SHEPHERD+ WEDDERBURN

RESPONSE TO REQUEST FOR FURTHER INFORMATION FROM THE SECRETARY OF STATE ON BEHALF OF

(1) BARROW OFFSHORE WIND LIMITED (REF: 20048546) (2) BURBO EXTENSION LTD (REF: 20048544) (3) WALNEY EXTENSION LIMITED (REF: 20048542) (4) MORECAMBE WIND LIMITED (REF: 20048547) (5) WALNEY (UK) OFFSHORE WINDFARMS LIMITED (REF: 20048545) (6) ØRSTED BURBO (UK) LIMITED (REF: 20048543) (THE "ØRSTED IPs")

IN CONNECTION WITH THE Application by Mona Offshore Wind Limited for an Order Granting Development Consent for the Mona Offshore Wind Farm

Shepherd and Wedderburn LLP
9 Haymarket Square
Edinburgh
EH3 8FY

1. Introduction

1.1 We represent six operational offshore windfarms in the East Irish Sea (as set out relevant representations RR-004, RR-007, RR-047, RR-087, RR-088 and RR-090), who we refer to together as the "**Ørsted IPs**". The Ørsted IPs are interested parties to the application by Mona Offshore Wind Farm Limited (the "**Applicant**") for an Order under the Planning Act 2008 (the "**Act**") granting Development Consent for the Mona Offshore Wind Farm (the **"Project**").

1.2 This document contains a response to the Secretary of State for Energy Security and Net Zero's ("**SoS**") request for further information ("**RFI**") dated 12 May 2025, on behalf of the Ørsted IPs.

1.3 At paragraph 6 of the RFI, the Ørsted IPs are invited to provide views on the Applicant's submission "Technical Note Calculation of Net Effects on GHG Emissions" ("**GHG Note**") ([AS-033]), accepted by the examining authority on 10 January 2025. The GHG note was provided following examination deadline 6 on 20 December 2024, and three working days before the final examination deadline.

1.4 The Ørsted IPs provided their initial views on the GHG note at deadline 7 in their response to deadline 6 submissions [REP7-153]. The Ørsted IPs maintain the issues raised in that submission, however, given the limited time the Ørsted IPs had to consider the GHG Note, they appreciate the opportunity to expand on some of these issues.

2. Response to GHG Note

2.1 As explained in their deadline 7 submissions [REP7-153], the Ørsted IPs do not consider the GHG Note provides an accurate assessment of the worst-case scenario of the effects of the Project, in terms of GHG emissions. The GHG Note assesses the effects of the Project on the basis of the shortest possible lifetime of each of the Ørsted IPs assets.

2.2 In other words, the GHG Note ignores the potential for the Ørsted IPs' assets to continue operating beyond their initially anticipated lifetimes. It has been explained throughout this examination, and in the examinations of the Morgan Offshore Windfarm Generation Assets ("**Morgan**")[1] and Morecambe Offshore Windfarm Generations Assets ("**Morecambe**")[2] (together, the "**MoMo assets**"), that the Ørsted IPs' assets are capable of continuing to operate beyond their initially anticipated lifetimes, both from a consenting and engineering perspective.

2.3 Detailed evidence on this point was submitted in the examination for Morecambe. In response to an action point arising out of a hearing in that examination, the Ørsted IPs provided a detailed note outlining the consenting position in respect of the assets. In summary, there is no requirement for the assets to be decommissioned at a particular date. None of the core operational consents for the Ørsted IPs' assets are subject to an expiry date. Further, none of the marine licences (largely held for construction/maintenance purposes) require the decommissioning of the assets at a particular date.

2.4 The note also addressed the integrity of the assets from an engineering perspective. Based on extensive industry experience, and technical assessments of its assets, it is considered the Ørsted IPs' wind farms in the vicinity of the Project could be operated beyond their initially anticipated lifetimes. This submission is provided as **Appendix 1**.

2.5 As outlined in the Ørsted IPs deadline 7 submission, the wake effects of the Project, and in particular the cumulative wake effects with Morgan and Morecambe are likely to impact decision making regarding the ongoing operation of the Ørsted IPs' assets.

2.6 Further evidence on this matter was submitted in response to questions by the examining authority in the Morecambe examination. The Ørsted IPs provided modelling of the financial consequences of the predicted wake losses for their assets ("**Financial Modelling**"). The Financial Modelling includes the consequences of cumulative wake effects of the Project and Morgan. The Financial Modelling indicated that the impacts of the predicted wake effects could be sufficient to result in the ongoing operation of the assets becoming unviable. This risk becomes relevant as the assets become fully merchant.

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[1] EN010136.

[2] EN010121.

2.7 The Financial Modelling has been provided to the Secretary of State via letter dated 2 May 2025. For completeness, the Financial Modelling is provided as **Appendix 2** to this response.

2.8 To ensure the SoS has consistent information before it, the Ørsted IPs have also prepared tables showing the project-alone financial impacts from the Project and Morgan which are provided at **Appendix 3.** These are equivalent to table 12 in the Financial Modelling and were also provided with the 2 May letter to the SoS.

2.9 The evidence outlined above and attached to this letter clearly demonstrates that there is a strong possibility the wake effects of the Project along with the MoMo assets could result in the decommissioning of the Ørsted IPs assets earlier than would otherwise have been required.

2.10 In light of the clear evidence submitted in this examination, and which is in the public domain via other examinations, the GHG Note should have assessed the scenario in which the Ørsted IPs' assets are decommissioned earlier than would otherwise have been possible (i.e. a loss of an additional 10 year operating period for each of the assets), as a result of wake effects of the Project alone and cumulatively with the MoMo assets. This would provide a realistic worst-case scenario against which the benefits of the Project could be assessed.

2.11 It is irrational for the Applicant to proceed with its GHG assessment on the basis that the assets would be decommissioned at the earliest possible opportunity. Such an approach fails to properly assess the environmental baseline and its likely evolution as required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017.

2.12 The Applicant cannot draw conclusions regarding the significance of the effect of the Project on climate change without having properly assessed a worst-case scenario. The Ørsted IPs suggest the Applicant be requested to provide and updated GHG assessment which incorporates this scenario, so that the SoS can properly evaluate the project in accordance with the relevant legislative and policy framework.

Shepherd & Wedderburn LLP

23.05.2025

APPENDIX 1- Submission regarding consenting position

SHEPHERD+WEDDERBURN

RESPONSE TO ACTION POINT ON BEHALF OF

(1) BARROW OFFSHORE WIND LIMITED (REF: 20049974) (2) BURBO EXTENSION LTD (REF: 20049975) (3) WALNEY EXTENSION LIMITED (REF: 20049977) (4) MORECAMBE WIND LIMITED (REF: 20049973) (5) WALNEY (UK) OFFSHORE WINDFARMS LIMITED (REF: 20049978) (6) ØRSTED BURBO (UK) LIMITED (REF: 20049976) (THE "ØRSTED IPs")

IN CONNECTION WITH THE Application by Morecambe Offshore Wind Limited for an Order Granting Development Consent for the Morecambe Offshore Wind Farm

1. Response to AP 23

1.1 This submission responds to action point 23 of the hearing points arising from Issue Specific Hearing 3 ("**ISH3**") [EV7-006] on behalf of the Ørsted IPs.

1.2 This submission sets out the position in respect of the lifetime of the Ørsted IPs' assets. First, in respect of the engineering performance of the assets and second, in respect of the need for further consents or marine licences. This submission also addresses how lifetime extensions should be treated in decision-making under the NPS-EN3 and the Applicant's assessment of the Project's net impacts on GHG emissions.

Engineering position

1.3 Ørsted considers, based on extensive industry experience, and technical assessments of its assets, that the Ørsted IPs' wind farms in the vicinity of the Project could feasibly be operated beyond their certified 20-25 year design life.

1.4 The Ørsted IPs' offshore wind farms in the vicinity of the Project have an industry standard 20- or 25-year certified design life in accordance with key standards, such as DNV-OS-J101/DNV-ST-0126 for foundations, and IEC 61400 for turbines. Following extensive technical integrity assessments on certain offshore windfarms in later life and using Ørsted's extensive knowledge as a leading offshore wind farm developer, the Ørsted IPs consider there is potential for Ørsted to operate the wind farms beyond their certified design life.

1.5 The technical integrity assessment of an offshore wind farm falls into four categories: turbines, foundations, array cable, and the Supervisory Control and Data Acquisition ("SCADA") system. Barrow, Ørsted's oldest wind farm in the Irish Sea, has completed this technical integrity assessment to demonstrate its capability to operate 10 years beyond its certified design life to 2040 equivalent to a 35 years asset life For illustrative purposes, examples of solutions already implemented at Barrow to increase the likelihood of operating the wind farm beyond its certified design life are set out below.

1.6 Turbine component failures are typically seen as non-critical since their design allows for repairs, refurbishment or replacement in the event of failure. Barrow remedied blade erosion damages in 2023 by installing leading edge protection which, together with routine maintenance, should help to ensure lasting blade integrity until 2040. Another consideration in assessing operation of turbines beyond certified design life is long-term availability of spare parts. In the case of Barrow, Ørsted has concluded that the V90, the wind turbine used to power the wind farm, is a widely deployed platform which should allow continued supply of spare parts from the manufacturer or third parties.

1.7 Foundations and array cables failures tend to be seen as critical to offshore wind farm operation because a failure in one of these elements would typically limit or end the operational life of the asset. Risk of failure is therefore mitigated by increasing engineering conservatism into the original design of the component and undertaking regular inspection programmes of critical structures in the form of visual, non-destructive testing, surveys etc.

1.8 In the case of Barrow, external J-tubes are used to house array cables, thus limiting the risk of free-flowing water into the foundations which, in turn, mitigate the risk of free corrosion and increase the likelihood of foundations lasting until 2040. The structural integrity of foundations and array cables throughout Ørsted's global offshore wind farm portfolio (including all of the Orsted IP's wind farms) has generally met or exceeded expectations with relatively few failures to critical components observed to date across Ørsted's entire portfolio.

1.9 The SCADA system is considered resilient across Ørsted operated wind farms and is not seen as a critical factor in the decision to operate wind farms beyond their certified 20-25 year design life. This is due to the availability of spare parts, the relative simplicity in addressing technical issues in this category, and a wide pool of technical knowledge available in this domain.

1.10 Finally, Ørsted operates each of its assets in accordance with Prudent Operating Practice, a contractual requirement under the Operations & Maintenance Agreement between the project companies (typically a joint venture comprising of Ørsted and external partners) and the operator (Ørsted). This practice ensures a continuous maintenance and assessment programme of the

asset is in place to preserve its condition. Ørsted has taken the fleet decision to maintain its assets to enable longer term operation.

1.11 Ørsted is a global leader in offshore wind energy and one of its oldest participants having pioneered the world's first offshore wind farm in 1991. The company currently operates 12 offshore wind farms in the UK with a total capacity of 5.6 GW, of which 1.9GW is in the Irish Sea. Ørsted has four wind farms in development and is demonstrably committed to the successful installation of 43-50GW capacity by 2030 (as set out in the Clean Power 2030 Action Plan) and 65GW-140GW by 2050 (under the Balanced Pathway Scenario of the 6th Carbon Budget). Given this experience, Ørsted is well placed to be providing views on the likely lifetime of assets.

Consenting position

Operational consents

1.12 The key operational consents for the Orsted IPs assets are consents issued under section 36 of the Electricity Act 1989 ("**section 36 consents**") and development consent orders ("**DCOs**"). As set out in Table 1 below, none of these consents are subject to an end or expiry date, nor do they contain a condition requiring the assets to be decommissioned at a particular date.

1.13 As has been set out in detail in respect of Barrow Offshore Windfarm and Burbo Bank Offshore Windfarm (the oldest of the assets, which are both subject to section 36 consents), neither a new consent nor a variation to the existing consents are required to continue operations beyond the initial expected 25-year period. This has been confirmed by the Department for Business, energy & Industrial Security [REP3-110], whom Orsted contacted in 2021 regarding the prospect of extending the lifetime of the assets. In response, BEIS stated "…*the Secretary of State has not found anything which would lead him to conclude that the consents for which he is the competent authority require variation or the supply of additional consents, licences or permissions to secure the Secretary of State's approval to enable the continued operation of the wind farms…"*

1.14 The Orsted IPs have not identified any reason why a different approach would be applied to its other assets which are authorised by section 36 consents (that is, the Walney Offshore Windfarm and West of Duddon Sands Offshore Windfarm). Neither consent is subject to an expiry date or a condition requiring decommissioning by a specific date.

1.15 It is noted that a different approach is typically taken in relation to section 36 consents in Scotland, which are commonly subject to an operational time limits, after which a consent for lifetime extension would be required. The time limit is a key condition and noted very clearly. By way of example, the section 36 consent for the Green Volt Floating Offshore Windfarm off the East Coast of Scotland is provided as **Appendix 1** to this submission. If it was intended for the Orsted IPs' section 36 consents to be subject to an operational time limit, that would be expressly stated.

1.16 Walney Extension Offshore Windfarm and Burbo Extension Windfarm are authorised by DCOs. Neither of the DCOs are subject to expiry dates or contain a requirement for the assets to be decommissioned at a particular date.

Marine Licences

1.17 As set out in the Table 1 below, all of the assets also hold marine licences. These licences authorise a range of construction and maintenance activities. These broadly fall within two categories – lifetime marine licences which authorise a broad range activities, and licences authorising more specific construction and maintenance activities.

1.18 The DCOs for Walney Extension and Burbo Bank Extension windfarms both contain deemed marine licences ("**dMLs**") which fall within the first category of 'lifetime marine licences'. There is no requirement to decommission the assets within the dMLs, nor are they subject to 'end' dates. In fact, each dML contains a condition providing that it will *"…remain in force until the authorised scheme has been decommissioned in accordance with a programme approved by the Secretary of State under section 106 of the 2004 Act…".* This is a more contemporary approach to marine licensing.

1.19 The Orsted IPs' assets which are authorised by section 36 consents, also hold relevant marine licences under part 4 of the Marine and Coastal Access Act 2009 ("**MACA**"). In general, these licences authorise specific activities. These marine licences are subject to expiry dates, however none of the marine licences contain conditions requiring the decommissioning of the windfarms.

1.20 In contrast to dMLs within DCOs, these assets typically hold a number of marine licences authorising specific activities (for example, inter-array cable repair). This is due to a requirement for specific maintenance being identified at an asset and the authorisation for such maintenance being obtained as and when necessary. This is a standard and legitimate approach to managing assets. While it is acknowledged that this type of maintenance will always be required at the assets (and therefore, marine licences will always be required), in the Orsted IPs' experience obtaining or varying marine licences to authorise maintenance activities is considered business-as-usual.

1.21 For completeness, it is noted that two of the marine licences, for West of Duddon Sands and Walney Offshore Windfarm (construction licences which contain some operational obligations) were issued under the Food and Environmental Protection Act 1985 ("**FEPA"**) and became marine licences through the transitional provisions in MACA. Additionally, Barrow Offshore Windfarm and Burbo Bank Offshore Windfarm formerly held licences issued under FEPA related to construction and operation activities. However, those licences expired in 2008 and 2009 and necessary maintenance marine licences were obtained.

1.22 The Orsted IPs acknowledge their assets would not be operated without appropriate marine licences. Any need to obtain or vary such a marine licence is therefore considered business-as-usual and would not impact on decision making regarding extending the lifetime of the assets. For instance, at Burbo Offshore Wind Farm, the Operation & Maintenance Marine Licence [L/2016/00296/5] has been varied 4 times in the last 9 years.

1.23 It would not be appropriate to treat marine licences as determining the lifetime of a development. Marine licences are often required for specific activities, which may not have been dealt with in the consenting process for the construction of the development. While important, these often do not go to the core of the activity undertaken at the asset (unlike 36 consents). For example, if UXO travels near to an asset, where previously UXO was not an issue, a marine licence would likely be required to authorise clearance. Not having that licence previously would not mean the operation of the asset was unlawful.

<u>Relevance to decision making and EIA</u>

1.24 In light of the above, the Orsted IPs position is that there is no consenting impediment to continuing to operate the assets beyond the 20- or 25-year certified design life. Given none of the consents or marine licences contain a clear requirement to decommission or cease operating, it is not rational to disregard the potential for wind farms to be operated beyond the 20-or 25-year certified design life.

This is reinforced when considering the economic effects because irrespective of this position, ultimately, whether to continue operating these assets is a commercial decision. Such decisions would be made close to the end of the 20- or 25-year initial operating period, depending on a number of factors, but fundamentally on the economic viability of the asset. This would be the case even if further section 36 consents or variations to the DCOs were required (which the Orsted IPs do not consider is the case).

1.25 It is crucial to preserve the ability to operate assets beyond their operational lifetime (even where fresh or varied consent is required). As noted in the Orsted IPs deadline 3 submission, extending the lifetime of existing assets is a highly sustainable way of generating renewable energy for the UK grid. The UK Government and TCE have issued statements in support of facilitating lifetime extensions.

1.26 Therefore, in considering "*future viability*" under paragraph 2.8.347 of the NPS-EN3, decision makers should give substantial weight to threats to extending the lifetime of existing assets. As the Orsted IPs have stated on several occasions, the level of cumulative wake effect predicted, if left unmitigated, could be sufficient to tip the scale in favour of decommissioning the assets. We note that once DCO for the Project is granted, the Ørsted IPs will reflect associated wake losses on their financial forecasts and adjust commercial decisions regarding lifetime extension accordingly. Therefore, if no mitigation for wake effects is provided, those effects are essentially irreversible.

1.27 The Applicant's assessment of the net GHG emissions arising from the Project must account for total loss of generation from the Orsted IPs' developments for 10 years beyond their 20- or 25-year lifetime, in order provide an accurate worst-case scenario. In light of the consenting regime outlined above, and emerging knowledge regarding the actual likely lifetimes of components from

an engineering perspective, it is not rational to disregard the potential for wind farms to be operated beyond the 20- or 25-year certified design life.

1.28 It is noted that the question of lifetime extensions of these assets is not simply theoretical. As evidenced by Orsted's communications with BEIS, Orsted is already exploring whether to extend the lifetime of both the Barrow and Burbo offshore windfarms. There can be no doubt that the wake effect predicted from the Project, and cumulatively with other developments will be a material factor in the commercial decision to pursue life extension.

Table 1 – consents held for the Orsted IPs' assets		
Asset	**Consent**	**Marine licence**
Barrow offshore Wind farm	s 36 consent authorising the construction and operation of the windfarm granted in 2003 (no expiry date)	Marine Licence (reference: L/2016/00297/4) issued in 2019 authorising certain "maintenance" activities at the offshore windfarm (including replacement of major components). Current expiry date - July 2026.
		Marine Licence (reference: L/2014/00214/4) issued in 2018 for "maintenance" of inter-array cables. Current expiry date - July 2026
		FEPA licence relating to construction and operation. Allowed to expire in 2009 due to change in consenting regime.
Burbo Bank Offshore Windfarm	s 36 Consent authorising the construction and operation of the windfarm in 2003 (no expiry date).	Marine Licence (reference: L/2016/00296/5) issued in 2016 authorising "maintenance" activities at the offshore windfarm. Current expiry date - 2032.
		Marine Licence (reference: L/2014/00348) issued in 2014 authorising "maintenance" of inter-array cables. Current expiry date - December 2032.
		Marine Licence (reference: L/2018/00103/1) issued in 2018 authorising "maintenance" of the offshore export cable. Current expiry - December 2032.
		FEPA licence relating to construction and operation. Allowed to expire in 2008 due to change in consenting regime.
West of Duddon Sands	s 36 consent authorising the construction and operation of the windfarm granted in 2008 (no expiry date).	Marine licence (reference L/2012/00424/19) issued 2008 (and varied in 2018) authorising construction activities. Current expiry date - November 2037.
		Marine licence (reference L/2016/00294/4) issued in 2016 (and varied in 2019) authorising maintenance activities (e.g. removal of marine growth and replacement of components). Current expiry date - November 2037
		Marine licence (reference L/2015/00017/2) issued in 2015 (and varied in 2017) authorising inter-array

		cable repair. Current expiry date - November 2037
Walney Offshore Windfarm	s 36 consent authorising the construction and operation of the windfarm granted in 2007 (no expiry date).	Marine licence (reference L/2011/00067) issued in 2013 authorising construction activities. Current expiry date is 1 March 2032.
		Marine licence (reference L/2016/00298/4) issued in 2016 (and varied 2019) for range of maintenance activities (e.g. removal of marine growth and replacement of components). Current expiry date - March 2032
		Marine licence (reference L/2014/00023) issued in 2014 (and varied 2018) authorising inter-array cable repair. Current expiry date - March 2032.
Walney Extension Offshore Windfarm	Construction/existence of generating station and transmission assets authorised by the Walney Extension Offshore Wind Farm Order 2014. There is no expiry date/required decommissioning date in the DCO.	Deemed Marine Licence authorising construction and maintenance activities relating to generation assets. No expiry date or requirement to decommission.
Burbo Bank Extension Offshore Windfarm	Construction/existence of generating station and transmission assets authorised by the Walney Extension Offshore Wind Farm Order 2014. There is no expiry date/required decommissioning date in the DCO.	Deemed Marine Licence authorising construction and maintenance activities relating to generation assets. No expiry date or requirement to decommission.
		Marine licence (reference L/2017/00296/1) issued in 2018 authorising inter-array cable repair. Current expiry date - August 2042.

Appendix 1

ANNEX C – Consent Decision Notice

E: [redacted]@gov.scot

Scottish Government
Riaghaltas na h-Alba
gov.scot

Dr Alexander Quayle
Green Volt Offshore Windfarm Ltd
12 Alva Street
Edinburgh
EH2 4QG
United Kingdom

19 April 2024

Dear Dr Quayle,

THE ELECTRICITY ACT 1989

THE ELECTRICITY WORKS (ENVIRONMENTAL IMPACT ASSESSMENT) (SCOTLAND) REGULATIONS 2017

DECISION NOTICE FOR THE SECTION 36 CONSENT FOR THE CONSTRUCTION AND OPERATION OF GREEN VOLT OFFSHORE WIND FARM, APPROXIMATELY 80 KILOMETRES OFF THE ABERDEENSHIRE COAST

1. Application and description of the Development

1.1 On 20 January 2023, Green Volt Offshore Windfarm Ltd (Company Number SC698787) having its registered office at 12 Alva Street, Edinburgh, EH2 4QG, United Kingdom ("the Company"), submitted to the Scottish Ministers applications under the Electricity Act 1989 for:

- A consent under section 36 ("s.36") of the Electricity Act 1989 for the construction and operation of the Green Volt Offshore Windfarm ("the Development") approximately 80 kilometres ("km") off the Aberdeenshire coast (hereafter referred to as "the Application"); and
- A declaration under section 36A ("s.36A ") of the Electricity Act 1989 to extinguish public rights of navigation so far as they pass through those places within the Scottish marine area (essentially the territorial sea adjacent to Scotland) where structures forming part of the Development are to be located (hereafter referred to as "the S36A Application").

1.2 The Application was accompanied by an Environmental Impact Assessment ("EIA") report ("EIA Report") as required under the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 ("the 2017 EW Regulations") and information to inform the Habitats Regulations

Appraisal ("HRA") as required under the Conservation (Natural Habitats, & c.) Regulations 1994 and the Conservation of Offshore Marine Habitats and Species Regulations 2017 (together, "the Habitats Regulations"). An Addendum of Additional Information to include impacts on ornithology, including population viability analysis ("PVA"), collision risk modelling ("CRM"), displacement and apportioning, alongside a without prejudice HRA derogation case for the project was submitted by the Company on 20 October 2023.

1.3 The Scottish Ministers carried out two consultation exercises:

1. A consultation on the Application ("the Original Consultation"); and

2. A consultation on the Addendum of Additional Information ("the Additional Information Consultation").

1.4 In addition to the Application, the Company also applied for marine licences under the Marine (Scotland) Act 2010 ("the 2010 Act") and the Marine and Coastal Access Act 2009 ("the 2009 Act") to construct, alter or improve the marine renewable energy works and associated offshore transmission infrastructure. A separate decision notice will be issued in respect of any marine licences granted.

1.5 The Application is for the construction and operation of an offshore energy generating station, with a maximum generating capacity of 560 megawatts ("MW") of electricity. The offshore generating station shall comprise :

1. Up to 35 three-blade horizontal axis wind turbine generators ("WTGs") each with:
    a. A maximum rotor hub height of 143 metres ("m") above Lowest Astronomical Tide ("LAT");
    b. A maximum height to blade tip of 264m above LAT;
    c. A maximum rotor diameter of 242m;
    d. A blade tip clearance of 22m above Mean High Water Springs;
    e. A maximum blade width of 8m;
    f. A minimum turbine spacing of 1,540m;
    g. A maximum turbine spacing of 1,936m.

2. Up to 35 of either semi-submersible platform, semi-submersible barge or tension leg platform floating substructures for the WTGs.

3. Catenary mooring lines with a radius of up to 650m and a maximum of six drag embedment anchors per WTG, if semi-submersible platform or semi-submersible barge is used.

4. A mooring line radius of up to 100m and a maximum of six suction pile anchors per WTG, if tension leg platform is used.

5. A maximum of 134km of inter-array cable.

and except to the extent modified by the foregoing, all as described in the Application and by the conditions imposed by the Scottish Ministers.

1.6 The location and boundary of the Development site is shown in **Figure 1 of Annex 1.**

This decision notice contains the Scottish Ministers' decision to grant consent for the Development detailed above, in accordance with regulation 21 of the EW regulations. A declaration under S36A of the Electricity Act 1989 has not been granted.

2. Summary of environmental information

2.1 The environmental information provided was an EIA Report[1] which assessed impacts on a range of receptors, as well as information to inform the HRA Report[2].

2.2 On 15 November 2021, the Company submitted a scoping report[3] and a request for a scoping opinion in respect of the Development to the Scottish Ministers. Following consultation with statutory and other consultees, a scoping opinion[4] was issued by Scottish Ministers on 19 April 2022, advising on the scope of the impacts to be addressed and the methods of assessment to be used within the EIA Report. The EIA Report assessed the impact pathways identified in the scoping opinion and was prepared in accordance with the terms of the 2017 EW Regulations.

2.3 A summary of the environmental information provided in the EIA Report is given below.

2.4 Marine Geology, Oceanography and Physical Processes

2.4.1 The EIA Report considered the potential effects on marine geology, oceanography and physical processes during the construction, operation and maintenance, and decommissioning phases of the Development.

2.4.2 The impacts scoped in to the EIA Report to be assessed during the construction phase were identified as:

- damage to the seabed structure and form;
- increase in suspended sediment concentration and deposition;
- disturbance of seabed sediments, effects on wave, tidal and sediment regime; and,
- changes to the water column.

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[1] https://marine.gov.scot/data/offshore-environmental-impact-assessment-report-information-support-eia-application-green-volt
https://marine.gov.scot/data/offshore-environmental-impact-assessment-report-volume-1-technical-chapters-green-volt-offshore
https://marine.gov.scot/data/offshore-environmental-impact-assessment-report-volume-2-technical-appendices-green-volt

[2] https://marine.gov.scot/data/offshore-environmental-impact-assessment-report-report-inform-appropriate-assessment-green-volt

[3] https://marine.gov.scot/data/scoping-request-green-volt-floating-offshore-wind-farm-east-aberdeenshire-coast

[4] https://marine.gov.scot/data/scoping-opinion-green-volt-offshore-wind-farm-east-aberdeenshire-coast

10.6.2 The Development will provide wider benefits to the offshore wind industry as reflected within the Scotland's Offshore Wind Policy Statement, in which offshore wind is seen as an integral element in Scotland's contribution towards action on climate change, including the ambition to achieve 8-11 GW of offshore wind in Scotland by 2030.

10.6.3 The Development will also contribute to the UK Government's North Sea Transition Deal, decarbonisation of oil and gas assets whereby the Oil and Gas sector and government will work together over the long-term to deliver the skills, innovation and new infrastructure required to decarbonise North Sea Oil and Gas production The Development will contribute to targets under the Deal to reduce Green House Gas emissions from upstream oil and gas activities through Supply Decarbonisation.

11. The Scottish Ministers' Determination

11.1 The Scottish Ministers are satisfied that an EIA has been carried out, and that the applicable procedures regarding publicity and consultation in respect of the Application have been followed.

11.2 When formulating proposals for the construction of the proposed generating station, the Company must comply with paragraph 3 of Schedule 9 to the Electricity Act 1989. Paragraph 3(1)(a) of Schedule 9 requires the Company in formulating such proposals to have regard to the desirability of preserving natural beauty, of conserving flora, fauna and geological or physiographical features of special interest and of protecting sites, buildings and objects of architectural, historic or archaeological interest. Paragraph 3(1)(b) requires the Company to do what it reasonably can to mitigate any effect which the proposals would have on the natural beauty of the countryside or on any such flora, fauna, features, sites, buildings or objects. Under paragraph 3(3) of that Schedule, the Company must also avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters.

11.3 Under paragraph 3(2) of Schedule 9, the Scottish Ministers must have regard to the desirability of the matters mentioned in paragraph 3(1)(a) of that Schedule and the extent to which the Company has complied with its duty under paragraph 3(1)(b). Under paragraph 3(3) the Scottish Ministers must avoid, so far as possible, causing injury to fisheries or to the stock of fish in any waters.

11.4 In considering the Application, the Scottish Ministers have had regard to the desirability of the matters mentioned in paragraph 3(1)(a) of Schedule 9 and the extent to which the Company has complied with its duty under paragraph 3(1)(b). Ministers consider that the Company has done what it reasonably can to mitigate the effect of the Development on the matters mentioned in paragraph 3(1)(a). The Scottish Ministers are content that the requirements of paragraph 3 of Schedule 9 are satisfied.

11.5 The Scottish Ministers have weighed the impacts of the Development, and the degree to which these can be mitigated, against the economic and renewable energy benefits which would be realised. The Scottish Ministers have undertaken this exercise in the context of national and local policies.

11.6 The Scottish Ministers have considered the extent to which the Development accords with and is supported by Scottish Government policy, the terms of the NPF4, the NMP, local development plans and the environmental impacts of the Development, in particular: impacts on marine mammals, seabirds, (including impacts on European sites and European offshore marine sites), impacts on physical processes and the Southern Trench ncMPA, impacts on commercial fisheries, and impacts on aviation and defence. The Scottish Ministers have also considered the socio-economic and the renewable energy benefits of the Development.

11.7 The Scottish Ministers are satisfied that the environmental issues have been appropriately addressed by way of the design of the Development and through mitigation measures, and that the issues which remain are, on balance, outweighed by the benefits of the Development. In particular the Scottish Ministers are satisfied that the Development will not hinder the achievement of the conservation objectives of the Southern Trench ncMPA and a derogation case has been completed under the Habitats Regulations.

11.8 In their consideration of the environmental impacts of the Development, the Scottish Ministers have identified conditions to be attached to the s.36 consent to reduce and monitor environmental impacts (these conditions are outlined in Annex 2). These includes a requirement for post-consent monitoring of birds, a CMS, an Environmental Management Plan ("EMP"), OMP, a PMP, a LMP, and a VMP and a requirement to submit a Detailed Seabird Compensation Plan in writing for approval by the Scottish Ministers.

11.9 A condition requiring the appointment of an Environmental Clerk of Works ("ECoW") and defining the terms of the ECoWs appointment has been attached to the s.36 consent. The ECoW will be required to monitor and report on compliance with all consent conditions and to monitor the construction of the Development in accordance with plans and the terms of the Application, the s.36 consent and all relevant regulations and legislation. The ECoW will also be required to provide quality assurance on the final draft versions of any plans and programmes required under the s.36 consent.

11.10 Under section 36B of the Electricity Act 1989, the Scottish Ministers may not grant a consent in relation to any particular offshore generating activities if they consider that interference with the use of recognised sea lanes, essential to international navigation is likely to be caused by the carrying on of those activities or is likely to result from their having been carried on. The Scottish Ministers, when determining whether to give consent for any particular offshore generating activities, and considering the conditions to be included in such consent, must have regard to the extent and nature of any obstruction of or danger to navigation which, without amounting to interference with the use of such sea lanes, is likely to be caused by the carrying on of the activities, or is likely to result from their having been carried on. In determining this consent, the Scottish Ministers must have regard to the likely overall effect (both while being carried on and subsequently) of the activities in question and such other offshore generating activities which are either already the subject of s.36 consent or activities for which it appears likely that such consents will be granted. In this regard, the Scottish Ministers are satisfied that the appropriate consultation was carried out on the Application. Representations were received from MCA and NLB. No concerns were raised on the premise of suggested conditions being attached to the s.36 consent.

The Scottish Ministers have concluded that the Company has had regard to the potential interference of recognised sea lanes essential to international and national navigation and has discharged its responsibilities in terms of section 36B to the Electricity Act 1989.

11.11 Under s.36A of the Electricity Act 1989, Scottish Ministers have the power to make a declaration, on application by an applicant when making an application for consent under s.36 of the Electricity Act 1989, which extinguishes public rights of navigation which pass through the place where a generating station will be established; or suspends rights of navigation for a specified period of time; or restricts rights of navigation or makes them subject to conditions. The power to extinguish public rights of navigation extends only to renewable generating stations situated in the territorial sea. The Development (in terms of the section 36 consent) is located outside the territorial sea and therefore the Scottish Ministers have not made a declaration under s.36A for public rights of navigation to be extinguished.

11.12 The Scottish Ministers are satisfied, having regard to current knowledge and methods of assessment, that this reasoned conclusion, as required under the 2017 EW Regulations, is valid.

11.13 The embedded mitigation and any additional mitigation identified in the EIA Report has been incorporated into the conditions of this s.36 consent. The conditions also capture monitoring measures required under Regulation 22 of the 2017 EW Regulations.

11.14 In accordance with the 2017 EW Regulations, the Company must publicise notice of this determination and provide that a copy of this decision letter may be inspected: (a) on the Application website; (b) in the Edinburgh Gazette; and (c) in a newspaper circulating in the locality to which the Application relates is situated or such newspaper as is likely to come to the attention of those likely to be affected by the Development. The Company must provide copies of the public notices to the Scottish Ministers.

11.15 Copies of this letter have been sent to the public bodies consulted on the Application, including consultee planning authorities, NatureScot, SEPA and HES. This letter has also been published on the Marine Scotland Information website. The Secretary of State has been notified regarding the outcome of the derogation case.

11.16 The Scottish Ministers' decision is final, subject to the right of any aggrieved person to apply to the Court of Session for judicial review. Judicial review is the mechanism by which the Court of Session supervises the exercise of administrative functions, including how the Scottish Ministers exercise their statutory function to determine applications for regulatory approval. The rules relating to the judicial review process can be found on the Scottish Courts and Tribunals website. Your local Citizens' Advice Bureau or your solicitor will be able to advise you about the applicable procedures.

Yours sincerely,

[redacted]

A member of staff of the Scottish Ministers

Annex 1 – DESCRIPTION OF THE DEVELOPMENT

The Application is for the construction and operation of an offshore energy generating station, with a maximum generating capacity of 560 megawatts ("MW") of electricity. The offshore generating station shall comprise:

1. Up to 35 three-blade horizontal axis wind turbine generators ("WTGs") each with:
    a. A maximum rotor hub height of 143 metres ("m") above Lowest Astronomical Tide ("LAT");
    b. A maximum height to blade tip of 264m above LAT;
    c. A maximum rotor diameter of 242m;
    d. A blade tip clearance of 22m above Mean High Water Springs;
    e. A maximum blade width of 8m;
    f. A minimum turbine spacing of 1,540m;
    g. A maximum turbine spacing of 1,936m.

2. Up to 35 of either semi-submersible platform, semi-submersible barge or tension leg platform floating substructures for the WTGs.

3. Catenary mooring lines with a radius of up to 650m and a maximum of six drag embedment anchors per WTG, if semi-submersible platform or semi-submersible barge is used.

4. A mooring line radius of up to 100m and a maximum of six suction pile anchors per WTG, if tension leg platform is used.

5. A maximum of 134km of inter-array cable.

and, except to the extent modified by the foregoing, all as described in the Application and by the conditions imposed by the Scottish Ministers. References to "the Development" in this consent shall be construed accordingly.

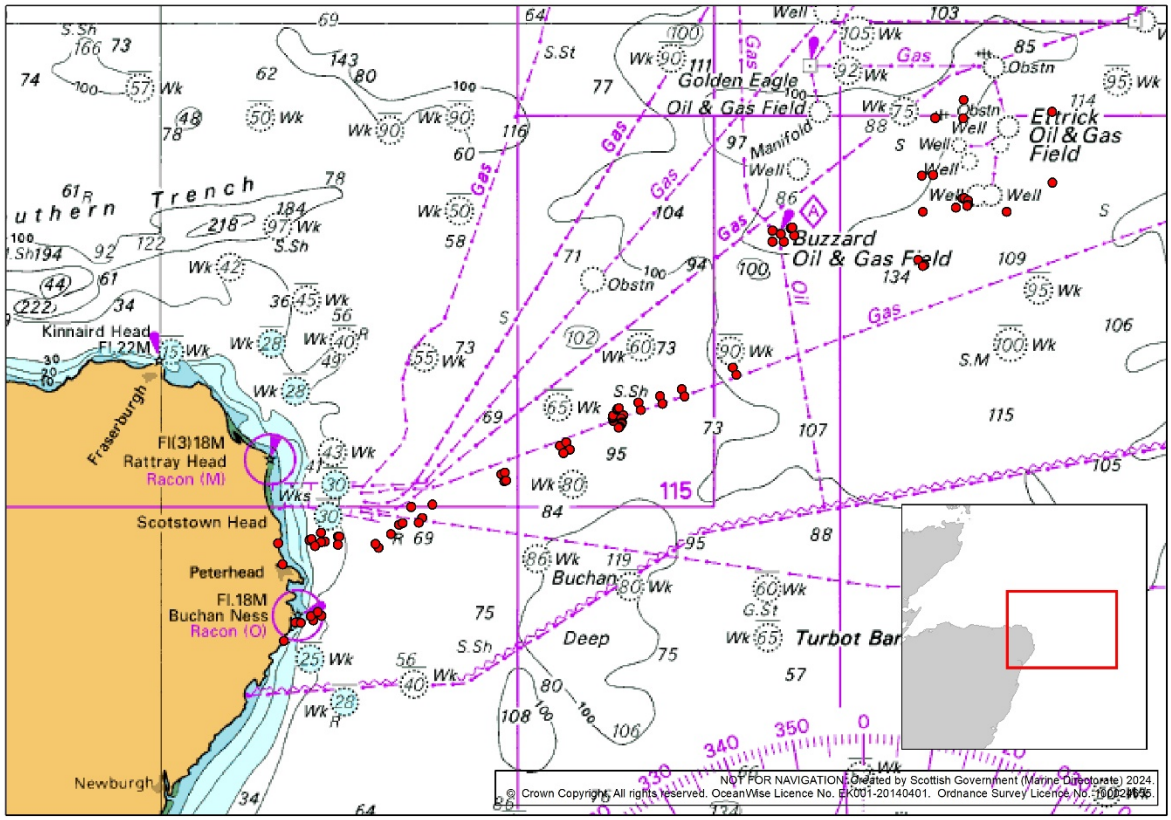

Figure 1 - Development location

Annex 2 – SECTION 36 CONSENT CONDITIONS

The consent granted under Section 36 of the Electricity Act 1989 is subject to the following conditions:

Part 1 – Conditions Attached to Section 36 Consent

1. Duration of the Consent

The consent is for a period of 35 years from the date of Final Commissioning of the Development.

Written confirmation of the date of First Commissioning of the Development must be provided by the Company to the Scottish Ministers and to Aberdeenshire Council, Aberdeen City Council and Angus Council no later than one calendar month after this date.

***Reason**: To define the duration of the consent.*

2. Commencement of the Development

The Commencement of the Development must be no later than five years from the date of this consent, or in substitution such other later period as the Scottish Ministers may hereafter direct in writing. The Company must provide written confirmation of the intended date of Commencement of the Development to the Scottish Ministers and Aberdeenshire Council, Aberdeen City Council and Angus Council no later than one calendar month before that date.

***Reason:** To ensure that the Commencement of the Development is undertaken within a reasonable timescale after consent is granted.*

3. Decommissioning

There must be no Commencement of the Development until a Decommissioning Programme ("DP"), submitted in accordance with a section 105 notice served by the appropriate Minister, has been approved under section 106 of the Energy Act 2004 by the Scottish Ministers.

***Reason:** To ensure the decommissioning and removal of the Development in an appropriate and environmentally acceptable manner, and in the interests of safety and environmental protection.*

4. Assignation

This consent must not be assigned without the prior written authorisation of the Scottish Ministers. The Scottish Ministers may authorise the assignation of the consent (with or without conditions) or refuse assignation as they may see fit. The consent cannot be assigned, alienated or transferred otherwise than in accordance with the assignation procedure as directed by Scottish Ministers.

Reason: *To safeguard the obligations of the consent if transferred to another company.*

5. Redundant Wind Turbine Generators

If any wind turbine generator ("WTG") fails to generate electricity for a continuous period of 12 months, then, unless otherwise agreed in writing by the Scottish Ministers, the Company must: (i) by no later than the date of expiration of the 12 month period, submit a scheme to the Scottish Ministers setting out the manner in which that WTG and associated infrastructure will be removed from the site and the sea bed restored; and (ii) implement the approved scheme within six months of the date of its approval, or such other date as agreed in writing by the Scottish Ministers, all to the satisfaction of the Scottish Ministers.

Reason: *To ensure than should a WTG become redundant, it is removed from the site, in the interests of safety, amenity and environmental protection.*

6. Incident Reporting

In the event of any breach of health and safety or environmental obligations relating to the Development during the period of this consent and decommissioning, the Company must provide written notification of the nature and timing of the incident to the Scottish Ministers within 24 hours of the incident occurring. Confirmation of remedial measures taken and/or to be taken to rectify the breach must be provided, in writing, to the Scottish Ministers within a period of time to be agreed by the Scottish Ministers.

Reason: *To keep the Scottish Ministers informed of any such incidents which may be in the public interest.*

7. Implementation in accordance with approved plan and requirements of this consent

Except as otherwise required by the terms of this consent, the Development must be constructed and operated in accordance with the Application, the Environmental Impact Assessment Report submitted by the Company on 20 January 2023, the Addendum of Additional Information submitted by the Company of 20 October 2023, and any other documentation and information provided by the Applicant in support of the Application.

Reason: *To ensure that the Development is carried out in accordance with the approved details.*

8. Submission and approval of plans, programmes and schemes

The Company must submit the requested plans, programmes and schemes, as detailed in the conditions, in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with any such advisors or organisations as detailed in these conditions or as may be required at the discretion of the Scottish Ministers.

Any updates or amendments made to the approved plans, programmes and schemes must be submitted, in writing, to the Scottish Ministers for their written approval. The Development must, at all times, be constructed and operated in accordance with the approved plans, programmes and schemes.

Reason: *To ensure that the Development is constructed and operated in accordance with the approved details.*

9. Compliance with this consent

The Company must satisfy itself that all contractors or sub-contractors are aware of the extent of the Development for which this consent has been granted, the activity which is consented and the terms of the conditions attached to this consent. All contractors and sub-contractors permitted to engage in the Development must abide by the conditions set out in this consent.

The Company must ensure that all personnel adhere to the Scottish Marine Wildlife Watching Code, where appropriate, during all construction, operation and maintenance activities.

Reason: *To ensure that the Development is constructed and operated in accordance with the approved details.*

10. Construction Programme

The Company must, no later than six months prior to the Commencement of the Development, submit a Construction Programme ("CoP"), in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, Maritime and Coastguard Agency ("MCA"), Northern Lighthouse Board ("NLB"), and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The CoP must set out:

a) The proposed date for Commencement of the Development;
b) The proposed timings for mobilisation of plant and delivery of materials, including details of onshore lay-down areas;
c) The proposed timings and sequencing of construction work for all elements of the Development infrastructure;
d) Contingency planning for poor weather or other unforeseen delays; and
e) The scheduled date for Final Commissioning of the Development.

The final CoP must be sent to Aberdeenshire Council, Aberdeen City Council and Angus Council for information only.

Reason: *To confirm the timing and programming of construction.*

11. Construction Method Statement

The Company must, no later than six months prior to the Commencement of the Development submit a Construction Method Statement ("CMS"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, MCA, NLB, and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The CMS must include, but not be limited to:

a) Details of the commencement dates, duration and phasing for the key elements of construction, the working areas, the construction procedures and good working practices for installing the Development;
b) Details of the roles and responsibilities, chain of command and contact details of company personnel, any contractors or sub-contractors involved during the construction of the Development.
c) Details of how the construction related mitigation steps proposed in the Application are to be delivered.

The CMS must adhere to the construction methods assessed in the Application. The CMS also must, so far as is reasonably practicable, be consistent with the Design Statement ("DS"), the Environmental Management Plan ("EMP"), the Vessel Management Plan ("VMP"), the Navigational Safety Plan ("NSP"), the Piling Strategy ("PS"), the Cable Plan ("CaP") and the Lighting and Marking Plan ("LMP").

The final CMS must be sent to Aberdeenshire Council, Aberdeen City Council and Angus Council for information only.

Reason: *To ensure the appropriate construction management of the Development, taking into account mitigation measures to protect the environment and other users of the marine area.*

Reason: *To mitigate the underwater noise impacts arising from piling activity.*

12. Development Specification and Layout Plan

The Company must, no later than six months prior to the Commencement of the Development, submit a Development Specification and Layout Plan ("DSLP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with the MCA, NLB, NatureScot, the Ministry of Defence ("MOD"), Civil Aviation Authority ("CAA"), Scottish Fishermen's Federation ("SFF"), Aberdeenshire Council, Aberdeen City Council, Angus Council and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The DSLP must include, but not be limited to the following:

a) A plan showing the location of each individual WTG (subject to any required micro-siting), including information on WTG spacing, WTG identification/numbering, seabed conditions, bathymetry, confirmed foundation type for each WTG and any key constraints recorded on the site;
b) A list of latitude and longitude coordinates accurate to three decimal places of minutes of arc for each WTG. This should also be provided as a Geographic Information System shape file using World Geodetic System 84 format;
c) The grid coordinates of the centre point of the proposed location for each WTG;
d) A table or diagram of each WTG dimensions including: height to blade tip (measured above LAT) to the highest point, height to hub (measured above LAT to the centreline of the generator shaft), rotor diameter and maximum rotation speed;
e) The generating output of each WTG used on the site (Figure 1) and a confirmed generating output for the site overall;

f) The finishes for each WTG (see condition 19 on WTG lighting and marking); and
g) The length and proposed arrangements on or above the seabed of all inter-array cables.

Reason: *To confirm the final Development specification and layout.*

13. Design Statement

The Company must, no later than six months prior to the Commencement of the Development, submit a DS, in writing, to the Scottish Ministers. The DS, which must be signed off by at least one qualified landscape architect, as instructed by the Company prior to submission to the Scottish Ministers, must include representative wind farm visualisations from key viewpoints as agreed with the Scottish Ministers, based upon the final DSLP as approved by the Scottish Ministers as updated or amended.

The Company must provide the DS, for information only, to Aberdeenshire Council, Aberdeen City Council, Angus Council, NatureScot, MCA and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

Reason: *To ensure that the Development is carried out in accordance with the approved details, and to inform interested parties of the final wind farm scheme proposed to be built.*

14. Environmental Management Plan

The Company must, no later than six months prior to the Commencement of the Development, submit an EMP, in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The EMP must provide the overarching framework for on-site environmental management during the phases of development as follows:

a) All construction as required to be undertaken for the Final Commissioning of the Development; and
b) The operational lifespan of the Development from the Final Commissioning of the Development until the cessation of electricity generation (environmental management during decommissioning is addressed by the DP provided for by condition 3).

The EMP must be in accordance with the Application insofar as it related to environmental management measures. The EMP must set out the roles, responsibilities and chain of command for the Company personnel any contractors or sub-contractors in respect of environmental management for the protection of environmental interests during the construction and operation of the Development. It must address, but not be limited to, the following overarching requirements for environmental management during construction:

a) Mitigation measures to prevent significant adverse impacts to environmental interests, as identified in the Application and pre-consent and pre-construction

monitoring or data collection, and include reference to relevant parts of the CMS (refer to condition 11);
b) Marine Pollution and Contingency Plan ("MPCP");
c) Management measures to prevent the introduction of invasive non-native marine species;
d) A site waste management plan (dealing with all aspects of waste produced during the construction period), including details of contingency planning in the event of accidental release of materials which could cause harm to the environment. Wherever possible the waster hierarchy of reduce, reuse and recycle should be encouraged; and
e) The reporting mechanisms that will be used to provide the Scottish Ministers and relevant stakeholders with regular updates on construction activity, including any environmental issues that have been encountered and how these have been addressed.

The EMP must be regularly reviewed by the Company and the Scottish Ministers at intervals agreed by the Scottish Ministers. Reviews must include, but not be limited to, the reviews of updated information on construction methods and operations of the Development and updated working practices.

The EMP must be informed, so far as is reasonably practicable, by the baseline monitoring or data collection undertaken as part of the Application and the PEMP.

Reason: *To ensure that all construction and operation activities are carried out in a manner that minimises their impact on the environment, and that mitigation measures contained in the Application, or as otherwise agreed, are fully implemented.*

15. Vessel Management Plan

The Company must, no later than six months prior to the Commencement of the Development, submit a VMP in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, MCA, SFF and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The VMP must include, but not be limited to, the following details:

a) The number, types and specification of vessels required;
b) How vessel management will be coordinated, particularly during construction, but also during operation; and
c) Location of working port(s), the routes of passage, how often vessels will be required to transit between port(s) and the site and indicative vessel transit corridors proposed to be used during construction and operation of the Development.

The confirmed individual vessel details must be notified to the Scottish Ministers in writing no later than 14 days prior to the Commencement of the Development, and thereafter, any changes to the details supplied must be notified to the Scottish Ministers, as soon as practicable, prior to any such change being implemented in the construction or operation of the Development.

The VMP should refer to the Scottish Marine Wildlife Watching Code and Guide to Best Practice for Watching Marine Wildlife for guidance on how vessels should behave around aggregations of birds on the water.

The VMP must, so far as is reasonably practicable, be consistent with the CMS, the EMP, the PEMP, the NSP, and the LMP.

Reason: *To mitigate the impact of vessels.*

16. Operation and Maintenance Programme

The Company must, no later than three months prior to the Commissioning of the first WTG, submit an Operation and Maintenance Programme ("OMP"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, SFF and MCA and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The OMP must set out the procedures and good working practices for operations and the maintenance of the WTG's, substructures, and inter-array cable network of the Development. Environmental sensitivities which may affect the timing of the operation and maintenance activities must be considered in the OMP.

The OMP must, so far as is reasonably practicable, be consistent with the EMP, the PEMP, the VMP, the NSP, the CaP and the LMP.

Reason: *To safeguard environmental interests during operation and maintenance of the Development.*

17. Navigational Safety Plan

The Company must, no later than six months prior to the Commencement of the Development, submit an NSP, in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with MCA, NLB, RYA, SFF and any other navigational advisors or organisations as may be required at the discretion of the Scottish Ministers.

The NSP must include, but not be limited to, the following issues:

a) Navigational safety measures;
b) Construction exclusion zones;
c) Notice(s) to mariners and radio navigation warnings;
d) Anchoring areas;
e) Temporary construction lighting and marking;
f) Buoyage;
g) Post-construction monitoring, and;
h) Hydrographic surveys.

The Company must confirm within the NSP that they have taken into account and adequately addressed all of the recommendations of the MCA in the current Marine Guidance Note ("MGN") 654, and its annexes that may be appropriate to the Development, or any other relevant document which may supersede this guidance prior to approval of the NSP.

Reason: *To mitigate the navigational risk to other legitimate users of the sea.*

18. Inter Array Cable Plan

The Company must, no later than six months prior to the Commencement of the Development, submit a Cable Plan ("CaP"), in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, MCA, SFF and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers. The CaP must be in accordance with the Application.

The CaP must include, but not be limited to, the following:

a) The vessel types, location, duration and cable laying techniques for the inter array cables;
b) The results of monitoring or data collection work (including geophysical, geotechnical and benthic surveys) which will help inform inter array cable routing;
c) Technical specification of the inter array cables, including a desk based assessment of attenuation of electro-magnetic field strengths and shielding;
d) A Cable Burial Risk Assessment to ascertain burial depths and where necessary alternative protection measures;
e) Methods to be used to mitigate the effects of EMF;
f) Methodologies and timetable for post-construction and operational surveys (including over trawl where appropriate) of the inter array cables where mechanical protection of cables is deployed; and
g) Methodologies for cable inspection with measures to address and report to the Scottish Ministers, the MCA, NLB, UKHO and mariners, any exposure of inter array cables.

Any consented cable protection works must ensure existing and future safe navigation is not compromised. The Scottish Ministers will accept a maximum of 5% reduction in surrounding depth referenced to Chart Datum. Any greater reduction in depth must be agreed in writing by the Scottish Ministers.

Reason: *To ensure all environmental and navigational issues are considered for the location and construction of the inter array cables.*

19. Lighting and Marking Plan

The Company must, no later than six months prior to the Commencement of the Development, submit an LMP, in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, MCA, NLB, CAA, MOD, RYA and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers.

The LMP must provide that the Development be lit and marked in accordance with the current CAA and MOD aviation lighting policy, and guidance that is in place as at the date of the Scottish Ministers approval of the LMP, or any such other documents that may supersede this guidance prior to the approval of the LMP.

The LMP must detail navigational lighting requirements detailed in the International Association of Marine Aids to Navigation and Lighthouse Authorities ("IALA") 0-139 and G1162 or any other documents that may supersede this guidance prior to approval of the LMP.

Reason: *To ensure navigational safety and the safe marking and lighting of the Development.*

20. Air Defence Radar Mitigation Scheme

The Company must, prior to the Commencement of the Development, submit an Air Defence Radar Mitigation Scheme ("ADRM Scheme"), in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation of the ADRM Scheme with the MOD.

For the purposes of this condition, the ADRM Scheme means a detailed scheme to mitigate the adverse impacts of the Development on the Air Defence Radar at Remote Radar Head Buchan and the air surveillance and control operations of the MOD. The scheme will set out the appropriate measures to be implemented to that end.

No WTG erected as part of the Development shall be permitted to rotate its rotor blades about its horizontal axis, other than for the purpose of testing radar mitigation for the Development for specific periods as defined in the approved ADRM Scheme or otherwise arranged in accordance with provisions contained in the approved ADRM Scheme, until:

a) those mitigation measures required to be implemented prior to any WTG being permitted to rotate its rotor blades about its horizontal axis as set out in the approved ADRM Scheme have been implemented, and;
b) any performance criteria specified in the approved ADRM Scheme and which the approved ADRM Scheme requires to have been satisfied prior to any WTG being permitted to rotate its rotor blades about its horizontal axis have been satisfied and the Scottish Ministers, in conjunction with the MOD, have confirmed this in writing.

Thereafter, the Development shall be operated strictly in accordance with the details set out in the approved ADRM Scheme for the lifetime of the Development.

Reason: *To mitigate the adverse impacts of the Development on the Air Defence Radar Head Buchan.*

21. Primary Radar Mitigation Scheme

No part of any WTG shall be erected above mean sea level until a Primary Radar Mitigation Scheme ("PRMS") has been submitted to and approved in writing by the Scottish Ministers following consultation with NATS (En Route) Public Limited Company ("NERL"). Commencement of the Development cannot take place until such approval is granted.

No blades shall be fitted to any WTG until the technical mitigation measures set out in the approved PRMS have been implemented in accordance with its terms and the Development must thereafter be operated fully in accordance with such approved Primary Radar Mitigation Scheme

Reason: *To mitigate the adverse impacts of the Development on the Allanshill and Perwinnes radar and associated air traffic control operations.*

22. Project Environmental Monitoring Programme

The Company must, no later than six months prior to the Commencement of the Development, submit a PEMP, in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot, RSPB Scotland, SFF and any other environmental advisors or organisations as required at the discretion of the Scottish Ministers. The PEMP must be in accordance with the Application as it relates to environmental monitoring.

The PEMP must set out measures by which the Company must monitor the environmental impacts of the Development, which may include the use of eDNA techniques. Monitoring is required throughout the lifespan of the Development where this is deemed necessary by the Scottish Ministers. Lifespan in this context includes pre-construction, construction, operational and decommissioning phases.

The Scottish Ministers must approve all initial methodologies for the above monitoring, in writing and, where appropriate, in consultation with the NatureScot and any other environmental advisors or organisations as required at the discretion of the Scottish Ministers.

Monitoring must be done in such a way so as to ensure that the data which is collected allows useful and valid comparisons between different phases of the Development. Monitoring may also serve the purpose of verifying key predictions in the Application. In the event that further potential adverse environmental effects are identified, for which no predictions were made in the Application, the Scottish Ministers may require the Company to undertake additional monitoring.

The PEMP must cover the following matters:, but not be limited to, the following matters:

a) Pre-construction, construction (if considered appropriate by the Scottish Ministers) and post-construction monitoring or data collection as relevant in terms of the Application, and any subsequent monitoring or data collection for:

    1. Birds;
    2. Fish and shellfish;
    3. Diadromous Fish
    4. Marine mammals;
    5. Benthic Communities

b) The Company's contribution to data collection or monitoring as identified and agreed by the Scottish Ministers.

In relation to EMF, the Licensee must monitor and provide a report on the EMF produced by the Works to the Scottish Ministers. The Company must agree the methodologies and timescales for monitoring with the Scottish Ministers prior to the Commencement of the Works.. Any agreement must be adhered to unless otherwise agreed and approved by the Scottish Ministers.

Due consideration must be given to the Scottish Marine Energy Research ("ScotMER") programme, or any successor programme formed to facilitate these research interests.

Any pre-consent monitoring or data collection carried out by the Licensee to address any of the above issues may be used in part to discharge this condition subject to the written approval of the Scottish Ministers.

The Scottish Ministers may require the Company to amend the PEMP and submit such an amended PEMP, in writing, to the Scottish Ministers, for their written approval. Such approval may only be granted following consultation with NatureScot and any other environmental advisers, or such other advisors as may be required at the discretion of the Scottish Ministers.

The Company must submit written reports and associated raw and processed data of such monitoring or data collection to the Scottish Ministers at timescales to be determined by them. Consideration should be given to data storage, analysis and reporting and be to Marine Environmental Data and Information Network standards.

Subject to any legal restrictions regarding the treatment of the information, the results are to be made publicly available by the Scottish Ministers, or by such other party appointed at their discretion.

The Scottish Ministers may agree, in writing, that monitoring may be reduced or ceased before the end of the lifespan of the Development.

Should any advisory groups be established for advice from stakeholders, the Company must participate as directed by the Scottish Ministers.

Reason: *To ensure that appropriate and effective monitoring of the impacts of the Development is undertaken.*

23. Fisheries Management and Mitigation Strategy

The Company must submit a Fisheries Management and Mitigation Strategy ("FMMS"), in writing, to the Scottish Ministers for their written approval no later than six months prior to the Commencement of the Development. The Development cannot take place until such approval is granted.

The FMMS must include:

a) a strategy for communicating with fishers;
b) an assessment of the impact of the Development on the affected commercial fisheries, both in socio-economic terms and in terms of environmental sustainability;
c) a description of measures to mitigate adverse effects on commercial fisheries and fishers, and;
d) a description of the monitoring of the effect of the Development on commercial fisheries and of the effectiveness of mitigation.

The outcome of the monitoring of the effectiveness of the mitigation measures may be used to adapt the FMMS subject to the approval of the Scottish Ministers.

The Company must implement the approved FMMS.

Should any relevant stakeholder groups be established, the Company must participate as directed by the Scottish Ministers.

Reason: *To mitigate the impact on commercial fishermen.*

24. Environmental Clerk of Works

Prior to the Commencement of the Development, the Company must at its own expense, and with the approval of the Scottish Ministers in consultation with NatureScot, appoint an independent Environmental Clerk of Works ("ECoW"). The ECoW must be appointed in time to review and approve the draft version of the first plan or programme submitted under this consent to Scottish Ministers, in sufficient time for any pre-construction monitoring requirements, and remain in post until agreed by the Scottish Ministers. The terms of appointment must also be approved by the Scottish Ministers in consultation with NatureScot.

The terms of the appointment must include, but not be limited to:

a) Quality assurance of final draft versions of all plans and programmes required under this consent;
b) Responsible for the monitoring and reporting of compliance with the consent conditions and the environmental mitigation measures for all wind farm infrastructure;
c) Provision of on-going advice and guidance to the Company in relation to achieving compliance with consent conditions, including but not limited to the conditions relating to and the implementation of the CMS, the EMP, the PEMP, the PS, the CaP and the VMP;
d) Provision of reports on point b & c above to the Scottish Ministers at timescales to be determined by the Scottish Ministers;
e) Induction and toolbox talks to onsite construction teams on environmental policy and procedures, including temporary stops and keeping a record of these;
f) Monitoring that the Development is being constructed in accordance with the plans and this consent, the Application and in compliance with all relevant regulations and legislation;
g) Reviewing and reporting incidents/near misses and reporting any changes in procedures as a result to the Scottish Ministers; and
h) Agreement of a communication strategy with the Scottish Ministers.

Reason: *To ensure effective monitoring of and compliance with the environmental mitigation and management measures associated with the Development.*

25. Fisheries Liaison Officer

Prior to the Commencement of the Development, a Fisheries Liaison Officer ("FLO"), must be appointed by the Company and approved, in writing, by the Scottish Ministers following consultation with the SFF and any other advisors or organisations as required at the discretion of the Scottish Ministers. The FLO must be appointed by the Company for the period from Commencement of the Development until the Final Commissioning of the Development. The identity and credentials of the FLO must be included in the EMP (referred to in condition 14). The FLO must establish and maintain effective communications between the Company, any contractors or sub-contractors, fishermen and other users of the sea during the construction of the Development, and ensure compliance with best practice guidelines whilst doing so.

The responsibilities of the FLO must include, but not be limited to:

a) Establishing and maintaining effective communications between the Company, any contractors or sub-contractors, fishermen and other users of the sea concerning the overall Development and any amendments to the CMS and site environmental procedures;
b) The provision of information relating to the safe operation of fishing activity on the site of the Development; and
c) Ensuring that information is made available and circulated in a timely manner to minimise interference with fishing operations and other users of the sea.

Reason: *To facilitate engagement with the commercial fishing industry.*

26. Protocol for Archaeological Discoveries

The Company must, no later than six months prior to the Commencement of the Development submit a Protocol for Archaeological Discoveries ("PAD") and Written Scheme of Investigation ("WSI") which sets out what the Company must do on discovering any marine archaeology during the construction, operation, maintenance and monitoring of the Development, in writing, to the Scottish Ministers for their written approval. Commencement of the Development cannot take place until such approval is granted.

Such approval may be given only following consultation by the Scottish Ministers with Historic Environment Scotland and any such advisors as may be required at the discretion of the Scottish Ministers. The Reporting Protocol must be implemented in full, at all times, by the Company.

The Company must send the approved PAD and WSI to Aberdeenshire Council, Aberdeen City Council and Angus Council for information only.

Reason: *To ensure any discovery of archaeological interest is properly and correctly reported.*

27. Detailed Seabird Compensation Plan

The Company must submit a Detailed Seabird Compensation Plan in writing to the Scottish Ministers for their written approval at least six months prior to the implementation of the compensatory measures. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers, which may include a compensatory measures steering group.

The Detailed Seabird Compensation Plan must be in accordance with the Outline Seabird Compensation Plan submitted on 16 April 2024, unless otherwise agreed by the Scottish Ministers, and demonstrate that the compensatory measures will compensate for any adverse effects on kittiwake at Buchan Ness to Collieston Coast SPA; kittiwake, razorbill and guillemot at East Caithness Cliffs SPA; gannet and puffin at Forth Islands SPA; kittiwake and guillemot at Fowlsheugh SPA; kittiwake at Troup, Pennan and Lion's Heads SPA, as identified in the Appropriate Assessment for the Development. The Detailed Seabird Compensation Plan must include, but not be limited to, the following:

a) a timetable of implementation and maintenance of the compensatory measures;
b) the location of the compensatory measures;
c) a description of the characteristics of the proposed compensatory measures;
d) the predicted outcomes of each compensatory measure, including timescales of when those outcomes will be achieved;
e) details of monitoring and reporting of the effectiveness of the compensatory measures including—
    i) survey methods;
    ii) survey programmes;
    iii) success criteria;
    iv) timescales for monitoring reports to be submitted to the Scottish Ministers;
    v) reporting of meeting success criteria, and
    vi) measures to adapt, and where necessary increase, compensatory measures and the criteria used to trigger any adaptation of compensatory measures.

The Company must implement the measures set out in the approved Detailed Seabird Compensation Plan.

The Development shall only be commenced where the Scottish Ministers have concluded that the success criteria have been met and that the compensatory measures taken are effective and confirmed this in writing to the Company following its consideration of monitoring and reporting information provided by the Company.

Any requests for amendments to the approved Detailed Seabird Compensation Plan must be submitted, in writing, to the Scottish Ministers for their written approval. Such approval may only be granted following consultation by the Scottish Ministers with NatureScot and any such other advisors or organisations as may be required at the discretion of the Scottish Ministers, which may include a compensatory measures steering group.

The Company must make such alterations to the approved Detailed Seabird Compensation Plan as directed by the Scottish Ministers and submit the updated Detailed Seabird Compensation Plan to the Scottish Ministers for approval within such a period as directed in writing by the Scottish Ministers.

The Company must notify the Scottish Ministers and NatureScot of the completion of any compensatory measures set out in the Detailed Seabird Compensation Plan.

Reason: To ensure the coherence of the UK site network is secured

Annex 3 - DEFINITIONS AND GLOSSARY OF TERMS - In this decision notice and in Annex 1 and 2

“Addendum of Additional Information” means the additional information requested from the Company, submitted on 20 October 2023;
“ADRM Scheme” means Air Defence Radar Mitigation Scheme;
“Application” means the Environmental Impact Assessment Report, Report to Inform Appropriate Assessment and supporting documents submitted by the Company on 20 January 2023 to construct an offshore generating station and transmission works, it also includes the Addendum of Additional Information submitted on 20 October 2023;
“AEoSI” means adverse effect on site integrity;
“Commencement of the Development” means the date on which the first construction activity occurs in accordance with the EIA Report submitted by the Company on 20 January 2023;
“Company” means Green Volt Offshore Windfarm Ltd (Company Number SC698787), having its registered office at 12 Alva Street, Edinburgh, EH2 4QG, United Kingdom;
“CRM” means collision risk modelling;
“EIA” means Environmental Impact Assessment;
“EIA Report” means Environmental Impact Assessment Report;
“EMF” means Electromagnetic Field;
“GVA” means Gross Added Value;
“HPAI” means Highly Pathogenic Avian Influenza;
“HRA” means Habitats Regulations Appraisal;
“IALA” means International Association of Marine Aids to Navigation and Lighthouse Authorities;
“km” means kilometres;
“LAT” means Lowest Astronomical Tide;
“LSE” means Likely Significant Effect;
“m” means metres;
“MGN” means Marine Guidance Note;
“MNNS” means Marine Non-Native Species;
“MMO” means Marine Management Organisation;
“ncMPA” means Nature Conservation Marine Protected Area;
“MW” means megawatt;
“PI” means Public Inquiry;
“PVA” means Population Viability Assessment;
“s.36” means Section 36 of the Electricity Act 1989;
“s.36A” means Section 36A of the Electricity Act 1989;
“SAC” means Special Area of Conservation;
“SAR” means Search and Rescue;
“ScotMER” means Scottish Marine Energy Research Programme;
“SPA” means Special Protected Area;
“UXO” means Unexploded Ordnance;
“WTG” means Wind Turbine Generator.

Organisations and Companies

“BT” means British Telecommunications;
“CAA” means the Civil Aviation Authority;

“DSFB” means District Salmon Fishery Board
“HES” means Historic Environment Scotland;
“MAU” means Marine Directorate – Marine Analytical Unit;
“MCA” means the Maritime and Coastguard Agency;
“MD-LOT” means Marine Directorate – Licensing Operations Team (previously known as “MS-LOT”, Marine Scotland – Licensing Operations Team);
“MD-SEDD” means Marine Directorate – Science, Evidence, Data and Digital (previously known as “MSS” which means Marine Scotland Science);
“MOD” means the Ministry of Defence;
“NATS” means National Air Traffic Service Safeguarding;
“NLB” means the Northern Lighthouse Board;
“RSPB” means the Royal Society for the Protection of Birds Scotland;
“RYA” means the Royal Yachting Association Scotland;
“SFF” means the Scottish Fishermen’s Federation;
“UKHO” means United Kingdom Hydrographic Office.

Plans, programmes, statements and schemes

“CaP” means Cable Plan;
“CBRA” means Cable Burial Risk Assessment:
“CMS” means Construction Method Statement;
“CoP” means Construction Programme;
“DP” means Decommissioning Programme;
“DS” means the Design Statement;
“DSLP” means Development Specification and Layout Plan;
“ECoW” means Environmental Clerk of Works;
“EMP” means Environmental Management Plan;
“FLO” means Fisheries Liaison Officer;
“FMMS” means Fisheries Management and Mitigation Strategy;
“LMP” means Lighting and Marking Plan;
“MPCP” means Marine Pollution Contingency Plan;
“NPF4” means Scotland’s National Planning Framework 4;
“NSP” means Navigational Safety Plan;
“OMP” means Operation and Maintenance Programme;
“PAD” means Protocol for Archaeological Discoveries;
“PAM” means Passive Acoustic Monitoring;
“PEMP” means Project Environmental Monitoring Programme;
“PRMS” means Primary Radar Mitigation Scheme;
“PS” means Piling Strategy;
“VMP” means Vessel Management Plan, and;
“WSI” means Written Scheme of Investigation.

Legislation

“the Electricity Act” means the Electricity Act 1989;

“the Habitats Regulations” means the Conservation (Natural Habitats, & c.) Regulations 1994 and the Conservation of Habitats and Species Regulations 2017;

“the 2017 EW Regulations” means the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017;

“the 2017 MW Regulations” means the Marine Works (Environmental Impact Assessment) (Scotland) Regulations 2017.

APPENDIX 2 - Financial Modelling

APPENDIX 1 – ØRSTED RESPONSE TO EXQ1 & EXQ2

This document has been prepared by the Ørsted IPs in response to the examining authority's written questions [PD-015] in the examination of the Morecambe Offshore Windfarm Generation Assets ("**Morecambe**"). This submission forms part of the Ørsted IPs' response to questions1OOI3, 2OOI2 and 2OOI3.

Using a mix of publicly available data and information submitted throughout the examinations of Morecambe along with the Morgan and Mona Offshore wind projects (together, the "**MoMoMo developments**"), the Ørsted IPs have modelled the financial consequences of the wake losses for each project. The purpose of this analysis is to provide the Examining Authority (ExA) sufficient information to quantify and understand the magnitude of the financial losses incurred by the Ørsted IPs as a result of the wake effects and the significance of those impacts across the lifetime of each asset without divulging confidential internal commercial information.

This document first explains the methodology used and then lists assumptions. It is then structured in two parts reflecting the two questions asked by the ExA. Part One answers 1OOI3. It provides an analysis of the overall financial impacts of wake impacts of the MoMoMo developments on the Ørsted IPs' portfolio. Part Two answers 2OOI3 and 2OOI4 and, in conjunction with Appendix 3, provides an analysis of the impacts on the assets and explains when wake impacts become particularly relevant in terms of future viability of the assets.

Methodology

At its highest level, the formula used to calculate the financial impact of the predicted wake losses at a particular project is a function of:

(1) the Annual Electricity production *multiplied by*

(2) the predicted wake loss (in %) *multiplied by*

(3) electricity prices between the operational commencement date of the "waking" project and the "waked" project's decommissioning date.

Part 3 of the calculation differs depending on the type of market support the asset receives, which is either via Renewable Obligation Certificates (ROC) or Contract for Difference (CfD).

CfD Assets' revenue per MWh is based on the Contract for Difference price per MWh. When the CfD expires (see *Table 8: CfD price*) the assets become fully merchant with revenue calculated as Market Price per MWh. The following assets are currently supported by CfD: Walney Extension Offshore Windfarm (comprising Walney 3 and Walney 4) and Burbo Bank Extension Offshore Windfarm.

ROC Assets' revenue per MWh is based on the number of ROC certificates produced by the assets per MWh multiplied by the buy-out price per MWh plus the market price per MWh. When ROC certificates expire (as outlined in *Table 9: Buy-out price per ROC*), the asset becomes fully merchant with revenue calculated as market price per MWh. The following assets are currently supported by the ROC scheme: Barrow Offshore Windfarm, West of Duddon Sands Offshore Windfarm, Walney Offshore Windfarm (comprising Walney 1 and Walney 2) and Burbo Bank Offshore Wind farm.

Assets are referred by their acronyms, as set out below, throughout the rest of the document.

Barrow	BOW
West of Duddon Sands	WDS
Walney 1	WOW01
Walney 2	WOW02
Walney Extension 3	WOW03
Walney Extension 4	WOW04
Burbo Bank 1	BBW01
Burbo Bank 2 extension	BBW02

Assumptions

In order to produce this high-level analysis, the Ørsted IPs have made several reasonable assumptions designed to simplify the modelling. The scope of the analysis is limited to Morecambe and the cumulative effect of the MoMoMo developments.

The numerical assumptions referred to below are available in the form of data tables in Appendix 2.

1. Annual Production remains stable throughout the lifetime of the asset (*Table 6: Estimated Electricity production per annum (GWh)*. The Ørsted IPs' internal expectations of AEP are confidential and cannot be shared. Instead the AEP numbers are taken from the Mona submission "S_Ex_1 Technical Note: Calculation of the Net Effects on Greenhouse Gas Emissions" [AS-033,] page 16, where an average of the last 5 years of metered production from each asset is sourced from Ofgem.
2. Wake loss remains static throughout the lifetime of the asset (*Table 5: Percentage wake effect)*.
3. Assets operate for an additional 10 years on top of their minimum operational lifetime (*Table 7: Decommissioning dates*)
4. Wake impacts as a result of all three MoMoMo developments, start on the 01/07/2030. In reality, the assets are aiming to be fully constructed by this date meaning the Ørsted IPs' assets will experience wake losses earlier.
5. Revenue loss is a function of Market Price, CfD and ROC and ignores auxiliary services, Renewable Energy Guarantees of Origin and other revenues.
6. CfD prices are available on the LCCC website, see hyperlinks in Table 8: CfD price .
7. ROC prices are available on the OFGEM website, see hyperlinks in Table 9: Buy-out price per ROC
8. Market prices are sourced from DESNZ's Research titled "*Prices from Energy and emissions projections: 2023 to 2050*" (published 17 December 2024), specifically *"Annex M: Growth assumptions and prices".*
9. The market prices used in this paper are based on the main projection or "reference scenario" used by DESNZ in its publication "Energy and emissions projections 2023 to 2050 (*Table 10: "Energy and emissions projections: 2023 to 2050", from DESNZ (p/KWh, 2023 prices)).* This is referred to as the "DESNZ Reference Scenario" in this document.
10. DESNZ scenarios are expressed in 2023 Prices. In order to align with this document, prices have been adjusted to 2025 by means of adding two years' worth of inflation (*Table 11: Table 10 above converted to £/MWh and adjusted to 2025 prices*).

11. For the avoidance of any doubt, this document contains no confidential information. All price forecasts are sourced from DESNZ and are used for illustrative purposes and do not reflect Ørsted's energy market outlook.

Part One – Financial impact analysis of wake losses, response to 1OOI3

The analysis below illustrates the magnitude of the financial impacts of wake loss from Morecambe alone and the MoMoMo developments cumulatively, across the lifetimes of the Ørsted IPs' assets.

By 2034, all of the Ørsted IPs will be fully merchant. Morecambe wake loss will translate into an average £3m lost annal revenue for its first decade of operation. MoMoMo's cumulative wake impacts are expected to reduce the Ørsted's IPs' revenue by between £16m to £20m per annum for the same period. This level of financial impact could be sufficient to result in the ongoing operation of the assets becoming unviable.

As noted above, this analysis is based on DESNZ Reference scenario. Tables outlining the financial impacts in more detail are provided in Appendix 3.

As with any long-term financial predictions, the answer is heavily predicated on underlying assumptions. In particular, the discounting rate used to calculate the current value of the stream of wake losses that will impact the Ørsted IPs' assets. This calculation is usually referred to as a Net Present Value ("**NPV**").

Ørsted does not consider it would be appropriate to select one discount rate and has instead opted to run the NPV calculations using a range. The results of these computations are available in Table 1 and Table 2 below. Table 1 analyses Morecambe only and Table 2 analyses the cumulative impact of the MoMoMo developments. The NPV for the minimum lifetime of the asset is shown separately from the total impact NPV that includes an additional 10-year operation. It is noted that the discounting rates in the tables take into account future anticipated inflation.

In summary, based on DESNZ Reference scenario and assuming a 0.0% discount rate, it is predicted that the effects from Morecambe alone would result in a loss of up to £38 million across the minimum lifetimes of the assets, and cumulatively with the Mona and Morgan developments the predicted loss is up to £250 million. This impact is predicted to almost double if the assets continue to operate for a further 10 years.

As the discount rate increases, the NPV values reduce accordingly. For example, at a 7.5% discount rate, the NPV total impact for Morecambe alone (including a 10 year additional operating period) reduces to £27m, and £169m for the cumulative MoMoMo developments; this is lower than the £68m and £440m predicted using a 0.0% discount rate.

Table 1: Morecambe wake loss NPV impact on Ørsted IPs (inclusive and exclusive of additional 10-year operation) (£m)

	Total impact (min. lifetime + 10 years)				Minimum lifetime			
	0.0%	2.5%	5.0%	7.5%	0.0%	2.5%	5.0%	7.5%
BOW	2	2	1	1	-	-	-	-
WDS	27	20	15	11	16	13	10	8
WOW01	4	3	2	1	1	1	1	1
WOW02	3	2	2	1	2	1	1	1
WOW03	10	7	5	4	6	5	4	3
WOW04	14	10	7	5	9	7	5	4
BBW01	1	1	0	0	0	0	0	0
BBW02	7	5	3	3	4	3	2	2
Total	**68**	**49**	**36**	**27**	**38**	**30**	**24**	**19**

Table 2: cumulative wake loss NPV impact on Ørsted IPs from the MoMoMo developments (inclusive and exclusive of additional 10-year operation) (£m)

	Total impact (min. lifetime + 10 years)				Minimum lifetime			
	0.0%	2.5%	5.0%	7.5%	0.0%	2.5%	5.0%	7.5%
BOW	5	4	3	2	-	-	-	-
WDS	104	76	57	43	61	49	40	32
WOW01	25	18	13	10	9	7	6	5
WOW02	36	27	20	15	17	14	12	10
WOW03	104	73	52	38	64	50	39	31
WOW04	134	94	68	49	83	65	51	40
BBW01	3	2	2	1	0	0	0	0
BBW02	29	20	14	10	16	13	10	8
Total	**440**	**315**	**229**	**169**	**250**	**199**	**158**	**126**

Part Two – detailed analysis in response to 2OOI3 and 2OOI4

As outlined in the Ørsted IPs' response to question 2OOI3 above, as market support for the assets falls away and they become fully merchant, the economic margins for ongoing operation become highly marginal and assets become significantly more vulnerable.

By way of example, the financial impacts of the predicted wake loss on BOW are displayed in tables 3 (for Morecambe alone) and 4 (for the MoMoMo developments cumulatively) below. BOW (an asset with 90 MW installed capacity), will be the first asset in the Ørsted IPs' portfolio to become fully merchant in 2027. By this stage, the price of electricity generated from this asset will be £62.1/MWh (as shown in the 'Total Price' row in tables 3 and 4 below). Meanwhile, the predicted wake loss will continue at 1.37% from Morecambe alone and cumulatively from the MoMoMo developments at 3.09%. These losses translate into a financial impact of approximately £0.2m per annum from Morecambe alone and between £0.5m to £0.6m cumulatively per annum from the MoMoMo developments.

Table 3: Detailed calculations of the financial impact of wake effects on Barrow caused by Morecambe alone

BOW (2025 prices)		'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41
Production	GWh	272	272	272	272	272	272	272	272	272	272	272	188	-
Wake loss	%age	-	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	1.37%	-
Compensation period		-	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.7	-
Lost production	GWh	-	(1.8)	(3.7)	(3.7)	(3.7)	(3.7)	(3.7)	(3.7)	(3.7)	(3.7)	(3.7)	(1.8)	-
ROC price	£/MWh	-	-	-	-	-	-	-	-	-	-	-	-	-
Market Price	£/MWh	57.4	47.3	41.6	47.6	52.4	55.2	60.5	62.6	66.2	72.8	72.0	73.8	-
Total Price	£/MWh	57.4	47.3	41.6	47.6	52.4	55.2	60.5	62.6	66.2	72.8	72.0	73.8	-
Financial Impact	£m	-	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)	(0.1)	-

Table 4: Detailed calculations of the financial impact of wake effects on Barrow cumulatively from the MoMoMo developments

BOW (2025 prices)		'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	'41
Production	GWh	272	272	272	272	272	272	272	272	272	272	272	188	-
Wake loss	%age	-	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	3.09%	-
Compensation period		-	0.5	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.7	-
Lost production	GWh	-	(4.2)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(8.4)	(4.0)	-
ROC price	£/MWh	-	-	-	-	-	-	-	-	-	-	-	-	-
Market Price	£/MWh	57.4	47.3	41.6	47.6	52.4	55.2	60.5	62.6	66.2	72.8	72.0	73.8	-
Total Price	£/MWh	57.4	47.3	41.6	47.6	52.4	55.2	60.5	62.6	66.2	72.8	72.0	73.8	-
Financial Impact	£m	-	(0.2)	(0.3)	(0.4)	(0.4)	(0.5)	(0.5)	(0.5)	(0.6)	(0.6)	(0.6)	(0.3)	-

As illustrated above for BOW, at the point that market support ends, the price predicted for electricity generated at each asset will become merchant and revenues will likely drop and become volatile.

This will coincide with the assets aging and therefore potentially incurring increased operational expenditures. At this point, the profitability of the assets becomes more marginal and the Ørsted IPs will have limited options to insulate the assets from the volatility of the energy markets. While these factors have been anticipated and planned for by Ørsted, the wake effects of Morecambe alone and the MoMoMo developments could not have been. In summary, at a point where the assets have become more vulnerable, they will also experience new material financial impacts from wake loss from Morecambe (as well as the Morgan and Mona developments). The Ørsted IPs consider the financial impact of the wake loss will compound forecast financial pressures on the assets. At around this point, therefore, the viability of the assets is likely to be particularly impacted.

APPENDIX 2 – ASSUMPTIONS USED IN ANALYSIS OF FINANCIAL IMPACTS OF WAKE LOSS

Inputs used in the analysis are clearly highlighted in blue font

Table 5: Percentage wake effect

	Morecambe	Cumulative MoMoMo
BOW	1.37%	3.09%
WDS	1.01%	3.86%
WOW01	0.53%	3.78%
WOW02	0.32%	3.69%
WOW03	0.40%	4.13%
WOW04	0.56%	5.21%
BBW01	0.46%	1.63%
BBW02	0.45%	1.85%

Source: Wake Impact Assessment report (REP3-112) page 9

Table 6: Estimated Electricity production per annum (GWh)

	GWh
BOW	272.0
WDS	1,476.9
WOW01	626.4
WOW02	709.0
WOW03	1,299.0
WOW04	1,299.0
BBW01	252.0
BBW02	896.2

Source: Additional Submission to the examination of the Mona Offshore Windfarm Generation Assets (EN010121) - Accepted at the discretion of the Examining Authority - S_Ex_1 Technical Note: Calculation of the Net Effects on Greenhouse Gas Emissions (AS-033) page 16 (sourced from OFGEM)

Table 7: Decommissioning dates

	Earliest date	With additional 10 years
BOW	30/09/2030	30/09/2040
WDS	31/10/2038	31/10/2048
WOW01	31/07/2035	31/07/2045
WOW02	30/06/2036	30/06/2046
WOW03	31/05/2042	31/05/2052
WOW04	31/05/2042	31/05/2052
BBW01	31/12/2031	31/12/2041
BBW02	31/05/2041	31/05/2051

Table 8: **CfD price**

Asset	sources
WOW03	• Link to LCCC website
WOW04	
BBW02	• Link to LCCC website

Table 9: Buy-out price per ROC

Asset	source
BOW	• Link to Buy out prices
WDS	
WOW01	
WOW02	
BBW01	

Table 10: "Energy and emissions projections: 2023 to 2050", from DESNZ (p/KWh, 2023 prices)
Prices sourced from "EEP - Annex M - Growth assumptions and prices" (Link to OFGEM webpage)
Using the "Reference" tab > Price – Wholesale > Electricity (baseload) > p/kWh (2023 prices), row 20

Year	p/kWh (2023 prices)	Year	p/kWh (2023 prices)	Year	p/kWh (2023 prices)
2023	9.809	**2034**	5.236	**2045**	7.728
2024	6.808	**2035**	5.742	**2046**	7.902
2025	6.861	**2036**	5.938	**2047**	7.792
2026	6.827	**2037**	6.284	**2048**	7.856
2027	6.155	**2038**	6.906	**2049**	7.844
2028	5.889	**2039**	6.834	**2050**	7.804
2029	5.450	**2040**	7.002	**2051***	7.804
2030	4.488	**2041**	7.240	**2052***	7.804
2031	3.944	**2042**	7.434	**2053***	7.804
2032	4.518	**2043**	7.516		
2033	4.972	**2044**	7.696		

** table extended three years to 2053 assuming 7.80p/KWh in each year*

Table 11: Table 10 above converted to £/MWh and adjusted to 2025 prices

Adjusting from "2023 prices" to "2025 price" by applying an inflationary factor of 3.3%[1] for 2024 and 2.0 %[2] for 2025

Year	£/MWh (2025 prices)	Year	£/MWh (2025 prices)	Year	£/MWh (2025 prices)
2023	98.09	**2034**	55.17	**2045**	81.43
2024	70.32	**2035**	60.50	**2046**	83.26
2025	72.30	**2036**	62.57	**2047**	82.10
2026	71.93	**2037**	66.21	**2048**	82.78
2027	64.85	**2038**	72.76	**2049**	82.65
2028	62.05	**2039**	72.01	**2050**	82.22
2029	57.43	**2040**	73.78	**2051**	82.22
2030	47.29	**2041**	76.29	**2052**	82.22
2031	41.55	**2042**	78.33	**2053**	82.22
2032	47.61	**2043**	79.20		
2033	52.38	**2044**	81.09		

[1] Office for National Statistics https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/l55o/mm23
[2] Bank of England inflation target Inflation and the 2% target | Bank of England

APPENDIX 3 –DETAILED CACLULATIONS OF FINANCIAL IMPACT OF WAKE EFFECT

(Based on DESNZ Reference scenario, 2025 prices)

Detailed calculations of the financial impact of **Morecambe alone** on each asset

Table 12: Summary of financial impact of Morecambe alone (£m, 2025 prices)

	BOW	WDS	WOW01	WOW02	WOW03	WOW04	BBW01	BBW02	**Total**
2025	-	-	-	-	-	-	-	-	**-**
[…]	-	-	-	-	-	-	-	-	**-**
2030	0.1	1.3	0.3	0.2	0.5	0.8	0.0	0.4	**3.6**
2031	0.2	2.6	0.2	0.4	1.1	1.5	0.0	0.8	**6.8**
2032	0.2	2.6	0.2	0.4	1.1	1.5	0.1	0.4	**6.4**
2033	0.2	2.7	0.2	0.1	0.3	0.7	0.1	0.2	**4.4**
2034	0.2	2.8	0.2	0.1	0.3	0.4	0.1	0.2	**4.2**
2035	0.2	0.9	0.2	0.1	0.3	0.4	0.1	0.2	**2.5**
2036	0.2	0.9	0.2	0.1	0.3	0.5	0.1	0.3	**2.6**
2037	0.2	1.0	0.2	0.2	0.3	0.5	0.1	0.3	**2.8**
2038	0.3	1.1	0.2	0.2	0.4	0.5	0.1	0.3	**3.0**
2039	0.3	1.1	0.2	0.2	0.4	0.5	0.1	0.3	**3.0**
2040	0.1	1.1	0.2	0.2	0.4	0.5	0.1	0.3	**2.9**
2041	-	1.1	0.3	0.2	0.4	0.6	0.1	0.3	**2.9**
2042	-	1.2	0.3	0.2	0.4	0.6	-	0.3	**2.9**
2043	-	1.2	0.3	0.2	0.4	0.6	-	0.3	**2.9**
2044	-	1.2	0.3	0.2	0.4	0.6	-	0.3	**3.0**
2045	-	1.2	0.1	0.2	0.4	0.6	-	0.3	**2.8**
2046	-	1.2	-	0.0	0.4	0.6	-	0.3	**2.7**
2047	-	1.2	-	-	0.4	0.6	-	0.3	**2.6**
2048	-	0.8	-	-	0.4	0.6	-	0.3	**2.1**
2049	-	-	-	-	0.4	0.6	-	0.3	**1.4**
2050	-	-	-	-	0.4	0.6	-	0.3	**1.4**
2051	-	-	-	-	0.4	0.6	-	0.1	**1.1**
2052	-	-	-	-	0.1	0.1	-	-	**0.2**
Min. lifetime	0.1	15.9	1.2	1.5	6.2	8.9	0.1	4.0	**37.9**
+10 years	2.1	11.3	2.3	1.6	3.9	5.5	0.7	3.0	**30.5**
Total	**2.2**	**27.2**	**3.5**	**3.1**	**10.1**	**14.4**	**0.8**	**7.0**	**68.3**

Detailed calculations of the financial impact of **combined MoMoMo** on each Ørsted IPs

Table 13: Summary of financial impact of combined MoMoMo (£m, 2025 prices)

	BOW	WDS	WOW01	WOW02	WOW03	WOW04	BBW01	BBW02	**Total**
2025	-	-	-	-	-	-	-	-	**-**
[…]	-	-	-	-	-	-	-	-	**-**
2030	0.2	5.0	2.1	2.3	5.5	7.0	0.1	1.7	**23.9**
2031	0.3	9.7	1.5	4.5	11.2	14.1	0.2	3.5	**45.0**
2032	0.4	10.1	1.1	4.6	11.2	14.1	0.2	1.5	**43.2**
2033	0.4	10.4	1.2	1.4	2.8	6.2	0.2	0.9	**23.5**
2034	0.5	10.5	1.3	1.4	3.0	3.7	0.2	0.9	**21.6**
2035	0.5	3.4	1.4	1.6	3.2	4.1	0.2	1.0	**15.6**
2036	0.5	3.6	1.5	1.6	3.4	4.2	0.3	1.0	**16.1**
2037	0.6	3.8	1.6	1.7	3.6	4.5	0.3	1.1	**17.0**
2038	0.6	4.1	1.7	1.9	3.9	4.9	0.3	1.2	**18.7**
2039	0.6	4.1	1.7	1.9	3.9	4.9	0.3	1.2	**18.5**
2040	0.3	4.2	1.7	1.9	4.0	5.0	0.3	1.2	**18.7**
2041	-	4.3	1.8	2.0	4.1	5.2	0.3	1.3	**19.0**
2042	-	4.5	1.9	2.0	4.2	5.3	-	1.3	**19.2**
2043	-	4.5	1.9	2.1	4.2	5.4	-	1.3	**19.4**
2044	-	4.6	1.9	2.1	4.4	5.5	-	1.3	**19.8**
2045	-	4.6	0.6	2.1	4.4	5.5	-	1.4	**18.6**
2046	-	4.7	-	0.6	4.5	5.6	-	1.4	**16.8**
2047	-	4.7	-	-	4.4	5.6	-	1.4	**16.0**
2048	-	2.9	-	-	4.4	5.6	-	1.4	**14.3**
2049	-	-	-	-	4.4	5.6	-	1.4	**11.4**
2050	-	-	-	-	4.4	5.6	-	1.4	**11.3**
2051	-	-	-	-	4.4	5.6	-	0.3	**10.2**
2052	-	-	-	-	0.9	1.1	-	-	**2.0**
Min. lifetime	0.2	60.7	8.7	17.4	63.8	83.2	0.3	16.4	**250.7**
+10 years	4.8	43.3	16.3	18.4	40.4	51.0	2.6	12.4	**189.1**
Total	**5.0**	**103.9**	**25.0**	**35.8**	**104.2**	**134.1**	**2.9**	**28.9**	**439.8**

APPENDIX 3 - Project alone impacts

Table 1: Summary of financial impact of Mona alone (£m, 2025 prices)[1]

	BOW	WDS	WOW01	WOW02	WOW03	WOW04	BBW01	BBW02	**Total**
2025	-	-	-	-	-	-	-	-	**-**
[…]	-	-	-	-	-	-	-	-	**-**
2030	0.1	2.0	0.9	0.8	1.1	2.1	0.1	1.1	**8.2**
2031	0.2	4.0	0.9	1.5	2.2	4.3	0.1	2.3	**15.5**
2032	0.2	4.1	0.5	1.5	2.2	4.3	0.1	1.2	**14.1**
2033	0.2	4.2	0.5	0.5	0.6	2.3	0.1	0.6	**9.0**
2034	0.2	4.3	0.6	0.5	0.6	1.1	0.1	0.6	**8.0**
2035	0.3	1.4	0.6	0.5	0.7	1.2	0.1	0.7	**5.5**
2036	0.3	1.5	0.7	0.5	0.7	1.3	0.2	0.7	**5.7**
2037	0.3	1.5	0.7	0.6	0.7	1.4	0.2	0.7	**6.0**
2038	0.3	1.7	0.8	0.6	0.8	1.5	0.2	0.8	**6.6**
2039	0.3	1.7	0.8	0.6	0.8	1.5	0.2	0.8	**6.6**
2040	0.1	1.7	0.8	0.6	0.8	1.5	0.2	0.8	**6.6**
2041	-	1.8	0.8	0.7	0.8	1.6	0.2	0.8	**6.6**
2042	-	1.8	0.8	0.7	0.8	1.6	-	0.9	**6.6**
2043	-	1.8	0.8	0.7	0.9	1.6	-	0.9	**6.7**
2044	-	1.9	0.8	0.7	0.9	1.7	-	0.9	**6.9**
2045	-	1.9	0.3	0.7	0.9	1.7	-	0.9	**6.3**
2046	-	1.9	-	0.2	0.9	1.7	-	0.9	**5.6**
2047	-	1.9	-	-	0.9	1.7	-	0.9	**5.4**
2048	-	1.2	-	-	0.9	1.7	-	0.9	**4.7**
2049	-	-	-	-	0.9	1.7	-	0.9	**3.5**
2050	-	-	-	-	0.9	1.7	-	0.9	**3.5**
2051	-	-	-	-	0.9	1.7	-	0.2	**2.8**
2052	-	-	-	-	0.2	0.3	-	-	**0.5**
Min. lifetime	0.1	24.7	4.1	5.8	12.8	25.6	0.2	11.0	**84.3**
+10 years	2.4	17.6	7.2	6.1	8.1	15.5	1.5	8.2	**66.6**
Total	**2.5**	**42.3**	**11.3**	**11.8**	**20.9**	**41.1**	**1.7**	**19.2**	**150.8**

[1] It is noted that the cumulative effects are slightly lower than the aggregate effects of the individual projects. This is due to complexities related to the interaction of wakes between the developments, as explained in the Wood Thilsted wake loss assessment.

Table 2: Summary of financial impact of Morgan alone (£m, 2025 prices)

	BOW	WDS	WOW01	WOW02	WOW03	WOW04	BBW01	BBW02	**Total**
2025	-	-	-	-	-	-	-	-	**-**
[…]	-	-	-	-	-	-	-	-	**-**
2030	0.0	1.7	0.9	1.4	4.5	4.3	0.0	0.2	**12.9**
2031	0.1	3.2	0.9	2.6	9.1	8.7	0.0	0.4	**25.0**
2032	0.1	3.3	0.5	2.7	9.1	8.7	0.0	0.2	**24.6**
2033	0.1	3.4	0.5	0.8	2.3	4.6	0.0	0.1	**11.8**
2034	0.1	3.5	0.5	0.9	2.4	2.3	0.0	0.1	**9.8**
2035	0.1	1.1	0.6	0.9	2.6	2.5	0.0	0.1	**8.1**
2036	0.1	1.2	0.6	1.0	2.7	2.6	0.0	0.1	**8.3**
2037	0.1	1.3	0.7	1.0	2.9	2.8	0.0	0.1	**8.8**
2038	0.1	1.4	0.7	1.1	3.2	3.0	0.0	0.1	**9.7**
2039	0.1	1.4	0.7	1.1	3.1	3.0	0.0	0.1	**9.6**
2040	0.0	1.4	0.7	1.1	3.2	3.1	0.0	0.1	**9.8**
2041	-	1.4	0.8	1.2	3.3	3.2	0.0	0.1	**10.1**
2042	-	1.5	0.8	1.2	3.4	3.3	-	0.1	**10.3**
2043	-	1.5	0.8	1.2	3.4	3.3	-	0.1	**10.4**
2044	-	1.5	0.8	1.3	3.5	3.4	-	0.1	**10.7**
2045	-	1.5	0.3	1.3	3.5	3.4	-	0.1	**10.2**
2046	-	1.6	-	0.3	3.6	3.5	-	0.1	**9.2**
2047	-	1.6	-	-	3.6	3.4	-	0.1	**8.7**
2048	-	1.0	-	-	3.6	3.5	-	0.1	**8.2**
2049	-	-	-	-	3.6	3.5	-	0.1	**7.2**
2050	-	-	-	-	3.6	3.4	-	0.1	**7.2**
2051	-	-	-	-	3.6	3.4	-	0.0	**7.0**
2052	-	-	-	-	0.7	0.7	-	-	**1.4**
Min. lifetime	0.0	20.1	3.9	10.3	51.8	52.2	0.0	1.8	**140.1**
+10 years	0.7	14.3	6.8	10.9	32.8	31.5	0.4	1.3	**98.7**
Total	**0.7**	**34.5**	**10.7**	**21.2**	**84.6**	**83.7**	**0.4**	**3.2**	**238.9**