

The Race to the Water for Offshore Renewable Energy: Assessing Cumulative and In-combination Impacts for Offshore Renewable Energy Developments

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ABSTRACT

Wind, wave and tidal energy are widely regarded as being the ‘good guys’ in energy production for their carbon neutral qualities. However, lurking in the shadow of this good reputation is the uncertainty about the impacts that this new technology will have on the marine environment. It could cause a potential conflict between carbon-neutral energy production and the protection of habitats, and the prevention of biodiversity loss. This article presents empirical data collected from three case studies in England and Scotland. This research indicates that the disjointed nature of the consenting processes for offshore renewables does not encourage full assessment of the cumulative impacts of offshore renewable developments as required by European Union environmental impact assessment legislation. The article identifies elements of the consenting processes, which fail to provide a full assessment of cumulative and in-combination impacts, and recommends changes to these processes in England and Scotland.

KEYWORDS: Offshore renewable energy, cumulative impacts, EIA, the Crown Estate

1. INTRODUCTION

As an infinite resource which does not contribute towards carbon emissions, offshore renewable energy has been promoted and encouraged at international, European Union (EU) and national levels.¹ Whilst the environmental benefits of producing green energy often present at the fore of political debates, one could be forgiven for

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1 European Commission, ‘A Strong European Industrial Base Backing Renewables is Essential to Support the Clean Energy Transition’ (*News*, 11 January 2018) <https://ec.europa.eu/info/news/strong-european-industrial-base-backing-renewables-essential-support-clean-energy-transition-2018-jan-11_en> accessed 31 August 2019; Council Directive 2009/28/EC of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (2009 Renewable Energy Directive); Commission, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM (2014) 15 final. A policy framework for climate and energy in the period from 2020 to 2030.

placing offshore renewables firmly in a category of technologies that are ‘good’ for the environment²—standing opposite to fossil fuel mining for energy generation. However, one must not rush to the assumption that because of this, offshore renewables cannot be ‘bad’ for the environment in other ways.³ In order for offshore renewable energy to generate a sufficient output, it must be constructed on an area of seabed affected by the specific natural element required for the technology to generate energy, whether it is wind, wave or tidal currents. However, such an area of seabed may also provide a dynamic and unique environment for certain species of flora and fauna, and sensitive habitats to thrive. While experts are still developing a definitive understanding of what conditions make a perfect site for offshore renewable energy generation, and what conditions are required for certain species and habitats to thrive, there is evidence available to suggest that these two critical needs can detrimentally affect one another.⁴

This article engages with these two contrasting narratives—namely balancing the need for carbon-neutral energy production with the need to protect and preserve the existing marine environment. It will focus on the law’s embrace of offshore renewable energy and will contend that the disjointed nature of the consenting processes for offshore renewables in England and Scotland, combined with the speed at which this industry has developed, means that the full assessment of cumulative and in-combination impacts is being neglected. In the field of offshore renewables, there is a growing collection of academic commentary outlining the various environmental and planning challenges that are facing the industry.⁵ Additionally, a range of commentary is available on the topic of cumulative impact assessment and strategic environmental assessment (SEA).⁶ By using this commentary as a basis for analysis, this

- 2 Discussions of the environmental benefits of offshore renewables are often dominated by the carbon neutral qualities of this source of energy production. For a more varied illustration of environmental benefits of offshore renewables, see eg: Stephen Mangi, ‘The Impact of Offshore Wind Farms on Marine Ecosystems: A Review Taking an Ecosystem Services Perspective’ (2013) 101 Proc IEEE 999; Brian Snyder and Mark Kaiser, ‘Ecological and Economic Cost-Benefit Analysis of Offshore Wind Energy’ (2009) 34 Renew Energy 1567; Joseph Appiott, Amardeep Dhanju and Biliana Cicin-Sain, ‘Encouraging Renewable Energy in the Offshore Environment’ (2014) 90 Ocean Coast Manage 58.
- 3 An overview of the negative environmental impacts of offshore renewables can be found in the above-mentioned articles: Mangi, *ibid*; Snyder and Kaiser, *ibid*.
- 4 For an illustration of the difficulties faced by those who aim to understand how activities such as offshore wind development can impact upon the marine environment, see Monique LaFrance and others, ‘A Comparison of Top-down and Bottom-up Approaches to Benthic Habitat Mapping to Inform Offshore Wind Energy Development’ (2014) 83 Cont Shelf Res 24.
- 5 Karen N Scott, ‘Tilting at Offshore Windmills: Regulating Wind Farm Development within the Renewable Energy Zone’ (2006) 18 JEL 89; Olivia Woolley, ‘Trouble on the Horizon? Addressing Place-Based Values in Planning for Offshore Wind Energy’ (2010) 22 JEL 223; Yvonne Rydin, Maria Lee and Simon Lock, ‘Public Engagement in Decision-Making on Major Wind Energy Projects’ (2015) 27 JEL 139; Chiara Armeni, ‘Participation in Environmental Decision-Making: Reflecting on Planning and Community Benefits for Major Wind Farms’ (2016) 28 JEL 415; Glen Plant, ‘Offshore Renewable Energy Development in the British Islands: Legal and Political Risk’ (2013) 3 Renew Energy L Pol’y Rev 189; Catherine A Caine, ‘The Place of the Rochdale Envelope Approach in Offshore Renewable Energy’ (2018) 20 Env L Rev 74; Alana Barker, ‘Wind Farm Decisions: Tipping the Scales in Favour of Renewable Energy’ (2017) 184 SPEL 131; Maria Lee and others, ‘Decision-Making for Major Renewable Energy Infrastructure’ [2018] JPEL 507.
- 6 Elizabeth A Masden and others, ‘Cumulative Impact Assessments and Bird/Wind Farm Interactions: Developing a Conceptual Framework’ (2010) 30 Environ Impact Assess Rev 1; Bridget Durning and

article fills an important gap in the literature by providing an analysis of the extent to which the consenting processes for offshore renewables provide an adequate assessment of cumulative and in-combination impacts. The findings of this article provide a unique addition to the existing commentary in this area by analysing the results of empirical data collected from stakeholders involved in three offshore renewable energy developments in England and Scotland.

The findings of this article are informed by empirical data collection conducted by the author, whereby stakeholders were asked a series of questions in semi-structured interviews concerning the level of integration of habitat protection into the consenting processes for offshore renewable energy.⁷ These data were collected between 2014 and 2016 from stakeholders involved in the consultation process for three offshore renewable energy developments: the MeyGen Ltd tidal array (Pentland Firth, Scotland), the East Anglia ONE wind farm development (Suffolk Coast, England) and the North West Lewis wave development (North West coast in Lewis, Scotland). The questionnaire contained a range of open and closed questions on the consenting processes for the case study, with which the respondent was familiar. Questions pertained to the selection of the development site, environmental impacts of the development and their mitigation, developer's assessment of cumulative impacts and the environmental protection mechanisms for after the development's decommissioning. The sample of respondents was obtained using purposive sampling. A total of 21 interviews were conducted with an 87.5% response rate amongst decision-makers, developers and interested parties (both statutory and non-statutory).⁸ The respondents were identified through the planning documentation and objection letters for each case study, which had been published online. As agreed during the research project, the identities of all respondents have been protected using a coding system. The final question asked 'do you feel that any changes are required in the regulatory system as a whole to ensure environmental protection in large developments such as offshore renewable energy projects? If so, please elaborate' provided a wealth of data for analysis. The majority of respondents argued that the various elements of the consenting process need to be coordinated to guarantee the appropriate assessment of cumulative and in-combination impacts. The stakeholders' views and concerns led to the determination of the current problems in the assessment of cumulative and in-combination impacts in the consenting processes and to the drafting of recommendations to solve these problems.

Martin Broderick, 'Development of Cumulative Impact Assessment Guidelines for Offshore Wind Farms and Evaluation of Use in Project Making' (2019) 37 *Impact Assess Proj Apprais* 124; Lourdes M Cooper and William R Sheate, 'Integrating Cumulative Effects Assessment into UK Strategic Planning: Implications of the European Union SEA Directive' (2004) 22 *Impact Assess Proj Apprais* 5; Chiara Bragagnolo, Davide Geneletti and Thomas B Fischer, 'Cumulative Effects in SEA of Spatial Plans – Evidence from Italy and England' (2012) 30 *Impact Assess Proj Apprais* 100; Lourdes M Cooper, 'CEA in Policies and Plans: UK Case Studies' (2011) 31 *Environ Impact Assess Rev* 465.

7 Ethics approval was obtained for these interviews from Newcastle University Ethics Committee in 2013.

8 The planning authorities constituted 14% of the respondents, developers 10% and interested parties 76% (25% statutory consultees and 75% non-statutory).

Throughout this article, cross-references will be made to the empirical data previously collected.⁹

The article will be structured by beginning with a critical discussion of the rapid evolution of offshore renewables to provide an understanding of the speed at which this industry has developed to date. The article will then turn to analyse the extent to which the assessment of cumulative and in-combination impacts currently takes place in the consenting processes. The following section will then provide an analysis of four critical barriers to cumulative impact assessment in the consenting processes for offshore renewables. These are the Crown Estate site leasing process, the use of the 'Rochdale Envelope' approach, the implications of the financial contract for difference (CfD) process and the problems caused by how data are collected and shared amongst developers. Following this analysis, the article will conclude with five recommendations aimed at improving the assessment of cumulative and in-combination impacts that are undertaken for offshore renewables in England and Scotland.

2. THE RAPID RISE OF OFFSHORE RENEWABLE ENERGY IN THE UK

Much has changed in almost 20 years since the UK's first offshore wind farm began operating in Blyth in 2000. The consenting process for offshore renewables has significantly evolved in England and Scotland along with amendments to the environmental impact assessment regulations.¹⁰ Many political leaders have influenced the development of the sector through incentives for development such as financial rewards,¹¹ as well as cutting back financial aid in other sectors.¹² To add to this, in recent years, the offshore renewables industry has taken a great stride forward by

9 The research data supporting this publication are provided as supplementary information. The full responses referred to in this article can be viewed on the following website: <<https://racetothe.water.blog>> accessed 31 August 2019.

10 Details of the current consenting processes for offshore renewables in England and Scotland can be found in Section 2.1.1 below. Key evolutions in the processes include the introduction of the development consent order process, as introduced by the Planning Act 2008, and the changes that have been implemented as a result of the creation of the Crown Estate Scotland in 2017. Environmental impact assessment regulations have also been amended a number of times since 2000 as a result of the following Directive amendments: Directive of the European Parliament and of the Council 2003/35/EC of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC [2003] OJ L156/17; Directive of the European Parliament and of the Council 2009/31/EC of 23 April 2009 on the geological storage of carbon dioxide and amending Council Directive 85/337/EEC, European Parliament and Council Directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC, 2008/1/EC and Regulation (EC) No 1013/2006 [2009] OJ L140/114; Directive of the European Parliament and of the Council 2014/52/EU of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment [2014] OJ L124/1 (the 2014 EIA Directive).

11 For an overview of the various sources of financial assistance that are available to offshore wind farm developers, see: HM Government, 'Overview of Support for the Offshore Wind Industry' (June 2014); Department for Business, Energy & Industrial Strategy, 'Government Confirms up to £557 Million for New Renewable Energy Projects' (*News*, 11 October 2017) 557.

12 Terry Macalister, 'Marine Energy Budget Slashed Despite PM's Pledge of Support' *The Guardian* (London, 6 July 2011).

developing new technology which provides a more efficient output.¹³ However, while all of this development has been taking place, one area of understanding that has not received particularly noteworthy growth or funding is the understanding of the marine environment and the consequences that human actions have on it.¹⁴ As developments grow larger and areas of the seabed are leased to developers more frequently, it is essential for nature conservation purposes that consenting processes are able to provide careful consideration to the cumulative and in-combination impacts of developments.

The number of offshore renewable developments in England and Scotland has dramatically increased since the Crown Estate announced the first leasing round for offshore wind developments in 2001. In this round, development was initially slow despite the availability of capital grants.¹⁵ The second round of offshore wind farms was proposed in 2003; however, as Trinick explains, this round was delayed by the introduction of the Strategic Environmental Assessment Directive.¹⁶ In order to ensure that the requirements of SEA were fulfilled, no Round two sites were awarded to developers until a SEA had been undertaken. The size of Round two leases was noticeably more substantial than those in Round one with a total capacity of 7.2 GW awarded in Round two compared to the 1.5 GW awarded in Round one. In addition to the increase in size, Round two sites were also pushed slightly further offshore due to the requirement that Round two sites must not be placed within 8 km of the shoreline.¹⁷ Following significant amendments to the consenting procedures in England for large-scale infrastructure projects, Round three leasing zones were released in 2009.¹⁸ Of all of the rounds listed for offshore wind, a low number of seabed zones were leased for offshore wind in Scotland between Rounds one and three, with no sites in Scotland offered at all in Round two.¹⁹ However, following the devolution of Crown Estate powers in 2017,²⁰ preparations for a new offshore wind

13 Energy generation from wind, eg, has seen exceptional growth in recent years and is argued to be one of the most economical sources of electricity. However, Artigao and others contend that maintenance challenges continue to press for wind technology: Estefania Artigao and others, 'Wind Turbine Reliability: A Comprehensive Review Towards Effective Condition Monitoring Development' (2018) 228 *Appl Energy* 1569.

14 For example, Taormina and others argue that despite using submarine cables since the 19th century, significant knowledge gaps remain regarding the impact of electromagnetic fields on marine species. Bastien Taormina and others, 'A Review of Potential Impacts of Submarine Power Cables on the Marine Environment: Knowledge Gaps, Recommendations and Future Directions' (2018) 96 *Renew Sust Energy Rev* 380.

15 Marcus Trinick, 'Green on Green: Planning for Wind Energy' [2006] *JPL Dec Supp* 89, 93.

16 *ibid* 94; Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment [2001] *OJ L197/30* (the SEA Directive).

17 Trinick (n 15) 94; Crown Estate responsibility to lease areas of seabed beyond territorial waters was provided by the Energy Act 2004, s 84.

18 The third offshore wind leasing round consisted of the nine following sites: Moray Firth, Firth of Forth, Dogger Bank, Hornsea, East Anglia, Rampion, Navitus Bay, Bristol Channel and Celtic Array.

19 Out of the leasing-rounds, the following developments have been leased in Scotland: the Robin Rigg offshore wind farm and the Beatrice demonstration site were leased in round one, followed by the Moray Firth and Firth of Forth sites in round three, and an isolated lease for the world's first floating offshore wind farm, Hywind floating wind farm.

20 Crown Estate Transfer Scheme 2017 SI 2017/524.

leasing round in Scotland are currently underway with an anticipated launch date of October 2019.²¹ Also, talks are currently taking place for a fourth offshore wind leasing round to take place in England and Wales.²²

While up until now, Scotland's seabed leasing for offshore wind may have hidden in the shadows of the many leasing opportunities available in England, the same cannot be said for wave and tidal energy—a sector where Scotland is a world leader. For wave and tidal energy, there have been several leasing rounds released around the UK, mainly focused in Scotland.²³ However, despite the apparent boom in support for wave energy, the industry was hit with financial problems shortly afterwards. Towards the end of 2014, one of the leading renewable energy firms specialising in wave energy, Pelamis Wave Power, announced that it had entered into administration due to its inability to secure the necessary funding for its wave development.²⁴ This was shortly followed by another wave energy developer, Aquamarine Power Limited, announcing that it was to downsize a month later.²⁵ In October 2015, Aquamarine Power Limited also entered into administration.²⁶ The North West Lewis wave development that had successfully obtained planning permission at the hands of Aquamarine Power was not constructed as a result. This setback for the wave industry provides a reminder that while the offshore renewables sector is capable of making booming advancements, it is also highly reliant on financial backing from the government. This reliance is argued to be problematic for the assessment of cumulative and in-combination impacts in Section 3.2.3 below.

Notwithstanding the struggles faced in the wave industry, the abovementioned rise in offshore renewables demonstrates that much activity has taken place in a short period. This has ranged from the rapid increase of offshore wind turbines resulting in reduced cost; to the progress made by the MeyGen Limited tidal array in the Pentland Firth which has been heralded as being the first of its kind in the world. This growth has primarily been incentivised in the UK due to targets from the EU, which require the UK to increase its renewable energy generation by 2020.²⁷ It is contended that this rapid increase in the offshore renewables sector has resulted in several barriers for the full assessment of cumulative and in-combination impacts as outlined below.

21 Crown Estate Scotland, 'Scotland Moves Closer to New Offshore Wind Leasing' (*News*, 31 July 2019) <<https://www.crownestatescotland.com/media-and-notice/news-media-releases-opinion/scotland-moves-closer-to-new-offshore-wind-leasing>> accessed 31 August 2019.

22 Crown Estate, 'Offshore Wind Potential New Leasing' <<https://www.thecrownestate.co.uk/en-gb/what-we-do/on-the-seabed/energy/offshore-wind-potential-new-leasing/>> accessed 31 August 2019.

23 Two competitive leasing rounds were initially put forward for tender in the Pentland Firth and Orkney waters in Scotland and the Rathlin Island and Torr Head area in Northern Ireland. With additional leasing rights released in 2014 for wave and tidal sites across England, Wales, Scotland and Northern Ireland.

24 Victoria Weldon, 'Jobs Threat as Cash Troubles Sink Wave Firm' *HeraldScotland* (Glasgow, 22 November 2014).

25 'Jobs Threat as Aquamarine Power "Downsizes"' (*BBC*, 3 December 2014) <<https://www.bbc.com/news/uk-scotland-scotland-business-30313111>> accessed 31 August 2019.

26 'Aquamarine Power Calls in Administrators' (*BBC*, 28 October 2015) <<https://www.bbc.com/news/uk-scotland-scotland-business-34659324>> accessed 31 August 2019.

27 2009 Renewable Energy Directive (n 1).

3. CUMULATIVE AND IN-COMBINATION IMPACT ASSESSMENT FOR OFFSHORE RENEWABLES

The term ‘cumulative impact’ refers to an environmental impact on a species or habitat from a proposed development combined with at least one other operational development in the area.²⁸ Whereas on the other hand, an ‘in-combination impact’ concerns an environmental impact on a species or habitat from a proposed development, combined with the environmental impacts from other planned developments and projects which are not yet operational.²⁹ Cumulative impact assessment has been regarded as a fundamental element of environmental impact assessment since its inception in 1985.³⁰ Assessment of cumulative impacts for offshore developments is fundamental—particularly for sensitive species that hold a limited capacity for change.³¹ A failure to accurately assess the cumulative impacts of an offshore development can result in catastrophic consequences for sensitive species, should development be awarded consent. One example of a sensitive species that is vulnerable to the cumulative impacts of offshore renewable developments is the harbour porpoise. This was raised as a consideration in the environmental statement for the MeyGen tidal array where it was determined that the potential risk of harbour porpoises colliding with the turbines for the MeyGen tidal array were low due to the low number of species in the area. However, it was recognised by the developer that if similar surrounding developments were to be consented to in future, the cumulative collision risk could become significant enough to affect the potential biological removal rate of the species.³² The failure to adequately consider cumulative impacts of sites at an early stage can result in damaging sites being consented to, potentially leaving less-damaging sites to be rejected later. Additionally, assessment failures in this area can result in delay and rejection for developers.

The assessment of cumulative and in-combination impacts has proven to be problematic for some offshore wind farms, such as the Rampion and Navitus Bay wind farm applications.³³ In both the Rampion and Navitus Bay applications, the cumulative and in-combination impacts of previously constructed developments were

28 Cooper and Sheate (n 6).

29 Renewable UK, ‘Cumulative Impact Assessment Guidelines: Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms’ (June 2013).

30 The requirement to include cumulative impacts was inserted into the first EIA Directive: Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment [1985] OJ L175/40 (the 1985 EIA Directive) annex III.

31 Edward A Willsted and others, ‘Obligations and Aspirations: A Critical Evaluation of Offshore Wind Farm Cumulative Impact Assessments’ (2018) 82 *Renew Sust Energ Rev* 2332, 2333.

32 ‘MeyGen – Pentland Firth: Environmental Statement’ (Scottish Government) s 11.269 <http://marine.gov.scot/datafiles/lot/Meygen/Environmental_statement/Complete%20ES.pdf> accessed 31 August 2019.

33 The Secretary of State’s assessment of this can be found at s 25 of the decision letter at ‘Rampion Offshore Wind Farm Decision Letter’ (Department of Energy & Climate Change) <<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010032/EN010032-001699-Rampion%20Decision%20and%20Statement%20of%20Reasons.pdf>> accessed 31 August 2019. A discussion of the mortality rates used in the Navitus Bay application can be reviewed in the Ava Wood and others, ‘Examining Authority’s Report of Findings and Conclusions’ (The Planning Inspectorate) <<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010024/EN010024-000043-Examining%20Authority%20Recommendation%20Report%20-%20%20Main%20Report.pdf>> accessed 31 August 2019. As per Caine (n 5).

considered based on the figures that had been built. The Rampion application thus considered the impact on Greater Black-Backed Gulls, with decision-makers concluding that when combined with surrounding wind farms, the development would have a significant cumulative impact on the species.³⁴ However, the assessment concluded that the additional mortality would not affect the population in the long term. In the Navitus Bay application, the mortality from earlier projects was recalculated with a higher avoidance rate. The Navitus Bay application was ultimately rejected due to the significant adverse effect that the development would have, and the subsequent interference with a designated World Heritage Site.³⁵

More recently, cumulative and in-combination impact assessment has been problematic for offshore wind farm applications in the Forth and Tay areas, resulting in litigation between Royal Society for the Protection of Birds (RSPB) and Scottish Ministers.³⁶ In the case, the RSPB challenged a consent granted for the construction of four wind farms in the Forth and Tay areas based on the concern for the potential impact and displacement of specific bird species. They claimed that the methodology made no explicit assessment of cumulative effects on protective avian species. On this point, the Lord Ordinary in the Court of Session held that the methodology was flawed, that the decision failed to comply with the Environmental Impact Assessment (EIA) Directive, and that the development consents under the Electricity Act 1989 and the Marine (Scotland) Act 2010 were flawed. This decision was then overturned in the subsequent case of *Royal Society for the Protection of Birds v Scottish Ministers* where it was held that the Lord Ordinary had been incorrect to challenge the methodology used, and subsequently the way in which cumulative impacts had been assessed.³⁷ On this point, it was stated:

Despite paying lip service to the correct legal test for judicial review, the Lord Ordinary has strayed well beyond the limits of testing the legality of the process and has turned himself into the decision-maker. . . He has acted, almost as if he were the reporter at such an inquiry, as a finder of fact on matters of scientific fact and methodology which, whatever the judge's own particular skills may be, are not within the proper province of a court of review. For this reason alone, his decision on this ground cannot be sustained.³⁸

Whilst it has been confirmed in this case that the judicial review process is unable to challenge specific methodologies used by developers, the fact that this case combined with the Rampion and Navitus Bay applications became so focussed on the assessment of cumulative and in-combination impacts provides a cautionary tale to offshore renewable developers to ensure that their assessments are adequate. As more wind farm developments are consented to, and the seabed becomes more

34 'Rampion Offshore Wind Farm Decision Letter', *ibid*, s 5.

35 'Navitus Bay Offshore Wind Farm Decision Letter' (Department of Energy & Climate Change) [29] <<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010024/EN010024-000055-Secretary%20of%20State%20Decision%20Letter%20and%20Statement%20of%20Reasons.pdf>> accessed 31 August 2019.

36 *Royal Society for the Protection of Birds v Scottish Ministers* [2016] CSOH 103.

37 *Royal Society for the Protection of Birds v Scottish Ministers* [2017] CSIH 31.

38 *ibid* [207].

crowded, cumulative and in-combination impacts will rise. It is, therefore, essential to ensure that the consenting process for offshore renewables allows for the adequate assessment of cumulative and in-combination impacts in order to prevent developers from having their applications rejected in future, and to ensure that damaging impacts on the marine environment are not overlooked in the application process. It is argued in the following sections of this article that the consenting processes for offshore renewables in England and Scotland currently fail to provide a full assessment of cumulative and in-combination impacts for two reasons. First, the disjointed consenting process does not guarantee that a full assessment of cumulative impacts is undertaken at a 'national level' of planning. Secondly, the time pressure to meet the targets set by the Renewable Energy Directive,³⁹ combined with the rapid development of the technology, has led to a situation where developers are rushing to obtain consent, using applications with broad descriptions of what their development will entail.

3.1 How are Cumulative and In-Combination Impacts Currently Assessed?

In order to understand how the consenting processes for offshore renewables are hampering the full assessment of cumulative and in-combination impacts, it is first essential to understand who is responsible for such an assessment, and at what stage in the process. The consenting processes for offshore renewables in England and Scotland can be divided into two stages of practical responsibility. These are the national level and the developer level. Under this division of practical responsibility, national responsibility includes the assessments undertaken before a lease of seabed area is agreed with a developer. This includes SEA of large areas of seabed, and the Crown Estate leasing process which determines suitable areas of the seabed that can be leased. Under the 'developer level' of responsibility, falls the assessments and applications that a developer is required to make before being able to obtain consent to develop on the agreed seabed area. This includes environmental impact assessment, and the relevant consent in England or Scotland depending upon where the development is taking place. It is important to note that whilst a division of responsibility has been used here to show who is practically responsible for conducting such assessments, the overall responsibility of ensuring that environmental impact assessment is carried out lies with the UK as a Member State of the EU. The fact that the consenting processes are split between the state and developer on a practical level is noteworthy, as it is contended below that by delegating the site selection stage of the process to the state, responsibility for the assessment of cumulative and in-combination impacts from EU law should also be transferred to the state. This differs from the process on land, whereby the developer would be fully responsible for such

39 The 2009 Renewable Energy Directive (n 1) set a target for the UK to ensure that the EU fulfilled at least 20% of its total energy needs from renewable energy by 2020. From this, the UK was set a target of ensure that 15% of its energy is produced from renewable sources by 2020. In 2018, the Directive of the European Parliament and of the Council 2018/2001 of 11 December 2018 on the promotion of the use of energy from renewable sources [2018] OJ L328/82 revised the overall EU target and raised it to 32% by 2030.

an assessment. The following overview provides a critical discussion of the ‘national’ and ‘developer’ stages of the consenting process, and analyses the extent to which cumulative and in-combination impacts are currently assessed.

3.1.1 SEA

The national level begins with the EU requirement of SEA.⁴⁰ This stage requires the creation of an environmental report which highlights the significant environmental effects of a plan or programme. In the case of offshore renewables, the UK has chosen to assess large areas of the UK seabed for its suitability for the construction of offshore renewables. The environmental report is subject to consultation, which leads to the creation of a statement summarising the environmental considerations resulting from development in the specified area, along with provisions to monitor the significant environmental effects that would arise from such development. The aim of this is to identify any unforeseen environmental effects of proposed development and act accordingly. The assessment of cumulative and in-combination impacts at this stage in development planning has been widely discussed in academic literature.⁴¹ However, the focus of this analysis has often been directed at the cumulative effects assessment system in Canada, which has faced significant scrutiny. The introduction of the SEA Directive in the EU in 2001 has resulted in an analysis of the extent to which SEA and strategic assessment are capable of effectively assessing cumulative and in-combination impacts. In 2011, Gunn and Noble contended that cumulative impact assessment was *de facto* assessed at the developer level during environmental impact assessment.⁴² However, many commentators have argued that this should not be the case, providing a robust collective opinion to assert that cumulative impact assessment is better addressed at a strategic (state) level.⁴³ Many reasons have been provided for this assertion, including the need for a proactive assessment of cumulative and in-combination impacts. These include the fact that the state is better equipped to undertake such an assessment, and the fact that market pressures influence government bodies less than developers, thereby

40 The SEA Directive (n 16). This Directive has been transposed in England and Wales through the Environmental Assessment of Plans and Programmes Regulations 2004 SI 2004/1633, and in Scotland through the Environmental Assessment (Scotland) Act 2005 (asp 15).

41 Bram F Noble, ‘Strategic Approaches to Regional Cumulative Effects Assessment: A Case Study of the Great Sand Hills, Canada’ (2008) 26 *Impact Assess Proj Apprais* 78; Larry Canter, Samuel F Atkinson and Barry Sadler, ‘Introduction to a Special Issue on Cumulative Effects Assessment and Management’ (2011) 31 *Environ Impact Assess Rev* 451, 452; Larry Canter and Bill Ross, ‘State of Practice of Cumulative Effects Assessment and Management: The Good, the Bad and the Ugly’ (2010) 28 *Impact Assess Proj Apprais* 261; Jill Gunn and Bram F Noble, ‘Conceptual and Methodological Challenges to Integrating SEA and Cumulative Effects Assessment’ (2011) 31 *Environ Impact Assess Rev* 154; Wanda Baxter, William A Ross and Harry Spaling, ‘Improving the Practice of Cumulative Effects Assessment in Canada’ (2001) 19 *Impact Assess Proj Apprais* 253; Riki Therival and Bill Ross, ‘Cumulative Effects Assessment: Does Scale Matter?’ (2007) 27 *Environ Impact Assess Rev* 365; A John Sinclair, Meinhard Doelle and Peter N Duinker, ‘Looking Up, Down, and Sideways: Reconceiving Cumulative Effects Assessment as a Mindset’ (2017) 62 *Environ Impact Assess Rev* 183.

42 Gunn and Noble, *ibid* 155.

43 *ibid*; Cooper and Sheate (n 6); Bragagnolo, Geneletti and Fischer (n 6); Cooper (n 6); Therival and Ross (n 41).

suggesting that they are better placed to provide an independent and accurate assessment.⁴⁴

In the offshore renewable energy sector, four SEAs have been conducted thus far in England and Wales,⁴⁵ and two have been conducted in Scotland.⁴⁶ An examination of each of these SEAs shows that all have referred to the assessment of cumulative impacts. However, the cumulative assessments provided effectively serve as a list of impacts that will require further assessment and attention as specific developments are proposed. No specific site details are provided at this stage; therefore, potential environmental impacts are assessed at 'local' and 'regional' levels as opposed to individual site levels. For example, the following extract from the non-technical summary of OESEA2⁴⁷ shows how SEA serves to provide recommendations to those who are tasked with selecting the site location:

The SEA recognises that there is uncertainty regarding potential cumulative effects of noise disturbance, and recommendations to address this are outlined above. Displacement, barrier effects and collision risk represent potentially significant sources of cumulative effects to birds (and potentially marine mammals) at a local or regional level but are considered unlikely to be significant to bird populations at a strategic level. The SEA recommends a precautionary approach to facility [sic] siting in areas known to be of key importance to bird and marine mammal populations unless evidence indicates otherwise.⁴⁸

This shows that, at this stage, it is not possible to provide a more accurate assessment of the cumulative and in-combination impacts that will affect each development as the specific development sites have not yet been determined.

3.1.2 *The Crown Estate leasing stage*

The SEA findings, combined with consideration of the relevant National Planning Statements/Plan Frameworks,⁴⁹ are then used by the Crown Estate and Crown

44 Cooper and Sheate (n 6) 7; Therival and Ross (n 41) 371.

45 These are known as Round 2 Wind (R2 Wind), the Offshore Energy Strategic Environmental Assessment (OESEA), the OESEA2 and the OESEA3. The 'R2 Wind' SEA covers the Round 2 offshore wind farm sites in the North West, Greater Wash and Thames Estuary strategic areas. Whereas OESEA, OESEA2 and OESEA3 cover UK offshore waters and territorial waters of England and Wales for a number of activities including: oil & gas, offshore wind, wave and tidal energy, and gas and carbon dioxide storage.

46 In Scotland, two SEAs have been prepared to develop offshore wind and marine renewables (wave and tidal), respectively.

47 OESEA2 (n 45).

48 Department of Energy and Climate Change, 'UK Offshore Energy Strategic Environmental Assessment' (February 2011), xxi.

49 The relevant National Policy Statements (NPS) for offshore renewables in England are: Department of Energy & Climate Change, 'Overarching National Policy Statement for Energy (EN-1)' (July 2011) and Department of Energy & Climate Change, 'Overarching National Policy Statement for Renewable Energy Infrastructure (EN-3)' (July 2011). In Scotland, the following Initial Plan Frameworks have been created for offshore renewables: The Scottish Government, 'Offshore Wind Energy in Scottish Waters – Initial Plan Framework' (August 2012); The Scottish Government, 'Wave Energy in Scottish Waters Initial Plan Framework' (August 2012) and The Scottish Government, 'Tidal Energy in Scottish Waters – Initial Plan Framework' (August 2012).

Estate Scotland to determine which areas of seabed should be leased to developers. Until 1 April 2017, the Crown Estate was the owner of almost the entirety of the seabed within the territorial waters of England and Scotland. This ownership gave the Crown Estate the right under the Energy Act 2004⁵⁰ to issue licences for offshore renewable energy within the UK Renewable Energy Zone. However, following recommendations from the Smith Commission Report, the Scottish functions of the Crown Estate were transferred to a newly formed body known as Crown Estate Scotland.⁵¹ It is contended that Crown Estate and Crown Estate Scotland ownership of the seabed is a critical feature that sets marine development apart from terrestrial development. This is particularly the case with regards to the assessment of cumulative and in-combination impacts as the assessment process is started at a national level and then passed over to individual developers to continue. This is unlike the system on land whereby the developer takes full responsibility for the assessment of cumulative and in-combination impacts.

When selecting seabed areas to be leased for Round three offshore wind developments, the Crown Estate used a two-stage process comprising of the 'zone appraisal process' and 'zone characterisation'. Guidance on this process affirms that it is not possible for the developer to consider alternative development sites after they have leased the seabed zone from the Crown Estate, as they are obliged to develop within their leased area.⁵² This effectively means that the Crown Estate also needs to conduct a thorough assessment of the cumulative and in-combination impacts that may occur at each potential leasing zone before offering the lease to the developer. However, the following statement from Crown Estate guidance confesses that:

The resolution of [Zone Characterisation] ZoC could be lower than for an EIA baseline, that should be sufficient to provide developers with sufficient understanding to guide the way in which the zone is developed, as well as an indication of the main constraints on development and an understanding of the best way of managing these constraints.⁵³

This shows that the information analysed at this stage in the process does not necessarily have to be of EIA baseline standard.⁵⁴ This effort to consider cumulative impacts by the Crown Estate arguably challenges the EIA Directive's requirement to

50 Energy Act 2004, s 84. For an analysis of how this provision was developed, refer to Glen Plant, 'Offshore Renewable Energy Development and the Energy Bill' [2004] JPL 868, 870–79.

51 s 36 Scotland Act 2016 (asp 11) inserted s 90B into the Scotland Act 1998 (asp 46) requiring such a transfer to take place. The Crown Estate Transfer Scheme 2017 SI 2017/524 then put this transfer into effect.

52 The Crown Estate, 'Round 3 Zone Appraisal and Planning: A Strategic Approach to Zone Design, Project Identification and Consent' (7 May 2010).

53 *ibid* 12.

54 A baseline study is an important element of environmental impact assessment as it requires that all relevant information regarding the current environmental status of the area in question is collected. This then allows future development to be measured against the baseline. For further details about how the EU recommends carrying out a baseline assessment, refer to European Commission, 'Environmental Impact Assessment of Projects Guidance on the Preparation of the Environmental Impact Assessment Report (2017).

consider the cumulative impacts of development.⁵⁵ By disabling the developer from considering alternative site locations, the Crown Estate is effectively taking responsibility for the obligation to consider alternative sites. However, as the consideration provided at the zone characterisation stage does not necessarily have to be of EIA baseline standard, there is a chance that cumulative or in-combination impacts may not be discovered as a result of the lower baseline standard used in the Crown Estate's leasing procedure. This, therefore, means that the current consenting process could potentially fail to satisfy the EIA Directive's requirement to consider the cumulative impacts of offshore renewable developments in the UK.⁵⁶

Crown Estate guidance notes that an effective zone characterisation should provide a 'detailed understanding of the potential cumulative and in-combination effects relevant to the zone, allowing the appropriate mitigation to be designed into the zone development plans'.⁵⁷ The Crown Estate's Zone Appraisal process for Round three shows an increased willingness to consider cumulative and in-combination impacts during the leasing round stage. This is alluded to within the Crown Estate's guidance, where it is noted that:

A broad understanding of zone-wide cumulative effects issues should ideally be developed in conjunction with stakeholders before Projects are brought forward for consent this would allow measures to reduce cumulative effects to be built into project plans at an early stage. However, it is acknowledged that the level of detail regarding the potential for cumulative and in-combination effects will improve throughout the ZoC process as more information and data become available, and this improved understanding will feed into the Zone Planning and Project planning processes.⁵⁸

While this intention to undertake the ZoC stage of the process with an apparent reference to cumulative and in-combination impacts is clear from the Crown Estate, the reality of this taking place is not as absolute. In the guidance issued, the need to meet climate change targets provide a reason as to why the ZoC will not take further responsibility for cumulative effects and in-combination issues:

In some zones, the level of development required within the 2020 timescale will mean that earlier projects are brought forward for consent before the ZoC process is complete. Whilst this means that these projects will not benefit from the detailed understanding of zone-wide consenting issues, information from them can feed into the same strategy as a whole and benefit later projects.⁵⁹

This statement from Crown Estate guidance for Round three offshore wind leasing demonstrates that while the Crown Estate acknowledges the need to assess

55 Directive of the European Parliament and of the Council 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment [2011] OJ L26/1 (as amended) ('the 2011 EIA Directive'), annex IV, s 5.

56 *ibid.*

57 The Crown Estate (n 52) 14.

58 *ibid* 14.

59 *ibid* 14.

cumulative impacts, there are currently obstacles which are preventing them from doing so. It is contended that a combination of time pressures on the industry from the 2020 renewable energy targets, combined with the fact that developers have traditionally been responsible for this type of assessment, has meant that the Crown Estate has not taken full responsibility for assessing cumulative and in-combination impacts. This was raised as a critical concern during the empirical data collection and will be discussed in greater detail in Section 3.2.1 below.

3.1.3 *Environmental impact assessment*

Once the site lease has been agreed between the Crown Estate/Crown Estate Scotland and the developer, the application then passes to the 'developer level'. At this stage, the developer is obliged to apply for various consents according to the size and location of their development, ie whether this falls within waters in England and Wales, or Scotland, and whether the development falls within territorial waters or the exclusive economic zone. In England and Wales, the principal consents required for development between 1 and 100 MW are planning permission for the onshore element of development, and consent under section 36 Electricity Act 1989 for the offshore element as awarded by the Marine Management Organisation.⁶⁰ If the developer wishes, they can apply for deemed planning permission under the Electricity Act, which allows for the onshore element to be considered under the same application.⁶¹ Developments over 100 MW in England and Wales are classed as 'nationally significant infrastructure projects' (NSIP) and therefore require a development consent order from the Secretary of State under the Planning Act 2008.⁶² Developments in Scotland follow a similar consenting process to those between 1 and 100 MW in England and Wales. This consists of planning permission for the onshore element, and consent under section 36 of the Electricity Act 1989 as awarded by Scottish Ministers.⁶³ It is also possible for a developer in Scotland to apply for deemed planning permission to avoid applying for separate permission for the onshore elements of their development.⁶⁴

In addition to the consents as mentioned above, a developer for offshore renewable energy will also need to conduct an EIA for their development as required by European law.⁶⁵ For offshore renewable developments in England and Wales, EIA is a compulsory stage before consent can be granted; however in Scotland, this is subject to screening.⁶⁶ While this leaves scope for developments to be screened out of

60 Town and Country Planning Act 1990, s 57; Electricity Act 1989, s 36.

61 Town and Country Planning Act 1990, *ibid*, s 90.

62 Planning Act 2008, s 114.

63 Town and Country Planning (Scotland) Act 1997, s 28(1); Electricity Act 1989, s 36. The powers under s 36 Electricity Act 1989 were transferred to Scottish Ministers under the Scotland Act 1998 (Transfer for Functions to Scottish Ministers etc.) Order 1999 SSI 1999/1950, s 2 and sch 1.

64 Town and Country Planning (Scotland) 1997, *ibid*, s 57(2).

65 EIA is required under the 2014 EIA Directive (n 10).

66 EIA is compulsory for offshore renewable energy developments in England and Wales through the following legislation: Electricity Works (Environmental Impact Assessment) (England and Wales) Regulations 2017 SI 2017/580, reg 6; Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 SI 2017/572, reg 4. In Scotland, screening is required under Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 SSI 2017/101, reg 6.

the EIA process in Scotland, this has not been the case to date, with offshore renewable developers in Scotland being required to conduct an EIA before consent is granted. The requirement to assess cumulative impacts has been part of the EIA process since its inception in 1985 and features prominently in the most recent amendment to the Directive.⁶⁷ This requires developers to include the following in their environmental statement:

a description of the likely significant effects of the project on the environment resulting from, *inter alia* . . .

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relation to areas of particular environmental importance likely to be affected or the use of natural resources.⁶⁸

This requirement is recognised in academic commentary as being a difficult one to fulfil, and one that is often not adequately addressed at the EIA level.⁶⁹ Maclean and others explain that one of the challenges facing developers in the offshore wind industry is the difficult task of ascertaining a baseline study from which to calculate cumulative impacts.⁷⁰ This issue appears to have been exacerbated in recent offshore renewable leasing rounds, whereby developers are all granted their lease at the same time, resulting in a potential ‘race to the water’ with developers vying to be the first to obtain consent so that the cumulative impacts of surrounding developments do not hinder their application. This issue was raised as a concern in the empirical data collection and is discussed in more detail below in Section 3.2.3.

While academic commentary does not paint cumulative impact assessment at EIA level in a favourable light, an examination of the cumulative impact assessments that were conducted in the three case studies explored in this research did not present any concerns. For example, in the environmental impact statement for the MeyGen Limited Tidal Array, cumulative impacts appear to have been diligently assessed in each section by the developer. This was assessed according to a transparent methodology that was set out at the beginning of the document.⁷¹ In addition, none of the stakeholders who were interviewed in this research made any negative comments with regards to how the developers had assessed cumulative impacts in their environmental statements. While this observation only refers to three offshore renewable case studies, it shows that developers are capable of providing proper assessments

67 The 1985 EIA Directive (n 30); The 2014 EIA Directive (n 10) sch IV. The amendments made to EIA by the 2014 Directive as considered in detail by Kalina Arabadjieva, ‘Better Regulation’ in *Environmental Impact Assessment: The Amended EIA Directive* (2016) 28(1) JEL 159.

68 The 2011 EIA Directive (n 55), annex IV, s 5.

69 Cooper and Sheate (n 6) 7; Helen J Byron and others, ‘Road Developments in the UK: An Analysis of Ecological Assessment in Environmental Impact Statements Produced Between 1993 and 1997’ (2000) 43(1) *J Environ Plann Manage* 71, 81; Therival and Ross (n 41) 384; Ilya MD Maclean and others, ‘Resolving Issues with Environmental Impact Assessment of Marine Renewable Energy Installations’ (2014) 1 *Front Mar Sci* 1, 3.

70 *ibid* 3.

71 ‘MeyGen – Pentland Firth: Environmental Statement’ (n 32) 8-2, s 8.5.

contrary to the assertions made in ageing academic commentary.⁷² However, while the developers in these case studies can be praised for how they have tackled the assessment of cumulative impacts, this does not provide a counterargument for the need for cumulative impacts to be assessed at the Crown Estate leasing stage. The case studies assessed in this research were one of the first of their kind, in either their technology, or in size of the development, and were, therefore, less likely to encounter cumulative impact problems from similar surrounding developments. It may be the case that, going forward, an EIA will flag up cumulative impact issues which cannot be resolved at the developer level. In such an instance, the developer would not be able to relocate their development as they would be bound by the zone that has been leased to them by the Crown Estate.

3.1.4 *Appropriate assessment*

The final hurdle that a developer may have to overcome with regards to assessing cumulative impacts lies with appropriate assessment under the Habitats Directive.⁷³ An appropriate assessment will not apply to all developments; however, it is required for 'any plan or project not directly connected with or necessary to the management of the site (SPA or SAC) but likely to have a significant effect thereon, either individually or in combination with other plans or projects'.⁷⁴ The assessment should predict and highlight the implications that the development will have on the protected area in question and highlight appropriate mitigation for the impacts. If it is found that the development: (1) will have a negative impact on the site; (2) there are no alternative solutions; and (3) the development must be carried out for imperative reasons of overriding public interest, the 'member state shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected'.⁷⁵ If such development falls within the first and second criteria but does not need to be undertaken for imperative reasons of overriding public interest, the application must be refused.

The requirement of appropriate assessment requires the assessment of cumulative and in-combination impacts in the same way that the EIA and SEA Directives do. However, unlike SEA and EIA, an appropriate assessment may not be required for all offshore renewable developments; therefore, this final opportunity to assess cumulative and in-combination impacts on the environment may not be provided to all developments. In addition to this, it is essential to note that appropriate assessment is undertaken towards the end of the developer's application process. Thus, meaning that any cumulative and in-combination issues that are raised at this stage in the development cannot be overcome by the developer simply by relocating their development as they will be bound by the lease awarded to them from the Crown Estate.

72 Refer to above-mentioned commentary in (n 69).

73 Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora [1992] OJ L206/7 (the Habitats Directive).

74 *ibid*, art 3.

75 *ibid*, arts 3–4.

3.2 The Obstacles Facing the Assessment of Cumulative and In-Combination Impacts for Offshore Renewables

From the overview of cumulative and in-combination impact assessment in the consenting processes outlined above, it is clear to see that cumulative and in-combination impact assessment is raised as a consideration at all of the above-mentioned stages of the process. However, while the consenting processes for offshore renewables provide many opportunities for cumulative impacts to be raised and assessed, it is essential to remember that these various consents and assessments all exist with different motivations and aims running behind them. For example, whilst the Crown Estate leasing process takes environmental considerations into account when determining where sites should be located, it is also concerned with the financial reward from offering the lease and will also be mindful of the pressure to construct offshore renewables in order to meet EU renewable energy targets.⁷⁶ In addition to this, it can be argued that where responsibility for one type of assessment falls on many parties without clear boundaries or definition,⁷⁷ the temptation can be to expect another party in the process to take on the burden of assessment. Historically, this responsibility has fallen to the developer through EIA, as cumulative impact assessment has been present in EIA law since 1985.⁷⁸ However, due to the nature of offshore development as opposed to terrestrial, it has been determined by the empirical data in this research that cumulative and in-combination impacts must be fully assessed at a national level, rather than at the developer level. The following subsections will outline four fundamental problems that arise from the current planning processes concerning the assessment of cumulative and in-combination impacts.

3.2.1 Cumulative impact assessment at the Crown Estate leasing stage

As outlined above, the consenting processes for offshore renewables have developed based around the Crown Estate/Crown Estate Scotland's ownership of the seabed, combined with the introduction of EU environmental initiatives such as SEA, EIA and habitat protection laws. Each of these requirements holds their place in the process; however, the results of this research suggest that these separate requirements are not working well together where cumulative and in-combination impact assessment is concerned. The combination of assessments and consenting mechanisms—all of which have different motivations running behind them, mean that inevitably some misalignment of aims will occur.

An excellent example of such a misalignment is apparent when considering the EIA requirement to consider alternative development sites and the need to assess cumulative and in-combination impacts. In 2003, Plant referred to the Crown Estate as a 'landlord' with a debatable role in environmental protection.⁷⁹ On the one hand, is the argument that the Crown Estate has a 'quasi-regulatory role' when granting

76 The 2009 Renewable Energy Directive (n 1).

77 It is argued that poor definitions and boundaries of cumulative impact assessment are to blame for poor cumulative impact assessment of bird and windfarm interactions by Masden (n 6) 2.

78 The 1985 EIA Directive (n 30).

79 Plant (n 50), 955.

marine licences to include environmental conditions. However, on the other hand, it can also be argued that as the primary task of the Crown Estate is to administer Crown land, and they have no responsibility for environmental assessment, environmental protection is not a principal responsibility for them.⁸⁰ Whilst it is important to note that these views were expressed in pre-Planning Act 2008, and the Crown Estate leasing process has undoubtedly changed since this time, the question of the extent to which the Crown Estate is responsible for environmental protection, particularly when considering the assessment of cumulative and in-combination impacts, remains a question without a straightforward answer.

One of the main difficulties in determining responsibility for the assessment of cumulative and in-combination impacts is that, as outlined above, each stage of the process at national and developer level requires such an assessment. These overlapping requirements can lead to a situation where the responsibility is pushed 'further down the line' to the developer, who has traditionally been responsible for them in terrestrial developments. The distinction between EIA and SEA was considered in the case of *Walton v Scottish Ministers* where it was recognised by Lord Reed that 'both Directives impose a requirement to carry out an environmental assessment, but they are different in scope'.⁸¹ However, despite these differences, a report to the European Commission by Sheate and others acknowledges that there are overlaps between the EIA and SEA Directives.⁸² The report recommends that where both Directives apply, the Member State should 'determine how best to coordinate the content of the assessments and decision-making processes, and should consider whether it is appropriate to create a clear differential responsibility for different aspects at different levels'.⁸³ The recommendation continues to state that in situations where an SEA would be better suited to considering alternatives or broad cumulative impacts, it would be sufficient for the Member State to fulfil these obligations at SEA level rather than EIA. It would, therefore, appear to suggest that the Crown Estate taking responsibility for considering alternative sites from the developer is consistent with the spirit of the SEA Directive. However, in doing so, the Crown Estate must ensure that the data used to assess alternative sites and broad cumulative effects are compliant with the standards required by EIA legislation, namely, the need to conduct a baseline study that is of the standard required at EIA level. At present, this does not appear to be the case.

It is noteworthy to mention that in the empirical data collection, the problem of assessing cumulative and in-combination impacts of developments was raised by the majority of respondents.⁸⁴ This is demonstrated in the following quotations:

Interview W6: Once the developer has got a zone, they might have fairly limited information once they actually take on the zone if, as they start their zone appraisal, they do then find that there are particularly sensitive areas. I think

80 *ibid.*

81 *Walton v Scottish Ministers* [2012] UKSC 44 [10].

82 William Sheate and others, 'The Relationship between the EIA and SEA Directives' (European Commission, August 2005).

83 *ibid.* 86.

84 Interview responses can be viewed at <<https://racetothe.water.blog>> accessed 31 August 2019.

one of the concerns might be that it is then almost too late to avoid that area.⁸⁵

Interview S3: [Cumulative impacts were not a problem for this development] however, the difficulty will arise later, when other people come along. The capacity to absorb effects on harbour seals is low because the population is not too happy at the moment; it's decreased a bit. That is the problem that we have stored up for the future, is how we manage further proposals for tidal turbines in that area.⁸⁶

Interview N4: I think the UK and the devolved administrations need to look at the cumulative impact of these developments alongside other activities that are happening at sea, whether that is fishing or military activity and then work out levels of injury and disturbance to marine mammal population.⁸⁷

These responses include a show of empathy for developers who are unable to avoid particular environmental concerns in their seabed area once it had been leased to them. Respondents also highlighted the fact that the problem of failing to assess cumulative impacts at the Crown Estate leasing stage may ultimately mean that less-damaging developments are rejected at a later date as species capacity to tolerate development will have been filled by that point.

3.2.2 *The use of the Rochdale envelope approach in EIA*

Once the Crown Estate has leased a seabed zone to a developer, the application then moves to the developer level as outlined above. As the consenting process can take several years for large and new offshore technologies, the planning mechanism known as 'the Rochdale envelope approach'⁸⁸ is frequently being used by developers in offshore renewables. Derived from case law,⁸⁹ this approach allows developers to describe their project using general parameters that cater to uncertainties at the time of application. So, for example, for an offshore wind farm development, the developer could submit an environmental statement to say that they will use one of three foundation types for each turbine (a gravity-based structure, a drilled monopile or a drilled pin pile). These three foundation types will then form the 'envelope' for the foundation element of that development, and the EIA will assess the best and worst-case environmental impacts for each type of foundation. The 'Rochdale envelope approach' has been advocated as an essential mechanism to cater to technological advancement, and the fact that financing and procurement are dealt with after consent has been

85 Interview W6, England 1 April 2015.

86 Interview S3, Scotland 18 August 2014.

87 Interview N4, Scotland 20 August 2015.

88 This is also known as the 'project envelope' and 'engineering envelope'.

89 *R v Rochdale Metropolitan Borough Council ex parte Tew and Others (Rochdale No 1)* [1999] 3 PLR 74; *R v Rochdale Metropolitan Borough Council ex parte Milne (Rochdale No 2)* [2001] Env LR 22; *R v Rochdale Metropolitan Borough Council (Rochdale No 3)* [2002] WL 31441253.

obtained.⁹⁰ However, despite the widespread use of this planning technique in the offshore renewables industry, very little guidance has been offered by the Infrastructure Planning Commission (now the Planning Inspectorate) in the UK on the use of this approach.⁹¹ This has left developers free to advance the approach to suit their needs.⁹²

From observations of the increased and largely unguided application of the 'Rochdale envelope approach' in the offshore renewables industry, obstacles for the assessment of cumulative impacts arise. As current guidance on the use of the Rochdale envelope is sparse, Lonsdale and others have raised concern that applications are beginning to follow a 'not environmentally worse than approach'.⁹³ This approach arises when a developer uses a 'Rochdale envelope' for various elements of their development, and all of the worst-case scenarios from each envelope are added together to make an overall 'not environmentally worse than' figure/scenario to be assessed. In isolation, this approach may not cause too many issues. However, if numerous developers in one leasing round all use the 'not environmentally worse than approach', this has the potential to provide an incredibly unrealistic outlook of the combined environmental impact of the developments.⁹⁴ This outlook becomes even more unrealistic when assessing the cumulative and in-combination impacts of development if the 'not environmentally worse than' approach is used. The result of this is that later planning applications could be refused as the assessment could unrealistically show that certain species will have already hit their toleration limit based on the worst-case projections submitted by developers.

When asked about the use of the 'Rochdale envelope approach' in the empirical data collection, the majority of respondents referred to the necessary evil of the approach. No respondent felt that the approach should be removed from the process as it was necessary for this fast-expanding industry to provide developers with scope for their application to change according to financial and technological considerations. However, the difficulty of assessing multiple options as a result was raised by respondents. For example, Interview S3 stated, 'it makes it a lot more difficult for us'.⁹⁵ Interview S1 put forward a similar position stating,

'that's quite a difficult one for us because if they're using the Rochdale envelope it means they've got a range of different options . . . so that means they would still need to assess the potential impacts of each of those different scenarios in the assessment. It just means that we have to consider those different impacts as well in our appraisal. So it is better for us if the project can be refined as much as possible when the application is submitted so that our advice can be as detailed as possible'.⁹⁶

90 CA Caine (n 5) 80–81; JA Voormolen, HM Junginger and WGJHM van Sark, 'Unravelling Historical Cost Developments of Offshore Wind Energy in Europe' (2016) 88 *Energ Pol'y* 435; Glen Wright and others, 'Establishing a Legal Research Agenda for Ocean Energy' (2016) 63 *Mar Pol'y* 126.

91 Infrastructure Planning Commission, 'Using the Rochdale Envelope: Advice Note Nine' (February 2011).

92 Caine (n 5) 75–76.

93 Jemma Lonsdale and others, 'The Amended European Environmental Impact Assessment Directive: UK Marine Experience and Recommendations' (2017) 148 *Ocean Coast Manage* 131, 134.

94 Caine (n 5) 84.

95 Interview S3, Scotland 18 August 2014.

96 Interview S1, Scotland 3 August 2014.

3.2.3 *The race to the water*

While the planning process for offshore renewable energy in itself presents difficulties for the assessment of cumulative and in-combination impacts, it is not the only factor that is to blame. Many stakeholders, who were respondents in the empirical part of this research, referred to the consideration of cumulative impacts as a ‘race to the water’. This is essentially the concept that it would be beneficial for a developer to be the first to obtain consent for their development so that they do not need to consider the cumulative and in-combination impacts of similar surrounding developments. One respondent explained that the ‘first come, first served’ nature of the process means that the first developers have the ‘advantage’ of having the available environmental capacity to work with.⁹⁷ However, the knowledge and understanding of the impacts of renewables technology on the marine environment are lower, meaning that mitigation measures provided for in earlier projects may not be as effective as they could be. As a consequence of this, the respondent argued that the ‘first come, first served’ approach has the potential to mean that projects that are more damaging to the environment could be consented to if they apply first, and then later less-damaging developments could be refused as there is not the environmental capacity for them.⁹⁸

To further fuel the race to the water, developers are pitted against each other to compete for financial backing from a process known as the CfD. This process provides financial security for developers who bid for financial backing from the Low Carbon Contract Company.⁹⁹ In order to apply for CfD, developers need to satisfy the set criteria, which include securing the appropriate development consents as outlined above. The CfD application process does not have a flexible deadline to allow developers to make a CfD application after they have taken their time to finish their environmental assessments—one deadline is set for all developers to meet. This often means that developers feel forced to undertake their environmental assessments in a time-pressured manner in order to allow them to apply for CfD. After all, without obtaining the financial backing for the development, the ability of the developer to be able to continue with the development is significantly reduced. Concern for this competitive approach is summarised in the below quotation from the empirical data collection.

Interview S6: Certainly, for offshore wind, they all had to achieve funding. They were trying to get these Contracts for Difference. . . it is so competitive as there is just one pot of money. There is only so much money that is available, and everybody is rushing to get their application in fast, so they are eligible for funding. There is something to be said about the funding mechanism and how that could allay the competition so that it would allow more gradual development of offshore renewables.¹⁰⁰

97 Interview W7, England 14 April 2015.

98 *ibid.*

99 Department for Business, Energy & Industrial Strategy, ‘Contracts for Difference’ <<https://www.gov.uk/government/publications/contracts-for-difference/contract-for-difference>> accessed 31 August 2019.

100 Interview S6, 24 October 2014.

Not only does the CfD application process apply a significant amount of pressure on developers, and those who are consulting upon development proposals, the process also puts significant strain on the ability of all involved to carefully consider the cumulative and in-combination impacts of a development. By imposing a final deadline on developers, assessments can be rushed and the consultees can be swamped, having to look at numerous applications at one time—therefore, reducing their ability to fully assess the environmental impacts of the development in question. Of course, one reason for the pressured deadline for CfD is to meet the EU 20-20-20 targets.¹⁰¹ However, while the consenting process is amended to deal with the rush to secure green energy to slow the impacts of climate change, it is potentially causing damage to the ocean environment that cannot be rectified at a later date.

3.2.4 Data collection and sharing

The final hurdle for the assessment of cumulative impacts is the concern that developers are currently not sharing the information that they are collecting for their environmental assessments. Many respondents raised this point in the interviews with some claiming that due to the commercially sensitive and expensive nature of the information collected by developers, they are reluctant to share this with their competitors (ie other renewable developers). The following quotation from the empirical data collection demonstrates this argument.

Interview W3: You have to take into account that a developer may have spent £5 million doing a survey on birds and they've gotten the results of that survey. They spent a lot of time and money on that and are not going to give that information away free to the guy up the road. There is some collaboration, and there is some sharing of data, but there is still competition. I mean, obviously, I don't know the extent, but we do know that a lot of data is kept close to their chests as well.¹⁰²

The overriding concern from respondents regarding a lack of data sharing is that everyone involved in the process is not learning enough about the first rounds of technology that has been constructed. As a result of this, the industry is unable to improve future tranches of development in light of the lessons learnt. Without having a detailed understanding of the impact that new offshore renewable technology is having on the marine environment, the assessment of cumulative impacts is made even more difficult. Many gaps remain within the expert understanding of the impacts of human actions on the marine environment,¹⁰³ and failing to share data that have been collected is likely to extend the time that these gaps are present. These concerns were raised in the empirical data collection as evident in the following quotations.

101 The 2009 Renewable Energy Directive (n 1).

102 Interview W3, England 13 March 2015.

103 An example of a sensitive marine mammal that was continually raised during the interviews was the harbour porpoise. The following article provides a useful assessment of the difficulties associated with protecting it: Eunice Pinn, 'Protected Areas for Harbour Porpoise, but at What Cost to Their Conservation?' (2016) 18 *Env L Rev* 97.

Interview N2: Wouldn't it be great if everybody got together and shared a bit more information? That's a general concern we have about development in general: about not looking at the wider benefit to Scotland and developers using commercial confidentiality to keep data to themselves.¹⁰⁴

Interview N3: We have a risk of not learning as well as we might from the first turbines, the first devices that go into the water on these programmes. . . And if we're not learning, then we're still having to take a precautionous approach to consenting in the future, which is not in anyone's interest.¹⁰⁵

One example of alternative practice for data collection is the process used in the marine aggregates industry. Here, the marine aggregates industry has made a voluntary commitment to undertake regional environmental assessments for several extraction areas.¹⁰⁶ The first round of assessment was undertaken on the East Channel Region and published in 2003.¹⁰⁷ All of the data collected are stored in the marine aggregates regional environmental assessments document repository to provide a central source of baseline data for marine aggregate licence/application areas. While EIAs are still undertaken for each permit that is required, it is anticipated that this repository will provide reliable regional data that can be used to provide an understanding of how the permit location interacts with the region as a whole.¹⁰⁸

A comparable initiative that has been introduced in renewable energy is the offshore renewables joint industry programme.¹⁰⁹ The programme has a variety of members¹¹⁰ and is managed by the Carbon Trust. While this programme is similar to the marine aggregates document repository in the sense that industry actors are working together, the aims and objectives of these groups are different. The main objectives of this initiative are to reduce the following risks for offshore wind farm developments in the UK: the risk of not getting consent, the risk of delay in getting consent and the risk of getting consent with conditions that reduce the viability of the project.¹¹¹ Instead of collecting baseline data, the offshore renewables joint industry programme focuses on specific industry-wide issues that require attention such as producing reports outlining best practice, and providing guidance on technical issues that are common in the industry.

The marine aggregates industry has demonstrated that centralised strategic data collection is possible—and can be of benefit to those applying to undertake licenced operations. However, the introduction of such measures depends upon financial resourcing and industry support. A repository such as the one used by the marine

104 Interview N2, Scotland 15 May 2015.

105 Interview N3, Scotland 10 July 2015.

106 Joint Nature Conservation Committee, 'Offshore Marine Aggregates' (2015).

107 Subsequent REAs have been undertaken on the outer Thames Estuary, the South region of the Isle of Wight, the Humber Region and the East Region of Great Yarmouth, *ibid*.

108 'About MAREA' <<http://www.marine-aggregate-rea.info/about-marea>> accessed 31 August 2019.

109 'Offshore Renewables Joint Industry Programme (ORJIP)' <<https://www.carbontrust.com/offshore-wind/orjip/>> accessed 31 August 2019.

110 Membership includes the Carbon Trust, the Department for Business, Energy & Industrial Strategy, Marine Scotland, the Crown Estate and several offshore wind developers.

111 ORJIP (n 109).

aggregates industry works best with cooperation from all within the industry and is somewhat of an ‘all or nothing’ concept. If such a repository were to be introduced in offshore renewables, it would instigate a shift away from the currently disjointed approach that takes place in data collection at the developer level for offshore renewables. However, this would require full cooperation from those within the industry.

4. RECOMMENDATIONS

From analysing the current consenting processes for offshore renewables combined with the empirical data obtained from those currently implementing these processes, this research makes five recommendations. These recommendations aim to ensure that cumulative and in-combination impacts are adequately assessed as required by EU legislation.¹¹² These recommendations have been issued to combat the four critical problems outlined above.

4.1 Crown Estate and Crown Estate Scotland to Take Full Responsibility for Assessment

The first recommendation is for the Crown Estate and Crown Estate Scotland to ensure that their assessment of cumulative and in-combination impacts at the site leasing stage complies with the requirements of the EIA Directive. In order to achieve this, the zone allocation and characterisation stages must be based upon data that meet the EIA baseline standard. It is not feasible to suggest that a developer considers alternative sites as they are arguably able to do on land because Crown Estate and Crown Estate Scotland ownership of the seabed means that a different system is required. However, in the same way that the terrestrial developer is required to consider alternative sites for their cumulative and in-combination impacts, the Crown Estate and Crown Estate Scotland must also be held accountable to the same standards. One obvious objection to the strengthening of assessments undertaken at the Crown Estate and Crown Estate Scotland leasing round would be the increased cost. However, a solution to this would be to retrospectively charge the developer who successfully obtains the lease of that seabed zone for the additional assessment costs incurred by the Crown Estate and Crown Estate Scotland.

4.2 Improve Guidance for the Use of the Rochdale Envelope Approach

The second recommendation relates to the use of the ‘Rochdale envelope approach’. Recent commentary in this area has provided some recommendations aimed at controlling the use of this approach in the offshore renewables industry.¹¹³ The recommendations advocate that the Planning Inspectorate commissions a report into the use of the approach to ascertain what is an ‘appropriate use’ of the approach in the offshore renewables industry.¹¹⁴ Once such a report has been undertaken, it is recommended that the Planning Inspectorate should then issue explicit advice on the

112 Regardless of the outcome of Brexit negotiations, s 2(1) of the EU (Withdrawal) Act 2018 requires that all existing EU legislation continues to have effect in domestic law on and after exit day. Therefore, all of the EU requirements discussed in this article will remain active unless subsequent legislation is enacted to repeal them.

113 Caine (n 5).

114 *ibid* 86.

use of the envelope to developers either in the form of detailed guidance provided to all developers, or encouraging ‘a dialogue on the proposed use of the approach in the pre-application stage on a case-by-case basis’.¹¹⁵ It is anticipated that once measures have been taken to ensure that developers do not submit unrealistic worst-case scenarios, the ability to forecast realistic cumulative and in-combination impacts will vastly improve.

4.3 Altering the NSIP Consent Process to Prevent Rushed Applications

The third recommendation attempts to deal with the problem of the ‘race to the water’ and applies to England only because the strict application timeframe for a development consent order does not apply in Scotland. The problem that arises as a result of developers rushing to submit their applications is the concern that cumulative and in-combination impact assessment will not receive sufficient attention at the developer level. To prevent this issue, either a more flexible timeline for the CfD application should be introduced or the application criteria should be adjusted. While the CfD process appears to be one of the main reasons why developers are tempted to rush their applications through, it is not feasible to suggest an alteration to the CfD deadlines as the process is by nature a competitive one which is heavily relied upon by developers. Currently, a strict timetable is followed when applying for a development consent order for an NSIP in England with a six-month examination period. One solution to the issue of preventing developers from rushing through their application to apply for a development consent order would be to relax the strict timeframe to allow for an extended examination period if it is deemed necessary. However, this solution may be unpopular with many. Delay in applications has long been a source of contention in the industry, with the Planning Act 2008 aiming to resolve this by coordinating multiple consents and introducing the above-mentioned set timeframe. While this timeframe has been added, it is important to note that the pre-application stage of developments has no time limit.¹¹⁶ Marshall and Cowell assert that the pre-application stage can take from 9 to 44 months and ultimately conclude that the Planning Act 2008 changes have not reduced the overall time that a developer spends on an application, but has instead shifted a significant amount of time from the examination and decision-making stages to the pre-application stage.¹¹⁷

The second solution seems, therefore, more desirable and feasible to combat the assessment issues that arise from developers rushing to submit their applications. It is recommended that requirements relating to the quality of environmental statements are added to the list of considerations made by the Secretary of State when deciding whether to accept a proposed development into the development consent order application process. While experienced and well-informed developers will ensure that they use the pre-application phase of the process to ensure that they have fully considered the cumulative and in-combination impacts of their development,

115 With the latter recommendation being the more labour and cost-intensive suggestion, the feasibility of these recommendations is considered by Caine (n 5) 87.

116 Tim Marshall and Richard Cowell, ‘Infrastructure, Planning and the Command of Time’ (2016) 34 *Environ Plann C* 1843, 1858.

117 *ibid.*

others may not use the pre-application stage as wisely. In order to prevent developers from rushing through their applications for the CfD process, a high bar for acceptance of applications must be applied to the application process. When applying to the process, developers are required to submit, amongst other documents, their environmental statement and screening and scoping opinions (if applied for). The environmental statement must, as a minimum, conform with Schedule Four of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.¹¹⁸ However, no additional requirements relating to the quality of the environmental statement are present in the application form. In addition to this, none of the requirements upon the Secretary of State relating to the acceptance of the applications refers to the quality of the environmental statement submitted.¹¹⁹ This leads to a situation that respondents have described, whereby inadequate environmental statements can be accepted for submission. This, in turn, means that those consulting on the documents have to undertake more work to provide comments on the application. In order to remedy this, it is submitted that requirements relating to the quality of environmental statements should be incorporated into the list of considerations made by the Secretary of State when deciding whether to accept applications.

4.4 Introduce a Data Repository for Offshore Renewables

The final recommendation from this research relates to data collection. This proposes the introduction of a central source of baseline data collection such as the scheme in the marine aggregates industry as discussed above. Data sharing is essential within this industry as uncertainties remain about the impact that offshore renewables have on the marine environment. By sharing data from developments that have already been constructed, everyone within the consenting process will have a better understanding of the potential cumulative and in-combination impacts that can arise. For this proposed data repository, offshore renewables developers would pay a fee to access the information and would be obliged to enter their monitoring data to the system as a requirement of use. The database should be established and run in collaboration with statutory consultees in order to ensure that the necessary information is collected and stored. Again, cost implications could be raised here as an objection; however, this recommendation suggests a cost shift rather than creation as the developer currently pays large sums to collect data for their development areas. This money would instead be collected to conduct large-scale data collection and would act as a 'fee' for the developer to obtain access to the information.

5. CONCLUSION

This article has argued that while offshore renewables are widely regarded as being the 'good guys' for their abilities to produce green and carbon-free energy, it is vital to ensure that the planning processes allow for a full and accurate assessment of cumulative and in-combination impacts. While some of the planning mechanisms that

118 Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 SI 2017/572, sch 4. Further information on the application process can be found in the following document: Department for Communities and Local Government, 'Planning Act 2008: Application Form Guidance' (2013) 11.

119 Planning Act 2008, s 55(3).

have been utilised for offshore renewables are the same as those used for terrestrial developments; it is essential to recognise that there are fundamental differences between the two environments. What may work well for terrestrial developments will not necessarily work in the same way at sea. From this analysis of the consenting processes for offshore renewables, this article has made five recommendations to ensure that cumulative and in-combination impacts are assessed as per the requirements of EU legislation. While these recommendations may seem to suggest relatively extensive changes to the current consenting processes for offshore renewables, the importance of ensuring that cumulative and in-combination impact assessment is carefully undertaken while offshore renewables are climbing out of infancy is averred. By making changes to improve cumulative and in-combination impact assessment for offshore renewables, it is submitted that the young offshore renewables industry will be able to flourish in England and Scotland without causing irreparable damage to the marine environment.

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