

Arbroath and Montrose Static Gear Association

Marine Scotland Licencing Operations Team
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AB11 9DB

To whom it may concern

Applications for Consents and Licences for the Firth of Forth Seagreen Phase 1 Offshore Project – Seagreen Wind Energy Limited

Firstly, may I say this is not written by an academic but by a fisherman who is representing a group of fishermen who are committed and passionate about their chosen profession, so where I fail in punctuation and grammar, I will more than make up in substance giving the views of the fishermen that our association represents.

It will be no surprise that the Arbroath and District Static Gear Association are totally opposed to the planning application for the offshore development.

Our objections to the development are based on the following factors:

1. Effect on future stocks

We can accept there is no scientific evidence to suggest that the construction and operation of the turbines will have any effect on the lobster, crab and fish stock. However until we do have the evidence can we afford to take the chance? We think not and strongly believe that taking the chance with men's livelihoods and the local community infrastructure is totally unacceptable and tantamount to be immoral.

2. Area of sea lost to the fishing fleet

The loss of fishing grounds to both the inshore and offshore fleets is significant. Fishing opportunities throughout the North Sea are diminishing year on year. If you look at the areas currently closed to fishermen: closed areas, seasonal closures, real time closures, oil and gas installations etc. we cannot afford to loose anymore

3. Destruction to sea bed during construction

The general disturbance and destruction to the seabed from concrete and noise pollution is causing the utmost concern. We have grave concerns that the noise and vibration will drive marine life away.

4. Increased marine traffic during construction and maintenance

Marine traffic during construction will undoubtedly increase

considerably with the potential to cause damage/loss of fishing gear i.e. pots and endanger boats and crews themselves. It is inevitable that there could be numerous incidents.

5. Heritage.

The members of the association all have one thing in common, our total commitment to the fishing industry. We take very seriously the responsibility we have to look after our seas to pass on to the next generation and to make sure that nothing or no-one threatens the sustainability of our rich fishing grounds.

Make no mistake about it, if the development goes ahead and it has an adverse effect on the marine life we will witness a coastal clearance that would be on a scale never witnessed before on the east coast of Scotland.

We as an association cannot have that on our conscience. Can you?

Yours Faithfully

Bryan Beckett



Our Ref: MM/fi/L12-136

Your Ref:

4th December 2012



Scottish Fishermen's Federation

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Dear Sirs,

Application for various consents for construction and operation of Seagreen Alpha and Bravo Projects.

The Scottish Fishermen's Federation (SFF) represents the interests of the membership of the main sea fishery associations in Scotland. These include the Anglo-Scottish Fishermen's Association, the Clyde Fishermen's Association, the Fish-Salesmen's Association (Scotland) Ltd, the Mallaig and North-West Fishermen's Association, the Orkney Fishermen's Association, the Scottish Whitefish Producers' Association Ltd and the Shetland Fishermen's Association. As an industry total reliant on marine resources, the SFF is clearly focussed on the importance of engaging with the emerging impact of renewable developments on our members, so are grateful to have the opportunity to respond to this application.

As stakeholders we realise the importance of provision of information on projects, which this application does a very good job of providing. However, it must be noted that the capacity of stakeholders is already fully utilised in the core functions of our organisations, and this new workstream brings an additional burden which must be taken on board by industry.

The SFF would seek some assistance from the Scottish Government in providing the necessary capacity for stakeholders to continue to engage meaningfully in the process. The industry understands that such assistance has been granted to Local Authorities, and with the perception that the renewables companies have had dedicated staff and consultants preparing their application, it seems wrong to impose an unwanted cost on an industry that has many other legitimate costs to meet.

Members:

Anglo Scottish Fishermen's Association

Mallaig & North-West Fishermen's Association

Scottish Pelagic Fishermen's Association Ltd

It is apparent throughout this application that the developers team have been prepared to listen to stakeholders views and adjust their plans accordingly, never the less the SFF must, on behalf of it's members, reiterate our stance, that we remain opposed to the development until such time as its effects can be proved not to mean the end of the sustainable commercial fishing in the area.

The SFF agrees that the Scallop fleet is the one primarily affected by this particular development, but given that fishing is a dynamic industry involved in harvesting natural resources which have no boundaries, no less attention should be paid to any other fleet operating in the area, such as the smaller class of Nephrops trawlers or creel vessels.

That being said, the SFF are well aware of the social and political desire to develop renewable energy and remain happy to engage with developers, to the extent that when our primary function of protecting and preserving the livelihoods of our members is satisfied, we can see the need to continue the process of ensuring co-existence of both industries in the marine environment.

As requested we enclose an annex including all the points we feel need to be addressed, either before the licence is issued or on licence conditions.

The SFF will remain open to dialogue with developers, and look forward to a successful co-operation within this development. We would hope that this engagement would be sufficiently successful that we could revise our stated stance from one of opposition to support.

Yours faithfully,

[Redacted]

Bertie Armstrong
Chief Executive
Scottish Fishermen's Federation

Annex to Seagreen Consents Response

In the first instance the SFF would expect a full engagement between the developers and industry in a manner such as recommended by the Fishing Liaison with Offshore Wind and Wave (FLOWW) Liaison guidelines. Furthermore the SFF would expect that all the possible negative effects of this development on the fishing industry will be the subject of mitigation measures which must be agreed before consents are issued, this should be the core function of the Working Groups established in partnership with the other developers in the area. Possibilities for mitigation will include such as: aid for diversification, realistic employment and training opportunities, new fishing gear development. Together these should form a strategy which will protect the fishing industry for the duration of the existence of the development.

The SFF would expect the developers to demonstrate to the fishing industry that they are operating to the best possible standards of certification for all aspects of their operations.

The SFF would expect dissemination of construction plans to be at least through the working group members, but also correct usage of the Notice to Mariner system and eventually integration into the Kingfisher navigational system. The mitigation strategy should also be properly disseminated.

The biggest single concern of the SFF is that the development will lead to either restricted access or total exclusion from the wind farm site or Transmission route. It is still unclear to the SFF that fishing will be possible within the development. Mitigation for this will need to be found through negotiations on the turbine and cable layout once the Rochdale envelope ceases to be an issue. The transmission corridor also needs to be negotiated in this forum.

Construction of all phases, including Transmission must be negotiated in the Working Group in order to mitigate the effects on the fleet. For the transmission works, SFF would insist on the minimum depth of trench being to the oil industry standard, with a preference for rock dumping where that is not possible.

Subsequent to the previous point, displacement of effort may become a problem, and given the combined cumulative nature of the developments in the area, again the Working Groups must be used to address the issue.

There must be a developed system to ensure that vessels, particularly smaller less nomadic vessels, are in some way compensated for temporary closures to enable surveys and construction work.

The SFF would insist on an agreement, preferably based on the previous work through the Oil and Gas UK, whereby fishers could be compensated for any damage or loss of earnings through construction debris.

Upon completion of each phase of construction, SFF would insist on the appropriate over trawl procedures being conducted to ensure the seabed is as close to its original condition as possible.

From the outset the SFF would insist on a full scientific baseline being recorded, and the effects of the development both on fish species and fishing vessels earning being continually monitored. This is particularly relevant for this development, as the ES acknowledges that Scallops may be particularly sensitive to the effects of construction.

The cessation of the development should be the subject of an agreement on decommissioning before construction begins.

Our ref: PCS/123168
Your ref: A4MR-DEV272-SLE-173

If telephoning ask for:
Silvia Cagnoni- Watt

5 December 2012

Andrew Sutherland
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By email only to: ms.marinelicensing@scotland.gsi.gov.uk

Dear Andrew Sutherland

**Marine (Scotland) Act 2010
The Electricity Act 1989**

**Application for Consent Under Section 36 Of The Electricity Act 1989 and a Marine Licence Under Part 4 Of The Marine (Scotland) Act 2010 and The Marine And Coastal Access Act 2009 to Construct and Operate Seagreen Alpha And Bravo Offshore Windfarms and Transmission Asset Project
Seagreen Alpha and Bravo Offshore Windfarms 27km and 38km East of the Angus Coast, Firth Of Forth**

Thank you for your consultation letter of 26 October. The following comments are based on the Environmental Statement (dated September 2012) which has been submitted in support of the application.

We ask that the planning **condition** in Section 1 be attached to the consent. If this is not applied, then please consider this representation as an **objection**. Please also note the advice provided below.

Advice for Marine Scotland

1. Environmental management and Pollution Prevention

- 1.1 We welcome the general mitigation principles and pollution prevention measures set out in chapter 22 of the Environmental Statement (ES). We specifically welcome the commitment to create a Construction Environmental Management Plan (CEMP) as detailed in section 22.11. In line with this, we would request that a **condition** is attached to the consent requiring the submission of a site specific CEMP. If this is not attached, then please consider this representation as an **objection**. To assist, the following wording is suggested:

At least two (2) months prior to the commencement of any works, a site specific construction environmental management plan (CEMP) must be submitted for the written



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David Sigsworth

Chief Executive
James Curran

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approval of the planning authority in consultation with SEPA and other agencies such as SNH as appropriate and all work shall be carried out in accordance with the approved plan.

Reason: to control pollution of air, land and water.

- 1.2 Additional advice on the issues we would expect to see addressed through the CEMP is detailed below under advice for the applicant.

2. Terrestrial infrastructure

- 2.1 We note that the Onshore Transmission Works, including transmission infrastructure will be subject to a separate application for planning permission under the Town and Country Planning (Scotland) Act 1997, which will be made to Angus Council. We recommend taking into account the advice provided in our scoping response in relation to the on-shore development when preparing for this.

Detailed advice for the applicant

3. Environmental Management

- 3.1 Please note we have requested the submission of a site specific CEMP prior to any works commencing. A draft Schedule of Mitigation should be produced as part of this process. This should cover all the mitigation measures identified to avoid or minimise environmental effects. Details of the specific issues that we expect to be addressed are available on the Pollution Prevention and Environmental Management section of our [website](#).
- 3.2 A key issue for us is the timing of works. Therefore, the Schedule of Mitigation should include a timetable of works that takes into account all environmental sensitivities.
- 3.3 The Construction Environmental Management Document (CEMD) should form the basis of more detailed site specific Construction Environmental Management Plans (CEMPs) which along with detailed method statements may be required by condition or, in certain cases, through environmental regulation. This approach provides a useful link between the principles of development which need to be outlined at the early stages of the project and the method statements which are usually produced following award of contract (just before development commences).
- 3.4 We recommend that the detailed CEMD is submitted for approval to the determining authority at least two months prior to the proposed commencement (or relevant phase) of development to order to provide consultees with sufficient time to assess the information. This document should incorporate detailed pollution prevention and mitigation measures for all construction elements potentially capable of giving rise to pollution during all phases of construction, reinstatement after construction and final site decommissioning, as applicable. This document should also include any site specific CEMPs and Construction Method Statements provided by the contractor as required by the determining authority and statutory consultees. The CEMD and CEMP do not negate the need for various licences and consents if required. The requirements from the obtained licences and consents should be included within the final CEMPs.



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- 3.5 Useful guidance can be found in CIRIA C584 entitled “Coastal and marine environmental site guide”. Reference can be made to the appropriate checklists and good practice advice generally in this document.
- 3.6 The CEMP should also give consideration to how all waste streams from the project will be minimised, recycled, reused and disposed of using the principles of the waste hierarchy.

4. Protection of the marine environment

- 4.1 We note that in section 22.14 in terms of mitigation of non-native or invasive species from construction vessels, there is the intention to carry out a risk assessment which will lead to recommendation for management measures. We welcome this approach and we recommend that in relation to marine non-native species you have regard to the following guidance notes:
- The alien invasive species and the oil and gas industry guidance produced by the Oil & Gas industry at www.ogp.org.uk/pubs/436.pdf
 - SNH web-based advice on Marine non-native species at www.snh.gov.uk/land-and-sea/managing-coasts-and-sea/marine-nonnatives/
 - Marine non-native guidance from the GreenBlue (recreation advice) at www.thegreenblue.org.uk/clubs_and_training_centres/antifoul_and_invasive_species/best_practice_invasive_species.aspx.
 - Best practice guidance provided in the CIRIA C584 – Coastal and Marine Environmental Site Guide

5. Water and sediment quality

- 5.1 With regard to section 8.185 cable installation activities will take place approximately 0.6 km from the designated bathing water at Carnoustie. SEPA monitors Scotland's designated bathing waters throughout the bathing water season from 1 June to 15 September. Large scale sediment disturbance can result in elevated faecal coliform concentrations which can potentially lead to bathing water failure. Ideally such works should take place outwith the bathing water season. SEPA should be notified when the cable installation is scheduled to take place in Carnoustie Bay at the earliest opportunity.
- 5.2 Section 8.76 (page 8-16) refers to ‘The landfall lies within the Deil’s Heid to Carnoustie RBMP, while a section of the ECR lies within the outer reaches of the Scurdie Ness to Diel’s Heid RBMPs’. This should be amended to ‘The landfall lies within the Deil’s Head to Carnoustie water body, while a section of the ECR lies within the outer reaches of the Scurdie Ness to Deil’s Head water body’. This also needs to be corrected in Sections 8.77 and 8.80.



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Regulatory advice for the applicant

6. Regulatory requirements

- 6.1 Details of regulatory requirements and good practice advice for the applicant can be found on our website at www.sepa.org.uk/planning.aspx. If you are unable to find the advice you need for a specific regulatory matter, please contact a member of the operations team in your local SEPA office at:

Arbroath office
62 High Street
ARBROATH
DD11 1AW
Tel: 01241 874370
Fax: 01241 430695

[Arbroath office on Google Maps](#) 

If you have any queries relating to this letter, please contact me by telephone on 01786 452430 or e-mail at planning.se@sepa.org.uk.

Yours sincerely

Silvia Cagnoni-Watt
Senior Planning Officer
Planning Service

Ecopy:
Angus Council, PLNProcessing@angus.gov.uk ;
Dr Robert East , c/o SSe Renewables, info@seagreenwindenergy.com

Disclaimer

This advice is given without prejudice to any decision made on elements of the proposal regulated by us, as such a decision may take into account factors not considered at the planning stage. We prefer all the technical information required for any SEPA consents to be submitted at the same time as the planning application. However, we consider it to be at the applicant's commercial risk if any significant changes required during the regulatory stage necessitate a further planning application and/or neighbour notification or advertising. We have relied on the accuracy and completeness of the information supplied to us in providing the above advice and can take no responsibility for incorrect data or interpretation, or omissions, in such information. If we have not referred to a particular issue in our response, it should not be assumed that there is no impact associated with that issue. If you did not specifically request advice on flood risk, then advice will not have been provided on this issue. Further information on our consultation arrangements generally can be found in [How and when to consult SEPA](#), and on flood risk specifically in the [SEPA-Planning Authority Protocol](#).



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Surfers Against Sewage comments on the Environmental Statement for the Firth of Forth Seagreen Phase 1 Offshore Project

Surfers Against Sewage would like to provide the following comments on the Environmental Statement (ES) for the Firth of Forth Seagreen Phase 1 Offshore Project.

Firstly SAS would like to advise that Seagreen Wind Energy Ltd reference the Surfers Against Sewage report entitled "Guidance on environmental impact assessment of offshore renewable energy development on surfing resources and recreation", to ensure impacts on recreational water users are adequately addressed.

Surfers Against Sewage are pleased to see that Seagreen Wind Energy Ltd has considered the direct impacts, during the construction period, on Barry Sands and Carnoustie Bay with regards to recreational uses (including surfing, windsurfing and kayaking). SAS understands that access may need to be restricted to Carnoustie Bay for safety reasons for a limited time and requests that this time be kept to an absolute minimum so as to have a minimal effect on the surfing community. SAS advises Seagreen to liaise with local surfing/windsurfing groups and to arrange mitigating factors such as alternative access routes where possible.

There does not seem to be any mention, in the ES, of the potential effect that the project may have on local surf breaks *after* the construction period. SAS would like to see that modelling has been undertaken to quantify the likely effect on parameters such as wave height, direction and period at the shoreline, specifically at local surf breaks. There are some well established surf spots in the area including Johnshaven, Montrose and Lunan Bay to the North and Abroath, Carnoustie Bay, St Andrews and Kingsbarns to the South. SAS requests that the effect on the swell, and resulting waves, be considered at all of these locations. SAS would like the opportunity to review the modelling results and add constructive feedback if necessary.



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22 November 2012

Dear Andrew

**013/OW/SGFoF1 - 10:
Request For Comments Section 36 & Marine Licence Application
Seagreen Wind Energy Limited: 26 October 2012**

I have read the relevant parts of the Seagreen Phase 1 Offshore Project Consent Application Documentation on behalf of RYA Scotland and the RYA. Firstly I commend the developers and their consultants for carrying out a thorough job with good communication with ourselves as stakeholders. Although I suspect that the number of recreational vessels likely to traverse the area has been underestimated, this will not affect the conclusions drawn. I agree that leaving a gap between Alpha and Bravo that could be used by commercial craft could pose an increased risk to recreational craft passing through the windfarm. In one of the documents it is mentioned that the alignment of the turbines is important to recreational sailors. Although an alignment paralleling the AIS tracks would be welcome the most important thing is for the devices to be in a regular array as shown on the various diagrams, wherever possible.

The RYA has some concerns about phases 2 and 3 of this development and it would be useful for the tracks of recreational vessels passing through Alpha and Bravo to be monitored and logged so that decisions about the subsequent phases can be based on good evidence.

The wave buoys will need to be well marked and their positions widely promulgated, particularly as sailors will not expect there to be buoys within a windfarm. The degree of hazard will depend on where exactly they are located in relation to the margin of the windfarms. This should be a matter for discussion when plans are further advanced.

Finally, I note that it can be difficult for a recreational sailor to know exactly how far off a feature they are (the focus is on ensuring a safe distance off) and it is important that penalties are not exacted for inadvertently straying into an exclusion zone during construction.

Yours sincerely
[Redacted]

 Dr G Russell FRMetS MIEEM
Planning and Environment Officer, RYA Scotland



nature's voice

RSPB SCOTLAND

Andrew Sutherland – Licensing Casework Manager
Marine Scotland – Licensing Operations Team
Marine Laboratory
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13th December 2012

Dear Mr Sutherland

Seagreen, Alpha and Bravo Offshore Wind Farm Applications for Marine Licenses and Section 36 Consents

Thank you for inviting RSPB Scotland to comment on Seagreen Wind Energy Ltd. applications for two offshore wind farms. The proposed project sites for Alpha and Bravo wind farms are located between 27km and 38km to the east of the town of Arbroath, Angus in the Firth of Forth and Tay area, extending to 197km² and 194km² respectively.

We acknowledge and generally concur with the predictions in the environmental statement. Significant environmental impacts on seabird species are predicted, arising both from the proposed Alpha and Bravo projects in isolation and in combination with other development proposals, most notably Neart na Gaoithe and Inch Cape wind farm proposals in the Firth of Forth and Tay region. The applications were not supported by a report to inform the Habitats Risk Appraisal and we have been notified of Seagreen's intention to submit this report to Marine Scotland before the end of 2012.

At this stage, RSPB Scotland therefore **object** to the applications given the conclusions of likely significant impacts in the EIA and the potential adverse effects of the proposal on conservation objectives of the Natura network, which have not been assessed.

The HRA process is required under the Conservation (Natural Habitats & c) Regulations 1994 (as amended) and we seek to be informed of and consulted upon this process and any conclusions made therein. RSPB Scotland will then revisit our position on Seagreen's proposals. Further detail and explanation of the issues raised here are presented in Annex 1.

Yours sincerely,

[Redacted]

Bruce Anderson, Tayside & Fife Area Manager

Cc'd Naomi Healey-Cathcart – Seagreen Wind Energy Ltd

RSPB Scotland - TAYSIDE & FIFE

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Catriona Gall – Scottish Natural Heritage
Sophie Allen – Joint Nature Conservation Committee

ANNEX 1 – Seagreen Wind Energy Offshore Wind Farm Applications: RSPB Scotland Consultation Response (December 2012)

Background

Seagreen is proposing to develop two offshore wind farms, project Alpha and project Bravo, comprising a maximum 75 turbines (525MW) each and 1,050MW capacity in total. In addition to the wind farm arrays there is a requirement for infrastructure to connect the wind turbine generators to the national grid. This element is described as the Transmission Asset Project and would see a cable route leading from the project sites coming ashore at Carnoustie on the Angus coastline.

Projects Alpha and Bravo comprise the first of three phases of wind farm development within the Firth of Forth Round 3 Zone. The Crown Estate awarded Seagreen an exclusive Zone Development Agreement for a target total capacity of 3.5GW. In addition, there are two other wind farm lease sites within the Forth and Tay region, namely Neart na Gaoithe (at 450MW) and Inch Cape (at 1000MW). An application for Neart na Gaoithe was submitted in summer 2012 by Mainstream and an application is expected in spring 2013 for Inch Cape.

Seagreen are seeking to start construction of projects Alpha and Bravo in 2015, completing in 2019.

Key Comments

Environmental Impact Assessment: The supporting environmental statement and impact assessment (EIA) is of a very high standard. The methods, assessment and conclusions presented within the report are logical, written with clarity and, in our view, adequately considered. RSPB Scotland support the approach Seagreen has taken in engaging with key stakeholders during the pre-application consultation process and pro-actively responding to those issues raised during this process.

We consider the information presented in the environmental statement is sufficient to inform an assessment of the effects on integrity of the conservation objectives of the Natura network. We have not identified a requirement for any further data collation, however it is acknowledged that further assessment, including population scale modelling is necessary to undertake the Habitats Risk Appraisal.

With regard to the EIA of displacement effects, we realise that the displacement matrix design is in response to the dearth of available data, however, we do not accept that the most valid measure of displacement effects is percentage mortality. Therefore, we consider the EIA approach to assessing the impacts associated with displacement to be too simplistic. We recommend further dialogue with Marine Scotland and SNH to determine a more suitable approach to this topic of assessment and request our involvement in this process. For long lived species such as seabirds, the effects of displacement are more likely to be on variables such as clutch size, provisioning rates and fledgling success. While the influence of displacement upon these will be hard to measure, for at least some species it would be possible to incorporate into population models. We acknowledge that population models described in the following section may be included in the HRA and as such may address these issues within the context of the Natura network and relevant qualifying species.

Furthermore we are concerned that the approach of drawing concentric circles around potential turbine locations in order to assess the percentage of the site where displacement will occur is inappropriate. It may be that, at least for some of the time, , displacement happens in response to the wind farm as a single entity, in which case a greater degree of habitat loss would occur and as such the potential risks are underestimated.

Notwithstanding the above, we request to be involved in the development of suitable mitigation measures that will likely be required to minimise significant environmental impacts.

Habitats Risk Appraisal & Cumulative Impacts: Marine Scotland has commissioned CEH to undertake Work Package D (*Population dynamics of Forth & Tay breeding seabirds: Review of available models and modelling of key breeding populations*). This work package is specifically focused on improving our collective understanding of population scale effects of offshore wind development on selected bird species in the Forth and Tay area. We understand that CEH's population models will provide Marine Scotland with a tool to undertake its Appropriate Assessment of Seagreen's proposals, either with or without collaborative input from Seagreen.

RSPB Scotland considers this regulatory and collaborative approach to HRA as sensible and seek engagement in the process of applying it to Seagreen's proposals. In this regard we consider it necessary for RSPB Scotland to be consulted on Seagreen's HRA report and on the outcomes of Marine Scotland's Appropriate Assessment. At this stage we will then be able to review our objection to Seagreen's proposals.

In the interests of consistency and transparency, we recommend the above approach to HRA is applied to all three offshore wind farm proposals in the Forth and Tay region both as an assessment of the projects in isolation and in combination. All three proposals should therefore be assessed and determined at the same time. Joint determination enables a coordinated cumulative impact assessment by Marine Scotland of all three proposals using agreed and appropriate data inputs and methodologies. In addition, this approach will support national renewable policy by enabling those projects that deliver greatest energy output for least environmental impact to proceed.

The applicant intends to exclude any future development within Round 3 Zone 2 from the HRA assessment of cumulative impacts. We consider that all subsequent phases of development, for which Seagreen holds a lease agreement, are foreseeable. In this regard it is clearly stated in the ES as a project goal of Seagreen's to advance the planned development of a further 2.5GW of capacity within this Zone. Hence, we would welcome consideration of the potential cumulative impacts of these additional phases and would point towards Moray Offshore Renewables Ltd application as an example where future development of a Round 3 Zone was included in the environmental and cumulative assessment.

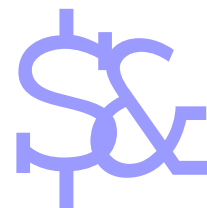
Mitigation and Monitoring: Should Seagreen's proposals be consented, RSPB Scotland requests engagement in the preparation of any future Site Environmental Management Plans, Construction Management Plans and Monitoring Plans. Pre-, during and post-construction monitoring is a particularly important requirement given the need to understand the accuracy of the environmental assessment predictions and to inform future development of offshore wind. In this regard the monitoring plan must be rigorous and robust.

CAPTAIN PHILLIP DAY
DIRECTOR OF MARINE OPERATIONS

Your Ref: 013/OW/SGFoF1-10
Our Ref: AJ/OPS/ML/O6_02_150

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05 November 2012

Dear Andrew,

APPLICATION FOR CONSENT UNDER SECTION 36 of the ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 of the MARINE (SCOTLAND) ACT 2010, and the MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

Thank you for your correspondence dated 26 October 2012 regarding the application by **Seagreen Wind Energy Limited** to install and operate wind turbines, offshore sub-stations and the associated electrical interconnecting and export cables at the Seagreen Alpha and Seagreen Bravo offshore windfarm sites in the outer Firth of Forth.

We are in receipt of the documentation sent directly from Seagreen Wind Energy Limited including the CD containing all the required manuals and supporting data.

With regard to the consultation and the scope of the assessment, we would only comment on any part relating to Shipping and Navigational Safety contained within the supporting documentation. We would require that Notice(s) to Mariners, Radio Navigation Warning and publication in appropriate bulletins be issued stating the nature and timescale of any works carried out in the marine environment relating to this project.

Marking and lighting of each site (possibly individually initially, and then as a whole) will be required for each of the three phases of wind farm life, namely the construction, operational and de-commissioning phases, to give the best possible indication to the mariner of the nature of the works being carried out.

We note that in the Navigational Risk Assessment a worst case scenario was predicted when a passage was left between the Alpha and Bravo sites, but there is no definite indication on whether the Navigable Passage will remain. Further mitigation for any such corridor and gap with the adjacent Inchcape OWF development may be required and will require final agreement with both Northern Lighthouse Board and the Maritime and Coastguard Agency.

05 November 2012

Andrew Sutherland

It may be necessary that alteration and repositioning of Navigational Marking and Lighting schemes are undertaken to ensure the mariner has the most effective indication of the construction site during the installation progress.

We are unable to specify final marking and lighting requirements at this time as the number and layout of turbines, the number and location of offshore sub-stations and meteorological masts, and cumulative impacts with regard to the Inchcape Offshore Wind Farm are unspecified in this application. We can however give an indicative proposal of what may be required.

Construction Phase

To ensure that the mariners are adequately warned of the construction site, its progress and growth; during the construction phase we require that the site boundary is marked by Cardinal Mark buoys (number to be determined when final layout is known). The Cardinal Buoys shall be a minimum of 3 metres in diameter at the waterline, have a focal plane of at least 3 metres above the waterline and be of suitable construction for the sea conditions commonly experienced in the Outer Firth of Forth. The light range on these buoys shall be 5 Nautical Miles.

All required buoyage shall remain in place until completion of this phase.

During this construction phase, any vessel engaged in these works shall be marked in accordance with the International Rules for the Prevention of Collisions at Sea whilst under way, and in accordance with the Standard Marking Schedule for Offshore structures if secured to the seabed.

Operational Phase

We are unable to specify any final marking and lighting requirements owing to the lack of clarity in the licence application with regard to the number and layout of turbines, the number and location of offshore sub-stations and, the cumulative impacts with regard to the Inchcape Offshore Wind Farm. Final requirements will be specified once these are confirmed.

In general terms, during the Operational Phase the windfarm site shall be marked and lit as per IALA Recommendation O-139 as follows:

- The tower of every wind generator should be painted yellow all round from the level of Highest Astronomical Tide (HAT) to 15 metres or the height of the Aid to Navigation, if fitted, whichever is greater.
- The structures designated as Significant Peripheral Structures (SPS) shall have lights visible from all directions in the horizontal plane. These lights should be synchronised to display a character of one yellow flash every 5 seconds, with a range of not less than 5 nautical miles.
- Selected Intermediate Structures (IS) on the periphery of the wind farm should be marked with lights visible from all directions in the horizontal plane. These lights should be synchronised to display a character of one yellow flash every 2.5 seconds, with a range of not less than 2 nautical miles.
- All lights shall be placed not less than 6 metres and not more than 30 metres above Mean High Water Springs (MHWS).

- A sound signal shall be attached to each SPS and IS as to be audible upon approaching the wind farm from any direction. The sound signal should be placed not less than 6 metres and not more than 30 metres above MHWS and should have a range of at least 2 nautical miles. The character shall be rhythmic blasts corresponding to Morse letter 'U' every 30 seconds. The minimum duration of the short blast shall be 0.75 seconds. The sound signal shall be operated when the meteorological visibility is two nautical miles or less. All sound signals should be synchronised.
- Each tower shall display identification panels with black letters or numbers one metre high on a yellow background visible in all directions. These panels shall be easily visible in daylight as well as at night, by the use of illumination or retro-reflecting material.
- All navigation lights should have an availability of not less than 99.8% (IALA Category 1) over a rolling three year period. Sound signals should have an availability of not less than 97% (IALA Category 3) over a rolling three year period.
- Offshore sub-stations and meteorological masts shall also be marked.

Appropriate means of ensuring the required IALA Availability target for Category 1 AtoN is achieved through redundancy, monitoring and repair must be in place, and arrangements made to warn the mariner promptly of any AtoN fault and its subsequent return to fully operational service.

Any existing Meteorological Masts within the site area will have marking and lighting amended to suit the final layout of the wind farm.

The marking and lighting of the wind farm may require to be altered or amended to reflect the development of the adjacent Inchcape site in order to form a continuation of a suitable marking of the area occupied by turbines and sub-stations. The licence holder will be expected co-operate fully in this matter.

We also require that once agreed, the final number, layout and positions of each of the wind turbine generators, along with that of any sub-sea infrastructure is communicated to the United Kingdom Hydrographic Office in order that all relevant nautical charts are correctly updated.

It may also be necessary to mark the landfall site of the export cable route(s) and we would then require that Lit Cable Marker Boards should be positioned as near as possible to the shoreline so as to mark the points at which the cable(s) come ashore. The Cable Marker Boards shall be diamond shaped, with dimensions 2.5 metres long and 1.5 metres wide, background painted yellow with the inscription 'Cables' painted horizontally in black. The structures shall be mounted at least 4 metres above ground level, with a navigation light flashing yellow once every five seconds (Fl Y 5s) mounted on the upward apex of the board. The nominal range of these lights should be 3 nautical miles, and they should have an availability of not less than 97% (IALA Category 3) over a rolling three year period.

05 November 2012

Andrew Sutherland

Decommissioning Phase

When the site eventually reaches the end of its designed life, we would require that the Northern Lighthouse Board is consulted on the requirement for marking and lighting during this phase.

General

All navigational marking and lighting of the site or its associated marine infrastructure will require the Statutory Sanction of the Northern Lighthouse Board prior to deployment.

These recommendations are based on the application documents and previously supplied documentation. At this stage we can make no firm recommendations but are content for a licence to be issued with the condition that NLB is consulted on final layout and development plans. The licence should ensure that the developer/operator provides marking to our requirements in all phases of construction, operation and decommissioning.

Please advise if we can be of any further assistance, or you require clarification of any of the above.

[Redacted]

Andrew Sutherland
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Sent via email: ms.marinelicensing@scotland.gsi.gov.uk

andrew.sutherland@scotland.gsi.gov.uk

29th October 2012

Dear Sir,

Firth of Forth, Seagreen Wind Energy LTD
SG Ref: 013/OW/SGFoF1 – 10 NATS Ref: WF9266

I refer to the above development. NATS received a notification dated 26th October 2012 advising of the submission of a planning application to the Scottish Government for up to 150 wind turbines in the Firth of Forth Round 3 Zone 2.

NATS has carried out a preliminary assessment and has determined that the proposed development is anticipated to have a major impact on its operation.

As such, NATS's position is to object to the development. The rationale and details of the impact are contained in the Technical and Operational Report which is attached to this correspondence.

NATS is always keen to resolve any potential issues and as such is willing to cooperate with the developer in order to investigate any potential resolutions allowing the development to progress.

Should you have any queries, do not hesitate to contact us using the details above.

Regards,

Yours sincerely,
[Redacted]

Sacha Rossi (Mr)
For and on behalf of NATS (En-Route) plc

<http://www.nats.co.uk/windfarms>

Technical and Operational Assessment

Proposed wind farm development –
Firth of Forth (Round 3, Zone 2)
Phase 1

Our Reference – W(F) 09266
Issue - 1



Publication history

Issue	Month/Year	Change Requests in this issue
Issue 1	October 2012	

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1 Background

NATS En Route Plc ("NERL") is responsible for the safe and expeditious movement in the en-route phase of flight for aircraft operating in controlled airspace in the UK. To undertake this responsibility NERL has a comprehensive infrastructure of radars, communication systems and navigational aids throughout the UK, all of which could be compromised by the establishment of a wind farm. In this respect NERL is responsible for safeguarding this infrastructure to ensure its integrity to provide the required services to Air Traffic Control (ATC). In order to discharge this responsibility NERL assess the potential impact of every proposed wind farm development in the UK, section 4 of this document defines the assessment of the potential impact of the proposal as detailed in section 2.

2 Wind farm details

Seagreen Wind Energy submitted a request for a NATS En-Route assessment for phase 1 of the Round 3 Offshore windfarm development known as Firth of Forth. The details of the development are yet to be finalised however it is likely to comprise of up to 150 wind turbines and these will reside within the following boundary points.

Turbine	Easting	Northing	Hub Height	Tip Height
Alpha				
A	403814	735705	Max 126	Max 209.7
B	403953	753979	-	-
C	405128	753978	-	-
D	405817	753977	-	-
E	408095	753975	-	-
F	408073	752488	-	-
G	409190	752472	-	-
H	409179	751693	-	-
I	414157	749334	-	-
J	415216	749779	-	-
K	415505	736614	-	-
L	408415	736063	-	-
M	405549	735840	-	-
Bravo				
A	415505	736614	Max 126	Max 209.7
B	415216	749779	-	-
C	415248	749792	-	-
D	415498	751889	-	-
E	414923	753083	-	-
F	416614	753968	-	-
G	424455	753961	-	-
H	423720	751564	-	-
I	424483	748965	-	-
J	425174	749228	-	-
K	426019	752703	-	-
L	431560	737861	-	-
M	426876	737497	-	-
N	426541	739830	-	-
O	426676	740473	-	-
P	425406	740566	-	-
Q	425118	739948	-	-
R	425370	737380	-	-

3 Assessments Required

The proposed development falls within the assessment regions of the following systems;

NERL Radar Sites	Easting	Northing	Range (km)	Range (nm)	Bearing (True)	Type
Alanshill Radar	390220	861480	108.63	58.65	171.61	CMB
Great Dun Fell Radar	371030	532210	224.48	121.21	8.55	CMB
Lowther Hill Radar	289020	610710	184.84	99.81	37.74	CMB
Perwinnes Radar	392190	813510	61.07	32.98	167.00	CMB
NERL Nav Aid Sites	Easting	Northing	Range (km)	Range (nm)	Bearing (True)	Type
None						
NERL AGA Sites	Easting	Northing	Range (km)	Range (nm)	Bearing (True)	Type
None						

4 En-Route Assessment

4.1 En-Route Radar Assessment

Perwinnes

Using the theory as described in Appendix A and development specific propagation profile it has been determined that with the limited terrain screening available to attenuate the signal, this development is likely to cause false primary plots to be generated.

4.2 En-Route Navigational Aid Assessment

No impact on NERL Navigational Aid Sites

4.3 En-Route Air-Ground Voice Communication Assessment

No impact on NERL Air-Ground Voice Communication Sites

4.4 En-Route Operational Assessment

Unit or role	Comment
Prestwick Centre ATC	Unacceptable
Prestwick Centre Military ATC	Unacceptable
Aberdeen En-route ATC	Unacceptable

Note: The technical impact, as detailed above, has also been passed to non-NERL users of the affected radar, this may have included other planning consultees such as the Ministry of Defence or local airports. Should these users find the impact as detailed unacceptable it is expected that they will contact the planning authority directly to raise their concerns.

6 Conclusions

The proposed development has been examined by technical and operational safeguarding teams. A technical impact is anticipated, this has been deemed to be **unacceptable**.

7 Appendix A – background radar theory

7.1 PSR False Plots

When radar transmits a pulse of energy with a power of P_t the power density, P , at a range of r is given by the equation;

$$P = G_t.P_t / (4\pi.r^2)$$

Where G_t is the gain of the radar's antenna in the direction in question.

If an object at this point in space has a radar cross section of σ , this can be treated as if the object re-radiates the pulse with a gain of σ and therefore the power density of the reflected signal at the radar is given by the equation;

$$P_a = \sigma.P / (4\pi.r^2) = \sigma.G_t.P_t / ((4\pi)^2.r^4)$$

The radar's ability to collect this power and feed it to its receiver is a function of its antenna's effective area, A_e , and is given by the equation;

$$P_r = P_a.A_e = P_a.G_r.\lambda^2 / (4\pi) = \sigma.G_t.G_r.\lambda^2.P_t / ((4\pi)^3.r^4)$$

Where G_t is the Radar antenna's receive gain in the direction of the object and λ is the radar's wavelength.

In a real world environment this equation must be augmented to include losses due to a variety of factors both internal to the radar system as well as external losses due to terrain and atmospheric absorption. For simplicity these losses are generally combined in a single variable L .

$$P_r = \sigma.G_t.G_r.\lambda^2.P_t / ((4\pi)^3.r^4.L)$$

7.2 SSR Reflections

When modelling the impact on SSR the probability that an indirect signal reflected from a wind turbine has the signal strength to be confused for a real interrogation or reply can be determined from a similar equation;

$$P_r = \sigma.G_t.G_r.\lambda^2.P_t / ((4\pi)^3.r_t^2.r_r^2.L)$$

Where r_t and r_r are the range from radar-to-turbine and turbine-to-aircraft respectively. This equation can be rearranged to give the radius from the turbine within which an aircraft must be for reflections to become a problem.

$$r_r = (\lambda^2 / (4\pi)^3)^{1/2} . (\sigma.G_t.G_r.P_t / (r_t^2.Pr.L))^{1/2}$$

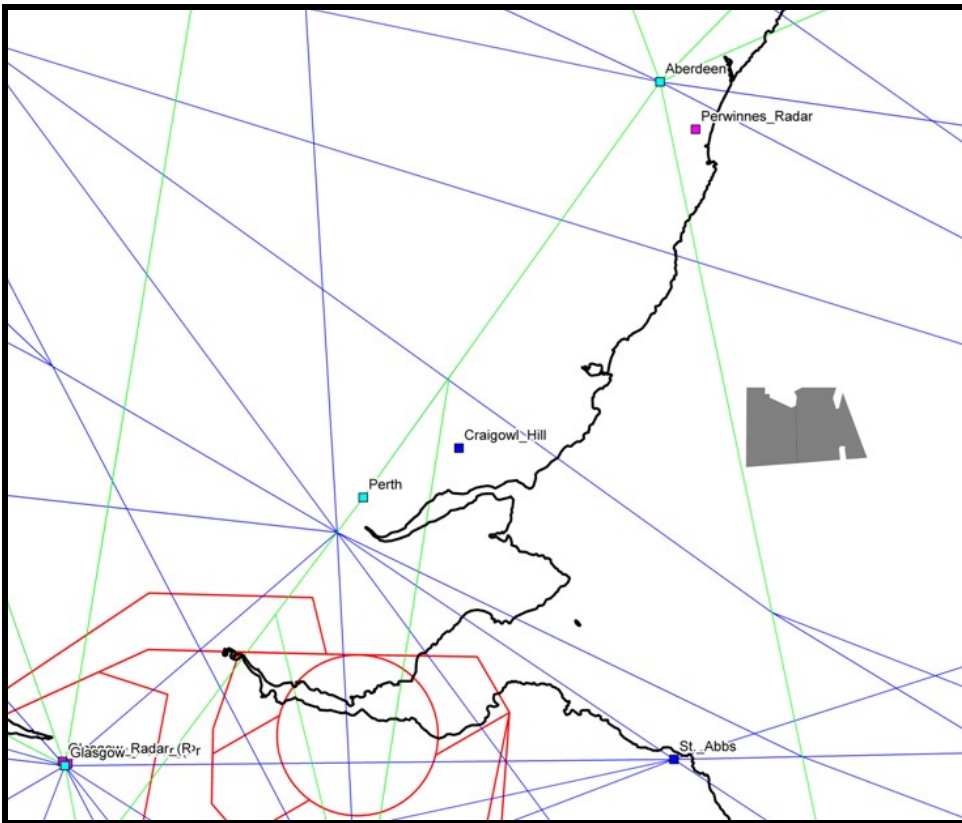
7.3 Shadowing

When turbines lie directly between a radar and an aircraft not only do they have the potential to absorb, or deflect, enough power such that the signal is of insufficient level to be detected on arrival it is also possible that azimuth determination, whether this done via sliding window or monopulse, can be distorted giving rise to inaccurate position reporting.

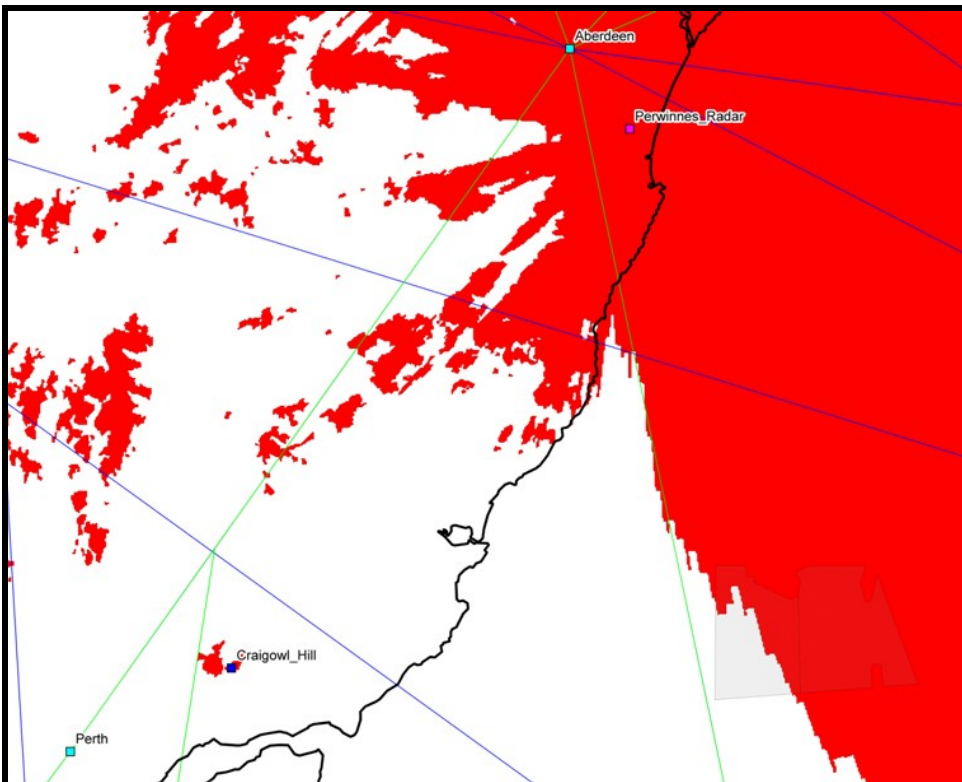
7.4 Terrain and Propagation Modelling

All terrain and propagation modelling is carried out by a software tool called ICS Telecom (version 6.99). All calculations of propagation losses are carried out with ICS Telecom configured to use the ITU-R 526 propagation model.

8 Appendix B – Diagrams



Boundary Overlaid on Air-routes Map



Perwinnes Line-of-sight at 200m amsl

Mr Andrew Sutherland
Licensing Operations Team
Marine Scotland
Marine Laboratory
375 Victoria Road
Aberdeen AB11 9DB

31 January 2013

Our Ref: 013/0W/SGFoF1-10

Dear Mr Sutherland

**APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989
AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010
FOR AN OFFSHORE WIND FARM, FIRTH OF FORTH**

Thank-you for your e-mail dated 29 October 2012 requesting comments from Marine Scotland Science on the above proposal.

MSS Advice

Marine Scotland Science has reviewed the submitted Scoping Report and has provided comments on Physical Environment, Coastal Processes Benthic Ecology, Diadromous Fish, Fish and Shellfish Ecology, Commercial Fisheries, Marine Mammals and Ornithology. Our advice is as follows.

Physical Environment

Marine Scotland has read through the relevant sections of the Seagreen Environmental Statement (ES). Section 5.5 of the project description states that “The content of this chapter forms the basis for the assessment of impacts presented later in the technical chapters of the ES”. We agree with this and have made the following comments.

The foundation designs considered include a gravity based system and a steel jacket system. Each will require different site preparation and installation methodologies. This will require different vessels to complete each of the stages. One of the primary concerns for assessing the potential impacts on the environment associated with these activities will depend on the timing, duration and frequency of the proposed works. Consequently understanding the weather window for the safe operation of the project vessels is essential for planning how the development will proceed and the time required to complete the project. Detailed information appears to be omitted from the ES.

The weather window will dictate when certain works will be undertaken. The weather window may be further reduced resulting from mitigation to avoid sensitive times of the year for a particular receptor. In doing so this has the potential to reduce the project work for each year, extending the net time required to complete the project. Consequently, in order to assess the potential impacts of the development, the duration and frequency of the proposed works needs to be known. Some receptors may be more susceptible to impact from recurring exposure to an activity for short periods of time

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over a number of years, while other receptors will be more susceptible to prolonged exposure to an activity for longer periods of time over a shorter number of years.

To define the weather window for the proposed development we would suggest contact is made with a number of vessel suppliers for confirmation of the safe working weather thresholds for the vessels being considered for each of the foundation/installation options. Also contact the Met Office who can provide a bespoke service for estimating the weather window for marine operations in UK waters. This includes wave height, direction, period and similar parameters for wind and currents. This information is routinely used by the offshore oil and gas industry for exploration and production operations. The combination of the vessel threshold limits and the estimated weather conditions below the threshold limits would provide the basis for project managing the proposed development. This would provide clarity on the sequence of activities to be undertaken during the installation of the devices.

The ES does not provide detail on the sequential nature of the activities for completing the deployment of the foundations for each device. In the case of gravity based systems several vessels will be involved, consequently the process will be limited by the vessel with the most restrictive weather window. With the information provided by vessel suppliers and the Met Office, a realistic Gantt chart or charts can then be produced to demonstrate the “worst-case” scenarios for those receptors that are susceptible to different activity exposures. This will ensure that in subsequent phases of the engineering design process, the development will be within the scope of the assessed effects and in keeping with the Rochdale Envelope approach. This in turn will provide advisers with a better context for assessing the potential impacts that may arise from the proposed development. Also our understanding of the potential for in combination impacts that may arise from concurrent projects is significantly restricted without knowing the realistic timing of the different stages for the development.

Given the potential scale of the associated works with the gravity based system and their integral nature to the main infrastructure for the proposed development, why have they not been incorporated into the environmental statement? Point 4 of Annex IV of the EIA Directive specifies that the information to be supplied by the developer includes “a description of the likely significant effects of the proposed project on the environment resulting from the use of natural resources”. In such cases the European Commission suggests where the associated works are deemed to be an integral part of the main project the associated works should only be approved following the EIA process for the project as a whole. The whole project cumulative impacts assessment does not take into consideration the associated works involved in this development. Information pertinent to the use of natural resources is missing from the ES with respect to the source of the ballast material, site preparation gravel, scour protection and the disposal of dredged sediment.

We have read though the relevant Sections of the Seagreen ES. Generally the approach the developer has adopted when considering Benthic Ecology and Intertidal Ecology for the Seagreen project is robust and that the methodology used is correct. Some of the comments to follow are fairly small and can be regarded as minor however other comments on Chapter 11 are pretty fundamental to problems our advisor has with the developer's assessments. Impacts of cable installation and, particularly, seabed preparation for gravity bases will cause permanent damage to the local ecology and that the assessments presented in the ES underestimate the effect of these operations. Further information is required on the dredging operations and, our opinion, the impacts are assessed on the low side and a re-assessment of these impacts should be carried out.

Chapter 2 no comments

Chapter 22 no comments

Chapter 11

Table 11.1	Was there no input from MSS during the consultation process?
Paragraph 11.52	The species here is <i>Hydrallmania falcata</i>
Paragraph 11.68	<i>Echinocyamus pusillus</i> is not "the purple urchin". This is either <i>Paracentrotus</i> or <i>Spatangus</i> . <i>Echinocyamus</i> is generally known as the Pea Urchin
Paragraph 11.75	Remove <i>Asa</i> in <i>Dosinia exoleta</i>
Paragraph 11.82	see comment for 11.68
Paragraph 11.87	Species is <i>Fabulina fabula</i>
Paragraph 11.123	We do not agree that the effects of cable installation will be low. Details of the method to be used here is needed. Will they be using jetting, trenching or what? We would recommend the impact should be rated as moderate at least. Some information on recolonisation rates by benthic fauna should be presented. The comparison between the development site and Kentish Flats needs data to support the idea that the effects observed there are comparable and can be applied to the Seagreen site. Do they have any data available on local currents/hydrography to compare sites for instance?
Paragraph 11.124	See comments for 11.123 above.
Paragraph 11.127	Are the comparisons given here between other developed areas and the Seagreen site valid - some data/information to support these statements would be useful.
Paragraph 11.129	Is <i>Sabellaria</i> reef present or not? The developer should be sure of this, they should find out precisely before they go much further.
Paragraph 11.131	They cannot state that the impact is negligible and not significant. They must consider the effects of suspended sediments, how and where it settles and how much deposition will take place.
Paragraph 11.141	see previous comments.
Paragraph 11.143	642,200m ² is a huge volume of material to be removed and will have a significant impact on the benthos.
Paragraph 11.144	Information on the sediments derived from the dynamic and passive plumes is needed here - how deep will the build up of sediment be (smothering) for instance. How far from the activity will sediments settle?
Paragraph 11.145	Sediment mobilisation - can they give an estimate how much sediment will be mobilised?
Paragraph 11.146	How much sediment is moved/removed for each foundation? Also, its hard to believe that the impact of GBS ground prep. on suspended sediment levels would be low. This would depend on the local sediment particle size spectrum, do they have any PSA data available?
Paragraph 11.147	See previous comments
Paragraph 11.149	We need data on local sediment particle size distributions. Also, there is no mention of substrate structure disruption - mixing of aerobic/anaerobic sediments for example.
Paragraph 11.150	The statement that the effects of GBS prep and cable installation are of low magnitude appear to be underestimates to me. These are large impacts and could be considered to be of moderate to high magnitude and at least of moderate significance in my opinion.
Paragraph 11.151	If GBS not used, can the developer give some information on what might be used instead?
Paragraph 11.152	CEFAS Action Level 1 – Developers should check whether specific Scottish Action Levels also exist, if so they should also be applied here.
Paragraph 11.153	Is the resultant deposition 100% temporary?
Mitigation	We need details of how site selection will reduce release of sediments.

Paragraph 11.156	The use of gravity bases will not constitute a "temporary disturbance to the benthos"
Paragraph 11.161	"This habitat is considered not sensitive to physical disturbance". They haven't considered dredging as a relevant cause of physical disturbance. The disturbance of 9.3% of the <i>Amphiura</i> habitat could be considered as reasonably high.
Paragraph 11.169	The preparation and installation of gravity bases will have a profound effect on benthic ecology.
Paragraph 11.178	The impact of dredging will be much more than negligible and not significant.
Paragraph 11.179	The comparisons between dredging and scalloping in terms of suspended sediment levels interesting however the volume of sediments entrained by these two activities are not really comparable.
Paragraph 11.182	See comment for Para. 11.152
Paragraph 11.184	See comments for Para. 11.179
Paragraph 11.186	Which method of cable installation will be used?
Paragraph 11.190	The range of areas being impacted is very large (<0.01 - 80.29%). The impact at the highest range is significant. The statement that "likely to rapidly recover" - we need evidence to support this.
Paragraph 11.194	Projects Alpha and Bravo - see previous comments
Paragraph 11.195	See previous comments on significance of seabed loss and effects on habitats and fauna
Paragraph 11.196	"no loss of habitat" - but there will be damage
Paragraph 11.205	Need to consider the smothering effects of sediment deposition.
Paragraph 11.207	See comments for Para. 11.179
Paragraph 11.212	Are the intertidal sediments totally devoid benthic fauna?
Paragraph 11.228	"to benefit the marine community" - this is a change to the local benthic community and is not necessarily a benefit. The introduction of species not normally present will change the local biodiversity. We believe that colonisation between structures will take place as and when larvae from these species are released into the water column and settle.
Paragraph 11.229	Benefit - see comment above.
Paragraph 11.266	See all previous comments
Paragraph 11.282	Much discussion is required as are the topics addressed in Paras. 11.283 and 11.284
Paragraph 11.289	See previous comments
Paragraph 11.292	See previous comments
Paragraph 11.293	Requires discussion
Paragraph 11.304	See previous comments. Same for Paras. 11.305, 11.306, 11.307, 11.308 and 11.309
Paragraph 11.333	The post construction survey will be required
Paragraph 11.335	See all previous comments

Diadromous Fish

Marine Scotland Science has reviewed the following chapters of the Environmental Statement. Chapters 12 (Natural fish and Shellfish Resource), 14 (Commercial Fisheries) and 22 (Mitigation and Monitoring). In addition we examined other relevant sections, including Chapter 5 (Project Description), Chapter 9 (Nature Conservation Designations) and Appendix I2 (Salmon and Sea trout Fisheries Technical Report)

Our comments are as follows

The main diadromous species which will potentially be present are Salmon, Sea Trout and Eels. The information provided is generally fit for purpose, although there are errors in what is provided. Some of these are listed below. The ES correctly notes the uncertainty about the detailed migration routes (and in the case of sea trout the sea feeding areas) of salmon, sea trout and eels. This is true; there is a great deal of uncertainty. However there should be a clearer statement that there will be potential for salmon smolts destined for sea feeding areas north of the British Isles, not just from nearby rivers, but also from rivers further south, including the Tweed to pass through the area; and returning adults, not just those destined for rivers further south, including those on the Scottish east coast, but also ones further north on this section of the Scottish coast, such as the River Dee (see for example Malcolm *et al* 2010 and also the preliminary results on the Scottish Government website at <http://www.scotland.gov.uk/Topics/marine/science/Research/Freshwater/SoutEskProject> of a tagging study on the Scottish east coast in 2012). There is also the possibility that sea trout from East coast rivers could be present in the area at any time of year for feeding. Because of the uncertainties, there is potential not just for small numbers of fish to be present, but potentially large numbers of fish, at least at times.

12.164. Indicates that only 5 species of migratory fish have been identified as relevant to the development and that these are presented in Table 12.12, yet 7 types of fish are included in Table 12.12. We think this may be because shads and sparling are included but are dropped from further consideration later in the text.

Table 12.12. There are various errors which include;

- sea trout can return to fresh water after less than a year at sea, and often return after 1 year at sea, although they can spend longer at sea before returning
- the peak of the downstream migration of eels is in late autumn / early winter
- eels die after spawning and do not return to freshwater.

In addition, although the source of the material is given as Maitland (2003) this only refers to the lamprey information.

12.168. Rod catch data for all important Scottish salmon rivers exists back to 1952

12.168-12.174 MSS is not in complete agreement with some of the interpretation of the catch trends, but we don't think it affects the assessment.

12.178. It is not the majority of sea trout, particularly in this part of Scotland, that survive spawning, but just some of them, and in contrast to what is said, few will return to spawn on numerous occasions.

12.183. Eel is not the only European fish to leave the coast and spawn in the sea, but it is the only European fish which can spend a substantial time growing in fresh water, then make a long-distance migration to spawn in the deep ocean.

12.186. Scotland is not the northern limit of lampreys in Europe, although it is towards the northern limit.

12.189. Sea lampreys would not necessarily be migrating when in the ISA.

12.197 Shad (probably mainly if not entirely allis shad) are regularly reported in Scottish east coast rivers, and it has been speculated that some of the rivers such as the Forth may have small populations.

12.111 The smelt populations of the Forth and Tay are more associated with the estuaries than the rivers themselves. And the Rivers Esk and Dee which historically had sparling populations weren't our Scottish east coast ones, but the ones on the Solway.

Figure 12.18 Teith salmon catches not shown on map.

Technical Report I2 6.2.3.1. Should be North Atlantic Salmon Conservation Trust.

Technical Report I2 6.4.3.1.2. What is said about the conservation measures on the South Esk might have been correct at the time of writing but was out of date by the time the application was submitted.

There are no diadromous fish fisheries in the development area itself. There are river rod and line fisheries and in some cases coastal net fisheries associated with many of the Scottish East Coast rivers. The information provided is sufficiently detailed and fit for purpose. We are not aware of any

eel fisheries currently operating in or close to the development area, but it is possible - the current situation can be checked with MS-SARF in Victoria Quay.

Marine Scotland Science are content that the Environmental Statement adequately covers the details of the site preparation, construction work and operation which are relevant to diadromous fish. The statement correctly identifies noise during construction and EMF during operation as potential impacts. We didn't notice anything on operational noise which should also be considered.

Specific comments

Noise during construction

Plot 12.5. The large difference in the audiograms of salmon and trout which have been provided from different sources is not what might be expected bearing in mind the close relationship of the species and their anatomy. Work commissioned by Marine Scotland to refine the audiograms of salmon and sea trout is imminent (or may already have started) and should be informative in this respect.

12.228 Not all fish should be expected to be able to move out of range, even if there is soft-start to the pile driving – eel larvae for example might not be able to.

12.242. MSS cannot see why a lack of change in a fish's hearing sensitivity would mean that there would be "little behavioural changes" (which presumably is intended to be taken as "little in the way of behavioural changes")

It is not clear that the thresholds will actually provide a robust basis for assessing impact.

It is not clear to us that although the fact, that there will be background noise, is mentioned, there appears to be little consideration in the modelling of what account needs to be taken of this, either as a masking or compounding effect to constructional or operational noise.

EMF during operation

There are major knowledge gaps that are noted in the statement. MSS has work in progress to investigate the effects of AC EMF on salmon and eel behaviour.

No proposals are made although the developer does make a commitment (eg in 12.453) to the development of a monitoring plan. An appropriate monitoring plan might well contribute towards the filling of knowledge gaps.

Marine Scotland are satisfied that the preparation and construction work, mitigation measures and monitoring proposals comply with the guidance, standards and legislation laid down to protect diadromous fish.

Soft start piling will be used with the aim that mobile species are not exposed to the highest noise levels during construction. Efforts will also be made to reduce sound generation through any other changes possible too. The cables will be buried to at least 0.5 m or protected by rock or bags of concrete grout which will reduce exposure of fish to EMF.

The immediate landfall of the cable connection is at Carnoustie which is remote from major salmon and sea trout rivers.

The statement does not emphasise the uncertainties in what diadromous fish will be present and at what times of year and the lack of good information of how noise and EMF may affect diadromous fish behaviour. Uncertainties are taken to mean no significant impact, which may not be the case. The uncertainty should be encompassed in the assessment rather than giving unsupported statements of not significant.

Furthermore no definite proposals for monitoring have been made, although the developer does make a commitment (eg in 12.453) to the development of a monitoring plan. Particularly as this is the first phase of a multi-phase development, an appropriate monitoring plan will need to put in place to

contribute towards the filling of knowledge gaps and the development if necessary of improved mitigation measures.

Monitoring of actual as opposed to modelled underwater sound levels during construction and operation would be useful to allow consideration of modification of construction or operational arrangements. It would be potentially useful to have modelled field strengths.

Given the substantial uncertainty associated with potential impacts on fish migration and consequences for individual rivers, and the possibility of widespread cumulative impacts, it is suggested that MS LOT may wish to consider with the developer whether arrangements can be put in place to monitor fish movement through the area and / or improved monitoring of the health of salmon populations to supplement and improve the current rod catch assessments. Some of such monitoring activities could be in collaboration with other developers / other parties.

Although sea trout and returning adult salmon could be in the vicinity of the operations at any time of year, this is not the case with salmon smolts departing from the rivers. However, the present large uncertainties about smolt migration routes, the distance of this development from the nearest salmon rivers, and the effects the sound levels which are likely to occur will have on smolt behaviour, may weaken any case for reducing pile driving during peak smolt migration times.

Designated Sites

Although the principles of the HRA process are described, JNCC and SNH seem to have only indicated to date that the South Esk, Tay, Teith and Tweed salmon SACs should be among the SACs considered as starting point in the HRA process. MSS-FL, as recommended previously, would suggest that the River Dee is added to this list.

Possibility of cumulative impacts

More work is needed with respect to potential cumulative impacts. The extent of the migrations of the species involved means that there is the potential for cumulative impacts, not just with nearby sites, but those further afield. This needs to be recognised, although the current uncertainties in the migration routes and the impacts of various types of development may make it difficult to make robust assessments.

Summary of main recommendations regarding diadromous fish and diadromous fish fisheries

The main priority at this stage is to develop monitoring plans, including the monitoring of diadromous fish themselves, and if possible their movements in the vicinity of the development, and to ensure that suitable mitigation measures can be applied proportionate to any impacts detected during monitoring. There will be a need to keep this under review as development progresses.

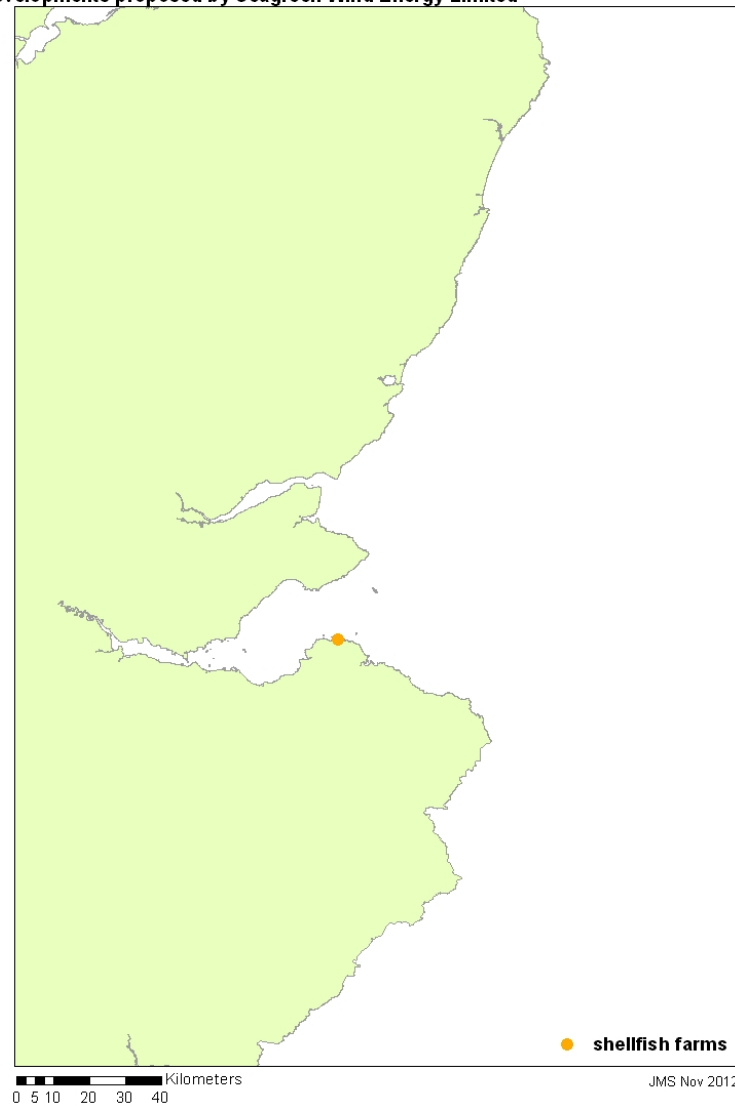
- Consider whether uncertainty has been properly addressed in the assessment process.
- Include River Dee in HRA.
- More consideration needed of possible cumulative impacts, including on a wider scale.

Fish and Shellfish Ecology

There are no aquaculture sites within the boundaries of the Seagreen Alpha and Bravo developments proposed by Seagreen Wind Energy Limited (see attached map below).

The closest aquaculture site is located ~57km south of the proposed developments and is an active land based lobster hatchery operated by The Firth of Forth Lobster Hatchery.

Active and inactive aquaculture sites within the vicinity of the Seagreen Alph and Bravo developments proposed by Seagreen Wind Energy Limited



Summary

No further information is required and we offer no further comment.

Fish and shellfish resources

Generally the developer has supplied a good evidence base and we are in agreement with the assessments that the developer has put forward.

There are some comments we would like to make to LOT however these wouldn't effect the overall assessment but should be recognised in the consultation process.

Caution should be taken when attributing significance of the benthic trawl catch data to species abundance (12.34, 12.129) as the beam trawl will catch flat fish very well (as evident in the tables) however demersal fish species and some commercially important shellfish like King scallops will not be well represented due to the nets catchability for these species.

Mitigation for noise.

In addition to soft start piling, the developer could look at piling activity to be carried out in the southern region of the site to try and minimise the noise propagation into the Buchan spawning area at peak spawning season. There may be scope that other mitigation options for other sensitive species, for instance marine mammals, may also benefit these fish species. We would also recommend that this development works with the other wind farm sites in the Firth of Forth to try and minimise cumulative noise impacts.

Disturbance of habitat.

The developer has not considered impacts from displaced fishing effort and how this may impact the various fish species. In particular in terms of scallops, although the developer has noted (12.296) that they are aware fishing occurs in their site and wishes the reader to consider the impact this has on habitat disturbance in comparison to that of the development itself. They have not taken this forward and assessed the additional pressure this may have on the area outside the site if fishing is displaced. This has both site specific impacts but also should be considered in the cumulative impacts section.

Mitigation for EMF

What evidence has the developer based their minimum cable burial depth? Other industries we are aware of set burial to a minimum of 1m. We would recommend that this be set as 1m minimum to improve mitigation of EMF impacts and where this is not possible then cable protection be utilised.

We would recommend that detailed discussions are sought from the fisheries working group as to the best type of cable protection for safety of fishing vessels. Although either of the two options described would suitably mitigate the EMF effect, mattresses however may pose a greater risk than rock dumping to fishing activities.

Commercial fishing

In general the developer has provided a robust assessment of the key impacts. However MSS does not agree with all the assessments made in terms of the evidence presented.

There appears to be a contradiction between statements 14.51 and 14.45. This should be clarified.

MSS are unaware of the existing legislation which provides a mechanism for prohibiting **fishing** specifically within operational wind farms (14.150). We are aware that operation safety zones around devices may be applied for but not often granted. Could the developer provide clarification as to what legislation specifically they are referring to, are they expecting the legislation to cover the whole site or just the individual turbines and a 50m exclusion zone round each of these. There are also concerns that the 50m exclusion zones may not cover the gravity base/scour protection scenario when taking the a radius from the centre of the WTG. There is also a lack of information as to how and what cables will be protected with at potential areas of scour in proximity to WTG base structures. This would have bearing on the potential impact that cabling may have for fishing should it be attempted within the site post construction.

Table 14.11 and 14.13

The scallop fishing activity in project alpha is heavier than in project bravo and we would consider scallop fishing to be of **medium** sensitivity and the impacts to be of medium magnitude from temporary loss or restriction of access to fishing grounds and displacement of fishing vessels, resulting in **moderate adverse and significant** impacts.

14.175

What form would the appropriate post-construction measurements take? How long would this take to complete post installation? The time frame for assessment of ground suitability for fishing needs to be confirmed.

14.185

Smaller vessels working static gear from small coastal ports will have a lower sensitivity to vessel conflicts as these larger vessels won't be working from their ports. However they will have a larger impact at sea where these vessels fish as there is less scope for these vessels to move grounds. The opposite can be said for larger ports where there will be a bigger conflict for port space with towed gear vessels in port than conflict on fishing grounds at sea.

Cumulative impacts

A this stage it has been difficult for the developer to address cumulative impacts with any great certainty. There is scope here for the developer to work with the neighbouring sites to address these issues as more information comes out about these developments and when design specs for seagreen and others are narrowed down.

This should also be looked at by the fisheries working group that has been set up with the FTWDG as this is a key issue in relation to fisheries.

Additionally, Marine Scotland may want to look at a national piece of work to look at how best to address cumulative impacts and possible provision of thresholds to measure any impact against to help give direction to the various developers as this is a common gap in ES submissions to date.

Ornithology

In general it was difficult to navigate the ES Ornithology chapter and supporting Technical Appendices and the required information could not always be (easily) found. Many of the specific comments below relate to lack of clarity, particularly relating to what has been done (and why) to produce density estimates and distribution/ abundance maps, and how values have then been derived for use in e.g. displacement or collision models.

Clarification is needed on how densities have been mapped and how the uneven effort across the 4 month transect cycle has been accounted for. Analysis of ship-based data to produce density surface models (e.g. GEEs) should be carried out for the commoner species to ensure robust density estimates are produced, and outputs from these should be used to map distribution and abundance. The current abundance and distribution maps presented in the ES are potentially misleading as they do not appear to account for different transects being surveyed each month, with between-month differences in abundance or distribution potentially masking any seasonal patterns. The production of density surfaces would allow these potential influences to be accounted for, and more informative distribution and abundance maps produced. The outputs from DSM would also allow model-based density and abundance estimates within the Alpha and Bravo, and other sub-regions as required to be extracted. This may be of particular relevance to impact assessment e.g. displacement.

The indirect effects of the development upon prey species is only briefly discussed and should be expanded.

No baseline population trajectories are presented with the ES, nor PVA to estimate the likely effects of the impacts discussed. It is understood that current PVA work contracted by Marine Scotland and to be delivered in March 2013 will be of assistance to Seagreen.

Until the points above and below are clarified it is difficult to properly assess the conclusions of the ES.

Survey effort and resulting distribution & abundance maps

The map of effort (F1, Figure 4.7) indicates uneven coverage and this is discussed in 4.2.19 and Table 4.4. This same pattern (NW-SE orientated strips) is apparent in a number of species distribution/ abundance maps. This is presumably due to the rotation of transects across 4 survey periods, with abundance patterns reflecting months when species were encountered more or less frequently, or the occasions when the 'wrong' transects were surveyed by mistake. Presenting the data in this manner is potentially misleading as it does not take into account that during each survey only c.25% of cells were surveyed and it does not capture within season spatial/ temporal variation. An extreme example of this is Little Auk (Figure 6.73) where a large number of cells have an abundance of zero when the reality is that many of these cells were presumably not surveyed during the period that the species were present (predominantly Nov of each year?).

Figure 6.2 it is not clear whether distribution/ abundances patterns presented are an artefact of survey effort and coverage and/or inter-survey variation in distribution. Have estimates from the 6 surveys between April and Sept been averaged and where no transects were not repeated within this period then the single estimate mapped? How does this reflect the natural variability in density/ distribution or the fact that a cell may not have been visited at all or not during a period of high density when other cells may have been visited? There appears to be a real risk of underestimating true abundance or distribution across the site being poorly presented.

These maps also present only birds observed with Bands A and B and so exclude all observations >100m from the transect line. This significantly reduces the data available for density estimation and it is unclear why Distance and e.g. density surface modelling was not used.

The concern is that these maps do not provide a reliable summary of the distribution or abundance of birds across the survey area. The recommendation is that the data are modelled to provide density surfaces that properly reflect the likely densities and distributions of birds and that capture the spatial and temporal variability encountered. This would also have the advantage of allowing environmental factors (e.g. depth, substrate type) to be incorporated into the model; Section 4.2.17 describes a habitat mosaic, and one of the justifications in the introduction to Appendix F1 for the high level of survey

coverage was the complex nature of the site and the desire to get '100% coverage'. Without modelling being undertaken it will be difficult to properly understand how the survey area may be being utilised by key bird species, what the likely impacts of any development may be, and how these impacts may vary across the site.

It is unclear where the conclusion that DSM is limited to expressing changes in distributions (4.2.108) and not appropriate is based on. Spatial and temporal autocorrelation needs to be considered for any modelling that is undertaken.

Specific Points

Appendix F1: Ornithological Baseline

A table listing species and the method that densities of flying and sitting birds were estimated for Projects Alpha and Bravo would be welcome (it is difficult to quickly assess whether raw counts, raw counts with correction factor or Distance sampling were used). E.g. include information in Table 5.1. Presenting flying and swimming birds separately would be helpful as different impact mechanisms may apply.

A table of the number of observations and individuals recorded on the water and in the air for each species would be helpful in understanding the sample sizes involved- expand Table 5.1?

Histograms of observations of the commonest species within each distance band would be of value in support of the statement regarding the lumping of sightings into band A being avoided due to observers on both sides of the vessel.

Were data pooled across projects and months to produce a single global detection function- or was there a reason to believe that detection functions would differ between projects and/ or months?

Was sea state considered for inclusion as a covariate in Distance based estimates?

Example detection probability plots for the commonest species would be useful.

How were density estimates derived for each project area? The designed survey would have allowed for a single design-based density estimate to be produced for the entire survey area but if model-based estimates were not produced, how were densities for individual project areas produced?

What was the actual survey effort (km on-effort) for each project each month? Actual km surveyed each month should be presented.

Was actual survey effort or designed effort used for analysis in Distance?

4.2.15 whilst high spatial resolution is achieved, low temporal resolution for individual transects results (they are surveyed every 4 months).

4.2.36 why was this needed for guillemot etc when Distance was used to produce estimates- or was this method used only for the presentation of boat based data in the distribution/ abundance maps? If the latter is the case then what was the justification for excluding a large amount of data and not using Distance methods?

Were densities from the mapped abundances or the 'global' density estimates used to inform displacement models? If the former, then this may not be appropriate due to the reasons above. If the latter, did this account for any potential 'hot spots'.

4.2.2 Availability bias may be important in understanding differences in estimates from aerial and ship-based surveys.

4.2.6 Even coverage probability is all that is required (and sufficient encounter rates) so 0.5-2 nm spacing not necessarily required.

4.2.9 Survey effort appropriate to obtain the encounters required in combination with design to ensure even coverage probability may have removed this issue.

4.2.22 What was the survey effort in Alpha and in Bravo?

4.2.113 This would significantly reduce your data set.

4.2.114 Histograms of sightings within the distance bands would be very useful to see. Was there any reason for this spike away from $g(0)$ like evasive behaviour or confusion due to both sides of the vessel being surveyed?

Figure 4.7 suggests unequal survey coverage along a distinct NW-SE orientation with diagonal lines of high/ low coverage probability apparent. Are these reflected in subsequent abundance/ distribution maps?

Chapter 10- Ornithology

Table 10.3 Reduction in % of area with displacement assumes that the narrow corridors between turbines will be utilised by birds to the same degree as 'open water'. Is this reasonable?

Table 10.15 Use of % area affected assumes all areas of equal importance to birds. Was this reflected in the distribution maps?

10.133 Was this using uniform density of bird species across the site?

10.135 This should not be seen as a direct measure of habitat quality. Is it reasonable to infer that areas not visited by the tracked IOM individuals were of lower quality or not 'core habitat'. The distribution/ density maps may provide an indication of the relative importance of areas across the site for some species at least.

10.142 Clupeid impact footprint from pile driving is large.

Table 10.2 Why has Gannet displacement not been included as potential effect- they may avoid the entire wind farm area.

Table 10.28 Is information on the translation from flying birds to density to flux through the turbines to collision estimates presented?

10.296 Is a single event is a single percussion event or the installation of a single pile? What is the duration and frequency of pile driving events and over what time period would pile driving take place? Do any studies indicate short-lived effects of repeated piling events?

10.300 Assumes even distribution of fish across area and that high resource areas are not preferentially selected for by birds?

10.303 Assumes even distribution of fish across area and that high resource areas are not preferentially selected for by birds?

10.309 what about non-noise impacts on sandeels e.g. increase in silt from construction making habitat unsuitable?

Plot 10.13 (and all subsequent) is based on data collected at along transects that were surveyed in 4 different months and does not account for temporal/ spatial variation in abundance. You may expect at sea densities to be different between the start of the breeding season (April) and post fledging (July) but these differences seem to be being presented as spatial variation rather than temporal. The assumption being made seems to be that the surveys represent a full survey (i.e. 100% coverage) when this is not the case- it would not be reasonable to assume that densities or distributions remained consistent across the 4 month rotations used.

Displacement during operation

10.341 Appears to assume even distribution/ importance of area which is unlikely to be true- or is total area based on mapping/ modelling suitable areas? What is avoidance distance based on?

10.342 What is avoidance distance of 300m based on for Kittiwake, and why less than the 400m for guillemot?

10.343 where is the 1% mortality from displacement from? Assumes no cycling of individuals using an area so may result in an underestimate of individuals impacted?

10.347 This may suggest reduced impact on the Isle of May but not on the birds present in the survey area.

Barrier effects

Plot 10.33 better way to present data needed. Dominant flight direction from a subset of regions would be more informative.

Plot 10.36 Is this Guillemot data? The embedded jpeg is called "Guillemot flight directions.jpg) and this map appears identical to Plot 10.39? What do the red arrows relate to?

Plot 10.37 what does the dashed line represent?

Collision impacts

Table 10.29 clarification on how these totals have been calculated is required.

Table 10.30 Estimated collision rate during passage? How did collision rate change with increased wind speed i.e. >4?

Cumulative & in combination

10.438 10.3% and 17.7% of what?

Where are displacement values from i.e. 10% of area= 10% of population and if so do survey data indicate uniform distribution across the site?

Where did 1% mortality value come from?

Focus on national population and no reference to regional populations/ individual sites? Individuals impacted not apportioned to SPAs. Which population/s were winter impacts assigned to?

Plot 10.43 see comments in earlier section on how distribution and density data have been mapped.

How does collision risk vary with wind speed/ direction and has this been accounted for in the hot-spot mapping? Are all kittiwake data represented here or breeding season only?

Plot 10.46 etc Do these relate to all fixes or do they exclude fixes during 'transit' to foraging areas?

Table 5.1 Indicate whether estimates derived from raw counts, correction factor applied or Distance.

What does the 1 annotation mean for some values e.g. gannet?

10.510 Robust monitoring of potential impact required, should. To be agreed with MSS and SNCBs.

Table 10.41 & 10.42. Displacement Kittiwake, Guil, Raz, Puffin- Minor and not significant based on?

5.1.29 what is this assumption based on?

Figure 6.1 Error bars needed and estimates for birds on the water and in the air presented separately (different impact mechanisms apply).

Figure 6.11 etc. Appropriate Y axis max 5 would be helpful. Error bars? Data presented by season may be helpful.

How were densities produced for each project- mean density across entire survey area multiplied by area of project? Did survey effort within project differ significantly and did effort differ significantly between survey periods?

Figure 6.18 (and subsequent telemetry tracks) do tracks for a) travelling and b) foraging activities exist?

Disturbance during construction.

10.286 Does this refer to transits only or also include 'stationary' vessels? Short term over 25 years but what would the impact duration be- 2 years?

Construction impact of prey

10.296 For each individual event but what about a series of events in the same area over a sustained period of time?

10.300 Assumes even distribution of fish across area and that high resource areas are not preferentially selected for by birds?

10.303 Assumes even distribution of fish across area and that high resource areas are not preferentially selected for by birds?

Very little information presented or referenced.

Chapter 22 – Mitigation and Monitoring

Assumes that impacts are negligible and mitigation therefore not required (e.g. prey species) so minimal mitigation discussed. Also final design not decided.

No monitoring discussed in the Mitigation and Monitoring chapter.

When additional information provided to inform the impact assessment, Chapter 22: Mitigation and Monitoring can be reassessed.

Marine Mammals

Overall, the existing environment sections are good. The boat based surveys clearly didn't produce the necessary quality of data, but other supporting data are appropriately used to fill the gaps and the quality of the analysis is good.

Sections referring to the assessment of impacts are less well written than the existing environment section and in many places, the logic for concluding that an impact is not significant is not entirely clear.

Population effects

The assessment does not attempt to place the impacts in the context of population status, for example, by using the framework developed by Thompson *et al.* for species in the Moray Firth. It can therefore only make qualitative assessments of the impacts which are less robust and less transparent.

The fact that the east coast harbour seal population is in serious decline has not been fully explored. We appreciate that the manner in which this must be dealt with is a matter for consultation between the SNCBs and Marine Scotland.

Mitigation

Given that auditory injury was predicted to occur at ranges of up to 1km for minke whales and harbour porpoises, using MMOs searching areas out to 500m is unlikely to be a sufficient mitigation. A clear strategy for mitigation of risks these risks must be developed and must show that the developer can give greater certainty that marine mammals are not present within these areas.

The zone of predicted behavioural response for bottlenose dolphins extends to the coast. If the noise levels are not mitigated, this may be considered to be too great an impact. The effect of noise mitigation on impact ranges for harbour seals is available in the technical appendix (H6). We would like to see similar analyses carried out for bottlenose dolphins and some discussion of the levels by which it may be feasible to reduce source noise levels.

Cumulative impacts

The cumulative impact assessment deals separately with projects alpha and bravo, and then alpha, Inch Cape and Neart Na Gaoithe. In this case, projects alpha, bravo, Inch Cape and Neart Na Gaoithe are never considered together. Unless the intention is never to pile drive in both project alpha and bravo at the same time, then this misses an important element of the cumulative effect. No acoustic modelling of the likely impact ranges of all three developments combined was shown.

We are concerned about leaving further afield projects out of the cumulative assessment. For harbour seals, the reference population is the ECMA, so developments within that area should be included. For bottlenose dolphins, the reference population should be the east coast of Scotland. This means that developments along that coast, including e.g. Aberdeen Bay wind farm should be included in the cumulative assessment.

Errors and omissions

We are concerned with the interpretation of bottlenose dolphin densities from appendix H5. It is not appropriate to assume that areas outside of the study area shown in the report have no bottlenose dolphins, particularly given that the boat based surveys recorded some in offshore locations. We note that other measures of dolphin distribution are also used, such as average densities and SAFESIMM, but some of the results presented in the impact assessment do use this inappropriate measure and hence show that zero dolphins will be affected.

There is no explanation of how the values in table 13.14 were reached. Please advise us on this matter. In particular, please explain why bottlenose dolphins are considered to have a medium sensitivity to auditory injury. Would changing this to high sensitivity affect the conclusions of the assessment?

The use of “home range” (throughout) is somewhat confusing. Firstly, this term is usually used for an individual animal; for a population it should be simply “range”. It seems that the chapter uses home range to define the area that the population of interest is found within. Secondly the ranges used in the section 13.621-13.624 should be defined here (or at least a reminder).

Throughout the chapter, there are occasions where there is a lack of clarity, or the presentation of data makes it difficult to interpret. For example, figure 13.1 has no y axis label and we believe there has been some confusion over the metrics used for encounter rate in appendix H1; in the technical report they are number of encounters per km of survey track, but in the ES chapter, they are reported as densities (animals per square km). Section 13.235, states that “...evidence suggests bottlenose dolphins do not show similar responses to noise as harbour porpoise...”, but does not state the source of this evidence.

Coastal Processes

The Oceanography group has no major concerns or comments regarding the coastal processes sections of the Environmental Statement. During previous consultations, the issue of wave diffraction and breaking were discussed. These issues are dealt with well in the ES using a strong evidence base consisting of a comprehensive review of environmental impacts assessments for other wind farms. This review included information on a variety of foundation designs, including gravity base structures that are generally considered as the ‘worst case scenario’ within the Rochdale envelope scheme.

Another potential issue for the operational phase of the wind farm is that of scour around the foundations. An imperial assessment of the scour was made (Appendix E4) and this is deemed to be appropriate. I was pleased to see that some consideration was given to the fate of scoured material during operation. The rate of release of scoured material does not seem to be given much attention in the main part of the ES, but the conclusion that the scoured sediment is less than that potentially released during sea bed preparation activities is considered to be sound.

Hopefully these comments are helpful to you. If you wish to discuss any matters further contact the MSS Renewables in-box MS_Renewables@scotland.gsi.gov.uk.

Yours sincerely

Paul Stainer
Marine Scotland Science



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14 December 2012

Dear Sirs

Please quote in any correspondence: DIO15629

Site Name: Firth of Forth Phase 1 Offshore Project

Planning Application Number: Section 36

Thank you for consulting the Ministry of Defence (MOD) about the above planning application in your communication dated 12 November 2012.

I am writing to inform you that the MOD objects to the proposal for the following reasons. Our assessment has been carried out on the basis that there will be up to 75 turbines, up to 209.5 metres in height to blade tip and located at the grid references below as stated in the planning application or provided by the developer:

Turbine	100km Square letter	Easting	Northing
1	NP	23720	51564
2	NP	24483	48965
3	NP	25174	49228
4	NP	26019	52703
5	NP	31560	37861
6	NP	26876	37497
7	NP	26541	39830
8	NP	26676	40473
9	NP	25406	40566
10	NP	25118	39948
11	NP	25370	37380
12	NP	03814	35705
13	NP	03871	43233
14	NP	96605	41892
15	NP	95343	41862
16	NP	93863	42372
17	NP	90646	44270
18	NP	89926	44923
19	NP	89004	45287

20	NP	85946	44435
21	NP	84734	43925
22	NP	83105	43709
23	NP	77574	41762
24	NP	71529	38759
25	NP	67225	35858
26	NP	62761	33892
27	NP	57181	32713
28	NP	56159	32724
29	NP	55901	32950
30	NP	55976	33252
31	NP	56104	33710
32	NP	56056	33947
33	NP	56076	33948
34	NP	56127	33726
35	NP	56387	33758
36	NP	57412	33759
37	NP	62452	34843
38	NP	66736	36730
39	NP	70989	39600
40	NP	77234	42703
41	NP	82757	44654
42	NP	84591	44923
43	NP	86422	45728
44	NP	87914	46144
45	NP	94083	47442
46	NP	00974	46766
47	NP	03902	47306
48	NP	03953	53979
49	NP	08095	53975
50	NP	08073	52488
51	NP	09190	52472
52	NP	19179	51693
53	NP	14157	49334
54	NP	15247	49792
55	NP	15498	51889
56	NP	14923	53083
57	NP	16614	53968
58	NP	24455	53961
59	NP	23955	52329
60	NP	06723	35931
61	NP	23955	52329
62	NP	06723	35931

Air Traffic Control (ATC) Radar

The turbines will be between 58.9km and 116.7km from, detectable by, and will cause unacceptable interference to the ATC radar at RAF Leuchars.

Wind turbines have been shown to have detrimental effects on the performance of MOD ATC and Range Control radars. These effects include the desensitisation of radar in the vicinity of the turbines, and the creation of "false" aircraft returns which air traffic controllers must treat as real. The desensitisation of radar could result in aircraft not being detected by the radar and therefore not presented to air traffic controllers. Controllers use the radar to separate and sequence both military and civilian aircraft, and in busy uncontrolled airspace radar is the only sure way to do this safely. Maintaining situational awareness of all aircraft movements within the airspace is crucial to achieving a safe and efficient air traffic service, and the integrity of radar data is central to this process. The creation of "false" aircraft displayed on the radar leads to increased workload for both controllers and aircrews,

and may have a significant operational impact. Furthermore, real aircraft returns can be obscured by the turbine's radar returns, making the tracking of conflicting unknown aircraft (the controllers' own traffic) much more difficult.

Air Defence (AD) Radar

The turbines will be between 87.1km and 117.5km and 122.4km and 140.4km from, detectable by, and will cause unacceptable interference to the AD radars at RAF Buchan and RAF Brizlee Wood respectively. Trials carried out in 2005 concluded that wind turbines can have detrimental effects on the operation of radar which include the desensitisation of radar in the vicinity of the turbines, and the creation of "false" aircraft returns. The probability of the radar detecting aircraft flying over or in the vicinity of the turbines would be reduced, and the RAF would be unable to provide a full air surveillance service in the area of the proposed wind farm.

If the developer is able to overcome the issues stated above, the MOD will request that all perimeter turbines be fitted with 200 candela omni-directional red lighting or North Hoyle lighting at the highest practicable point.

MOD Safeguarding wishes to be consulted and notified about the progress of planning applications and submissions relating to this proposal to verify that it will not adversely affect defence interests.

I hope this adequately explains our position on the matter. Further information about the effects of wind turbines on MOD interests can be obtained from the following website:

MOD: <http://www.mod.uk/DefenceInternet/MicroSite/DIO/WhatWeDo/Operations/ModSafeguarding.htm>

Yours faithfully

Marie Neenan
Senior Safeguarding Officer
Defence Infrastructure Organisation

SAFEGUARDING SOLUTIONS TO DEFENCE NEEDS

Seagreen Phase 1 (Alpha & Bravo) Offshore Windfarms
Ref: 013/OW/SGFOF1-10

In response to reference 013/OW/SGFOF1-10, the Ministry of Defence (MoD) would like to make the following representation regarding the proposed development of off-shore wind turbines and the associated on-shore aspect of the project.

The major areas of concern are outlined below:-

- The route of the underwater cable will run through the sea danger area of Barry Buddon. Any encroachment on the danger area will stop live firing and close the range. Barry Buddon is a heavily used training area with upwards of 300,000 troops training annually on site.
- Access to the on-shore cable route is being sought over MoD private roads. These roads must be open while the ranges are operational for health and safety reasons.
- Sea Green is unable to divulge detailed information in relation to the exact impacts that the project will have on the activities MoD undertakes at Barry Buddon.

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**Graeme Proctor
Navigation Safety
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SO15 1EG**

Mr Andrew Sutherland
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Marine Laboratory PO Box 101
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Aberdeen
AB11 9DB

Tel: +44 (0)23 8032 9191
E-mail: Graeme.proctor@mcga.gov.uk
Your ref: 013/OW/SGFoF1-10
Our ref:
6th December 2012

Dear Andrew

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1998 AND A MARINE LICENCE UNDER PART 4, SECTION 20 OF THE MARINE (SCOTLAND) ACT 2010 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS, FIRTH OF FORTH.

Many thanks for your letter of 26th October inviting comment on the Environmental Statement (ES) for the proposed Seagreen Energy application to construct and operate the Seagreen Alpha and Bravo Projects in the Firth of Forth.

The MCAs remit for offshore renewable energy development is to ensure that as progress is made towards government targets for renewable energy, safety of navigation is preserved. The full ES is a necessarily large and wide ranging series of documents, this response is focused on the shipping and navigation elements of the ES, primarily the Navigation Risk Assessment (NRA).

The MGN 371 checklist contained at appendix B to the NRA is noted, annotated with MCA comments as attached.

Survey Data

MGN 371 Annex 2 Paragraph 6 iii requires that hydrographic surveys should fulfil the requirements of the International Hydrographic Organisation (IHO) Order 1a standard, with the final data supplied as a digital full density data set, and survey report to the MCA Hydrography Manager. This information is yet to be submitted, Failure to report the survey or conduct it to Order 1a might invalidate the Navigational Risk Assessment if it was deemed not fit for purpose.

Cumulative Impacts

The cumulative impact assessment provides a comprehensive overview. Traffic in the area although not heavy, will be displaced by the development; the effects therefore need to be carefully monitored. One area of significant concern remains the undeveloped sea space between the Inchcape development and Project Alpha,

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also as future projects mature a similar concern will be raised over the space between NNG and the Southern part of the FoF zone.

Section 9&10 of the NRA addresses effects of commercial shipping and in particular deviations for routes 1 and 2. It is noted that Project Alpha (PA) and Bravo (PB) have been reviewed separately and seems to suggest that deviations proposed for route 1 in PA will impact PB and route 1 deviation in PB will impact PA, compounded further considering that the same route has different deviations proposed for each project. The developer is requested to review these deviations taking concurrent account of both PA and PB.

Safety Zones

The proposals identified for Safety Zones at section 19 of the NRA, are contradictory 19.3 states that no operational safety zone will be required, the 4th paragraph in the section goes on to indicate that operational safety zones will be applied for. It should be noted that a detailed justification would be required for a 50m operational safety zone, with significant evidence from the construction phase in addition to the baseline NRA required supporting the case.

Cable Routes

Export cable routes, cable burial protection index and cable protections are issues that are yet to be fully developed. However due cognisance needs to address cable burial and protection, particularly close to shore where impacts on navigable water depth may become significant. Existing charted anchorage areas should be avoided.

Emergency Response & Co-operation Plans

An Emergency Response & Cooperation Plan is required to meet the requirements of annex 4 and 5 of MGN 371. An approved ERCOP will need to be in place prior to consent being provided.

Salvage

It is noted that 2.2.5 of the NRA discusses in great detail both historical and current arrangements for the MCA, National Contingency Plan arrangements, but only comments briefly on local resources. The use of local tugs was discussed at the hazard workshop (section C4 commercial vessels), the developer will need to clearly identify 'self help' resources for incidents not considered nationally significant.

Conclusion

It is noted that the NRA does not draw any formal conclusions from its assessment; it has been used as a tool to outline impacts on traffic, its purpose purely to highlight risks, and consider any mitigation that may be appropriate in ensuring shipping will not be adversely impacted from the safety of navigation perspective.

This letter provides a cautious acceptance in principal of the project concept. The developer will need to meet requirements addressed in this letter, in order to ensure navigation safety is not compromised.

You have requested that any recommendations or conditions arising from the review are detailed under a separate annex, specific consent conditions will be provided against the finalised project plans submitted through the construction method

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statement, which will address layout, and operational requirements as required in MGN 371.

Yours sincerely

Graeme Proctor
MCA
Navigation Safety

Enc
Annotated MGN371 checklist

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Marine Scotland
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

**Enterprise, Planning and
Protective Services**

Keith Winter
08451 555555 ext. 442284
Keith.Winter@fife.gov.uk

Your Ref: KW/ND
Our Ref:

Date: 13 June 2013

Dear Sir/Madam

RE: APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND MARINE LICENCES UNDER PART 4, SECTION 20 OF THE MARINE (SCOTLAND) ACT TO CONSTRUCT AND OPERATE 2 OFFSHORE WINDFARMS, WITHIN THE FIRTH OF FORTH.

I write in response to the invitation to comment on proposals for the above project. Thank you for providing Fife Council with the opportunity to submit a response to this development proposal. I would be pleased if you could formally acknowledge receipt of this submission.

Fife Council welcomes any investment and development interest that will generate positive Opportunities and benefits for Fife and Scotland. Fife Council is seeking to become Scotland's "Leading Green Council" and supports the development of appropriate renewable energy technologies generally. It is considered that this development will in many ways contribute to meeting these objectives.

Whilst the Council supports the general principle of the proposal, and welcomes the inherent benefits it is likely to generate for Fife and Scotland, there are a number of areas of concern in relation to the Environmental Statement which we would wish to highlight to the Scottish Government.

Fife Council would wish to comment on the following issues in particular, with regard to the proposal:

Enterprise, Planning & Protective Services

Kingdom House, Kingdom Avenue, Glenrothes KY7 5LT





UNEXPLODED ORDINANCE (UXO)

It is noted that with the ES that although there are potential health and safety impacts associated with the presence of UXO during all phases of development, these are not assessed within this ES. Potential health and safety impacts will be fully assessed as part of a UXO specific risk assessment which will be informed by the geophysical survey data. UXO risk and response will be factored into the detailed design process and in the development of method statements and their associated health and safety risk assessments.

Fife Council would request that the outcomes of the UXO risk assessment are provided for comment.

ECOLOGY AND ORNITHOLOGY

In relation to the Chapters in the Environmental Statement relating to habitats and species, Fife Council would expect full consultation to be undertaken with the relevant key agencies SNH, SEPA and the RSPB. The Environmental Statement's Chapters on habitats and species appear to be generally thorough assessments of the possible impacts of the proposal, are supported by surveys for the appropriate habitats and species and from the information presented draw reasonable conclusions.

The possible cumulative impacts upon several bird species and marine mammals associated with this and other Firth of Forth wind farms have been taken into consideration and the report considers that there could be significant cumulative impacts. Again SNH will be required to advise on this matter.

CULTURAL HERITAGE

It is noted that the Environmental Statement utilises the 'Rochdale' principle and does not provide specific location or numbers of turbines but in terms of archaeological mitigation, Fife Council, would recommend that once identified a detailed mitigation strategy should be provided for each specific turbine footprint and for the footprint of associated cable trenching. For archaeological mitigation to be of value, it is considered that any mitigation strategy should involve the detailed examination of each seabed turbine footprint. Such examinations could make use of divers, remotely operated vehicles or remote sensing regimes (preferably multibeam).

COMMERCIAL FISHERIES

From dialogue with organisations such as the South East Inshore Fisheries Group, the Fishermen's Mutual Association (Pittenweem) Ltd, and the 10 Metre & Under Association, Fife Council is aware of concerns raised by the local fishing industry about the Seagreen

Project and other proposed offshore wind farm developments, and wishes to see these matters addressed.

The commercial fishing industry in Fife is small but locally important. The fishing fleet & onshore infrastructure is centred in the East Neuk. The main port is the village of Pittenweem, with some landings also taking place elsewhere. Other working harbours from which commercial vessels operate include Crail, St Monans, Anstruther, Methil, Burntisland and St. Andrews. The fleet at Pittenweem presently consists of around 40 vessels and provides direct employment to around 100 people. The fleet depends almost exclusively on in-shore fishing for shellfish (prawns, lobsters). It comprises of mostly smaller vessels (under 10 metres in length) fishing within 12 nautical miles (approx 23 km) off shore.

These small businesses are often single vessel operations and are highly dependent on the local fishing grounds around the Firth of Forth; they have limited capacity to cope with displacement, being constrained by lack of capital and licence/ quota regulations from fishing in other areas and/or diversifying into other fisheries.

Part of the concern of the local fishing interests centres on the lack of clarity as to precisely what the impact of the development will be; For example, despite numerous research studies, it is still unclear as to how the installation work will affect the seabed and fisheries stocks; it is still unclear if exclusion zones will operate, and if so whether this will be a permanent displacement of all fishing, or a selective approach based on vessel size and/or fishing method (with mobile gear operations excluded, but static gear fishing allowed).

In addition, Fife fishermen are not convinced that the new business opportunities for the sector, suggested by the Offshore Renewables industry, will materialise, notably the potential for fishermen to gain income from maintenance/ supply contracts for the turbines. Many doubt that this will be feasible - believing that the offshore industry will favour its own specialist suppliers/ contractors, or need to use the latter for practical reasons.

Fife Council is aware that there is a strong demand from local fishermen for assurance that they will be compensated for loss of income following disruption to/ exclusion from fishing grounds resulting from turbine development. To this end, they are seeking some form of mitigation clause for damages to be built into or underwritten in the licence agreement. Fife Council therefore would like Marine Scotland to give this due consideration.

This Council is aware of that the Offshore Developers' Forth/Tay Offshore Wind-farm Development Group has recently set up a new consultation forum, the Commercial Fisheries Working Group, to which the fishing industry (both individual fishermen and Associations like the Fishermen's Mutual Association (Pittenweem) Ltd) are invited, along with Scottish Natural Heritage and Marine Scotland.

This forum may enable matters such as compensation to be addressed. If so, we would urge those organising the Working Group, to ensure that meetings are held as frequently as

fishing interests consider to be necessary, and at a time of the week that suits working fishermen, so that they can readily take part.

Should the Scottish Government (Marine Scotland) be minded to approve the development, Fife Council would respectfully suggest that conditions be attached to any statutory permission granted, as set out in this submission (Appendix 2). Fife Council would request that the role of Enforcement would be one taken forward by Marine Scotland as the Consenting Authority. Any monitoring of conditions and any potential action required, should non compliance be evidenced, should solely be within the remit of Marine Scotland.

In all other respects, Fife Council would offer support for the project subject to following the mitigation methods within the related Environmental Statement submission and relevant advice from other Statutory Agencies/ Bodies. Fife Council would also support any proposal that used the minimum number of turbines to reach the licensed capacity of the project.

I trust this response is helpful but if you require any further information or clarification then please contact me.

Yours sincerely

[Redacted]

Keith Winter
Head of Enterprise, Planning and Protective Services

Appendix 2 – Recommended Conditions:

Archaeology:

BEFORE ANY WORK STARTS ON THE CONSTRUCTION OF THE FIRST FOUNDATION FOR THE TURBINE SUPPORT STRUCTURES, details of an archaeological mitigation strategy for each footprint of the turbine support structures, shall be submitted for the further approval of Marine Scotland and thereafter all works disturbing the sea bed shall be carried out in accordance with the archaeological mitigation strategy as approved. For the avoidance of doubt the strategy shall include the detailed examination of the footprint on the sea bed of each turbine support structure including all associated cable trenching). The method of examination shall include some or all of the following techniques; the use of divers, remotely operated vehicles or remote sensing regimes (preferably multibeam).

Reason To ensure a full and detailed assessment of seabed archaeology is carried out in advance of the construction works to disturb the sea bed taking place.

Unexploded Ordinance

BEFORE ANY CONSTRUCTION WORK STARTS ON SITE, an Unexploded Ordinance specific risk assessment shall be submitted for the further approval of Marine Scotland and thereafter the construction works shall be carried out in accordance with the details as approved.

Reason: To ensure that the developer has fully demonstrated that the construction project would not give rise to any risk associated with any Unexploded Ordinance within the site area.

Commercial Fishing

BEFORE ANY CONSTRUCTION WORK STARTS ON SITE, a Commercial Fishing Management Plan shall be submitted for the further approval of Marine Scotland, in consultation with Planning Authorities, Government Agencies and representative bodies of the Fishing Industry. FOR THE AVOIDANCE OF DOUBT, the Commercial Fishing Management Plan will identify the affect the proposal will have on the seabed and fisheries stock; whether fishing exclusion zones will be implemented; whether displacement of fishing is required, or restrictions require to be imposed on the permitted methods of fishing allowed, and any other proposed mitigation measures. Any proposed mitigation measures shall be fully implemented prior to construction work commencing, or the commissioning of the proposed windfarm, whichever is appropriate to the nature of the identified issue or impact.

Reason:

To ensure that the Developer has fully demonstrated that the Local Fishing Industry will be accommodated as part of this proposal and that management of any potential conflicts exists.

Date
Agenda Item No.

12/04395/NEA- Application under Section 36 of the Electricity Act 1989 for the construction and operation of 2 offshore wind farms at Seagreen Alpha Offshore Wind Farm and Seagreen Bravo Offshore Wind Farm, Fife,

Report by: Keith Winter, Head of Enterprise, Planning and Protective Services

Wards Affected:

Purpose

Fife Council has been consulted as Planning Authority in relation to this application by Marine Scotland who has been delegated by the Scottish Government to assess the proposal under Section 36 of the Electricity Act, 1989.

The purpose of this report is to seek the Committee's agreement on the proposed Council formal response to the consultation.

Recommendation(s)

It is recommended that the North East Fife Planning Committee:

- Agrees the content of the recommended formal response attached as Appendix 1, as Fife Council's recommendation to the proposal which supports the principle of the development, whilst highlighting areas that will require further assessment, particularly birds and marine mammals, Unexploded Ordinance assessment and other aspects associated with wind turbine development.
- Remits to the Head of Enterprise, Planning and Protective Services the submission of Fife Council's formal response to the Scottish Government (Marine Scotland).

Resource Implications

In terms of Section 57 of the 1997 Planning (Scotland) Act, Scottish Ministers may, on granting consent under Section 36 of the Electricity Act, also grant deemed planning permission with conditions, which the planning authority would subsequently enforce, in the same way as conditions imposed by a Reporter on appeal.

Legal & Risk Implications

Fife Council is being consulted as part of the determination process for the Section 36 application. Fife Council is not the determining Authority with regard to this particular

application and is responding to Scottish Ministers (Marine Scotland) as a Statutory Consultee. All other statutory consultees will be submitting individual comments and views direct to Scottish Ministers. If the Council as a Statutory Consultee is minded to object to the proposals, Scottish Ministers may be required to call a Public Inquiry unless the areas of objection can be satisfactorily addressed through modifications to the proposal or the imposition of appropriate conditions.

Impact Assessment

An EQIA checklist is not required because the report does not propose a change to existing policies and practises.

Consultation

Consultation was undertaken with the Executive Director, Corporate Services (Directorate), who supports the content and recommendation of this report.

Under the Electricity Act the onus for public consultation rests with the applicant and not with the Local Authority as is usually the case for a planning application. The Environmental Statement submitted as part of the proposal stated that the applicant held public information events in January, 2011 and then further public consultation events were held in May, 2012. Consultation has also taken place with a wide range of relevant authorities and agencies as part of the scoping stage for the Environmental Impact Assessment.

1.0 Background

1.1 The proposed Seagreen Offshore wind project comprises 2 Offshore Wind Farms within the north east of the outer Firth of Forth area. The proposals have been submitted under Section 36 of the Electricity Act 1989 to the Scottish Government for determination. The Section 36 application is accompanied by a detailed Environmental Statement which sets out the environmental considerations associated with the proposed development and also includes a Planning Statement and relevant drawings, photographs and photo montages illustrating the potential visual impact of the proposal.

1.2 The Seagreen Offshore Wind Farm project comprises 2 Separate Offshore Wind Farms. The individual windfarms are titled Project Alpha and Project Bravo respectively. Given both windfarms adjoin each other they have been submitted as 1 project, herewith referred to as the Seagreen Project. The Seagreen Project is located within the area designated as Firth of Forth Round 3 Zone 2 and would be the first phase of the expected three offshore wind projects within this designated area.

1.3 Each windfarm would comprise the following:

- Offshore wind turbines (up to a maximum of 75 per wind farm),

- Each wind farm is to have with a maximum capacity of 525 Mega Watts (MW))
- Up to 6 (3 in each offshore wind farm) meteorological masts (subject to separate permissions from Marine Scotland)
- One or two offshore collector stations

1.4 At its nearest point to the mainland (Angus Coastline) the proposed wind farm project is located approximately 27km off the east coast, within the outer area of the Firth of Forth. The Seagreen Project is located approximately 50km east north-east from Tentsmuir beach. No associated onshore works are proposed within the landward boundary of Fife Council. The Electricity generated will be transmitted to shore via offshore cables, buried .5 metres within the seabed, and will come ashore at Carnoustie on the Angus coastline. The electricity will then be transmitted to a connection point with the national electrical transmission network.

1.5 The maximum capacity allowed under the terms of the agreement for lease given by the Crown Estate for the Firth of Forth Round 3 Zone 2 is 3.5 GW and therefore this shall dictate the number of turbines being erected should permission be given. The applicant is considering a range of turbines with a cumulative rated output of 1050 Megawatts (1.05 Gigawatts). The applicant has requested to Marine Scotland that a flexible approach is taken into account with this application as the exact details of the proposal can not currently be defined. The application to Marine Scotland describes the minimum and maximum parameters of the development to allow an evaluation to be carried out. This process is commonly referred to as the 'Rochdale Envelope' approach which means that consent for a range of design parameters and installation methods is sought within a broad site area to allow further refinement as the project progresses and develops. Marine Scotland has agreed to this approach being taken.

1.6 Several foundation methods are assessed as part of the proposals but in essence all require the turbines to be rooted onto the seabed. The final choice of foundation and substructure designs will be based upon the size of the wind turbine generator selected in addition to ground conditions, water depth and environmental conditions at the site.

1.7 The wind turbine generator rotor diameters are to be between a minimum of 122 metres to 167 metres with a hub height of 87.1 metres (minimum) to 126 metres (maximum) above Lowest Astronomical Tide. There is to be a minimum separation distance between each turbine of 610 metres with a maximum distance of 835 metres.

2.0 Issues and Options

2.1 It is considered that all relevant operational and environmental issues have clearly been identified within the Environmental Statement submitted as part of the Section 36 Application to Marine Scotland. Fife Council is seeking to become Scotland's "Leading Green Council" as one of its Big 8 Priorities and is generally supportive of the development of renewable energy technologies. It is considered that this development will in many ways contribute to meeting the aims and objectives of the Council.

2.2 The Marine (Scotland) Act received Royal Assent 10 March 2010. The Act creates a new legislative and management framework for the marine environment to manage the competing demands of the use of the sea whilst protecting the marine environment. In particular, Part 3 of the Act places a duty on Scottish Ministers to prepare and adopt a National Marine Plan, followed by regional marine plans. The National Marine Plan will sit alongside and interact with existing planning regimes. The Pre-Consultation Draft Marine Plan for Scotland was published in 2011 and sets strategic context for developing major offshore wind farms around Scotland, which includes reference to the subject site.

2.3 SPP (Renewable Energy) states that Planning Authorities should support the development of a diverse range of renewable energy technologies, guide development to appropriate locations and provide clarity on the issues that will be taken into account when specific proposals are assessed. Development plans should support all scales of development associated with the generation of energy and heat from renewable sources, ensuring that an area's renewable energy potential is realised and optimised in a way that takes account of relevant economic, social, environmental and transport issues and maximises benefits.

2.4 National Planning Framework (NPF) 2 sets out a national framework covering energy generation amongst other land-use themes. The development of offshore wind farms are expected to contribute to the wider mix of renewable energy generation technologies being created in Scotland and are to assist in reducing harmful carbon emissions and meeting the stringent climate change related targets. There is specific reference to proposals for the development of Sub-Sea grids to assist in meeting UK and Scottish energy needs but also to allow export of electricity to other mainland European countries that would benefit the Scottish Economy.

2.5 National Renewable Energy Infrastructure Plan (N-RIP) supports the development of a globally competitive offshore renewables industry based in Scotland. The focus of the document seeks to ensure that there is adequate infrastructure in place to support the development and growth of offshore renewables, including land for economic development and port infrastructure. These are identified based upon their proximity to candidate sites for offshore wind farms that have been identified by the Crown Estates and are being taken forward in the upcoming Marine Plans. The Seagreen Project is specifically identified within the plan as part of a proposed cluster of offshore wind farms in the Forth/Tay area.

2.6 A Draft Plan for Offshore Wind Energy in Scottish Territorial Waters was produced by Marine Scotland in 2010. This document has been consulted upon however no finalised version of the plan has been published yet. Fife Council responded positively to the consultation. This document is considered to have some weight as a material consideration in the assessment of the development proposals. The Seagreen Project boundary is identified within the plan as a medium term development option within the East region of Scotland. Within the Draft Plan potential environmental and technical issues which are in need of addressing are identified, these include biodiversity; particularly marine life and migratory birds. Spawning grounds and nursery areas for fish species are located in the footprint of the works. The draft plan acknowledges that offshore wind development in this area is also likely to have visual and seascape impacts due to its

relative proximity to land and nationally designated landscapes. Overall, interaction with fishing is likely to be an important issue in the east region as a whole given current catch levels. In the context of each of the six identified Scottish marine regions it is notable that there are constraints on all of the regions, however the East region appears to have fewer environmental and technical issues than many of the other regions.

2.7 The principal policy considerations for developments of this nature are provided within the aforementioned emerging Marine Plans for Scotland and within the National Renewable Energy Infrastructure Plan (N-RIP). The scale of the proposals, in terms of turbine heights and numbers, requires it to also be assessed against the Fife Development Plan. In this instance, the Fife Development Plan comprises TAYplan Strategic Development Plan 2012 – 2032 and the Adopted St Andrews and East Fife Local Plan (2012). Fife Council's Supplementary Planning Guidance on Wind Energy (updated 2011) whilst carrying less weight as a consideration than the Development Plan supplements the local plan policies.

2.8 Policy 3: Managing TAYplan's Assets of TAYplan states that 'development likely to have a significant effect on a designated or proposed Natura 2000 sites (either alone or in combination with other sites or projects), will be subject to an appropriate assessment. Appropriate mitigation requires to be identified where necessary to ensure there will be no adverse effect on the integrity of Natura 2000 sites in accordance with Scottish Planning Policy.'

2.9 The relevant policies of the Adopted Local Plan and their criteria are as follows:

- Policy E3: The policy requires new development to make a positive contribution to the quality of its immediate environment both in terms of its environmental impact and the quality of place it will create. Developments must secure the most practicable energy efficiency benefit, demonstrate a commitment to landscape protection and improvement taking into account linkages to existing landscape features and the need to provide biodiversity enhancement; include measures to promote, enhance, and add to biodiversity; minimise waste by design and during construction.
- Policy E8: The policy states that development affecting a listed building, or its setting, shall preserve the building, or its setting, or any features of special architectural or historic interest which it possesses. The layout, design, materials, scale, siting and use of any development shall be appropriate to the character and appearance of the listed building and its setting.
- Policy E11: The policy requires developments affecting Historic Gardens and Designed Landscapes to protect, preserve, and enhance such places and shall not impact adversely upon their character, upon important views to, from or within them, or upon the site or setting of component features which contribute to their value.
- Policy E12: Scheduled Ancient Monuments and other identified nationally important archaeological resources shall be preserved in situ, and with an appropriate setting. Developments that have an adverse effect on scheduled monuments or the integrity of their setting shall not be permitted unless there are exceptional circumstances. A report of an archaeological evaluation should be provided prior to determination of the application.
- Policy E20: The policy states that development will only be permitted where it would have an adverse effect, either directly or indirectly, on the ecological status of water bodies.

- Policy E21: Development that will have an adverse affect on European Protected Species will not be permitted unless the developer shows that the proposed development is in the interests of preserving public health or public safety or other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment and there is no satisfactory alternative. Furthermore the proposed development must not be detrimental to the maintenance of the population of the European protected species concerned at favourable conservation status in their natural range. The policy requires relevant surveys on the status of the species to demonstrate the acceptability of proposals.
- Policy E22: The policy states that development that may affect a Local Biodiversity Site or Local Geodiversity Site will only be permitted where it can be demonstrated that the overall ecological integrity of the site will not be compromised and any significant adverse affects on the site are clearly outweighed by social or economic benefits of significant local importance. Appropriate surveys must identify how any anticipated damage will be minimised or mitigated, including replacement habitat for any losses incurred; and proposals for the conservation, protection, enhancement and future management of the natural heritage interest of the Site.
- Policy E23: Development that may affect national and local priority habitats or species, as identified in the Scottish Biodiversity List or Fife Local Biodiversity Action Plan, will not be permitted unless the developer submits an appraisal showing
- Policy I1: Renewable energy technology will be supported and is encouraged providing there are no adverse effects on communities or the environment; it provides employment opportunities, and uses brownfield or contaminated land where possible.

2.10 Policy R1 of Fife Council's Supplementary Planning Guidance (SPG) on Wind Energy (2011) reflects the intent of the SPP and Local Plan Policy noted above but indicates further that proposals for wind turbines/farms will be assessed against the following constraints, any positive or adverse effects on them and how the latter can be overcome or minimised:

1. historic environment
2. areas designated for their regional and local natural heritage value
3. tourism and recreational interests
4. communities
5. buffer zones
6. aviation and defence interests
7. broadcasting installations.

2.11 Policy R1 states that wind farm proposals affecting areas designated for their local and regional natural heritage value shall satisfactorily address any impacts on the particular interest that the designation is intended to protect but the designation shall not unreasonably restrict the overall ability of the plan area to contribute to national targets.

2.12 R1 further states that in all cases, applications for wind farms should be assessed in relation to criteria including as appropriate, grid capacity, impacts on the landscape and historic environment, ecology (including birds), biodiversity and nature conservation, the

water environment, communities, aviation, telecommunications, noise and shadow flicker (the flickering effect when rotating wind turbine blades periodically cast shadows through constrained opening such as windows).

2.13 SPG Policy R3 states that Fife Council will support offshore installations where they do not have an adverse effect on local maritime activities or the natural and historic environment.

2.14 On the whole the off shore turbines do not trigger an assessment against many of the land based policy criteria. It is considered that the Environmental Impact Assessment (EIA) documents submitted as part of the Section 36 application to Marine Scotland contains relevant surveys and adequate mitigation methods to minimise any potential ecological impact the proposal may have. The submission documents contain assessments of the potential impact the offshore turbines may have on the setting of any listed buildings and designed landscapes within the Local Authority boundary of Fife Council and note that the 50 kilometre distance from the shore minimises the proposed development's impact. This 50 kilometre distance off the coast of Fife (from Tentsmuir) also reduces its impact in terms of visual, noise and potential shadow flicker. Whilst all within the same 2 site areas, the proposed number of turbines in each site area varies depending on their generating capacity and therefore any proposal that requires fewer turbines should naturally have a lesser impact and would therefore be the optimum development. Whilst overall, Fife Council are supportive of the renewable energy project, there are however, some areas of concern that the Council believes have not been fully explored by the documentation prepared in support of the application.

2.15 The cultural heritage section of the Environmental Statement offers a comprehensive assessment of the archaeological potential of the general area of the development site including known archaeological sites. However the ES does not mitigate for potential archaeological deposits to exist within the sea bed footprint of each turbine. Whilst the specific location of each turbine footprint cannot be defined at this point it would still be expected that a future archaeological mitigation strategy would be in place. Any archaeological strategy should include the detailed examination of each seabed turbine footprint (including all associated cable trenching) and a strategy for the treatment of any archaeological deposits should they be encountered. It is therefore considered that, whilst the decision is solely within the remit of Marine Scotland as Consenting Authority, it would be prudent to recommend further archaeological mitigation to form part of any permission.

2.16 The Environmental Statement notes that unexploded ordinance (UXO) has not formed part of the assessment and that a UXO specific risk assessment will be informed by the geophysical survey data. It would be expected that any UXO site specific risk assessment is forwarded to Fife Council for further comment.

2.17 From dialogue with organisations such as the South East Inshore Fisheries Group, the Fishermen's Mutual Association (Pittenweem) Ltd, and the 10 Metre & Under Association, Fife Council is aware of concerns raised by the local fishing industry about the Seagreen Project and other proposed offshore wind farm developments, and wishes to see these matters addressed. The commercial fishing industry in Fife is small but locally important. The fishing fleet & onshore infrastructure is centred in the East Neuk. The main port is the village of Pittenweem, with some landings also taking place elsewhere. Other

working harbours from which commercial vessels operate include Crail, St Monans, Anstruther, Methil, Burntisland & St. Andrews. The fleet at Pittenweem presently consists of around 40 vessels and provides direct employment to around 100 people. These small businesses are often single vessel operations and are highly dependent on the local fishing grounds around the Firth of Forth; they have limited capacity to cope with displacement, being constrained by lack of capital and licence/ quota regulations from fishing in other areas and/or diversifying into other fisheries. Part of the concern of the local fishing interests centres on the lack of clarity as to precisely what the impact of the development will be; For example, despite numerous research studies, it is still unclear as to how the installation work will affect the seabed and fisheries stocks; it is still unclear if exclusion zones will operate, and if so whether this will be a permanent displacement of all fishing, or a selective approach based on vessel size and/or fishing method (with mobile gear operations excluded, but static gear fishing allowed).

2.18 Fife Council is aware that there is a strong demand from local fishermen for assurance that they will be compensated for loss of income following disruption to/ exclusion from fishing grounds resulting from turbine development. To this end, they are seeking some form of mitigation clause for damages to be built into or underwritten in the licence agreement. Fife Council therefore would like Marine Scotland to give this due consideration. An Offshore Developers' Forth/Tay Offshore Wind-farm Development Group has recently set up a new consultation forum, the Commercial Fisheries Working Group, to which the fishing industry (both individual fishermen and Associations like the Fishermen's Mutual Association (Pittenweem) Ltd) are invited, along with Scottish Natural Heritage and Marine Scotland. Fife Council would wish to see this forum be continued for the operational life span of this offshore project as well as for the construction life span of the development.

2.19 In all other aspects, it is considered that the EIA submission documents, the distance from the Fife Coastline and the engagement of maritime stakeholders as part of the process is considered to meet the requirements of SPG Policies R1 and R3. It is therefore considered that the principle of the development is acceptable and complies with the relevant criteria of the Development Plan, subject to compliance with all the mitigation methods outlined within the submitted EIA documents and the provision of additional archaeological and construction noise assessment work and any associated mitigation measures arising from that work.

3.0 Conclusions

3.1 Fife Council is being consulted as part of the determination process for the Section 36 application. The final decision will be made by the Scottish Government (Marine Scotland).

3.2 The proposed Council response highlights support for the general principle of the proposal, and welcomes the benefits the proposal will bring to meeting national renewable energy targets and of Fife's aspirations of being a leading 'green' Council. The predicted impacts of the offshore wind farm are likely to be more limited in nature compared with their onshore equivalents and will support the development of Fife's economy by supporting uses at the Energy Park and other strategic economic development sites. However the response also highlights specific concerns which particularly relate to additional archaeological and construction noise mitigation methods to be proposed.

List of Appendices

Appendix 1- Letter to Marine Scotland / Scottish Government

Appendix 2 – List of suggested conditions.

Appendix 3- Location Plan

Background Papers

In addition to the application submission documents the following documents, guidance notes and policy documents form the background papers to this report:

National Renewable Energy Infrastructure Plan 2

Emerging Marine Plans for Scotland

National Planning Framework 2

The Scottish Planning Policy

Approved TAYplan (2012)

Approved St Andrews and East Fife Local Plan (2012)

Fife Council's Supplementary Planning Guidance on Wind Energy (2011)

Report Contact

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Report agreed and signed off by Mary Stewart, Service Manager, and Jim Birrell, Senior Manager, Development and Buildings.

Wright H (Hamish)

From: Sutherland AI (Andrew)
Sent: 14 June 2013 11:33
To: 'ScottJ'
Subject: 013/OW/SGFoF1 - 10: LA (Angus Council) Provisional ES Response Seagreen: 14 June 2013

Hi Jamie,

Thank you for your provisional response to Marine Scotland regarding the Seagreen application. I have reviewed it and I am discussing the content with colleagues.

We note that Angus Council, although not objecting to the proposal, have raised some issues of concern such as the absence of requested night time visuals. I would be grateful if you could indicate how Angus Council would wish for such issues to be closed off? Would you require the production of night time visuals for example? In which case, it would be an opportunity for the applicant to build this into their forthcoming addendum (currently expected July 2013).

We would like to share your provisional response with Seagreen as well and I would be grateful if you could confirm that you are content with this?

Happy to discuss.

Best regards,

Andrew

Andrew Sutherland

Marine Renewables Licensing Advisor

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Wright H (Hamish)

From: Enrique Pardo <Enrique.Pardo@jncc.gov.uk>
Sent: 02 April 2013 09:42
To: Sutherland AI (Andrew); Tait A (Adrian) (MARLAB)
Cc: Karen Hall
Subject: FW: Seagreen Outer Forth Offshore Windfarm, Phase 1: Preliminary advice from JNCC & SNH

Hi Andrew and Adrian,

Further to our interim advice on the Seagreen ES last week we have noticed there was a mistake in relation to the benthic ecology section. The text in this section should have also highlighted that the 'Firth of Forth Banks Complex possible MPA is also being considered for moraines as a proposed protected geodiversity feature.' Although this feature is listed within the website link provided in our interim response we wanted to reiterate that this feature is still being considered within the possible MPA and it was an error on our part that it was not included in the response due to all the amendments to the response last Thursday before sending it across to MS.

Kind Regards,

Enrique Pardo
Offshore Industries Advisor
Joint Nature Conservation Committee
T. +44 (0) 122 426 6590
e. enrique.pardo@jncc.gov.uk

From: Enrique Pardo
Sent: 28 March 2013 13:33
To: 'Andrew.Sutherland@scotland.gsi.gov.uk'; 'Adrian.Tait@scotland.gsi.gov.uk'
Cc: Finlay.Bennet@scotland.gsi.gov.uk; Erica Knott; Karen Hall; Victoria Appleyard; 'roger.may@scotland.gsi.gov.uk'; Sophy Allen; 'Catriona Gall'
Subject: Seagreen Outer Forth Offshore Windfarm, Phase 1: Preliminary advice from JNCC & SNH

Dear All,

Please find attached JNCC and SNH's preliminary advice on the Seagreen Offshore Windfarm application.

Kind Regards,

Enrique Pardo
Offshore Industries Advisor
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The Joint Nature Conservation Committee (JNCC) is the statutory adviser to Government on UK and international nature conservation, on behalf of the Council for Nature Conservation and the Countryside, the Countryside Council for Wales, Natural England and Scottish Natural Heritage. Its work contributes to maintaining and enriching biological diversity, conserving geological features and sustaining natural systems.

To	Andrew Sutherland (MS), Adrian Tait (MS).
Cc.	Roger May (MS), Finlay Bennet (MS), Erica Knott (SNH), Karen Hall (JNCC), Victoria Appleyard (JNCC).
From	Enrique Pardo (JNCC), Catriona Gall (SNH).
Date	28 March 2013.
Subject	Seagreen Outer Forth Offshore Windfarm, Phase 1: Preliminary advice from JNCC & SNH.

This memo provides JNCC and SNH interim advice from our review of the Seagreen Phase 1 Environmental Statement (ES). We provide overarching comments on Habitats Regulations Appraisal (HRA) and cumulative impact assessment. We outline the key steps that will need to be addressed by Marine Scotland (MS), in conjunction with JNCC and SNH, in order to be able to provide final advice on the Seagreen application alone, and cumulatively with the other offshore wind development proposals in the Forth & Tay. We are currently in discussion with MS to progress these issues and highlight our forthcoming discussions in italics below.

Firstly, we note that JNCC and SNH have a meeting with Marine Scotland on 2 April 2013 in order to discuss developer applications and timelines for consent and how MS will be considering cumulative effects from multiple developments within the consenting framework.

We welcome our pre-application dialogue with Seagreen individually, as well as with the Forth & Tay offshore wind developers as a group (FTOWDG). This has been helpful in attempting to ensure consistency in methods and approaches to impact assessment, although it has not been possible to achieve complete agreement between all parties. Therefore JNCC and SNH are currently in the process of checking and liaising over each submitted ES to ensure that approaches are consistent enough for information to be collated in cumulative Habitats Regulations Appraisal (HRA).

We did find it helpful that Seagreen submitted an HRA screening report during pre-application dialogue. We are, however, disappointed with the subsequent decision to submit a final HRA report separate to the licence application and ES submission. We have always advised that the HRA is integral to Seagreen's overall impact assessment as the key ornithological and marine mammal receptors are Natura (SPA or SAC) qualifying interests. These receptors are included in Section 1 below – the key natural heritage interests and impacts to consider.

As we have only very recently received Seagreen's final HRA report (on 22 March 2013), we are still in the process of reviewing it. We find that receiving this HRA report separate to the ES makes the overall appraisal of the Seagreen application more time-consuming than it might otherwise have been.

As noted in italics below, there are a number of aspects relating to cumulative impact assessment which require further discussion between ourselves and Marine Scotland. We need to resolve and agree these matters before we can offer finalised advice on applications individually, as well as cumulatively.

1. KEY NATURAL HERITAGE INTERESTS AND IMPACTS TO CONSIDER

The following key natural heritage interests and impacts (a)-(d) are the priority for assessment, for Seagreen on its own and in combination with the other Forth & Tay offshore wind proposals – Neart na Gaoithe (please see SNH's preliminary advice, 23 November 2012) and Inch Cape (anticipating ES consultation in April), in Scottish waters.

Cumulative impact assessment, particularly for the qualifying interests of SPAs and SACs as noted below, remains complicated due to the differences in methodologies and approaches to technical assessments between the developments as well as the way that information is presented by each applicant to inform the cumulative HRA that MS is required to undertake.

a) Qualifying Interests of Special Protection Areas (SPAs)

HRA of operational windfarm impacts on key seabird species during the breeding season, as the windfarm is located within foraging range of a number of SPA breeding seabird colonies. See further discussion under section 2 on ornithology.

b) Qualifying Interests of Special Areas of Conservation (SACs)

HRA of windfarm construction impacts on harbour seals as a qualifying interest of the Tay & Eden Estuary SAC and on grey seals as a qualifying interest of Isle of May and the Berwickshire and North Northumberland Coast SACs.

HRA of windfarm and export cable construction impacts on bottlenose dolphin as a qualifying interest of the Moray Firth SAC.

HRA of windfarm and export cable impacts, particularly underwater noise and any EMF impacts, on the qualifying fish interests of Rivers Teith, Tay and South Esk SACs.

See further discussion under section 3 on marine mammals and section 4 on fish interests.

c) European Protected Species (EPS)

Consideration of EPS licensing requirements for the range of cetacean species potentially disturbed by this windfarm proposal. See further discussion under section 3.

d) Seascape, Landscape and Visual Impacts

SNH anticipates providing advice to Marine Scotland on the seascape, landscape and visual impacts of the three Forth and Tay windfarm proposals once the application for Inch Cape is submitted and we can review all available information. We confirm, as set out in our memo of 27 February 2013, that the illustrative material due to be submitted in the Inch Cape ES should address the concerns we raised previously in our letter of 23 November 2012.

2. ORNITHOLOGY

JNCC & SNH consider the assessment of ornithological impacts presented in the Seagreen ES to be thorough and robust. We welcome the level of pre-application engagement sought by Seagreen, alongside the meetings with the Forth & Tay Offshore Wind Developers' Group (FTOWDG) and we hope to continue this level of engagement.

Cumulative HRA for seabird species at SPA breeding colonies

This is the key priority for ornithological impact assessment – agreement of the scope and timeframe for cumulative HRA in respect of the breeding seabird species from SPA colonies where JNCC / SNH have advised connectivity with Seagreen phase 1, Neart na Gaoithe and Inch Cape windfarm proposals.

At this stage we provide only over-arching comments on the HRA process, but we note the key issues raised in Seagreen's letter dated 21 February 2013 (A4MR-SEAG-Z-MGT110-SLE-214) and will work with Marine Scotland to address these points. We anticipate that the intended ornithology meeting between MS, JNCC and SNH during April should help inform matters.

For cumulative HRA, the following points require agreement between MS, JNCC and SNH and are currently being finalised as this information is needed for the population modelling contract:

- Agreement of reference populations and collation of recent counts for SPA breeding seabird colonies within foraging range and where JNCC / SNH have advised 'likely significant effect'.
- Agreement of reference populations and collation of recent counts for any other non-SPA breeding seabird colonies within foraging range of the proposed windfarms.
- Agreement of any required over-arching regional population estimates based on the agreed SPA and non-SPA reference populations.
- Agreement of the appropriate breeding season for each species – and agreement on which life-cycle stages are included within a breeding season assessment (post-breeding dispersal, pre-breeding attendance at colonies?).

It will also be necessary to check developer's ES to ensure consistency in approach relating to data collection, data analysis and quantification of effects (displacement and collision risk in particular). Please see **Appendix A** for our detailed comments on the Seagreen ES.

Impact assessment for seabird species outwith the breeding season

MS, JNCC and SNH need to agree an approach to this issue in order to deal consistently with submitted applications – Round 3 proposals and those in Scottish territorial waters. We note that there are ongoing discussions to determine appropriate reference populations for seabirds in the non-breeding season.

Impact assessment for migratory species

We are satisfied that impact assessment for migratory species will be addressed by the MS research contract to undertake strategic collision risk modelling for wildfowl, waders and seabirds on migration. This contract will determine the appropriate reference populations in respect of birds on migration and estimate the overall numbers that may be at potential risk of collision with Scottish offshore windfarms (those in territorial waters and Round 3).

SNH and JNCC have advised that project or site-specific HRAs will not be required for these interests (at the MS meeting held 25 January 2013 and previously at FTOWDG ornithology meetings) because we do not consider it possible to assign connectivity with any degree of certainty between individual birds on migration and any particular SPA (with the exception of barnacle geese at Upper Solway Flats & Marshes and bean geese at Slammanan).

Export cable route – SPA interests

Figure 9.3 of the Seagreen ES provides detail of the export cable route corridor where it approaches shore, and the designated sites in proximity. As recognised in the ES, consideration will need to be given to potential impacts on the qualifying interests of the Firth of Tay and Eden Estuary SPA, which includes designation for wintering wildfowl and waders. As agreed by exchange of email (SNH advice dated 1 July 2011), the applicant has carried out shore-based vantage point work for these interests as indicated in paragraphs 10.61 - 10.6 of the ornithology chapter and discussed in detail in Volume III of Appendix F2.

While the applicant suggests that these SPA interests are screened out of HRA on the basis of no 'likely significant effect' (see Table 4.3 of the Seagreen HRA screening report) we're not yet able to provide confirmed advice in this regard until we have reviewed the survey results in more detail and / or have greater clarity on proposed installation methods and location of the cable landfall within the wider corridor.

We consider it would be helpful for Marine Scotland and Angus Council to discuss and agree who is taking the lead for the inter-tidal area and who will act as the competent authority in considering any impacts to qualifying bird interests of the Firth of Tay and Eden Estuary SPA arising from the export cable and proposed landfall. SNH is happy to input any (HRA) advice that might help inform discussion. Currently we anticipate providing such advice in our response to Seagreen's application for the onshore works.

3. MARINE MAMMALS

The key priority for marine mammal impact assessment is the cumulative HRA for qualifying interests of SACs. We provide the following headline points for further discussion with Marine Scotland in the first instance, and then between ourselves and FTOWDG, including Seagreen. We are aiming to provide our detailed comments on marine mammals in respect of the Seagreen HRA report and relevant chapters of the ES at a date to be agreed with MS.

Cumulative HRA for qualifying marine mammal interests of SACs

MS, JNCC and SNH need to agree the scope and timeframe for cumulative HRA in respect of the qualifying marine mammal interests from SACs where connectivity and 'likely significant effect' have been identified. As noted in section 1(b) this includes:

- **harbour seals** of the Tay & Eden Estuary SAC.

MS-S and SNH jointly commissioned SMRU to model the declining harbour seal population at this SAC, as reported in this paper:

Lonergan M, and Thompson D; Harbour seal (*Phoca vitulina*) abundance within the Firth of Tay and Eden Estuary Special Area of Conservation: recent trends and extrapolation to extinction. 2012 SCOS – BP 12/05.

MS-S, SNH and JNCC discussed the modelling outputs at our meeting of 12 December 2012. From this meeting, SNH and JNCC have an action to draft a joint position statement to inform advice to MS considering whether or not HRA can be carried out for development proposals in respect of the Tay & Eden SAC harbour seals and how we best address this matter in respect of the wider Natura network for this species and in reporting to Europe. This position statement is currently being finalised by SNH and will then require consideration by JNCC before being discussed with MS in relation to applications within this region.

- **grey seals** of Isle of May and the Berwickshire and North Northumberland Coast SACs.

As we advised FTOWDG in our note of 26 March 2012 and follow up email of 9 May 2012, HRA will apply to grey seals as a breeding interest (when they are most closely associated with a particular SAC and we can assign connectivity with some degree of certainty).

As previously advised, the grey seal population of the east coast management unit should be used as the reference population in HRA for the breeding season, however, there may need to be some interpretation to consider impacts against each of the SAC populations. Outwith the breeding season, this same population should be used for reference in the EIA.

We have not identified any requirement for population modelling in respect of grey seals – assessment of windfarm impacts will be informed by consideration of noise modelling outputs (numbers of individuals potentially displaced, numbers potentially suffering PTS) against the grey seal population of the east coast management unit.

MS, JNCC and SNH need to meet to discuss the outputs from FTOWDG's underwater noise modelling and how this informs the cumulative HRA for grey seals. MS will need to take an overview of the licensing requirements for marine renewables and any necessary conditions in respect of potential impacts to grey seals. It should be possible to initiate this discussion in advance of the submission for Inch Cape. As such, MS, JNCC and SNH have a preliminary meeting organised for the 16 April to discuss cumulative HRA issues and potential licensing conditions in relation to marine mammals.

- **bottlenose dolphin** of the Moray Firth SAC.

In our note of 26 March 2012, we advised that it is only the Moray Firth SAC that requires consideration in respect of HRA for bottlenose dolphin. We also advised that the east coast population is the reference population for cumulative HRA and that the potential impacts of the Moray Firth and FTOWDG offshore wind proposals would therefore need to be considered in combination against this reference population.

Our advice on the MORL Round 3 proposal included our advice on HRA for the bottlenose dolphins of the Moray Firth SAC. The population modelling undertaken in support of this ES included consideration of the cumulative impacts of MORL and Beatrice together on the SAC bottlenose dolphin. This allowed us to advise Marine Scotland that the Moray Firth proposals, in combination, would not result in any long-term impact to the viability of the SAC dolphins. We noted that disturbance impacts arising during construction could be managed / mitigated via construction programming.

We now need to meet with MS to take an overview of cumulative impacts to bottlenose dolphin for FTOWDG in addition to MFOWDG (and Aberdeen Bay). As discussed at our meeting held 12 December 2012, a key concern in respect of the FTOWDG proposals is whether or not a barrier might be created to bottlenose dolphin movements up and down the east coast, and its potential 'porosity' (influenced by the frequency of piling activity across the FTOWDG sites).

MS, JNCC and SNH need to meet to discuss the outputs from FTOWDG's underwater noise modelling and how this informs the cumulative HRA for bottlenose dolphin. MS will need to take an overview of marine renewables licensing requirements and any necessary conditions in respect of potential impacts to bottlenose dolphin. We think it should be possible to initiate discussion in advance of Inch Cape's submission. As such, MS, JNCC and SNH have a preliminary meeting organised for the 16 April to discuss cumulative HRA issues and potential licencing conditions in relation to marine mammals.

European protected species

JNCC and SNH need to meet with Marine Scotland's EPS licensing team to discuss the implementation of an EPS licensing framework for Scottish territorial waters, as agreed at our meeting of 12 December 2012. Although, it is for MS to implement the framework, we are required to advise on some aspects, in particular to recommend the reference populations for each cetacean species against which to assign significance of effects. We would welcome the opportunity to meet with Marine Scotland to discuss how the EPS licensing framework will be applied.

We also welcome the release of Marine Scotland's EPS licensing guidance for Scottish territorial waters, due this summer. We consider that applications for marine renewables development should be referencing the relevant EPS legislation and are disappointed that the Seagreen ES provides no consideration of EPS licensing requirements for cetacean species recorded on-site. We consider it certain that an EPS licence will be needed for this development proposal and we would be happy to provide further advice on a shadow EPS assessment for Seagreen, if requested.

The finalisation of appropriate reference populations for EPS assessments for cetaceans is nearing completion between all the UK statutory nature conservation advisers via the marine mammals working group. JNCC and SNH will feedback the outcomes to MS as soon as feasible on this matter to inform EPS assessments.

4. FISH OF CONSERVATION CONCERN

Cumulative HRA for qualifying interests of riverine SACs

There is a confusing discrepancy between the Seagreen and Neart na Gaoithe ES in respect of the outputs of underwater noise modelling for Atlantic salmon. This will need to be resolved in order for MS to be able to conclude a cumulative HRA for Atlantic salmon and the other qualifying interests of riverine SACs.

We are, however, able to provide interim advice to begin to inform a cumulative HRA for these SAC interests – please see **Appendix B** of this memo. We will be able to provide our confirmed advice once the Inch Cape ES is submitted and the discrepancies between developers' technical assessments and any other aspects of the ES are resolved.

Marine Scotland will need to take an overview of marine renewables licensing requirements and any necessary conditions in respect of potential impacts to SAC freshwater fish interests. We think it should be possible to initiate discussion in advance of Inch Cape's submission.

Marine fish and shellfish interests

Cumulative noise impacts

As noted in our preliminary advice on Neart na Gaoithe (memo dated 23 November 2012), we are concerned about the cumulative impacts from the Forth & Tay developments on marine fish and shellfish – particularly with regard to underwater construction noise (from pile-driving the turbine foundations).

In reviewing the Seagreen and Neart na Gaoithe ES we have noted some discrepancies in the interpretation of underwater noise modelling outputs for fish species. These will need to be resolved to complete cumulative impact assessment for these two proposals in combination, and together with Inch Cape once an application is made.

The Seagreen ES identifies herring as the most sensitive fish species relevant to the area and the noise impact assessment for fish is primarily focussed on this receptor. We highlight that cumulative impact assessment will also be required for other relevant fish species with a medium / high sensitivity to noise, particularly gadoids (cod, haddock, whiting) which are likely to be common in the area. Both the Seagreen and Neart na Gaoithe ES are weak in addressing these cumulative impacts and further work is needed to collate and interpret the outputs from underwater noise modelling.

For herring we also note that there is confusion in the Seagreen ES regarding the appropriate reference population against which to assign impacts. We advise that the impacts are best considered against the Buchan spawning stock (both for Seagreen alone and for FTOWDG cumulatively).

We have previously requested a meeting with MS and FTOWDG (September 2011) in order to discuss how cumulative impact assessment for marine fish and shellfish interests would be presented. We consider a meeting with MS would still be helpful in order to resolve any discrepancies between the technical assessments in ES and uncertainty over the reference populations against which to assign impacts. Resolution of these matters should then allow MS to take an overview of cumulative impacts to marine fish and shellfish to inform their consideration of conditions and other licensing aspects.

The ES does not mention the potential for noise from operating turbines to interfere with fish behaviour for those species relying on acoustic communication. While this issue is poorly understood, we do not expect there to be any significant impacts in this regard.

Impacts on sandeels

The ES for Seagreen phase 1 clearly identifies that much of the seabed within the proposed windfarm sites (alpha and bravo) comprises appropriate habitat to support sandeels. Many of the benthic trawls (72%) also contained sandeels, although they were not designed to sample sandeels specifically. However, it is not clear what the density of sandeels is across phase 1 and therefore (a) whether as a whole it's important, or (b) whether the relative importance of areas within phase 1 can be identified. MS-S will need to consider this issue alongside any other available data (such as annual dredge survey data) and advise further.

We welcome the suggestion in the ES that turbines can be micro-sited in order to mitigate impacts to sandeels, if required. Looking at relative density of sandeels taken from sampling stations as part of MS-S annual survey may be of relevance when it comes to micro-siting infrastructure (i.e. focussing away from higher density areas).

Assessment of sediment release

The assessment of impacts from the release of sediment is incomplete in the Seagreen ES. While the ES does estimate the increase in suspended sediments arising from the installation of foundations, it does not then address the potential impacts of the settlement of these sediments to cause smothering of fish or shellfish, or eggs that are deposited on the seabed. This is a notable omission in the assessment, given the volumes of material that could potentially be released, particularly for 'worst-case' gravity base foundations. Please see section 5 below, indicating the information we consider would be helpful for concluding an assessment in this regard.

It is possible that smothering could be an important consideration for sandeels, depending on the importance of this area for this species. It is also relevant to consider this potential impact in respect of scallops and some other shellfish.

Electro-magnetic fields (EMF)

There continues to be poor scientific understanding of EMFs and associated effects, so some caution is required. The ES does not attempt to predict the strength and range of EMFs from intra-array or export cabling – either exposed or buried. However, we consider that cable burial will provide some assurance of a reduction in potential EMF effects. Seagreen propose a minimum burial depth of 0.5m, we advise 1m as a preferred minimum target.

There is no discussion in the ES of the value of the Forth & Tay area for species likely to be most sensitive to EMF, such as skates and rays. The impacts to these species are of most concern at a cumulative level and we recommend that MS considers this issue strategically.

We consider that a meeting with MS would be helpful in order to discuss the various strategic concerns in respect of marine fish and shellfish, as MS will need to take an overview of marine renewables licensing requirements and any necessary conditions.

5. HYDRODYNAMIC PROCESSES & COASTAL GEOMORPHOLOGY

Assessment of sediment release

Some of the Seagreen ES is confusing in respect of the impact assessments undertaken for hydrodynamic processes and coastal geomorphology. In particular, we found it difficult to keep track of the discussion in chapter 7 regarding sediment release and whether the volumes quoted relate to project alpha, project bravo, or both.

We note that while volumes are estimated for the amount of sediment that could be released from installation of foundations, there is no supporting modelling to understand the likely dispersal of this dredged material from the seabed preparation required for these structures—how far it might travel, the depths that might accumulate. Nor is there full consideration of the sediment release related to scour effects around the foundations of operational turbines (particularly relevant to the consideration of gravity bases).

We note that it would also be helpful to present available contextual information on background levels of sediment within the area, including seasonality / consideration of storm events (or at least state clearly if this information is not available). We recommend for the ES to include a comparison of estimated windfarm impacts against the natural baseline, including consideration of seasonal variation.

We consider it would be very helpful if sediment concentration modelling was undertaken for installation of a single gravity base foundation, using a 'worst case' assumption that all the dredgings are released on-site. While construction impacts are the key concern, such modelling would also be informative for understanding the likely dispersal of sediment released from scour. We think it would be informative if the modelling could be undertaken for gravity base installation on each of the four key sediment types likely to be encountered on-site in the Seagreen phase 1 area. Based on Figure 7.7, these are: gravelly sand (dark pink), muddy sandy gravel (pale green), sandy gravel (pale pink) and slightly gravelly sand (grey).

In this regard, Marine Scotland have indicated they may let a contract to undertake 'worst case' sediment concentration modelling for each of the MFOWDG and FTOWDG windfarm clusters. This would help provide an overview of cumulative impacts in this regard, in order to inform any required licensing conditions.

Neither does the Seagreen ES adequately address the dispersal of sediments from installation of the subsea cable. This does not need to be a complex assessment, but it would be helpful for the ES to present the general habitat types encountered along the cable corridor, to consider the typical current speeds, and to roughly estimate the percentage of sediments likely to accumulate in close proximity (within 25m) to cable installation, and the percentage of fines dispersing over greater distance (within the next 2km). It is possible that we will need this information for consideration of potential impacts to the SAC habitat interests of the Firth of Tay and Eden Estuary SAC (see Section 6, as follows).

6. BENTHIC ECOLOGY

Sediment release

Please see section 5 above for our outstanding concerns in respect of assessment of the impacts of sediment release from Seagreen phase 1 (alpha, bravo and associated export cabling). We recommend that the applicant further discusses this issue with MS in the first instance – particularly with regard to anticipated dredging work and sediment discharge (with associated licensing requirements) and the decommissioning of gravity bases.

General comments

The benthic ecology of the windfarm site supports a diverse habitat complex, which supports potential Annex I habitat, i.e. *Sabellaria spinulosa* and other potential reef builders (although not currently present in reef form from the survey evidence presented), as well as Marine Protected Areas (MPA) search features being considered as part of the Scottish Nature Conservation MPA Project. These include offshore subtidal sands and gravels and the presence of *Arctica islandica*. *Modiolus Modiolus* are also recorded from the area, but we do not consider their presence in such small numbers to be a significant issue for development.

Seagreen outline potential mitigation measures to try and reduce the impact to benthic habitats from this development, including site specific surveys to inform the final turbine and export cable locations, minimising the introduction of new materials (e.g. rock dumping, mattresses etc) into the area that alters seabed habitat type and the micro-siting of infrastructure where possible in relation to sensitive benthic habitats. JNCC & SNH welcome these initial proposals and are keen to be involved in the development of these plans as they progress.

As noted in the ES, work is underway to identify MPAs in Scotland's seas. JNCC and SNH have now made recommendations to Scottish Parliament on locations for possible MPAs: <http://www.scotland.gov.uk/Resource/0041/00410442.pdf>. Public consultation on these MPA proposals is likely to take place in summer 2013, including consultation on potential conservation objectives and management measures for these possible MPAs.

The Project development area overlaps with the Firth of Forth Banks Complex possible MPA, which with relevance to this work is being considered for *Arctica islandica* aggregations and offshore subtidal sands and gravels (the bank features are considered unlikely to be impacted by human activity). We anticipate continuing close liaison between Marine Scotland and Seagreen over this possible MPA, in order to inform any mitigation or monitoring that may be required in this regard.

MS will need to take an overview of marine renewables licensing requirements and any necessary conditions alongside the designation of MPAs. JNCC and SNH are keen to continue liaison with MS and Seagreen over these aspects.

The ES does not mention any potential mitigation or good practice measures to reduce / avoid the possibility of introducing non-native species into the area from the range of activities associated with the proposed windfarm development. We would welcome further discussion of this aspect in order to inform our recommendations for consent conditions.

Export cable route – SAC & geological interests

Paragraphs 3.65 – 3.71 of the ES provide an overview of the options appraisal carried out for selection of the final export cable route, as illustrated in Figures 1.1 & 1.2. Appendix A presents the 'Landfall Site Selection' which provides the supporting detail to this process, and Seagreen kept us informed of decisions during pre-application dialogue over this cabling.

Figure 9.3 shows the export cable corridor as it approaches shore, with the confirmed option making landfall just south of Carnoustie. As set out in our scoping advice for the onshore works, dated 15 February 2011, the cable corridor encompasses part of the Firth of Tay and Eden Estuary SAC and includes part of the Barry Links Geological Conservation Review Site.

We seek confirmation whether this matter is to be addressed in the ES for the onshore works? We apologise for any confusion in respect of the Seagreen pre-application HRA screening report where we focussed our consideration to potential impacts from the windfarm itself (to the qualifying harbour seal interest of this SAC) and did not also consider possible impacts from the cable corridor on the SAC habitat interests. (At this time the final route option had not yet been confirmed and both the Carnoustie and Arbroath options were being kept open).

We consider it would be helpful for Marine Scotland and Angus Council to discuss and agree who is taking the lead for the inter-tidal area and who will act as the competent authority in considering any impacts to habitat interests of the Firth of Tay and Eden Estuary SAC arising from the export cable and proposed landfall. SNH is happy to input any (HRA) advice that might help inform discussion.

APPENDIX A

JNCC & SNH DETAILED COMMENTS ON SEAGREEN ORNITHOLOGY

These detailed comments on the Seagreen ES relate to the methods for data collection / analysis, and the approach to quantifying effects (primarily displacement and collision risk) – we have focused our review on these aspects to ensure that we have confidence in the underlying data for EIA and HRA processes, including cumulative impact assessment.

A1. METHODS FOR DATA COLLECTION / ANALYSIS

A1.1 Data Collection

Seagreen's approach to data collection was agreed with JNCC and SNH during pre-application consultation. In general we are satisfied with the methods employed for both data collection and to determine population and density estimates for the project area. Our confidence in the data presented is high. However, we request clarification on several points below and note that no full raw count or distance corrected counts were provided in the ES and as such we cannot verify the results presented.

We note that two observers were used simultaneously on either side of the boat, thus covering a transect width of 600m rather than the standard 300m. This method, whilst allowing for greater coverage of the survey area, can result in double counting due to the movement of individual birds from the arc of one observer to the other. We note that in the appendices (4.2.29) it is stated "the notation used during data collection meant that there was minimal double counting" but this is not explained further. We ask that this is expanded on to better understand how double counting was reduced.

We accept the use of radial snapshots as an appropriate method as per the recommended guidance (Camphuysen *et al.* 2004; Maclean *et al.*, 2009). We recognise that distance analysis was not performed on snapshot data due to lack of advice / guidance on this issue. However, we are unable to recommend or provide specific guidance on this method for a number of reasons:

- There are issues with vessel attraction when using the radial snapshot technique with distance bands.
 - Birds attracted to the vessel cannot be used for distance sampling.
 - It is most likely that the highest proportions of attracted birds are in the closest bands.
 - There is also the risk that numbers in the outer bands are lower as birds have moved from them towards the vessel.
 - There is also an issue with different levels of elimination of ship followers when using dual observers.
- It is very difficult to estimate distances to flying birds.

We note that dual observers were used under the assumption that this method eliminates heaping of birds into distance band A. We would welcome further explanation of the reasoning behind this assumption.

We note that two observers and one scribe were used during surveys. Observer fatigue can often affect the efficiency of detection by an observer and we ask for further explanation as to how observer fatigue risk was reduced or accounted for in analysis. Additionally, the use of one scribe to record two sets of observations simultaneously is considered challenging, we ask for more information regarding the efficiency of recording for two observers.

Page 25, Technical report F1: Table 4.4 – Our understanding is that there was only 74% coverage of the area in January (23-24th) 2010 and that this survey was amalgamated in Feb (26% - 21 Feb 2010) although these surveys were a month apart. Thus, there was a month of no coverage in February. Could Seagreen confirm that our understanding is correct?

We note that the survey points were changed each time along 3km spacing, producing 4 different patterns. We understand that this allowed 80% of the survey area to be covered over each phenological period. We also note that the reasoning behind this method is to capture potential hotspots of fine scale clustering of birds as per work by Dr Scott *et. al.* The method used is an acceptable approach and a good way to ensure a better coverage of the survey area over key phenological periods. However, this method and the reference supplied cannot justify the assumption that large aggregations of birds are likely to have been captured. The paper used as evidence for this phenomena provides evidence of fine scale clustering of marine animals as a result of high primary productivity within a spatial location although this spatial location is largely influence by oceanographic conditions and thus is transient in nature. A hotspot of bird abundance in one spatial location may not necessarily exist in the same location during a different tidal regime for instance. Thus, unless surveys were timed to capture certain tidal and current conditions, changing the survey route would not increase the likelihood of capturing higher aggregations of birds and thus the presence/absence of these hotspots should not be indicative of importance of a spatial location.

A1.2 Population estimates and Distance

We note that for species in which too few observations were recorded for traditional distance analysis, uncorrected densities coupled with in flight birds were used to establish a population estimate for these species. It is recommended that correction factors are used where possible to avoid underestimating populations. A uniform detection function in program Distance allows for corrected population estimates for birds recorded on the water. This may not be relevant for most species in which low abundances were recorded but we recommend that this should be addressed for any sensitive species that may have been underestimated.

The lower confidence intervals (LCI) and upper confidence intervals (UCI) for the population estimated appear to be incorrect in table 5.5 page 87 of the appendices. The total lower and total upper population estimates should be presented and not the difference between the upper and lower values and the predicted population. Additionally, there is no presentation of population levels for each year and no indication if what is presented is a mean for both survey years or for either years 1 or 2. The trends in population levels are described (ie lower densities in late winter rising to high in February etc.) but there is no discussion regarding the variation between the survey years. We ask for a fuller account of the population estimates for both years and comparison of the population levels between these years.

The description of the distance analysis methodology does not detail whether observations beyond 300m were excluded or not. The inclusion of observations beyond 300m is not recommended and we ask that this is clarified.

Provided that observations beyond 300m were excluded, we are satisfied with the methods employed to determine population and density estimates for the project area and our confidence in the data presented is high. However, we note that no full raw count or distance corrected counts were provided in the ES and as such we cannot verify these results.

A2. QUANTIFICATION AND ASSESSMENT OF EFFECT

A2.1.1 Displacement and barrier effects

We acknowledge that the quantification of displacement effects is extremely challenging due to a paucity of evidence and a lack of specific guidance. However, we did provide FTOWDG with some preliminary guidance on this issue in our advice note of 26 August 2011, where we recommended that a range of displacement rates and mortality rates are presented.

Marine Scotland has also commissioned research relevant to this issue, which is currently being undertaken by CEH:

- an investigation of the demographic effect of displacement and barrier effects; and
- population modelling for key SPA seabird species relevant to each of the Forth & Tay windfarm proposals.

JNCC and SNH will be able to confirm our advice on displacement effects once we are informed by the outputs from the MS research contracts. In the meantime, please find below our comments on the approach to estimating displacement presented in the Seagreen ES. There is unlikely to be merit in addressing these comments until the outputs from the MS research contracts are available and can be discussed between all parties.

A2.1.2 JNCC & SNH comments on the approach to displacement presented in the Seagreen ES

There is little empirical evidence to support the use of the displacement radii selected. For instance, the rationale given for guillemot reads that '(pers obs) densities of the auk appeared to be unaffected at 400m'. We ask that further evidence in support of this method is provided or that displacement is reconsidered using JNCC recommended methods of considering displacement from the entire project area as a worst case scenario.

We note that kernel density was used to determine habitat suitability to identify the importance of the project sites to foraging birds. However, seabirds do not necessarily forage in the same area as habitat quality is variable over time and space. Tracking studies are limited in their ability to identify preferential habitats for foraging as they only provide a proportion of a population's feeding preference thus confidence in the kernel analysis performed is low.

Expressing the area of the site lost as a proportion of a whole foraging range assumes that the whole area within a species foraging range is of equal value. Can evidence to support this assumption be provided?

Assessment of habitat quality through kernel analysis of tracking data does not take into account the degree of variability shown between years, and the small number of years tracking data is available for. As such, it cannot be assumed that the project area is consistently of lower, higher or equal value to the surrounding available habitat. We ask that this assumption is considered in more depth and discussed.

Absence of tracked birds from an area should not be taken as evidence of no or little use. Birds tracked from colonies are usually a small sample and do not represent the full geographic range of the colony. Tagged birds may also have their behaviour modified, for example, discouraging them from travelling long distances.

The displacement matrices are not discussed fully in the text, regional displacement is ignored and it is obviously higher. Additionally, regional razorbill displacement across the full project area seems odd (regionally) as it is lower than both project individually, this seems unlikely.

A2.1.3 Comments on specific ES sections relating to displacement and associated issues

- **10.290** – There is concern over the use of numbers of escape-diving birds being used to assess vessel disturbance. How is 'escape diving' defined, and how does it differ from 'diving'? Birds further from the vessel are less likely to have dives attributed to 'escape diving' due to observer perception of disturbance rather than any real difference in behaviour or rate of 'escaping'. More evidence to support these assumptions would be welcome.
- **10.341** – We ask that there is more evidence or justification for use of a 400m displacement distance for auks.
- **10.342** – See comments for displacement distances used above. Not only does this need to be thoroughly backed up, implications for cumulative displacement need to be investigated.
- **10.130** – Where there is less overlap between mapped displacement radii there will be more displacement per turbine, surely resulting in more displacement rather than less displacement as stated.
- **10.340** – There is some evidence suggesting Gannets exhibit considerable macroavoidance (e.g. Krijgsveld et al 2011), so we recommend that the effect of displacement on this species is considered as well as for the other four species (Kittiwake, Guillemot, Puffin and Razorbill).
- **10.358** – Requires further justification for not including fulmar in assessment of barrier effects.

- **10.343** – It is stated that a 1% mortality rate is more realistic than a 100% mortality rate but there is no evidence provided to support this statement. We advise that the full range of impacts are presented based on a matrix of displacement rates and mortality rates, as well as offering a preferred rate for each. We note that matrices are provided in the appendices for national and regional populations of the four species considered for displacement risk as a result of this development. However, in the environmental statement, only impacts on national populations are reported.
- **10.362** – An additional energy expenditure of 1.3% per trip may not have an impact of negligible magnitude over the course of a breeding season. The more trips a bird makes, the more 'out of condition' it will become compared to those birds facing no barriers. This may have implications for productivity at SPAs that need to be considered.
- **10.39** – This is the same as the map shown for gannet and thus incorrect.
- **10.370** – "Again, the dominance of return rather than outbound flights suggested birds at the edge of their foraging range" – this statement is difficult to understand and we ask for further clarification.
- **10.147** – We consider that more accurate flight directions could have been obtained by using records of birds carrying fish (for those species that carry fish for provisioning in the bill, where they are visible).
- **10.152** – There is some concern that the implicit assumption that additional costs are rapidly recovered may be flawed. A permanent increase in foraging bout range could result in cumulative decreases in condition of breeding birds.
- **10.152** – The additional costs caused by barrier effects may be tolerable to adult birds, but could affect colony productivity – thus potentially impacting upon an SPA population. It is not unreasonable to assume that increased time between provisions and decreased hunting ability due to additional energy expenditure could have a negative effect on colony productivity.
- **10.154** – The magnitudes of impacts from barrier effects need to be revised – describing increases in energy expenditure of 60% as low, and 89% as medium is misleading.

A2.2 Collision mortality

The description of the collision risk modelling methodology employed appears in line with the guidance provided (Band 2011). However, we ask that example spreadsheets used for collision risk modelling is provided to verify the methodology has been undertaken correctly. We generally agree with the assessment of impact due to collision mortality for Alpha and Bravo alone (summarised in Tables 10.41 and 10.42).

We are not currently in a position to agree with the assessment of cumulative impacts, this reflects a need to ensure consistency in CRM approaches, and data presentation of other key OWFs (as noted in 10.499). We note that the appropriate cumulative scale in the non-breeding season may extend beyond the range of projects currently identified for some species (Table 10.36). We are committed to working with Marine Scotland to ensure an appropriate, consistent and robust approach has been taken for the assessment of cumulative collision mortality.

Lesser Black-Backed Gull (LBBG) collision risk at the Bravo project site is 0.12% per annum is considered minor and not significant at a regional level but the same proportion for Herring Gull has been classed as moderate and significant. We ask for further clarification as to why LBBG is of less concern when both of these species are classed as highly sensitive species.

We note that LBBG was only represented in Alpha, but there are a number of collisions estimated for the Bravo project area. We ask for clarification as to whether there were LBBG recorded in the Bravo project area and, if not, where these collision estimates have been derived from.

A3 FURTHER MINOR COMMENTS on the SEAGREEN ES

A3.1 Sensitive Receptors

We ask that, when referring to whether numbers on site meet 1% thresholds, it would be useful to provide the population level the threshold refers to.

We note that for Arctic tern, the 1% regional passage population is exceeded within the project area. Expressing what the 1% regional threshold level is would be useful, allowing assessment of the importance of the site on a regional level during the passage period, especially as it is acknowledged that 'the Firth of Forth is known to be a key feeding area for passage Arctic terns'.

A3.2 Indirect effects

We note that avoidance of prey has been estimated and tracking data has been used to identify whether Alpha/Bravo are key feeding areas for seabirds. The total area of prey avoidance (for hearing specialists i.e. herring/sprat) has been calculated followed by the proportion of habitat lost by the sensitive receptors based on their mean max range +1SD. However, this percentage of area lost has the underlying assumption that the habitat lost is of equal quality of the habitat that remains but this is not the case. As identified in section 10.299, the avoidance behaviour could extend beyond the project area to highly productive areas including Wee Bankie, Scalp Bank and Marr Bank and this should be highlighted as a limitation of the methods employed.

A3.3 General comments on specific ES sections

- **10.45** – The box snapshot methodology does not assume that birds are recorded within 300 of the observer. It assumes that birds are recorded in a 300 m by 300 m box. As such, there is no issue with including birds in 'the corner of the box' as this area is taken into account in the density calculations. This makes the calculation in **10.46** unnecessary.
- **10.188** – We request that the developer clarifies which IEEM principles were used to screen out fulmar and common tern.
- **10.192 & 10.21** – No species are listed as having likely origin of St Abbs Head to Fast Castle SPA. Details of the specific criteria used to eliminate birds from, for example, St Abbs Head to Fast Castle SPA would be welcome, as well as outlining the justification for the other 'likely origin' decisions shown in table **10.21**.
- **10.215** – We would welcome the mapping of the observations of birds observed feeding or actively searching as this would highlight the most important areas.
- **10.220** – 'Fowlsheugh is by far the largest colony with 50556 individuals in 200' – the date in this section is not correct.
- **10.222** – We highlight that it is not possible to age auks in the field as adult unless they are accompanied by clearly recognisable young birds.
- **10.223** – We note that, in this section, densities given for birds on the water only whereas for other species, densities have been given for birds on the water and in snapshots.
- **10.243** – We note that www.bbc.co.uk has been used as a reference as evidence for the exclusion of the Farne Islands population of Puffin even though this colony is within the potential range of the project areas. This evidence base is not sufficient to support the exclusion of this SPA and the named interest feature.
- **Appendix F1. Table 10.5** – Why are indirect effects only considered during construction and decommissioning?

References

- Camphuysen, C. J., Fox, A. D., Leopold, M. F., & Krag Petersen, I. (2004). Towards standardised seabirds at sea census techniques in connection with environmental impact assessments for offshore wind farms in the U.K. Royal Netherlands Institute for Sea Research, Texel. Commissioned by Cowrie Ltd.
- Krijgsveld, K. L., Fijn, R. C., Japink, M., van Horssen, P. W., Heunks, C., Collier, M. P., Poot, M. J. M., Beuker, D. Dirksen, S. (2011). Effect Studies Offshore Wind Farm Egmond aan Zee. Final report on fluxes, flight altitudes and behaviour of flying bird. Bureau Waardenburg report 10-219, NZW-ReportR_231_T1_flu&flight. Bureau Waardenburg, Culmeborg, Netherlands.
- Lindeboom HJ, Kouwenhoven HJ, Bergman MJN, Bouma S, Brasseur S, Daan R, Fijn RC, de Haan D, Dirksen S, van Hal R, Hille Ris Lambers R, ter Hofstede R, Krijgsveld KL, Leopold M and Scheidat M. (2011). Short-term ecological effects of an offshore wind farm in the Dutch coastal zone; a compilation. *Environ. Res. Lett.* **6**:1-14.
- Maclean, I.M.D, Wright, L.J., Showler, D.A. and Rehfisch, M.M. (2009). A Review of Assessment Methodologies for Offshore Windfarms. British Trust for Ornithology Report Commissioned by Cowrie Ltd.
- Petersen, I.K., Clausager, I. & Christensen, T.K. 2004. Bird numbers and distribution in the Horns Rev offshore wind farm area. Annual status report 2003. Report commissioned by Elsam Engineering A/S. National Environmental Research Institute.
- Available at:
http://www.hornsrev.dk/Miljoeforhold/miljoerapporter/Bird_numbers_2003%20status_report.pdf.

APPENDIX B

FRESHWATER FISH of CONSERVATION CONCERN SNH INTERIM ADVICE for HABITATS REGULATIONS APPRAISAL

Introduction

Habitats Regulations Appraisal (HRA) is the process which applies to any plan or project with the potential to affect the qualifying interests of a Natura site. As JNCC and SNH advised in response to the Seagreen HRA report (see our letter of 31 January 2012), the qualifying fish interests of the following SACs need to be addressed under HRA for Seagreen phase 1 (the alpha and bravo windfarm sites):

- **River South Esk** designated for its populations of Atlantic salmon (*Salmo salar*) and freshwater pearl mussel (*Margaritifera margaritifera*).
- **River Tay** designated for its populations of the following fish species – Atlantic salmon, brook lamprey (*Lampetra planeri*), river lamprey (*Lampetra fluviatilis*) and sea lamprey (*Petromyzon marinus*); and for otter (*Lutra lutra*) and clear water lochs.
- **River Teith** designated for its populations of the following fish species – Atlantic salmon, brook lamprey, river lamprey and sea lamprey.

SNH interim advice for Habitats Regulations Appraisal

We provide the following interim HRA advice for the freshwater fish interests of each of the SACs listed above. We note that we will be able to provide our confirmed advice for cumulative HRA once the Inch Cape ES is submitted and the discrepancies between developers' technical assessments and any other relevant aspects of the ES are resolved.

1. Is the proposal connected with or necessary for SAC conservation management?

The proposal is not directly connected with or necessary for the conservation management of any of the above riverine SACs.

2. Is the proposal likely to have a significant effect on the qualifying interests of the SACs either alone or in combination with other plans or projects?

- **Atlantic salmon**

We advise **likely significant effect** from Seagreen phase 1 on Atlantic salmon due to the possibility that they could be disturbed by construction noise and / or possible effects of electro-magnetic fields (EMF) arising from installed cables. We confirm that we have considered the location of the export cable route and proposed landfall point and are satisfied that construction work associated with this cable installation would not result in likely significant effects to salmon. We are also satisfied that operational noise would not result in likely significant effects to salmon.

Cumulative impacts are a key concern for Seagreen phase 1 in combination with Neart na Gaoithe and Inch Cape, and will need to be considered in appropriate assessment.

- **Freshwater pearl mussel**

Atlantic salmon (and other salmonids) are integral to the life cycle of freshwater pearl mussel (FWPM), therefore any impacts to Atlantic salmon that prevent them from returning to their natal rivers may have a resulting effect on FWPM populations.

We therefore advise **likely significant effect** from Seagreen phase 1 on FWPM, so potential indirect impacts to this species will need to be considered in appropriate assessment.

- **Sea lamprey**

We advise **likely significant effect** from Seagreen phase 1 on sea lamprey due to the possibility that they could be disturbed by construction noise and / or possible effects of electro-magnetic fields (EMF) arising from installed cables. We confirm that we have considered the location of the export cable route and proposed landfall point and are satisfied that construction work associated with this cable installation would not result in likely significant effects to sea lamprey. We are also satisfied that operational noise would not result in likely significant effects to this species.

Cumulative impacts are a key concern for Seagreen phase 1 in combination with Neart na Gaoithe and Inch Cape, and will need to be considered in appropriate assessment.

3. Can it be ascertained that the proposal will not adversely affect the integrity of the SAC, either alone or in combination with other plans or projects?

This step is termed **appropriate assessment**, and it is to be undertaken by Marine Scotland, based on information submitted in each of the ES for the Forth & Tay windfarm proposals, with advice from ourselves. It considers the implications of the proposal for the (relevant) conservation objectives relating to the SAC qualifying species of concern. Please refer to <http://www.snh.org.uk/snhi/> for a full list of these conservation objectives as we only discuss the relevant ones below.

We provide the following interim advice, but we provide it in order to inform discussion with Marine Scotland over cumulative HRA for these freshwater fish interests of riverine SACs.

- **Atlantic salmon**

The relevant conservation objective to consider is whether or not the proposed FTOWDG windfarm proposals (Seagreen phase 1, Neart na Gaoithe and Inch Cape) would alone or in combination result in any impacts on the viability of Atlantic salmon populations supported by the SACs listed above. We need to consider whether noise disturbance to individuals during windfarm construction would result in population level effects and / or what mitigation can be applied to avoid such impacts. Marine Scotland, as the competent authority, needs to consider whether any conditions are needed on Section 36 / marine licences in this regard.

SNH notes that we are satisfied that operational noise from Seagreen alone, or from the FTOWDG proposals in combination, would not result in likely significant effects to salmon.

The applicant proposes to bury cables to reduce EMF. To mitigate impacts to Atlantic salmon, we advise a minimum target depth of at least 1m for cable burial, potentially increasing to 1.5m in shallower water close to shore.

- **Freshwater pearl mussel**

Potential indirect impacts to freshwater pearl mussel populations in the River South Esk will be addressed via mitigation to avoid population level effects on Atlantic salmon.

- **Sea lamprey**

The relevant conservation objective to consider is whether or not the proposed FTOWDG windfarm proposals (Seagreen phase 1, Neart na Gaoithe and Inch Cape) would alone or in combination result in any impacts on the viability of the populations of sea lamprey supported by the SACs listed above. We need to consider whether noise disturbance to individuals during windfarm construction would result in population level effects and / or what mitigation can be applied to avoid such impacts. Marine Scotland, as the competent authority, needs to consider whether any conditions are needed on Section 36 / marine licences in this regard.

SNH notes that we are satisfied that operational noise from Seagreen alone, or from the FTOWDG proposals in combination, would not result in likely significant effects to lamprey.

The applicant proposes to bury cables to reduce EMF. To mitigate impacts to sea lamprey, we advise a minimum target depth of at least 1m for cable burial, potentially increasing to 1.5m in shallower water close to shore.



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Our Case ID: 201204813
Your ref: 013/OW/SGFoF1 - 10

5 December 2012

Dear Mr Sutherland

**The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000
The Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended)
Application for consent to construct and operate Seagreen Alpha and Bravo Offshore
Wind Farms and Transmission Asset Project
Environmental Statement**

Thank you for your letter dated 26 October 2012 and the accompanying Environmental Statement (ES) requesting comments on the above. For information, this letter covers our comments on the ES for our role as consultees through the Scottish Ministers under the terms of the above Regulations. The comments in this letter relate to our statutory remit for scheduled monuments and their settings, category A listed buildings and their settings, gardens and designed landscapes appearing in the Inventory, Inventory Battlefields and designated wreck sites (Protection of Wrecks Act 1973). In this case, our advice also includes matters relating to marine archaeology out with the scope of the terrestrial planning system.

The Proposed Development

I understand this application relates to Phase 1 of the Firth of Forth Round 3 Zone, which consists of two offshore wind farms known as Project Alpha and Project Bravo. Project Alpha and Project Bravo are located approximately 27 km and 38 km respectively offshore from the nearest landfall on the Angus coastline. The selected landfall for the export cable is at Carnoustie. The majority of the Export Cable Route corridor is 1 km in width.

Each of the proposed offshore wind farms (Alpha and Bravo) will include the following:

- Maximum of 75 wind turbine generators with a max blade tip height of 209.7m;
- Foundations and substructures;
- Subsea array cables linking the turbines to the offshore platforms (355 km of cables for each wind farm);
- Up to three meteorological masts in each project.

The Transmission Asset Project Infrastructure includes:

- Offshore platforms (not more than 5 across both projects);
- High voltage subsea power cables connecting the platforms;
- Approximately 6 high voltage export cables up to Mean High Water Springs (MHWS);



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- Cable landfall and connection to onshore infrastructure up to MHWS.

Terrestrial Assets

Overall, we are content that the offshore works (as described above) will not have direct impacts on terrestrial assets within our statutory remit.

Having reviewed the submitted information, taking into account the distance between the proposed offshore wind farms and terrestrial assets within our statutory remit, we are content that the offshore works will not result in significant adverse impacts on the setting of terrestrial assets.

In terms of cumulative setting impacts, taking into account the distance between the proposed offshore wind farms and other reasonably foreseeable offshore projects, as well as the distance from terrestrial assets, we are content that there are unlikely to be any significant adverse cumulative setting impacts as a result of the proposed development.

Marine Assets

We note the geophysical and geotechnical survey findings in relation to Project Alpha, Project Bravo and the Transmission Asset Project. We are content with the predicted significance of direct, indirect and secondary impacts on the identified wrecks and targets of archaeological potential during the construction and operational phases of the development. Overall, we are content with the proposed mitigation measures, including the Temporary Exclusion Zones which will be put in place, as well as the Written Scheme of Investigation and Protocol for Archaeological Discoveries which will be prepared.

Conclusion

Overall, we are content with the principle of the development, and consider there shall be no significant adverse impacts on marine or terrestrial assets within our statutory remit. We are satisfied with the proposed mitigation strategy in relation to identified sites which have archaeological potential and for unexpected archaeological discoveries. As such, we offer no objection to the application.

Please contact me should you wish to discuss the contents of this letter.

Yours sincerely

[Redacted]

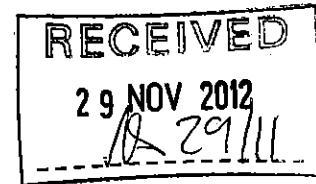
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27th November 2012



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Aberdeen AB11 9DB

Dear Mr. Sutherland

Application for Consent under Section 36 of the Electricity Act 1989 and a Marine Licence under part 4 of the Marine Scotland Act 2010 and the Marine and Coastal Access Act 2009 to construct and operate Seagreen Alpha and Bravo Offshore Windfarms and Transmission Asset Project

I refer to your e-mail of 26th October 2012 in respect of the above.

The current applications do not directly affect our jurisdiction, although it is possible that cables will come into our area of jurisdiction, in which event we would need to engage appropriately. Therefore, whilst at this stage we do not have any specific comments in relation to your correspondence, we would appreciate it if you would continue to liaise with us either directly or through the Forth and Tay Offshore Wind Developers Group.

Yours sincerely

[Redacted]

Pamela J Smyth
Group General Counsel

[Redacted]

Wright H (Hamish)

From: Iain Coutts (EDI) <Iain_Coutts@edinburghairport.com>
Sent: 16 November 2012 15:05
To: MS Marine Licensing
Subject: FW: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 26 October 2012
Attachments: Consultation Letter Seagreen.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Andrew,

This application has been assessed against Aerodrome Safeguarding criteria for Edinburgh Airport and I can confirm there are no safeguarding issues arising from the assessment. Therefore, Edinburgh Airport has no objections to the application.

Regards,

Iain

Iain Coutts
Safeguarding & Assurance Officer
0131 344 3592



Edinburgh Airport Limited
Airport Control Centre
EH12 9DN

From: Andrew.Sutherland@scotland.gsi.gov.uk [mailto:Andrew.Sutherland@scotland.gsi.gov.uk]
Sent: 26 October 2012 11:44
To: Iain Coutts (EDI)
Subject: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 26 October 2012

Dear Iain,

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010 AND THE MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

Please find attached a copy of the consultation letter for the above proposals. The closing date for any comments you may wish to make on the above proposal is **7th December 2012**. Please present all recommendations/conditions in a separate Annex to your response.

If you require an extension to the consultation deadline I would be grateful if you let us know before the deadline date. Please note reminder letters are no longer issued by the Marine Scotland Licensing Operations Team for marine renewable energy projects. If we have not received your comments, nor have we received any extension request by this date, we will assume you have no comments to make.

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Marine Scotland
Marine Laboratory
375 Victoria Road
Aberdeen
AB11 9DB

6 December 2012

Dear Sir/Madam,

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010 AND THE MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

The UK Chamber of Shipping welcomes the opportunity to comment on Seagreen's consent application documents for the proposed Phase 1 developments (projects Alpha and Bravo) in the Firth of Forth Round 3 Offshore Wind Zone.

Firstly, we would like our concerns over the pre-application consultation process employed by Seagreen to be noted. To our great disappointment, Seagreen has not approached the Chamber directly to discuss areas of concern since a Forth and Tay developers' group meeting held in January 2011. As a result, we were unaware of the proposals for projects Alpha and Bravo until receipt of the final application documents. This is clearly unsatisfactory and in direct contrast to the majority of consultation processes we have been engaged with around the UK. We request that Marine Scotland takes account of the flaws in the consultation process in reaching a final consenting decision.

In addition to our strong concerns regarding the consultation process, we wish for the following comments to be considered by Marine Scotland:

1. The phased approach to development in the Firth of Forth Zone is a continuing cause for concern. The Chamber highlighted the difficulties this approach presents for accurate navigational impact assessment in our 28 June 2011 response to the Scoping Report for Phases 2 and 3. We were, therefore, extremely disappointed to read in Section 18.3 of the Navigational Risk Assessment (NRA) that Marine Scotland had agreed for Phases 2 and 3 to be scoped out of the cumulative impact assessment. Scoping out future

development phases does not allow an accurate holistic picture of future development in the region to be presented, making assessment of navigational safety impacts and overall route deviation unnecessarily difficult.

2. Cumulative impacts of Seagreen developments and the Inch Cape and Neart na Gaoithe projects are also of concern. In discussions with the developers of the Inch Cape project, the potential for vessels to route between Inch Cape and Project Alpha has been discussed. However, Phase 3 of the Seagreen project would appear to remove this possibility. Again, we request certainty regarding future plans from the developers in order to facilitate an accurate assessment of the overall impacts on existing shipping routes.
3. Further concerns regarding potential rerouting to the west of the Phase 1 projects are created by the proposals contained within Section 10.2 of the NRA. The revised route illustrated in Figure 10.1 would presumably run between projects Alpha and Bravo and the Neart na Gaoithe site. However, as stated above, development of Phase 3 would be likely to remove this rerouting option. We therefore feel that the information provided by Seagreen could be made redundant by future development plans.
4. Assessment of the route deviation impacts of each project in isolation (see Sections 9 and 10 of the NRA) is particularly unhelpful. This does not allow stakeholders to assess revised routes in relation to other projects, including those in the Firth of Forth Zone, and does not appear to take the information provided in the MGN 371 shipping template into account as revised passing distances from turbine boundaries are not discussed.
5. Section 19.3 of the NRA indicates that Seagreen intends to apply for 50m operational safety zones around each turbine structure. It should be noted that operational safety zones are not accepted as standard practice by navigational stakeholders. Any application for operational safety zones should be supported by a full NRA justifying their need. Work is currently being undertaken by the Nautical and Offshore Renewable Energy Liaison (NOREL) group to develop alternative guidance designed to remove the need for operational safety zones. Seagreen should pay close attention to these developments via the regional representative at NOREL.

In summary, the lack of certainty regarding overall development with the Firth of Forth Zones means that the UK Chamber cannot offer full support for the Phase 1 proposals. As the NRA assesses the Phase 1 projects in isolation and the Regional Cumulative Shipping and Navigation Review (included with the application) considers the zone as whole, we have been presented with two very different views of route diversion projections. This has created significant uncertainty over the full extent of rerouting required to accommodate proposed wind farm developments in the region.

We urge Marine Scotland to encourage Seagreen to provide increased certainty over future plans for the zone as soon as possible and to provide navigational stakeholders with updated projections for traffic rerouting based on these plans. Until information illustrating an accurate holistic view of the region is provided, we cannot assess navigational impacts with absolute certainty. The absence of this information does not serve the developers' best interests as the UK Chamber will remain unable to offer support for the projects.

If you wish to discuss the UK Chamber's concerns in greater detail, please do not hesitate to contact me. Given our high level of concern regarding the cumulative impacts of offshore wind developments in this region (also noted in our 18 September comments on the Neart na Gaoithe application documents) and the gaps in the consultation process, we would welcome the opportunity to discuss the issues directly with Marine Scotland.

Yours faithfully,

[Redacted]

Richard Nevinson
Policy Advisor
Safety & Environment

Seagreen Phase 1 (Alpha & Bravo) Offshore Windfarms
Ref: 013/OW/SGFOF1-10

In response to ref: 013/OW/SGFOF1-10, Carnoustie Golf Links Ltd have no concerns with regard to the development of the off shore turbines however feel they require to make representation with regards to the onshore aspect of the project.

The following outlines the major areas of concern:-

- Major concerns in connection to Seagreen's preferred landfall and in particular why more investigation has not taken place with regards to the Arbroath/Easthaven options. Either alternate landfall would not have a major impact on tourism in the area.
- Despite many meetings with Seagreen we still have no detailed information with regard to the timing or extent of the project.
- Without having the detailed information we, as tenants of the land, have invested substantially over many years and have grave concerns over the disruption and disturbance to the golf courses during and after construction.
- As we await the return of The Open Championship ¹we realise that a possible clash with the development would mean the Royal & Ancient Golf Club of St Andrews (organisers of The Open Championship) would take the event elsewhere causing devastation to the local economy and the finances of the golf courses.

¹The Open Championship is the top professional golfing tournament in the world which annually brings millions of pounds to the local economy and Scotland in general.

Wright H (Hamish)

From: Windfarms <Windfarms@caa.co.uk>
Sent: 19 June 2013 10:15
To: Sutherland AI (Andrew)
Subject: RE: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 17 June 2013

Dear Andrew,

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010 AND THE MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

Having reviewed the ES provided for the above proposed development, Chapter 18 confirms appropriate aviation consultees have been identified and consultation has been conducted. The Civil Aviation Authority has no issue with the wording used in the ES and the document covers the correct lighting requirements for the proposed development. I would also reiterate the need, if the proposed development is approved, to inform the Defence Geographic Centre icgdgc-aero@mod.uk of the locations, heights and lighting status of the turbines and meteorological masts, the estimated and actual dates of construction and the maximum height of any construction equipment to be used, prior to the start of construction, to allow for the appropriate inclusion on Aviation Charts, for safety purposes.

Should you have any further questions please feel free to contact me, details below.

Kind regards,

Kelly

K LIGHTOWLER
Squadron Leader (RAF)

Surveillance and Spectrum Management
Directorate of Airspace Policy
Civil Aviation Authority
45-59 Kingsway London WC2B 6TE
Tel: 020 7453 6534 Fax: 020 7453 6565
kelly.lightowler@caa.co.uk

From: Andrew.Sutherland@scotland.gsi.gov.uk [mailto:Andrew.Sutherland@scotland.gsi.gov.uk]
Sent: 17 June 2013 10:49
To: Windfarms
Subject: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 17 June 2013

Hi Kelly,

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010 AND THE MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

Thank you for taking my call earlier. As discussed I noticed that MS LOT did not appear to have received a response from the CAA regarding the above application. After discussions with yourself this appeared to be correct.

Wright H (Hamish)

From: dale.aitkenhead@bt.com on behalf of radionetworkprotection@bt.com
Sent: 26 October 2012 11:33
To: Sutherland AI (Andrew)
Cc: MS Marine Licensing
Subject: RE: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 26 October 2012

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Sir/Madam

BT do not have any comments to make.

We have studied this proposal with respect to EMC and related problems to BT point-to-point microwave radio links.

The conclusion is that, the Project indicated should not cause interference to BT's current and presently planned radio networks.

Regards

Dale Aitkenhead

BTO Service Delivery -Operations Control TM, Radio Frequency Allocation & Network Protection

Tel 0191 2696372

mobile : 07540 897558

dale.aitkenhead@bt.com

Web: <http://operate.intra.bt.com/operate>

Let us know how we're doing here in SD Oerations Control... Please take our 30sec Mini-Survey below

BT Internal Customers... <http://formwize.intra.bt.com/run/survey3.cfm?ID=79809>

From: Andrew.Sutherland@scotland.gsi.gov.uk [mailto:Andrew.Sutherland@scotland.gsi.gov.uk]

Sent: 26 October 2012 11:13

To: radionetworkprotection G

Subject: 013/OW/SGFoF1 - 10: Request For Comments Section 36 & Marine Licence Application Seagreen Wind Energy Limited: 26 October 2012

Dear Sir / Madam,

APPLICATION FOR CONSENT UNDER SECTION 36 OF THE ELECTRICITY ACT 1989 AND A MARINE LICENCE UNDER PART 4 OF THE MARINE (SCOTLAND) ACT 2010 AND THE MARINE AND COASTAL ACCESS ACT 2009 TO CONSTRUCT AND OPERATE SEAGREEN ALPHA AND BRAVO OFFSHORE WINDFARMS AND TRANSMISSION ASSET PROJECT

Please find attached a copy of the consultation letter for the above proposals. The closing date for any comments you may wish to make on the above proposal is **7th December 2012**. Please present all recommendations/conditions in a separate Annex to your response.



Association of Salmon Fishery Boards

Response to the marine licence application for the Seagreen Phase 1 Offshore Project December 2012

Introduction

The Association of Salmon Fishery Boards is the representative body for Scotland's 41 District Salmon Fishery Boards (DSFBs) including the River Tweed Commission (RTC), which have a statutory responsibility to protect and improve salmon and sea trout fisheries. The Association and Boards work to create the environment in which sustainable fisheries for salmon and sea trout can be enjoyed. Conservation of fish stocks, and the habitats on which they depend, is essential and many DSFBs operate riparian habitat enhancement schemes and have voluntarily adopted 'catch and release' practices, which in some cases are made mandatory by the introduction of Salmon Conservation Regulations. ASFB creates policies that seek where possible to protect wider biodiversity and our environment as well as enhancing the economic benefits for our rural economy that result from angling. An analysis completed in 2004 demonstrated that freshwater angling in Scotland results in the Scottish economy producing over £100 million worth of annual output, which supports around 2,800 jobs and generates nearly £50million in wages and self-employment into Scottish households, most of which are in rural areas.

Similar to other offshore wind projects in Scotland, we have significant concerns relating to the proposed development, particularly with regard to the uncertainty surrounding the potential negative effects on Atlantic salmon and sea trout and the integrity of a number of Special Areas of Conservation for Atlantic salmon.

As stated above, DSFBs have a statutory duty to protect and improve salmon and sea trout *fisheries*. All salmon fishing rights in Scotland (freshwater and marine) are private heritable titles. As the environmental effects of offshore technologies are uncertain, we would expect that developers should be required to remedy any negative consequences of such developments on the heritable assets and the value of those assets (including employment within the fishery) of all fishery proprietors. We therefore believe that, as a condition of consent (should such consent be granted), there should be a requirement for a formal mitigation agreement between the developer and relevant DSFBs.

Overarching Comments

1. Designated Species

As highlighted in the Environmental Statement a number of rivers in the area are designated as Special Areas of Conservation (SAC), part of the Natura 2000 network – a series of internationally important wildlife sites throughout the European Union. The conservation objectives for these sites are set out below¹.

To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and

To ensure for the qualifying species that the following are maintained in the long term:

- *Population of the species, including range of genetic types for salmon, as a viable component of the site*
- *Distribution of the species within site*
- *Distribution and extent of habitats supporting the species*
- *Structure, function and supporting processes of habitats supporting the species*
- *No significant disturbance of the species*
- *Distribution and viability of freshwater pearl mussel host species*

¹ <http://gateway.snh.gov.uk/sitelink/index.jsp>

- *Structure, function and supporting processes of habitats*

The Habitats Directive (article 6) requires that *Member States shall take appropriate steps to avoid, in the special areas of conservation, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this Directive.*

It also states: *In the light of the conclusions of the [appropriate] assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

If this is not the case and there are no alternative solutions, the proposal can only be allowed to proceed if there are imperative reasons of overriding public interest.

The conservation status of the Atlantic salmon qualifying interest for the various SACs (First Assessment Cycle) are set out in Table 1 below. In addition, a number of these SACs are also designated for FW pearl mussel.

SAC	Qualifying Interest	Conservation Status
River Dee	Atlantic salmon	favourable maintained
River South Esk	Atlantic salmon	unfavourable recovering
River Tay	Atlantic salmon	favourable maintained
River Teith	Atlantic salmon	unfavourable recovering
River Tweed	Atlantic salmon	unfavourable recovering

Table 1: Conservation status of SACs for Atlantic salmon in the area of the development.

In all cases, the Salmon rod catch trends in these SACs as analysed by Marine Scotland Science, show that the spring stock component is in decline. The second assessment cycle is nearing completion, and the results of this assessment must be taken into account in the licensing decision. We believe that the assessment is likely to show that the early running spring component of many of these Atlantic salmon populations continues to deteriorate.

In addition, District Salmon Fishery Boards have a statutory obligation to protect sea trout. The marine phases of both Atlantic salmon and sea trout have also been included on the draft list of Priority Marine Features drawn together by SNH - the habitats and species of *greatest conservation importance* in inshore waters.

2. Climate Change Mitigation and Adaptation

As for many other species, climate change has been identified as a threat to Atlantic salmon. The species' developmental rate is directly related to water temperature, and increasing temperature in freshwater may result in smolts developing more rapidly and entering the ocean at a suboptimal time in relation to their planktonic food sources.

In addition, as air temperatures warm, much of the snow that feeds the river systems is expected to melt earlier. This will lead to a reduction in the flow of many rivers in the spring and summer, which will increase water temperatures further and may reduce the overall optimal habitat available to the Atlantic salmon. It is also clear that survival of salmon and sea trout during their marine migration phase has fallen over the last 40 years. Some of this reduced survival can be explained by changes in sea surface temperature and subsequent contraction of feeding grounds.

The first priority in mitigating these effects is to control atmospheric concentrations of greenhouse gases and we note that the Scottish Government has committed to meeting a stated target of 50% of Scotland's electricity demand from renewable sources by 2015. However, with further climate change inevitable in the short to medium term, attention is now focusing on the development of accommodation and adaptation strategies, through which adverse effects on species or ecosystems can be minimized. Some of the key needs with respect to developing adaptation strategies for rivers and their biodiversity were summarised by Ormerod (2009 – *Aquatic*

Conserv. Mar. Freshw. Ecosyst. 19: 609–613). We would highlight the following key point in particular: *to minimize the adverse effects on river biodiversity of actions taken to mitigate climate change.*

3. Potential Negative Effects of Offshore Renewable Devices

Offshore renewable developments have the potential to directly and indirectly impact anadromous fish such as Atlantic salmon and sea trout. We would therefore expect developers to assess the potential impacts of deployed devices on such fish during the deployment, operation and decommissioning phases. Such potential impacts have been highlighted by Marine Scotland Science and could include:

- Avoidance (including exclusion from particular rivers and subsequent impacts on local populations);
- Disorientation effects that could potentially affect behaviour, susceptibility to predation or by-catch; and
- Impaired ability to locate normal feeding grounds or river of origin; and delayed migration

ASFB therefore recommend to our members that careful consideration should be given to the following activities:

i. Subsea noise during construction

A recent review commissioned by SNH² states that ‘Marine renewable energy devices that require pile driving during construction appear to be the most relevant to consider, in addition to the time scale over which pile driving is carried out, for the species under investigation’.

ii. Subsea noise during operation

iii. Electromagnetic fields (EMFs) arising from cabling

The SNH-commissioned review (cited above) has shown that EMFs from subsea cables have the potential to interact with European eels and possibly salmonids if their migration or movement routes take them over the cables, particularly in shallow waters (<20m). Marine Scotland Science are currently undertaking a research programme which aims to investigate electro-magnetic force impacts on salmonids. We would hope to have some results from this work later in 2012. It is vital that all cables are appropriately shielded to ensure that EMF effects are below any threshold of effect for salmonids.

iv. EMFs arising from operation of devices

It is important to ensure that such effects are quantified and assessed in the Environmental Statement.

v. Disturbance or degradation of the benthic environment (including secondary effects on prey species)

It is important to ensure that such effects are quantified and assessed in the Environmental Statement.

vi. Aggregation effects

Whilst the aggregation of prey items around physical structures might be seen as a positive effect, possible negative effects might include the associated aggregation of predators.

4. General Comments on the Application

Guidance issued by Marine Scotland Science relating to information requirements on diadromous fish of freshwater fisheries interest states that an Environmental Statement should provide information on the use of the development area by such fish and that if such information was lacking then a suitable monitoring strategy should be devised. Indeed, Marine Scotland Science regard the monitoring undertaken at existing offshore developments such as Robin Rigg as being inadequate. We believe that the lack of meaningful monitoring in the present proposal is extremely disappointing and completely inadequate. We would emphasise that any monitoring strategies must include pre-construction monitoring in order that baseline information on salmon and sea trout movement, abundance, swimming depth, feeding behaviour etc. can be collected.

² Literature review on the potential effects of electromagnetic fields and subsea noise from marine renewable energy developments on Atlantic salmon, sea trout and European eel. Available at: <http://www.asfb.org.uk/wp-content/uploads/2011/06/SNH-EMF-Report1.pdf>

As with other applications for offshore renewable energy, the Rochdale Envelope approach is set out in the application. It must be emphasised that this approach makes it extremely difficult for stakeholders to assess the potential environmental risk as there is little detailed information on: the likely size of the scheme; the type of devices to be deployed; and the degree of confidence attached to the assessment of impacts. Our comments must therefore be viewed on that basis.

Suspended Sediments

Given the risks associated with the increased sediment concentrations it is suggested that sensitive operations should be avoided during the annual smolt migration period. This would have the additional benefit of avoiding the migration period of returning early-running adult salmon which themselves have high economic and ecological value.

Electromagnetic fields

We are aware that Marine Scotland Science are currently undertaking a research programme which aims to investigate electro-magnetic force impacts on salmonids. Until this work is completed, we are unable to assess the relative magnitude of this impact, or relate any potential EMFs arising from the proposed development to those magnetic fields likely to initiate a behavioural response in salmonids. Having responded to a number of proposed offshore windfarms it is clear that there is not a consensus between developers as to the appropriate depth to which cables should be buried. We believe that burial depth of cables should be based on research, but in the absence of definitive data we believe that **all** cables should be buried to a **minimum** depth of 1.5m, for **all** offshore renewable developments. Where cable burial is not possible due to hard substrates etc. we believe that all cables should be shielded to an equivalent depth by placing a suitable substrate on top of the cable or by some other means.

There is a clear need to assess the swimming depths of salmon and sea trout transiting the area of the wind farm in relation to the effects of EMFs from cabling. We note that the SALSEA project has shown that Atlantic salmon are capable of diving to considerable depths. In addition, Malcolm et al (2010) concluded based on research undertaken to date (Jakupsstovu, 1986; Holm et al, 2005; Starlaugsson, 1995) that in general terms salmon spend most of the time close to the surface although dives to greater depths of up to 280m have often been observed. Dives do not appear restricted to offshore areas, persisting late into the migration on the return to home waters. Early studies (Jakupsstovu, 1986) suggest an association between diving and feeding.

It is important to consider the foraging behaviour of sea trout, which we (and the developers) assume use the area in question. No information is presented as to the depths at which such fish forage. Sea trout are also more likely to be benthic feeders. Pemberton (1976) suggested a diel feeding pattern, with bottom feeding being greatest during the day and mid-water and surface feeding increasing between sunset and sunrise.

Noise

The assessment of noise impacts carries high uncertainty. It must be recognised that the significance of behavioural avoidance is dependent on the behaviour disrupted. For example, avoidance may be significant if it causes a migratory species to be held up or prevented from reaching areas of biological importance, e.g., spawning and feeding areas. We believe that the predicted area which salmon would avoid is significant and has the potential to at least delay smolt migration. As no information is available on smolt migration routes, we must assume that such a delay could, for example, make smolts more susceptible to predation. It must also be noted that salmonid smolts are physiologically stressed in adapting to the environmental challenge of movement between freshwater and seawater. Simultaneous challenge from noise, EMFs etc. during this transition will constitute a significant additional stressor. Stress leads to increased plasma levels of the stress hormone cortisol. Corticosteroids cause a range of secondary effects, including hydromineral imbalance and changes in intermediary metabolism (Wendelaar Bonga, 1997)³. In addition, tertiary responses extend to a reduction in the immune response and reduced capacity to tolerate subsequent or additional stressors (Wendelaar Bonga, 1997).

The ES operates under the assumption that Atlantic salmon and sea trout are present in the development area. However, the zones of avoidance set out do not appear to be related to the swimming speeds of fish (at different

³ Wendelaar Bonga, S. E. (1997). The stress response in fish. *Physiol. Rev.* 77, 591-625.

life stages), in order to assess the possibility of such fish swimming out of the zone of effect. We welcome the fact that piling operations will be intermittent. We also welcome reference to soft start piling which we believe will be necessary to ensure that Atlantic salmon and sea trout, of all life stages, can safely avoid traumatic hearing damage. However, no detail is given as to the duration of such soft start piling, and such duration must be appropriate to the swimming speeds of the species in question, to allow that species time to move out of the zone of effect. Should the development be granted consent, we believe that an appropriate duration of soft start piling, related to the swimming speed of juvenile salmon and sea trout, should be a condition of consent.

However, given the paucity of information on noise effects, we do not believe that soft piling alone is an appropriate mitigation. The ES sets out a number of options for turbine design (including gravity bases) of which the worst case scenario for noise is impact piling. We believe that, given the sensitivity of early running returning spring salmon, and the uncertainty of effects on juvenile fish, that it is appropriate, should consent be granted for the development, that a condition of consent is that no impact piling occurs during the period from March to June (inclusive). Such a condition is consistent with the precautionary principle and would still allow other forms of construction to continue during this period.

During pre-application discussions with the developers we have continually stressed the need for information on migratory routes and habitat usage for migratory salmonids. In the absence of such data (and the ES simply assumes that they are present), ASFB and DSFBs, in assessing the risks of the development to migratory fish, have no alternative but to assume that the entire run of each river will use the area under development. We note that Marine Scotland Science have previously commented that *'it needs to be categorically established which species are present on the site, and where, before the application is considered for consent'*.

Introduction of New Substrates

We are concerned that the potential for the structures to act as fish aggregation devices (FADs) could potentially be negative in the case of wild salmonids. However, if the structures do act as FADs we would be concerned that such areas may in fact represent new 'pinch points' for predation of migrating smolts and returning adults. This possibility does not appear to be considered in the application.

Monitoring and mitigation measures

As with other offshore wind applications, we are disappointed at the lack of salmonid-specific monitoring. We are keen to work with the developers and Marine Scotland to identify appropriate monitoring programmes. We would emphasise that any monitoring strategies must include pre-construction monitoring in order that baseline information on salmon and sea trout movement, abundance, swimming depth, feeding behaviour etc. can be collected.

We are very disappointed to see that no mitigation measures are proposed other than inter-array cable burial/protection, to reduce the effects associated with the construction/decommissioning and operation phase of the development. As stated above, we believe that **all** inter-array cabling should be buried to a minimum depth of 1.5m or have a suitable shielding material placed over them. We do not believe that there should be any exceptions to this, irrespective of the technical difficulties involved. In addition, we would highlight our comments regarding mitigation with regard to impact driving during the spring. We note that other potential mitigation measures to minimise and mitigate noise produced during potential piling operations (such as large or small bubble curtains or sound-absorbing sleeves) may be available but we are not aware of any attempts to quantify the effect of such mitigation measures.

Conclusion

As stated above, ASFB recognises the importance of offshore renewable energy. However, the environmental statement has failed to demonstrate that the development will not adversely affect the integrity of the SAC rivers or indeed other salmon and sea trout fisheries. Where a Natura site is involved, the onus is on the developer to demonstrate no impact and in the absence of that the precautionary principle will apply. Under these circumstances, we do not consider that the proposed development is compatible with the requirements of the Habitats Directive or Scotland's Marine Nature Conservation Strategy. On that basis, we have no alternative but to formally object to the proposed development, until adequate monitoring and mitigation strategies have been put in place.

It should be emphasised that we have no wish to prevent or delay the proposed development unnecessarily and we remain keen to work constructively with the developers and Marine Scotland to identify appropriate monitoring programmes which will allow us to be able to assess the acknowledged risks of this development, and other proposed developments more appropriately. We stated in our introduction that we believe that a formal mitigation agreement should be a condition of consent. In addition, there is a clear and urgent need to fund, plan and start strategic research on the movement, abundance, swimming depth, feeding behaviour etc. of salmon and sea trout. Such research would clearly feed into the potential mitigation measures that might be deemed appropriate, and the conditions under which such mitigation should be enacted. One aspect that should be considered immediately is the installation of fish counters, particularly in SAC rivers, to allow the real time understanding of adult salmon abundance (and depending on local conditions, new technology might even allow information on smolt escapement to be collected). We believe that the installation of such counters, in close liaison with the DSFBs in question and MSS, could potentially be considered as a condition of consent, where appropriate to local conditions, should such consent ultimately be granted. Developers should be encouraged to work together to fund such strategic monitoring, including the on-going costs of operating such counters, in order to allow more certainty for all involved.

The scale of proposed offshore wind developments and other technical approaches to marine renewables development represents a step-change in the exposure of marine animals of high cultural and economic significance to attendant risks. In many cases, understanding of the risks is insufficient to support proposals for mitigation even at this late stage when substantial developments are being submitted for licensing. The cumulative impact of this proposal alongside those developments already submitted or likely to follow in the near future is potentially even greater. We would therefore recommend that an expert group is set up to rapidly consider the best way forward to plug the considerable knowledge gaps that remain. It is important that the best scientific and biological talent is made available to find practicable ways to address the unresolved issues. ASFB would be very keen to constructively engage with such a group.

For further information please contact:

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5th December 2012

Dear Andrew

WDC comments on Seagreen Environmental Statement

WDC welcome the opportunity to comment on the Seagreen Project. This response considers the first phase in the development of round 3 zone 2 in the Firth of Forth, where two wind farms (Seagreen Alpha and Bravo) are proposed to consist of up to 75 wind turbines and generate up to 525 MW of power each. Pile driving will take a maximum of two years (93 hours each), with one vessel operating for each project. There are to be three phases, with a target capacity of 3.5GW. Our detailed comments are provided in Annex A and are focused on those sections dealing with marine mammals.

WDC have significant outstanding concerns relating to the proposed development, as well as cumulatively with other developments in the region. In particular our concerns relate to the uncertainty surrounding the potential negative effects on harbour seals and bottlenose dolphins and the integrity of the Firth of Tay and Eden Estuary and Moray Firth SACs respectively.

We recognise that further mitigation measures are being investigated. However, without a commitment to effective mitigation from the impacts of pile driving particularly, we do not consider that the proposed development is compatible with the requirements of the Habitats Directive and WDC has no choice but to object to this application. Should Marine Scotland be minded to offer consent, our recommendations for license conditions are provided in Annex B, as requested.

Yours sincerely
[Redacted]

Sarah Dolman
Head of policy for Scotland



Annex A

General comments

WDC welcome the collaborative FTOWDG approach to monitoring and understanding impacts. WDC acknowledge the number and scope of baseline studies and reviews that were conducted by Mainstream and FTOWDG to gain a clear understanding of the species usage of the area and potential impacts on marine mammals, particularly Natura 2000 species.

The impact summary tables (tables 13.42-13.44) provided are useful and providing additional tables that included cumulative impacts would have been useful too.

We understand the need for the Rochdale envelope approach. However without understanding the detailed design of a number of aspects of the wind farm it is very difficult for us to comment to a great level of detail. In particular, the lack of specific details of the construction techniques, vessels and methods that will be used during construction and decommissioning of the Project make substantive comment on suitable, effective mitigation measures very difficult. A lack of clarity can affect our ability to make an accurate assessment of the environmental information, particularly in this case where the development is within the range of seals and bottlenose dolphins protected by Special Areas of Conservation (SACs).

Whilst we note the effort to calculate zones of injury and behavioural disturbance, as with all applications, this work is theoretical and in some cases based on the audiograms of a few animals held in captivity. The models themselves are also flawed and so the results need to be interpreted with care and precaution. This uncertainty is acknowledged within the marine mammal chapter.

Specific comments

The ES states harbour porpoises, bottlenose dolphins, harbour seals and grey seals are the species that have the potential to be affected by the development. WDC believe that minke whales and white-beaked dolphins should be further considered too, as stated in previous scoping consultation and consultation meeting in November 2012. Both of these species have been identified as Priority Marine Features. Section 9.41 identified this site as being a Search Location in the Scottish marine protected area Project. In addition to those features for which the site has been identified, minke whales and white-beaked dolphins are also Search Features that are found in the region.

Chapter 13 deals with marine mammals. We agree that there is likely to be significant impacts to local population of harbour seals and cumulative and in-combination impacts to harbour seals, grey seals and harbour porpoises. We do not agree that it is possible to determine with confidence that there will be no significant impacts, individually and cumulatively, to bottlenose dolphins, minke whales and white-beaked dolphins. This is particularly true as there have been no studies to date on the impacts of a large scale development such as this one. In addition, there have not been studies on the combined impacts of the development at a number of marine renewable



energy sites within the range of each of these species.

Harbour seals

We agree with the assessment of the particular sensitivity of harbour seals, due to their rapidly declining status off the east coast of Scotland.

We note that SNH state that harbour seals are sensitive to disturbance during the breeding season from June until August, inclusive.

We further note that the current allowable 'take' under Marine Scotland's Potential Biological Removal (PBR) for the east coast management area of harbour seals is 0.

Sparling et al. (2012a) concludes that particular difficulties include *"The locally declining harbour seal population – the PBR ... is just 3 individuals. **Any further disturbance or displacement may be unacceptable for this population.**"* And further concludes that *"There is difficulty in a) predicting individual effects of piling noise on seals because of a severe lack of empirical data on the physical and behavioural effects of impulsive noise on seals. This makes b) predicting the consequences of the individual of any impact difficult (in terms of foraging success and ultimately reproductive success and survival) and then, given these difficulties c) linking predicted individual level impacts to population level consequences. **At every step in this process there are large uncertainties and it will be necessary to make assumptions and extrapolations.**"*

Skeate et al. (2012) further notes that *"Where impacts are likely, we call for intensive individual-based research perhaps coupled with a rigorous experimental protocol. However, we anticipate that cause and effect upon seals will remain difficult to establish as a result of the influence of other factors (e.g. Edrén et al., 2004; Teilmann et al., 2006) and ambiguity of interpreting complex movement and haul-out patterns especially where these occur some way from the wind farm (Tougaard et al., 2006; Brasseur et al., 2008, 2010; Lindeboom et al., 2011). **As pile-driving is likely to be the most damaging component of offshore wind farm development, we suggest the most effective means of protecting seals and reducing the need for demanding monitoring is for the industry to use alternatives to pile-driven monopiles (e.g. gravity-base designs) and/or develop more effective means of mitigating noise (e.g. bubble-curtains – Würsig et al., 2000).**"*

Spiral injuries

The number of harbour seal deaths resulting from spiral injuries is contributing to a decline in this population off the east coast. As a result, every effort should be made to prevent these deaths. It would appear that the ES does not assess the potential impacts of these deaths (table 13.1), and that Marine Scotland and the statutory nature conservation agencies have agreed this approach. WDC considers this to be totally unacceptable. It was clear at a recent presentation on the issue of corkscrew injuries at the Marine Scotland Conference 'Celebrating 20 years of the Scottish

Strandings Network' that the cause of the injuries is known.

Bottlenose dolphins

We do not believe that it is possible to rule out significant impacts to bottlenose dolphins from the Moray Firth Special Area of Conservation (SAC).

A bottlenose dolphin sighting was made in the development site during TCE aerial bird surveys in the summer of 2009/2010. This demonstrates that the dolphins use the site, however infrequently. Given the small size of the population, this is an important consideration.

Minke whales

Minke whales are very vulnerable to the impacts of intense noise pollution. A northern minke whale was found in the 2000 Bahamas military sonar mass stranding (Balcomb and Claridge, 2001). Thirty-four short-finned pilot whales (*Globicephala macrorhynchus*), one minke whale and two pygmy sperm whales (*Kogia breviceps*) stranded in the Outer Banks, North Carolina in January 2005 (Kaufman, 2005). Coincident with the stranding, one US Navy vessel was known to have used sonar about 90 nautical miles southeast of the stranding area (Kaufman, 2005). In one particularly noteworthy case in May 2003, researchers noted abnormal behaviour in killer whales (*Orcinus orca*), harbour porpoises and a minke whale in Haro Strait, in Washington State (Vancouver Aquarium Marine Science Centre, 2003). Simultaneously, the researchers heard an extremely loud screeching sound while recording whale calls, which was later revealed to come from the mid-frequency SQS-53C sonar on a US Navy destroyer transiting the area.

Closer to home, there was a significant decrease in northern minke whale sightings rates in western Scotland during periods of naval exercises (Parsons et al., 2000) and a minke whale was seen to be seemingly fleeing military sonar off the west coast of Scotland during Exercise Joint Warrior (HWDt, personal observation).

More generally, Gedamke *et al.* (2011) suggest a reasonable likelihood that baleen whales at a kilometre or more from seismic surveys could potentially be susceptible to TTS. They demonstrate the large impact that uncertainty and variability can have on risk assessment. In a review of impacts of UK seismic surveys, Stone and Tasker (2006) reported all mysticetes combined remained significantly further from the source during periods of shooting on surveys with large volume airgun arrays. Although effects of active airguns on the physiology of the mysticetes around the UK are largely unknown, shorter blow intervals indicated an increase in the respiration rate of fin whales within 1km of the airguns during periods of shooting (Stone, 1998).

Minke whale densities appear to vary from year to year in Scotland, being higher on the west coast during some summers and higher on the east coast during others. The data collected here suggests that minke whales have not been identified in high densities, but this is not what might be anticipated every year. Due to this uncertainty, we disagree with the conclusion that auditory impacts are not



significant.

Field data

A large number of sightings were not identified to species level (1,513). This helps to emphasise the requirement for adequate survey techniques and suitably knowledgeable and adequate numbers of personnel. We note the use of just one marine mammal observer (Appendix H1) to cover such a large survey area, that survey transects were designed for bird surveys and that sea state data were not provided to SMRU for analysis. All of these factors can be expected to influence the value of the data collected and analysed.

Boat survey data appears to only be available from May 2010 to November 2011 (Appendix H1), which is a 19 month period. This falls short of the anticipated 24 months of surveys.

Appendix H5 by Quick and Cheney (2011) makes further recommendations for research work that could be conducted. This should be pursued, and particularly a detailed examination of the wider photo-identification catalogue. We note the constant year-round use of the region by bottlenose dolphins, based on TPOD data.

Magnitude of impact

Table 13.4 is very misleading. It determines a High magnitude if 10% of the population are anticipated to be exposed to the impact down to Low for 1-5% of the population. Were 1-5% of the bottlenose dolphin or harbour seal population to be exposed to some impacts, this would still be a significant impact due to the low (and rapidly declining in the case of harbour seals) population numbers to start with. Were this impact to be injury or death then we would consider that <1% impact would be significant for these two populations, whereas it appears that the ES consider this impact to be Negligible. As a result, currently, even when receptors (such as bottlenose dolphins and harbour seals) sensitivity are considered High, the result remains Minor.

Auditory and physical injury

We disagree with table 13.14 in its assessment of bottlenose dolphin sensitivity being Medium for PTS and Low for behavior impacts. We also disagree with the assessment for harbour seals.

The numbers of harbour seals predicted to experience PTS are unacceptable and we disagree with the findings of 'not significant' set out in the single pile section of the marine mammal chapter. We agree that multiple piles may have a significant effect.

We agree with the conclusion that auditory impacts could be significant for harbour seals. We also believe that auditory impacts could be significant for grey seals.

The levels of potential auditory injury described for harbour porpoises in section 13.608 are unacceptable. No tested and proven mitigation currently exists, of which we are aware, as suggested in section 13.609. We agree with the conclusion that

impacts are significant for porpoises.

We have concerns about the concurrent piling activities that may occur on the three developments in this region should all three developments receive consent. Section 13.599 provides no confidence that the cumulative impacts of fatality and non-auditory injury of the three developments can be mitigated, when no tested and proven mitigation currently exists, of which we are aware.

The marine mammal chapter determines non significance without providing adequate evidence to support this conclusion, for both individual and multiple piles. Physical injury would be most likely to occur within a small radius of the vessel when piling begins and cannot be ruled out for pile driving, or for spiral injuries.

Behavioural impacts

We totally disagree with the assessment that behavioural impacts are not significant for all marine mammal species considered (with the exception of harbour seals, which are considered significant), especially bottlenose dolphins. We do not agree with the low levels of uncertainty that are provided in Table 13.24 (including bottlenose dolphins being medium), where no real data exists for the injury, auditory or behavioural impacts of pile driving associated with wind developments, for most of these species.

It is not adequate to assess the behavioural impacts of mobile species at this site alone, when a number of other large developments are proposed within their range too.

Management and mitigation

Proposed mitigation presented at various sections throughout this chapter includes use of marine mammal observers (MMOs), which WDC supports. However this management measure is only a mitigation measure if the activity is halted when animals are observed, allowing the animal to leave the area without risk of injury.

The use of acoustic deterrent devices (ADDs) are not proven for the species expected to be encountered, and until they are proven for a reasonable period of time (to account for habituation) and on the full range of species that are anticipated to be encountered, their use cannot be relied upon to clear the area of marine mammals. ADDs introduce further noise issues that need to be fully explored.

We agree that acoustic monitoring of noise propagation is important. The results of monitoring associated with this development, should it be consented, should be used to inform potential development of further development in this region.

The model developed by Aberdeen University to understand the impacts of vessel traffic on the east coast bottlenose dolphin population (Lusseau et al., 2011) should

be expanded to fully assess and understand the cumulative impacts of all the marine renewable energy proposals that are planned to be developed in this region on bottlenose dolphins.

A similar level of investigation is urgently required for harbour seals and the other cetaceans likely to be impacted behaviourally, as well as due to auditory and other impacts that injure, as a priority.

Monitoring

We recognise the commitment Seagreen makes to pre-construction, during and post construction monitoring. Should consent be given, WDC welcomes the opportunity to be involved in developing a suitable monitoring programme (section 13.654).

Conclusion

WDC have significant outstanding concerns relating to the proposed development, and cumulatively with other developments in the region, particularly with regard to the uncertainty surrounding the potential negative effects on harbour seals and bottlenose dolphins and the integrity of the Firth of Tay and Eden Estuary and Moray Firth SACs respectively.

We recognise that further mitigation measures are being investigated. However, without a commitment to effective mitigation from the impacts of pile driving particularly, we do not consider that the proposed development is compatible with the requirements of the Habitats Directive and WDC has no choice but to object to this application. Should Marine Scotland be minded to offer consent, our recommendations for license conditions are provided in Annex B, as requested.

References

- Balcomb, K.C. and Claridge, D.E., 2001. A mass stranding of cetaceans caused by naval sonar in the Bahamas. *Bahamas Journal of Science* 8, 1–12.
- Culloch, R. M. and Robinson, K. P. 2008. Bottlenose dolphins using coastal regions adjacent to a Special Area of Conservation in north-east Scotland. *Journal of the Marine Biological Association of the United Kingdom*, 2008, 88(6), 1237–1243.
- Gedamke, J., Gales, N. and Frydman, S. 2011. Assessing risk of baleen whale hearing loss from seismic surveys: The effect of uncertainty and individual variation. *J. Acoust. Soc. Am.* 129.
- Lusseau, D., New, L., Donovan, c., Cheney, B., Hastie, G. and Harwood, J. 2011. The development of a framework to understand and predict the population consequences of disturbance for the Moray Firth bottlenose dolphin population. *SNH Commissioned Report no. 468*.
- Parsons, E.C.M., Birks, I., Evans, P.G.H., Gordon, J.G., Shrimpton, J.H., Pooley, S., 2000. The possible impacts of military activity on cetaceans in West Scotland. *European Research on Cetaceans* 14, 185–190.



Skeate, E.R, Perrow, M.R. and Gilroy, J.J. 2012. Likely effects of construction of Scroby Sands offshore wind farm on a mixed population of harbour *Phoca vitulina* and grey *Halichoerus grypus* seals. *Marine Pollution Bulletin*, 64, 872-881.

Sparling, C.E., Russell, D.F., Lane, E., Grellier, K., Lonergan, M.E., McConnell, B.J., Matthiopoulos, J. and Thompson, D. 2012a. Baseline seal information for the FTWODG Area. SMRUL-FDG-2012-0. Unpublished.

Stone, C.J. and Tasker, M.L. 2006. The effects of seismic airguns on cetaceans in UK waters. *J. Cetacean Res. Manage.* 8, 3, 255–263.

Stone, C.J. 1998. Cetacean and seabird observations in Tranche 52 and Quad 214 during 1998. Unpublished report to Conoco (UK) Limited. 73pp.

ANNEX B

WDC make the following recommendations for consent conditions:

1. No use of vessels that could cause spiral trauma injuries.
2. Monitoring of the harbour seal population should be sufficient to detect further declines due to all aspects of construction and operation of this development.
3. The use of soft start is not considered to be a deterrent, including to curious marine mammals that may approach during pile driving activities, shut down is required.
4. Appropriate scientific monitoring should be undertaken for bottlenose dolphins during and post construction, including the abundance estimate and passive acoustic monitoring work that has been identified in the “Further work” section of Quick and Cheney (2011).
5. Bottlenose dolphin photo-identification work in the region should be continued throughout the construction and post-construction period.
6. Data should be made available in a timely fashion to allow an adaptive approach to consenting of other developments, to include environmental certainty, including the proposed phases in this zone.
7. An EPS licence should be required and adequate monitoring efforts to understand the extent of disturbance throughout the development.
8. WDC involvement in the relevant components of the Environmental Management Plan.
9. The Environmental Management Plan should contain details for dealing with any detected declines in harbour seal or bottlenose dolphin populations, to ensure maintenance of the Natura conservation objectives.

Recommendations for Marine Scotland

The cumulative impacts on cetaceans cannot be adequately considered until all east coast marine renewable energy applications are submitted (including Inch Cape and Neart na Gaiithe in the immediate vicinity, but also those within the wider east coast). Consideration of all regional developments together would enable opportunity for full consideration of appropriately consenting or rejecting of the least damaging/greatest capacity proposals over the most damaging/lowest capacity.

Should other regional developments (including Montrose Tidal Project) be consented and should any physical or displacement impacts occur, we would anticipate that appropriate decisions would subsequently have to be taken for other regional developments to ensure the protection of Natura features and European Protected Species.

Consideration should be given to the adequacy of the current frequency of two years baseline survey data collection, as not enough data are collected in one or two days visual surveys per month to provide densities of most species encountered in order to determine impacts during construction and operation.



The model developed by Aberdeen University to understand the impacts of vessel traffic on the east coast bottlenose dolphin population (Lusseau et al., 2011) should be expanded to fully assess and understand the cumulative impacts of all the marine renewable energy proposals that are planned to be developed in this region on bottlenose dolphins. A similar level of investigation is required for harbour seals and the other cetaceans likely to be impacted behaviourally, as well as due to auditory and other impacts that injure, as a priority.

In order to promote quieter alternatives to pile driving, Marine Scotland should suitably scale the level of monitoring and mitigation required.

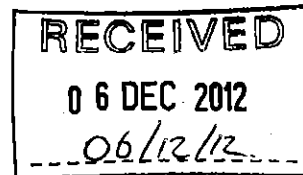
References

Lusseau, D., New, L., Donovan, c., Cheney, B., Hastie, G. and Harwood, J. 2011. The development of a framework to understand and predict the population consequences of disturbance for the Moray Firth bottlenose dolphin population. *SNH Commissioned Report no. 468*.

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4 December 2012

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Dear Sirs

**THE ELECTRICITY ACT 1989
THE ELECTRICITY WORKS (EIA) (SCOTLAND) REGULATION 2000
MARINE (SCOTLAND) ACT 2010
THE MARINE WORKS (EIA) REGULATION 2007
PROPOSED FIRTH OF FORTH SEAGREEN PHASE 1 OFFSHORE PROJECT
(ENVIRONMENTAL STATEMENT)**

With reference to your recent correspondence dated 26 October 2012 on the above development, we write to inform you of our involvement as Term Consultants to Transport Scotland – Trunk Road and Bus Operation (TS-TRBO) in relation to the provision of advice on issues affecting the trunk road network.

We have been passed a copy of the Environmental Statement (ES) prepared by Sea Green Wind Energy Limited in support of the above development. Having reviewed the information provided, we would make the following comments on behalf of Transport Scotland.

We understand from the information provided that the development proposal is to construct and operate three offshore sites comprising of two independent offshore windfarms known as Project Alpha and Project Bravo as well as a Transmission Asset Project. We note that Project Alpha and Project Bravo are located 27km and 38km east of the Angus coast and encompass an area of approximately 197km² and 194km² respectively. Both offshore wind farms will accommodate up to 75 wind turbine generators with the capacity to generate up to 525MW of electricity.

In addition to the wind turbine generators, the ES states that supporting offshore infrastructure is also included as part of the offshore windfarm projects. This will include array cables, meteorological masts, wave buoys and scour/cable protection where required. We note that the development would be operational for 25 years after which a decision will be made on whether or not to decommission or repower the wind farms.

Access Strategy and Traffic Impact

We note from the information given that the fabrication of the offshore wind farm structures will be carried out onshore and delivered by sea to the nearest suitable water port and to site by sea.

In these circumstances, we accept that the delivery of components to site will not have any significant Environmental impact on the trunk road network and its adjacent receptors. It is also noted that it is not anticipated that Abnormal Loads will be transported by road.

We note from the information contained within the ES that there will be a requirement for onshore transmission works and a new substation to support the offshore windfarms. We also note that there will be a separate planning application to Angus Council for these works which will be supported by a separate ES. Transport Scotland would wish to review the ES for this aspect of the project with regard to the traffic and environmental impacts that it may have on the trunk road network and its adjacent receptors.

Noise, Vibration and Air Quality

Based on the information provided within the ES, it is accepted that the traffic associated with the proposed offshore development will have no significant impact on the trunk road network and its adjacent receptors in terms of Noise and Air Quality. Therefore no further information is required in this regard.

I trust that the above is satisfactory and provides suitable guidance for the preparation of the assessment. In the meantime, please do not hesitate to contact me at our Glasgow Office if you have any queries.

Yours faithfully

[Redacted]

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