsh Government, NRW and industry to take forward this work area. The recommendations and actions set out above will inform considerations in developing an action plan. Some further recommendations specifically relating to progressing the Action Plan and its governance and management are provided below.

Recommendation 9: Governance of the Welsh Consenting Action Plan should be agreed to provide clarity on roles and responsibilities.

ACTION 9: Welsh Government, NRW and industry to agree overall governance and management for the Welsh Consenting Action Plan.

Further considerations:

- Agree Terms of Reference / Heads of Terms for the Action Plan (noting that there is scope for including or combining with actions under Recommendations 4 & 6)
- Regular monitoring and reporting of progress will maintain momentum and highlight any issues or problems.
- ORJIP OE secretariat could play independent role in administering the process and maintaining momentum.

Recommendation 10: A first draft of the Action Plan should be produced as soon as possible to maintain momentum. This should include a monitoring and reporting strategy and the focus should be on prioritising shorter-term actions to help guide consenting related to WEFO funded project.

ACTION 10: First draft to be produced and agreed by WG, NRW and industry by the end September 2019.

Further considerations:

- Action Plan to be informed in first instance by this report and outputs from July 2019 meetings.
- The consenting strategic advisory group should identify short, medium and longer-term priorities as part of establishing a focussed action plan.

6. CONCLUSIONS AND NEXT STEPS

This report documents a comprehensive review of challenges and opportunities related to the consenting of wave and tidal stream energy in Wales. This has been informed by engagement with a wide range of stakeholders, and discussions at a series of consenting-focused meetings in July 2019 coordinated by Marine Energy Wales and attended by representatives from industry, NRW and Welsh Government. Recommendations and associated actions have been identified to be taken forward within an Action Plan framework that will report directly to the Welsh Minister for Environment, Energy and Rural Affairs.

The importance of the marine energy sector to Wales was fully recognised by all participants in the study. There was a consensus and commitment amongst all participants to work collaboratively to support the sustainable growth of this industry. In relation to regulatory and advisory bodies, this has to be delivered within the framework of their existing roles and responsibilities. It was recognised that there is scope to further support the consenting process for wave and tidal stream projects in Wales. It was also recognised that there is a shared responsibility across all stakeholders to achieve this and deliver the solutions and improvements identified.

This study and the July 2019 consenting meetings have highlighted a clear commitment from Welsh Government, NRW and industry to work together collaboratively and proactively to deliver improvements to the consenting process. A collaborative Action Plan has been identified as the framework for developing, implementing and monitoring progress. This report and in particular the recommendations and associated actions can now be used to inform the development and implementation of this Action Plan. Maintaining momentum through collaboration and good communication will be key to progressing and delivering on this Action Plan and the Welsh Government's marine energy priorities.

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APPENDIX A CASE STUDIES

A.1 MEYGEN: USE OF DEPLOY & MONITOR AND STRATEGIC ENABLING RESEARCH

Relevant recommendations:

Recommendation 1: Where appropriate, the focus of evidence gathering should shift from pre-application, baseline survey to post-consent monitoring as a proportionate and effective mechanism for managing risk and uncertainty. The use of carefully managed deployments with integrated monitoring and project phasing as adaptive management tools to deliver a shift in focus should be formalised.

Recommendation 3: Review key consenting issues and develop a strategic evidence programme specifically to de-risk consenting for projects in Wales.

Detail of case study:

Below is an excerpt from the MeyGen Project's Consent decision letter. It details how the staged implementation of the Project was addressed in the Electricity Act section 36 Consent. It clearly sets out that future stages of the development beyond Stage One could not proceed without environmental monitoring of the installed turbines:

"Subject to the conditions set out in ANNEX 2 to this decision, the Scottish Ministers GRANT CONSENT under section 36 of the Electricity Act for the construction and operation of the Development, consisting of up to 61 turbines with a permitted capacity of up to 86 megawatts as described in ANNEX 1 and shown on the figure in ANNEX 3.

However, this consent is conditional upon the Company deploying the turbines in stages with Stage One of the Development being limited to a maximum of 6 turbines and with all Subsequent Stages of the Development being subject to the prior written approval of the Scottish Ministers. So as to avoid significant adverse impacts upon the environment, full and detailed monitoring of all the turbines deployed under the consent is required, thus ensuring that the approval by the Scottish Ministers of any Subsequent Stages of the Development is only done in the knowledge of the impact and the implications for the environment of the turbines."

ANNEX 2 conditions:

3. The Development shall be implemented in a staged manner whereby:
 - a) The Company may proceed with Stage One of the Development where all necessary conditions which must, under this consent, be satisfied prior to the Commencement of the Development are so satisfied;
 - b) The Company may proceed with each Subsequent Stage of the Development only: -
 - i. upon satisfying the Scottish Ministers that all necessary conditions which must, under this consent, be satisfied prior to the Subsequent Stage of the Development have been complied with;
 - ii. following application being made by the Company to the Scottish Ministers seeking their approval to proceed with such Subsequent Stage of the Development; and
 - iii. the Scottish Ministers, having considered all relevant information provided to them in connection with the Development including information provided under this consent and following their consultation with SNH, the Scottish Environment Protection Agency, the Maritime and Coastguard Agency, the Planning Authority, Northern Lighthouse Board and any such other advisors as may be required at their discretion, are satisfied that the Subsequent Stage of the Development will have regard to the preservation of the environment and ecology and have provided their written approval to the Company.

Reason: To prevent significant adverse impacts to the environment (in particular harbour seals and Atlantic salmon) by providing for a staged deployment of the Development.

Subsequent to issue of the Project consent, a Project Environmental Mentoring Plan (PEMP) was developed which detailed the environmental monitoring of the Project. This includes the monitoring required to inform the release of Subsequent Stages of the Project (under the section 36 Consent). The PEMP acknowledged that the MeyGen project offered an opportunity for the gathering of strategic monitoring data that would be of use the tidal industry as a whole. The PEMP

also included details of strategic research funded by the Scottish Government that would be conducted alongside the MeyGen-funded monitoring. The PEMP was developed in association with the following two strategic research initiatives:

1. The Scottish Government Demonstration Strategy, a research programme to develop, test and deploy methods for tracking the fine scale underwater movements of marine mammals in areas of marine renewable energy development (Marine Scotland, 2016)¹⁷; and
2. A 2-year Knowledge Transfer Partnership (KTP) with the University of Aberdeen, run by InnovateUK, the remit of which is to transfer and apply the knowledge and techniques developed in the FLOWBEC project (<https://noc.ac.uk/project/flowbec>) for environmental monitoring around tidal turbines to the MeyGen Project.

Some of the interim results of the Project environmental monitoring, specifically the seal tagging data and revised density estimates of seals in and around the Project area, were used to update the harbour seal collision risk assessment for the Project. The results of this work demonstrated an increase in the number of tidal turbines that could be deployed as part of Stage One of the Project could increase from six to eight. Extracts from the written confirmation from Marine Scotland on this is provided below:

"Although the consent granted was for 86MW, the initial stage [Stage One] was limited to a maximum of 6 turbines (only 4 turbines were installed by the developer). Condition 2(b) of the said [Section 36] consent requires the Company [MeyGen] to submit an application for approval by the Scottish Ministers prior to proceeding to each subsequent stage of the above works.

On 3rd April 2017, in accordance with condition 2(b) of the said consent, the Company submitted to the Scottish Ministers an application to proceed with Phase 1(b) of the above works, which consists of a further four turbines, in addition to the four turbines already installed at the development.

In addition, the application used collision modelling to determine if deployment of two turbines in addition to the six turbines presently permitted would result in significant adverse effects on harbour seals. The two models used were Encounter Rate Model ("ERM") and Collision Risk Model ("CRM") with different seal density estimates. The conclusion from the two models predicted that there will be no further impact on harbour seals from the deployment of up to two further turbines in addition to the six presently permitted. This conclusion was also advised by SNH which has allowed MS-LOT to determine the decision to proceed with Phase 1(b) of the above works, which consists of a further four turbines, in addition to the four turbines already installed at the development."

A review of the all environmental monitoring data collected to date (as of September 2019) for the MeyGen Project is underway and will be used to update the PEMP (during late 2019 / early 2020) for the Project.

A.2 HYWIND SCOTLAND AND TORR HEAD TIDAL: BESPOKE AND PROPORTIONATE APPROACH TO PRE-APPLICATION EVIDENCE

Relevant recommendation:

Recommendation 1: Where appropriate, the focus of evidence gathering should shift from pre-application, baseline survey to post-consent monitoring as a proportionate and effective mechanism for managing risk and uncertainty. The use of carefully managed deployments with integrated monitoring and project phasing as adaptive management tools to deliver a shift in focus should be formalised.

¹⁷ Marine Scotland (2016). Scottish Government Demonstration Strategy: Trialling Methods for Tracking the Fine Scale Underwater Movements of Marine Mammals in Areas of Marine Renewable Energy Development. Scottish Marine and Freshwater Science Vol 7 No 14.

Detail of case studies:

Hywind Scotland, 30 MW Floating Offshore Wind Project

The primary aim of the European Seabirds at Sea (ESAS) survey programme developed for the Hywind Scotland Floating Wind Project was to provide data to establish:

- the distribution, abundance and behaviour of birds within the defined survey area; and
- how this changed seasonally.

The survey design was approved by the Joint Nature Conservation Committee (JNCC), Scottish Natural Heritage (SNH) and Marine Scotland (MS) in September 2013, including detail of the layout of the survey design and the reasoning behind it. The survey was designed so that data collected would be suitable for Distance Sampling statistical analysis thereby allowing absolute measures of abundance (with confidence limits) to be estimated for all common seabird species present. A further aim of the surveys was to collect data on flying seabirds suitable for Collision Rate Modelling analyses.

The survey area was covered by 23 parallel transects which took two days' survey time to complete. Alternate transects were surveyed on one day and the other set of alternates on the second day. This regime meant that on each survey day the whole survey area was covered, thereby providing 2 days' effort of the entire survey area during each survey month.

Interim analysis of the data was undertaken following the first 12 months of survey and reported to Marine Scotland and their advisors. There was some uncertainty regarding the breeding colony origins of the guillemots and razorbills present in the survey area in late July and August, and over whether the very high densities of these species recorded in the survey area in August 2013 was a regular occurrence, or an unusual year. In consultation with Marine Scotland their advisors, it was agreed that additional surveys should be undertaken in July to September 2014. These surveys showed that densities in 2014 were on average much lower than in the same months in 2013. It was agreed with Marine Scotland (and their advisors) that further surveys beyond September 2014 were not required to inform the ornithological impact assessment for the Project.

Tidal Ventures Limited, 100 MW Torr Head Tidal Array

Project specific boat-based surveys were commissioned to establish bird use within the Project Agreement for Lease (AFL) area, and the immediate surrounding area, to provide context. The boat-based survey methods were based on European Seabirds at Sea (ESAS) methodology adapted to account for the survey of diving bird species in a tidal environment.

Prior to the surveys commencing, it was agreed in consultation with the Department of Environment Northern Ireland (DoENI) Marine Division that periodic reviews and a final review would be undertaken during and on completion of first 12 months of bird surveys to determine whether a second year of surveys would be required. Based on the results presented in the 9 month interim survey report it was agreed with the DoENI Marine Division that due to the relatively low numbers of birds recorded in the survey area and limited use of the area by diving birds that, subject to confirmation of results from the full 12 months of survey, one years' worth of data would be sufficient to inform the ornithological impact assessment for the Project. Following completion of the 12 months of surveys consultation confirmed no further survey data was required to inform the assessment.

Where the survey sample size was sufficiently large, data recorded during the surveys were used to generate estimates of monthly bird densities. However, due to the generally low numbers of seabirds recorded, it was only possible to do this for two species, guillemot and razorbill. The low numbers recorded for the majority of species reflected the relatively low importance of the Project study area as a foraging area for seabirds. For species that were only present in low numbers survey data were used to provide information on relative abundance and seasonal variation. There were not considered to be any major data gaps regarding the use by seabirds of the Project area.

Overall conclusions

The Hywind and Torr Head examples set out above demonstrate how project developers, regulators and their advisors worked together to determine the appropriate level of survey data required to inform the ornithological impact assessments for the specific projects in question. Both projects were able to generate adequate data to inform the ornithological impact assessments with less than the traditional two year's baseline survey. This avoided unnecessary investment in resources and time gathering further survey data that was unlikely to alter the overall ornithological assessment conclusions or consent conditions.

A.3 WHITE PAPER ON THE USE OF ADAPTIVE MANAGEMENT IN MARINE RENEWABLE ENERGY CONSENTING

Relevant recommendation:

Recommendation 1: Where appropriate, the focus of evidence gathering should shift from pre-application, baseline survey to post-consent monitoring as a proportionate and effective mechanism for managing risk and uncertainty. The use of carefully managed deployments with integrated monitoring and project phasing as adaptive management tools to deliver a shift in focus should be formalised.

Detail of case study:

The WREN (Working Together to Resolve Environmental Effects of Wind Energy) programme was established in 2012 by the International Energy Agency (IEA) Wind Committee to address environmental issues associated with onshore and offshore wind energy. It is run from the US by the National Renewable Energy Laboratory (NREL), the Pacific Northwest National Laboratory (PNNL) and the US Dept. of Energy's Wind Energy Technologies Office (WETO). WREN's primary objective is to facilitate international collaboration and advance understanding of environmental effects of wind energy.

WREN has produced a series of white papers to address common problems facing wind and wildlife interactions and in 2016 published a white paper on adaptive management¹⁸. The paper presents adaptive management in the context of consenting wind energy projects, including:

- the key attributes of adaptive management in relation to wind energy project design and implementation;
- monitoring and evaluation of effects on wildlife;
- adjustment of management requirements; and,
- examples of adaptive management in relation to wind energy around the world including US, United Kingdom, Norway and Netherlands.

The white paper found that of the 16 examples of adaptive management in American wind energy plans, most did not fully meet the definition of adaptive management. There was a high degree of variability in the processes set out to make management decisions about monitoring and management of potential environmental effects. In addition, through targeted interviews with stakeholders in the US, there was a general acknowledgement of the regulatory benefits of the concept of adaptive management, but a level of confusion around the definition and agreed approach. There was felt to be a need for further guidance and tools in the definition and approach to adaptive management.

This paper made recommendations based on the findings which include:

1. Adopt a universal definition of Adaptive Management that is coupled with an agreed set of eligibility criteria and consistent with the regulatory context in which it is being applied.
2. Optimise the spatial and temporal scales over which Adaptive Management is applied for their ability to reduce scientific uncertainty.
3. Let the application of Adaptive Management be guided by the need to minimise undue financial pressure on projects while ensuring that the natural resources of the nation or region are protected.
4. Establish formal processes and structures within national or regional regulatory bodies to make use of environmental impact data from existing projects to generate knowledge that can be applied to the planning and management of future projects.

These recommendations should be considered when applying adaptive management in relation to marine energy projects in Wales.

¹⁸ Hanna L; Copping A; Geerlofs S; Feinberg L; Brown-Saracino J; Gilman P; Bennet F; May R; Köppel J; Bulling L and Gartman V. (2016). Assessing Environmental Effects (WREN): A daptive Management White Paper. Report by Berlin Institute of Technology, Bureau of Ocean Energy Management (BOEM), Marine Scotland Science, Norwegian Institute for Nature Research (NINA), Pacific Northwest National Laboratory (PNNL) and US Department of Energy (DOE). pp 46. <https://tethys.pnnl.gov/publications/assessing-environmental-effects-wren-white-paper-adaptive-management-wind-energy>

A.4 IMPACT TOOL

Relevant recommendation:

Recommendation 2: Environmental Impact Assessment should be used more effectively and proportionately as a tool to inform consenting. Scoping should enable retiring or 'scoping down' of issues based on an appropriate depth of evidence wherever possible.

Detail of case study:

Description from the Marine Scotland webpage on IMPACT¹⁹:

"IMPACT is an online tool that has been produced by Aquatera on behalf of the Scottish Government as one of the outputs from the commissioned study – A Review of the Potential Impacts of Wave and Tidal Energy Development on Scotland's Marine Ecological Environment (Aquatera, 2012²⁰). IMPACT provides direct access to the outputs of this study in an easily searchable and accessible format. This allows users to identify the potential key environmental impacts associated with wave and tidal energy developments and to access guidelines and recommendations for how best to assess, monitor and manage these impacts."

The IMPACT tool can be used to determine the potential key issues of relevance to a project, according to series of input parameters. The outputs include:

- summary and detailed impact assessment results;
- data collection and monitoring guidance;
- explanations of the impact mechanisms that may lead to effects and an indication at which scale of project the effect may be considered significant within the context of consenting;
- full explanations of the potential effects at each phase of the development and which species may be vulnerable to these effects;
- information on how potential effects could be mitigated, managed and / or monitored to reduce uncertainty; and,
- suggestions for strategic research.

The IMPACT tool works to create a consistent, replicable approach to identifying the environmental effects that could result from the deployment of a single device or demonstration array scale wave and tidal stream energy developments. This in turn creates a more consistent approach to monitoring and management of those potential effects to allow for learning and ultimately, reduction in the uncertainty around these potential effects.

The IMPACT tool has been used in the consenting of a number of wave and tidal energy projects in Scotland, facilitating a proportionate approach to impact assessment and consenting for these projects. For example, the tool was used by Nova Innovation to inform the environmental assessment of the extension to their Shetland Tidal Array²¹, enabling the assessment and consent conditions to focus on the key issues identified by the tool. It was also used to inform the Environmental Impact Assessment and consenting programme for the proposed Brims Tidal Array in the Pentland Firth²², enabling a focus from an early stage in the Project on key potential effects.

¹⁹ <http://www.marine-impact.co.uk/index.asp>

²⁰ <https://www2.gov.scot/Resource/Doc/295194/0121070.pdf>

²¹ Nova Innovation (2018). Shetland Tidal Array Extension Environmental Assessment Report. Available at: <https://www2.gov.scot/Topics/marine/Licensing/marine/scoping/NOVA-AdditionalTurbine/MApp-022018/Ext-EA-Report>

²² <https://www2.gov.scot/Topics/marine/Licensing/marine/scoping/BrimsArray>

A.5 UK OFFSHORE RENEWABLE ENERGY LICENSING GROUP

Relevant recommendation:

Recommendation 4: A consenting “Strategic Advisory Group” is needed to come to a view/position on key technical consenting issues. The group should include eNGOs, NRW technical specialists and invited experts.

Detail of case study:

The UK Offshore Renewable Energy Licensing Group (ORELG)²³ was established in 2010 by the Marine Management Organisation (MMO) to provide a forum for knowledge sharing to address the strategic regulatory challenges associated with the consenting of offshore renewable energy projects, including offshore wind and wave and tidal stream.

The overall aim of the group was to provide a forum for regulators, advisers and stakeholders to identify and discuss key consenting issues and encourage knowledge-transfer and sharing of best practice to reduce uncertainty in consenting and ensure that regulatory processes did not in themselves lead to barriers to deployment.

The objectives of ORELG were:

- To take an overview of licensing and permitting processes associated with offshore wind, wave and tidal energy deployment and identify any blockages, delays or shortfalls with a view to remedial action
- To promote clarity, certainty and efficiency of process.
- To examine regulatory processes and particularly, to identify and propose solutions to issues that hamper or create barriers to efficient and timely licensing, in line with governments better regulation agenda. That is, paying particular attention to the five principles of good regulation:
 - Transparency, Accountability, Proportionality, Consistency, Targeting
- To identify any critical knowledge deficiencies together with remedial actions that can be initiated, either by group members, the sector, or escalated to other relevant groups or government departments.
- To engage in dialogue with interested bodies and the renewables sector, including individual developers, as a means to gather evidence of process or knowledge deficiencies.

The original draft Terms of Reference for the Group were as follows:

1. The group does not exist in isolation. It will make full use of links with other groups that deal with topics related to licensing of renewables.
2. The group will operate within the terms of reference established by government policy and focus on activities leading to permit, permit subject to conditions or rejection of proposal for Marine Licences.
3. The group is primarily intended as a vehicle for those bodies with a role to play in licensing activity – either as decision maker or consultee.
4. The group will consider issues affecting successful licensing broadly but will confine its actions to regulatory processes and refer other matters arising to other groups for attention.
5. The group will enter into dialogue with and consider the perspective of the sector, including developers, trade bodies and Crown Estate.
6. The group will take a strategic overview of licensing activity and, where possible, act as a focus to assist members in resource planning.
7. The group will promote structured and proactive pre-application processes.
8. The group will, from time to time, discuss matters on a commercial and in confidence, basis and will retain such information on that basis.
9. The group will operate flexibly with participants’ attendance reflecting topics that are being considered.
10. The terms of reference and focus of the group will be kept under review.

Marine Scotland subsequently took on coordination of ORELG, though membership continued to include stakeholders from across the UK. The group has met periodically since its formation, based on demand and the capacity of Marine Scotland to provide the coordinating role. ORELG membership has varied according to the format of the meetings and the topics being discussed, but has included government organisations, industry and non-governmental bodies. Meetings of ORELG have hosted expert speakers to discuss particular topics based on the key consenting issues and priorities. This has included international speakers from regulatory bodies in Germany, Denmark and the EU.

²³ <https://www2.gov.scot/Topics/marine/Licensing/marine/scoping/orelg>

At an ORELG meeting in 2017 the role of the group was reviewed, to consider the possible value in its continuation and future priorities. Two areas were identified where it was considered the group had been of particular value:

1. Providing a forum for regulators, advisors, government departments and stakeholders involved with the deployment of offshore renewable energy development to discuss the regulatory challenges associated with construction, operation and decommissioning. However, it was noted that resolving these issues and risks had been more challenging for the group.
2. Providing a forum to share good practice and encourage knowledge transfer to maximise the evidence base for offshore renewables.

ORELG could provide a useful model to consider in relation to the establishment of a Strategic Advisory Group in Wales.

A.6 INCORPORATION AND INFLUENCE OF CARBON REDUCTION AND SOCIO-ECONOMIC BENEFITS IN CONSENT DECISIONS.

Relevant recommendation:

Recommendation 5: Greater transparency is required on how socio-economic and carbon emission reduction benefits of marine energy projects are incorporated into and influence consent decisions.

Detail of case study:

The excerpts detailed below have been taken from the Electricity Act section 36 consent decision letter for the MeyGen Project issued by Marine Scotland Licensing Operations Team in 2013 on behalf of Scottish Ministers. They illustrate how carbon emission reduction, renewable energy generation and socio-economic targets and policies have been considered within and influenced the consent decision. Full details of the content of the consent decision letter are available on Marine Scotland's website (for link, see Case Study A.1).

Key excerpts from consent decision letter:

The Scottish Ministers consider the following issues material to the merits of the section 36 consent application:

- *The 86 MW Development within the Inner Sound off the north coast could annually generate renewable electricity equivalent to the demand from approximately 42,000 homes. This increase in the amount of renewable energy produced in Scotland is entirely consistent with the Scottish Government's policy on the promotion of renewable energy and its target for renewable sources to generate the equivalent of 100% of Scotland's annual electricity demand by 2020. Scotland requires a mix of energy infrastructure in order to achieve energy security at the same time as moving towards a low carbon economy. Due to the intermittent nature of renewables generation, a balanced electricity mix is required to support security of supply requirements. Scotland has the capability and the opportunity to generate a level of electricity from renewables by 2020 that would be the equivalent of 100% of Scotland's gross electricity consumption. This does not mean an energy mix where Scotland will be 100% reliable on renewables generation by 2020; but it supports Scotland's plan to remain a net exporter of electricity.*
- *The Scottish Ministers aim to achieve a thriving renewables industry in Scotland, the focus being to enhance Scotland's manufacturing capacity, to develop new indigenous industries, and to provide significant export opportunities. The Scottish Ministers have considered material details of how this proposal can contribute to local or national economic development priorities.*
- *The Development will lead to the creation of a number of both temporary and permanent jobs.*
- *The Development could also provide opportunities for the involvement of local, regional and Scottish suppliers in a range of activities, including research and development, design, project management, civil engineering, component fabrication/manufacture, installation and maintenance. The Development has the potential to generate positive spin-off effects in terms of the development of the renewables sector in Caithness and the Northern Isles as well as the Highlands, and more generally in Scotland.*