

SEPTEMBER 2012

Seagreen Phase 1 Offshore Project Consultation Report

(A4MR-SEAG-Z-DEV275-SRP-154)



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INTRODUCTION

Seagreen Alpha Wind Energy Limited (SAWEL) and Seagreen Bravo Wind Energy Limited (SBWEL) are seeking consent to construct and operate two offshore wind farms (OWFs) in the Firth of Forth Round 3 (R3) Zone 2, off the Angus coast, and associated infrastructure to facilitate the export of power to the national electricity transmission grid.

Seagreen Wind Energy Limited (Ltd), (the parent company of SAWEL and SBWEL, and hereafter referred to as 'Seagreen') was awarded the rights to develop a number of OWFs in Zone 2 (hereafter referred to as the 'Zone') by The Crown Estate, under its third round of offshore wind licensing arrangements.

The two OWFs, known as Seagreen Alpha (hereafter referred to as 'Project Alpha') and Seagreen Bravo (hereafter referred to as 'Project Bravo') covered in this Consultation Report are located 27 kilometres (km) and 38km east off the Angus coast and encompass an area of approximately 197 square kilometres (km²) and 194km² respectively. Both OWFs will accommodate up to 75 wind turbine generators with the capacity to generate up to 525 Megawatts (MW) of power. In addition to the wind turbine generators, supporting infrastructure is also included as part of the Seagreen Project. This will include offshore platforms, array cables, meteorological masts and wave buoys, high voltage export cable(s) and cable landfall at Carnoustie.

As the target generating capacity of the Seagreen Project is over 1MW, the development will require a licence under Section 36 of the Electricity Act 1989. The requirement for this consent also classes the development as a Schedule 2 development under The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2000 (as amended by the Electricity Works (Environmental Impact Assessment) (Scotland) Amendment Regulations 2008, which requires an Environmental Impact Assessment (EIA) to be undertaken and Environmental Statement (ES) to be produced.

The Seagreen Project has been screened for the requirement of an Appropriate Assessment under The Conservation (Natural Habitats, &c.) Regulations 1994. Due to the potential connectivity of the Seagreen Project to the integrity of several European sites in the region, the Seagreen Project will be subject to Habitats Regulations Appraisal (HRA) and it has been necessary to carry out HRA specific consultation in parallel with consultation on EIA.

The Seagreen Project will also require Marine Licences for construction and operation of structures upon the seabed both within 12 nautical miles (NM) of the Scottish coast (under The Marine (Scotland) Act 2010) and works outwith 12NM (under Marine and Coastal Access Act 2011). Due to the scale and nature of the Seagreen Project, the EIA being carried out need to also comply with the Marine Works (Environmental Impact Assessment) Regulations 2007 (as amended by the Marine Works (Environmental Impact Assessment) Regulations 2011).

Onshore transmission and substation infrastructure above mean low water springs (MLWS) tidal limit is not included within the offshore Seagreen Project. For information on the onshore works please refer to Seagreen Phase 1 Scoping Report Onshore Grid Connection Works (Seagreen, 2011a).

To support both the Section 36 and Marine Licence applications, Seagreen have produced this Consultation Report. The report provides information on key consultations that Seagreen have been involved with on the Phase 1 Seagreen Project between January 2010 and October 2012. It also details the process of public notification and consultation carried to comply with Part 4 Section 22 – 24 of The Marine (Scotland) Act 2010. The report is provided for information only with statutory consultation associated with the EIA process being presented and discussed in detail within the ES that supports the applications (Seagreen, 2012a).

The purpose of this report is to provide an overview of the consultation activity relevant to the Seagreen Project, that Seagreen has been involved with either independently or jointly with other offshore wind developers or organisations. The report details consultation on specific aspects of the project such as public engagement, consultation on export cable landfall and environmental consultation.

Seagreen is committed to informing and engaging with organisations and members of the public interested in the development of the Seagreen Project and the Zone.

To request copies of relevant available consultation material and/or records referred to in this report, please contact Seagreen either via the company website www.seagreenwindenergy.com;

or via the telephone on +44 (0)141 224 7083; or you can write to us at:

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Development and Consents
4th Floor
1 Waterloo Street
Glasgow
G2 6AY

SEAGREEN PROJECT CONSULTATION OVERVIEW

Key stages of consultation

From the outset, Seagreen has adopted a proactive approach to consultation setting a high standard of community and organisational involvement in the development process of the Seagreen Project. For ease of understanding, a timeline has been provided in Table 1 of the main consultation events since the first consultations on the Seagreen Project in January 2010.

Table 1. Key consultation timeline for the Seagreen Project

Period		Consultation event
Start date	End date	
8 January 2010	8 January 2010	Seagreen granted development partner status for Zone 2.
8 January 2010	15 January 2010	Letter announcing Zone agreement and Seagreen's intention to construct OWFs in the Firth of Forth sent to Scottish Ministers, council leaders and statutory nature conservation bodies (SNCBs).
July 2010	August 2010	First iteration of Zone Appraisal Process (ZAP) Report (Seagreen, 2010a) sent to statutory and key consultees.
22 July 2010	23 July 2010	Seagreen Phase 1 Offshore EIA Scoping Report (Seagreen, 2010b) issued to Marine Scotland Licensing Operations Team (MS-LOT), statutory and key consultees.
22 July 2010	28 November 2010	Seagreen Phase 1 Offshore EIA Scoping Opinion (Marine Scotland, 2010) received.
14 September 2010	14 September 2010	Seagreen Phase 1 offshore stakeholder briefing day.
18 June 2011	26 June 2011	First round of Seagreen Phase 1 offshore public information days.
21 October 2011	21 October 2011	Seagreen Phase 1 Offshore HRA Screening Report (Seagreen, 2011b) submitted to MS-LOT.
23 February 2011	23 February 2011	Seagreen Phase 1 Offshore HRA Screening Response (Marine Scotland, 2011) received.
14 May 2012	18 May 2012	Second round of Seagreen Phase 1 offshore public information days.
20 July 2012	20 July 2012	Notice sent to Scottish Ministers detailing Seagreen's intent to submit application.
27 August 2012	17 September 2012	Seagreen Phase 1 Offshore Section 36 and Marine License Applications gate check submission to MS-LOT.
27 September 2012	27 September 2012	Pre-submission meeting held with MS-LOT and SNCBs to present findings of the Seagreen Project EIA and discuss key messages prior to submission.
16 October 2012	16 October 2012	Seagreen Phase 1 Offshore Section 36 and Marine Licence Applications formal submission to MS-LOT.
October 2012	October 2012	Issue of Seagreen Phase 1 Offshore ES to SNCBs and other consultees. ES displayed in public libraries and public notice appears in national and local press for two consecutive weeks.

Key forums for consultation

Seagreen undertook project specific consultation with a number of organisations as well as with the public. Early consultation was undertaken with an initial list of consultees whilst, with the help of the Marine Scotland Licensing Operations Team (MS-LOT), the list of consultees was extended for progressive stages of the pre-application process. Where organisations are omitted from the latter stages of consultation this is either to do with communications from the organisation in question to be removed or the organisation did not respond to request inclusion. Lists of organisations consulted in the preliminary stages as well as the later stages of pre-application development are given in Table 2 below.

Table 2. Organisations consulted by Seagreen during the preliminary and pre-submission stages of the Seagreen Project

Preliminary consultation 2010	Pre-submission consultation 2012
Associated British Ports (ABP)	Angus Council
Association of Salmon Fishery Boards (ASFBS)	Arbroath Harbour
Arbroath Community Council	ASFBS
BAA Ltd	BAA Ltd
British Marine Aggregate Producer's Association	Boarhills & Dunino Community Council
British Sub-Aqua Club	British Telecom (Radio Network Protection Team)
Civil Aviation Authority (CAA)	Cameron Community Council
The Crown Estate (TCE)	Carnbee & Arncroach Community Council
Defence Infrastructure Organisation	Carnbee & Arncroach Community Council
Department of Energy and Climate Change (DECC)	Carnoustie Community Council
Dundee City Council	Carnoustie Golf Links Management Committee
Fife Coast and Countryside Trust	Chamber of Shipping
Forth Estuary Forum (FEF)	CAA
Forth Estuary Transport Authority	Colinsburgh & Kilconquhar Community Council
Forth Ports	The Crown Estate (TCE)
Greenpeace	Defence Infrastructure Organisation
Health and Safety Executive (HSE)	Dundee Sub Aqua Club
Highland and Islands Airport	East Fortune Airfield
Highland and Islands Enterprise	Edinburgh Airport
Historic Scotland	Esk District Salmon Fishery Board
Joint Nature Conservation Committee (JNCC)	Fife Council
Joint Nautical Archaeological Policy Committee	Fife Fishermen's Association
Joint Coast Watch Institution	Firth of Forth U10m Fishing Association
Joint Radio Company	Forth Ports
Mainstream Renewable Power Ltd	HSE
Maritime and Coastguard Agency (MCA)	Historic Scotland
Marine Conservation Society (MCS)	Inshore Fishery Group
Marine Scotland Compliance	JNCC
MS-LOT	Joint Radio Company

Preliminary consultation 2010	Pre-submission consultation 2012
Marine Scotland Science (MSS)	Largo Area Community Council
National Grid	Mainstream Renewable Power Ltd
National Trust for Scotland	MCA
Nautical Archaeological Society	Marine Safety Forum
Oil and Gas UK	Marine Scotland Compliance
Repsol Nuevas Energias UK Limited	MS-LOT
Royal National Lifeboat Institution (RNLI)	MSS
Royal Society for the Projection of Birds (RSPB)	Monifieth Community Council
Royal Yachting Association	Montrose Port Authority
Scottish Coastal Forum	National Air Traffic Services (NATS)
Scottish Enterprise Energy Team	Northern Lighthouse Board (NLB)
Scottish Environment Link	Repsol Nuevas Energias UK Limited
Scottish Environmental Protection Agency (SEPA)	RSPB
Scottish Natural Heritage (SNH)	Royal Yachting Association
Scottish Surfing Association	Scallop Association
Scottish Tourist Board	Scottish Canoe Association
Scottish Trust for Underwater Archaeology	SEPA
Scottish Wildlife Trust	Scottish Fisherman's Federation
Sea Mammals Research Unit (SMRU)	Scottish Fisherman's Organisation
Tay Biodiversity Partners	SNH
Transport Scotland	Scottish Surfing Federation
Whale & Dolphin Conservation Society	Scottish Wildlife Trust
	Strathkinness Community Council
	Surfers Against Sewage
	Tay District Salmon Fishery Board
	Transport Scotland
	Whale & Dolphin Conservation Society

A key stakeholder briefing event was held in Dundee on 14 September 2010 following the release of the scoping document and as part of Seagreen's ongoing consultation activities. This provided key stakeholders with the opportunity to present the development plans in detail and allowed stakeholders to engage with members of the project team on your specific areas of interest ask questions relating to the project. The feedback from the event has been included in the topic consultation summary tables below.

The potential for cumulative impacts from offshore wind development in the Firth of Forth led to the early formation of the Forth and Tay Offshore Wind Developers Group (FTOWDG) facilitated by The Crown Estate (TCE). The group includes Seagreen – representing the Firth of Forth Round 3 Zone 2; Mainstream Renewable Power Ltd – representing the Scottish Territorial Waters (STW) site Neart na Gaoithe; and Repsol Nuevas Energias UK Limited – representing the STW site Inch Cape. This FTOWDG held quarterly main meetings facilitated by TCE and has been working

closely since 2009 with the aim of promoting collaborative discussion about the development of offshore wind in this region. FTOWDG has undertaken consultation through the formation of topic specific sub-groups including ornithology, marine mammals, commercial fisheries and seascape, landscape and visual impacts (SLVIA) and together have produced numerous regional studies on key environmental aspects including underwater noise modelling, navigational assessment and seascape characterisations studies.

Seagreen has also been involved in more industry wide consultations such as those associated with Marine Scotland Policy Research Projects, the Strategic Ornithological Support Services (SOSS) and other Crown Estate strategic offshore renewables enabling actions (i.e. navigation safety and commercial fisheries studies); as well as consultations initiated by RenewablesUK.

SEAGREEN PROJECT PUBLIC ENGAGEMENT



Seagreen's public information days were held in two rounds at various locations along the Angus coastline, with venues being selected in those communities most likely to be impacted by both the Phase 1 offshore Seagreen Project and the onshore transmission works. This included the communities within the export cable route (ECR) landfall corridor as well as the community of Tealing where and the location of the onshore works grid connection is planned.

The first round of public information days took place in January 2011 and gave a high level overview of the Zone, the phased approach to the Zone's development, and the development and consenting processes for the Phase 1 offshore Seagreen Project and the onshore transmission works.

Initial public information days were held at:

- Carnoustie Leisure Centre on 18 January 2011 between 12:00 – 20:00
- Arbroath's Angus Business Centre 19 January 2011 between 12:00 – 20:00
- Tealing Community Hall 20 January 2011 between 12:00 – 20:00
- Dundee Discovery Point 25 January 2011 between 12:00 – 20:00
- Montrose The Park Hotel 26 January 2011 between 12:00 – 20:00

The second round of public information days were held prior to submission in May 2012 and specifically provided more detailed information on the Seagreen Project. The public information days were also an opportunity to raise awareness of the offshore environmental surveys which had informed the EIA, and how these shaped the evolution of the Seagreen Project. The second round of public information days also presented the refinement of the ECR corridor where, at the time, two potential landfall locations were consulted upon at either Carnoustie or Arbroath.

The second round of public information days were held at:

- Montrose' The Park Hotel 14 May 2012 between 15:00 – 19:00
- Arbroath's Webster Memorial Theatre 15 May 2012 between 15:00 – 19:00
- Carnoustie Leisure Centre on 16 May 2012 between 15:00 – 19:00
- Dundee Discovery Point 17 May 2012 between 15:00 – 19:00
- Tealing Community Hall 18 May 2012 between 15:00 – 19:00

A number of communication methods were used to raise awareness of the public information days and also capture the opinion of attendees. Members of the Seagreen team were present at the public exhibitions to allow the general public to ask team members specific questions about the project. The public information days were advertised in the local and regional press including the Montrose Review, Arbroath Herald (including Carnoustie Guide and Gazette) and Dundee Courier.

Posters were used to advertise the public information days to members of the community who may not have been reached by the newspaper advertisements, and were displayed in local shops and community centres. Posters were also displayed in the venues to encourage other users of the venue to attend.

Prior to each round of public information days letters were sent to the councillors in Angus council, local Members of Parliament (MPs) and community councils inviting them to attend the public information days, as well as key environmental consultees.

A dedicated website was established (www.seagreenwindenergy.com) to provide readily available access to information and updates on the progress of the Seagreen Project. This includes a 'contact us' page where members of the public can contact the Seagreen project team with any queries or concerns they may have. The offshore and onshore EIA Scoping Reports and the Zone Appraisal and Planning (ZAP) documents are available to download from the website.

Attendee numbers at the public exhibitions exceeded 100 across all venues at both rounds. Seagreen encouraged attendees to complete a questionnaire that set out several questions on offshore wind development in the Firth of Forth, with multiple choice answers as well as space for personal comments. Out of 104 attendees who attended the initial round of public information days, 48 completed questionnaires were returned showing that 77% of respondents found the public information day 'very helpful'. At the second round this had increased to 87% of the 101 attendees who completed a questionnaire.

Figures 1 and 2 below show the first round and second round responses to the questions “*what are your views on renewable energy?*” and “*what are your views on the proposed Firth of Forth offshore wind Zone?*”

Figure 1. Chart showing questionnaire responses from both public information days

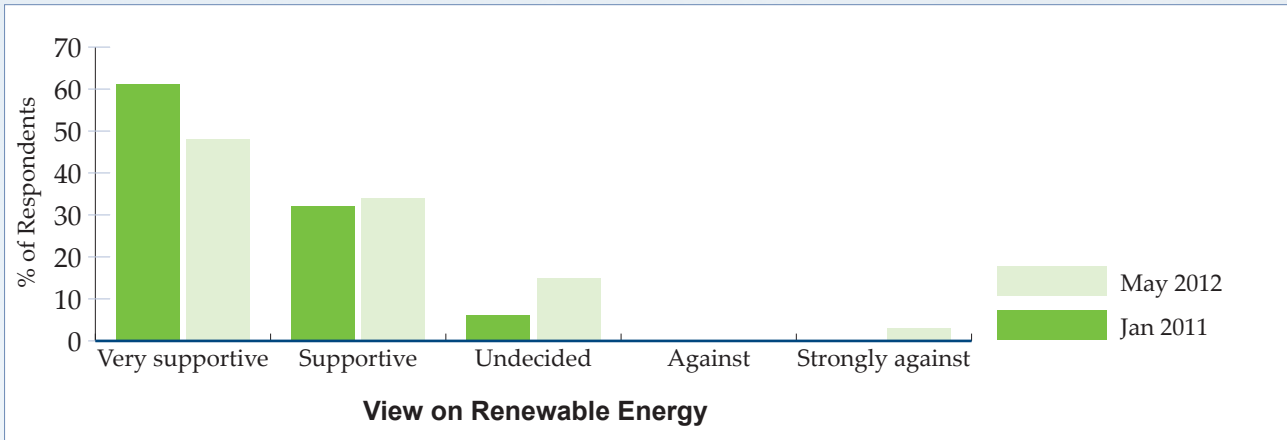
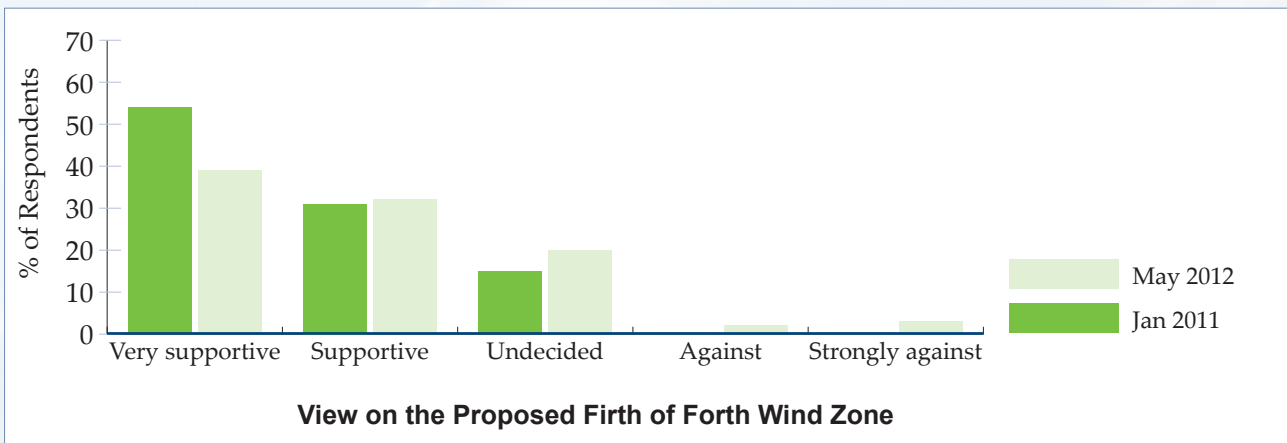


Figure 2. Chart showing questionnaire responses from both public information days



As Figures 1 and 2 shows that the majority of respondents are both supportive of renewable energy and of the proposed Firth of Forth offshore wind Zone. High percentages of respondents for both the first and second rounds of the public information days were in the very supportive category although it is noted that at the second round there was a reduction in the percentage of respondent who were supportive compared with the first round.

With respect to personal comments, the majority of comments offered support for the development, but displayed slight concern for the visual impact, and the potential impacts the construction phase. Another key theme that was raised from the public information days was that the local communities wanted Seagreen to be transparent in terms of costs and environmental impacts of the project. The Seagreen Project ES, supporting the offshore applications, has addressed comments regarding details on the construction phase and assessment of construction and operational stage impacts on visual amenity and other sensitive environmental and socio-economic receptors.

Seagreen has also sought to engage with local communities throughout the development process with joint onshore and offshore meetings having been held with both Angus Council and associated local community councils. The majority of these consultations were looking specifically at providing information and seeking feedback on the export cable landfall and associated onshore transmission, and details of the consultation undertaken can be found in Section 4 of this report.

As well as targeted public consultations, Seagreen has attended regular meetings of the East Coast Renewables Group as well as the Forth Estuary Forum Annual Conference in 2009, 2011 and 2012, and the Tay Estuary Forum Annual Conference 2012. Seagreen also participated in the Carnoustie Gala Day on the 7 July 2012 to raise awareness of the offshore wind developments in the Firth of Forth along with the FTOWDG.

Public consultation will continue during the determination period of the Seagreen Project. Seagreen will publish a public notice detailing the Section 36 and Marine Licence applications. The notice will also give the locations where the applications and the associated ES can be viewed by the public and the price at which individual copies of the ES can be purchased. The notices will be published in The Scotsman, the Edinburgh Gazette, the Dundee Courier, the Arbroath Herald, the St Andrews Citizen and the Montrose Review for a two week period once the applications have been registered by MS-LOT.

Any responses to the applications should be submitted, in writing, to either the following address:

Scottish Ministers at Scottish Government
Marine Scotland
Marine Laboratory
PO Box 101
375 Victoria Road
Aberdeen
AB11 9DB

or via email to The Scottish Government, MS-LOT mailbox at:

seagreenphaseone@scotland.gsi.gov.uk

All correspondence should identify the proposal and specifying the grounds for representation, not later than 42 days after the first public notice is published or 28 days following the last public notice publication, whichever is longer. Please see public notice for details or contact MS-LOT on the details provided above for confirmed date.

SEAGREEN PROJECT CONSULTATION ON EXPORT CABLE LANDFALL

In addition to the public consultation detailed in Section 3 above, Seagreen also undertook political consultation which covered the export cable landfall and associated site selection process.

Meetings that were undertaken include:

- Mike Weir MP (Angus) – 17 September 2010
- Andrew Welsh MSP (Angus South) – 27 October 2010
- Graeme Dey MSP (Angus South) – 28 August 2012
- Arbroath Community Council – 25 April 2012
- Carnoustie Community Council – 30 April 2012

At each of these meetings a general presentation was given providing background on the Firth of Forth Zone and the progress that had been made by Seagreen including an explanation of the export cable landfall route selection process and reasoning behind it. In each case there was the opportunity to ask any specific questions which were either answered at that stage or followed up post-meeting.

MSPs were contacted prior to the public exhibitions in 2012 and 2012 by letter to inform them about the events.

In addition, Seagreen are maintaining continual dialogue with the Carnoustie Golf Links Management Committee, the Barry Buddon Ministry of Defence (MOD) base and Angus Council as landowner regarding the potential development and installation of underground export cables through the Buddon links golf course and adjacent to the MOD site.

Marine Scotland provided advice on the proposed range of consents which would be required for the Seagreen Project in a letter to Seagreen dated 20 April 2012. In this letter Marine Scotland provided confirmation, that Projects Alpha and Bravo were considered to be two separate generating stations which would each require its own Section 36 consent and associated Marine Licence for construction. Marine Scotland confirmed that marine licences under the Marine and Coastal Access Act 2009 (MCAA, 2009) would be required for aspects of the Seagreen project outwith 12NM while the transmission works to shore would be consented under both the MCAA 2009 and the Marine (Scotland) Act 2010 (MSA 2010). In addition it was stated in the letter that landward of MLWS, all works also required to be consented under the Town and Country Planning (Scotland) Act 1997 (as amended):-

As all works within the intertidal area require to be consented under both the Town and Country Planning (Scotland) Act 1997 (as amended) and the Marine (Scotland) Act 2010 by Angus Council and Marine Scotland respectively, and in view of Marine Scotland's suggested approach to consideration of works within this area, further consultation was undertaken with both consenting authorities.

Following discussions with Marine Scotland on 30 May 2012 and with Angus Council on 18 May 2012, both authorities have subsequently made contact and agreed to discuss and agree on which authority will complete the assessment of the area between MHWS and MLWS.

SEAGREEN PROJECT CONSULTATION ON THE ENVIRONMENT

Seagreen has undertaken extensive consultation relating to the environment during the development of the Seagreen Project. This has primarily involved meetings, submission of reports and position papers, dialogue and correspondence. The following sub-sections look specifically at the main environmental aspects identified via EIA scoping, and the consultation undertaken as part of the EIA and HRA processes.

As previously mentioned statutory consultation associated with the EIA process has been presented and discussed in detail within the ES that supports the applications. A report to support the HRA will be submitted to MS-LOT following submission of the consent applications.

Consultation on the physical environment

Consultation regarding the physical environment commenced with the issue of the Phase 1 Scoping Report and the receipt of the scoping opinion from MS-LOT and the SNCBs (Marine Scotland, 2010). Formal and informal consultation continued through the development process, primarily through MS-LOT, in development of Seagreen's proposed approach to the EIA. MS-LOT in turn sought advice and opinion on this from Marine Scotland Science (MSS) and the SNCBs.

Table 3 summarises the key points of relevance to the physical environment that were highlighted in the statutory EIA scoping response as requiring assessment within the EIA. Consultation meetings and key correspondence with MS-LOT are summarised in Table 4.

Table 3. Summary of statutory EIA scoping responses of relevance to the physical environment

Date	Consultee	Summary of key points	More detail on consultation
January 2011	Marine Scotland and SEPA	The baseline assessment should identify: <ul style="list-style-type: none"> • sediments; • hydrodynamics; • sedimentary environment; • sedimentary structures; and • suspended sediment concentrations. 	Seagreen Phase1 Offshore ES Volume I, Chapter 7, <i>Existing environment</i>
January 2011	SNH and JNCC	Cable landfall could (potentially) interrupt sediment moving towards Barry Links Site of Special Scientific Interest (SSSI) & Geological Conservation Review (GCR) site, and potentially the Firth of Tay and Eden Special Area of Conservation (SAC) and Special Protection Area (SPA). This would need to be mitigated / minimised by sensitive design options.	Seagreen Phase1 Offshore ES Volume I, Chapter 7, <i>Existing environment</i> Volume III Appendix D3, <i>Geomorphological Assessment</i>
January 2011	SNH and JNCC	Much of this coast has experienced longstanding erosion problems and, given tidal observations and climate projections, it is likely that these management concerns will worsen during the lifetime of the Seagreen Project. Given the developed nature of this coastal zone, it would be prudent to safeguard the land-based elements of this proposal from the likely effects of climate change. A Shoreline Management Plan has been drawn up for this section of coast.	Seagreen Phase1 Offshore ES Volume I, Chapter 7, <i>Existing environment</i> Volume III Appendix D3, <i>Geomorphological Assessment</i>
January 2011	SNH and JNCC	There may be a need to address the cumulative effects of several OWFs on coastal processes depending upon array density and location with respect to existing renewable and coastal developments.	Seagreen Phase1 Offshore ES Volume I, Chapter 7, <i>Assessment of Effects-Cumulative and In-Combination Effects</i>

Table 4. Consultation meetings and correspondence with stakeholders on physical environment

Date	Consultee	Form of consultation of evidence	Summary of key points
23 September 2010	Marine Scotland	Meeting	Phase 1 benthic survey plan presented, including proposed approach to collection of particle size data. Zone metocean survey plan presented and proposed approach to sediment processes introduced, with notification of formal to follow.
24 November 2010	Marine Scotland	Seagreen submission of Position Paper (e-mail)	Submission of Position Paper on Coastal and Seabed Impact Assessment (Seagreen, 2010c) based on a review of potential environmental impacts. The paper proposed a staged assessment method commensurate with latest guidance and proportionate to the scale of the environmental risks and sought to establish that where there was no pathway between source and receptor this could be scoped out of assessment. Topics covered were: <ul style="list-style-type: none"> • suspended sediment dispersion and deposition patterns resulting from installation activities; • changes in coastal morphology due to cable landfall; • scour protection; • wave energy dissipation and focusing; and • wave and current processes controlling sandbank [and sea bed] morphology.
21 January 2011	Marine Scotland	Meeting	Marine Scotland agreed in principle with the Position Paper but requested submission of a rigorous scientific evidence base to support 'scoping out' key areas of assessment. Seagreen agreed to revise and update the Position Paper.
18 August 2011	Marine Scotland	Seagreen submission of Position Paper update (e-mail)	Submission of revised position paper (Seagreen, 2011c) providing further evidence base to support Seagreen's position and providing an update on progress with desk-based research into empirical methods for assessments of scour hole development.
3 November 2011	Marine Scotland and SNCBs	Marine Scotland letter	Response from Marine Scotland to revised position paper incorporating comments from SNCBs. The Seagreen paper was welcomed and considered robust and the proposed approach for offshore was accepted. Further information regarding the proposed export cable landfall location and installation techniques was requested.
17 November 2011	Marine Scotland	Meeting (conference call)	Marine Scotland confirmed acceptance of the recommendation that detailed wave modelling not required was accepted. Approach to consideration of export cable impacts on the seabed and at the shoreline discussed. Marine Scotland confirmed that detailed modelling was not required over the full cable route Seagreen undertook to provide further details of potential landfall locations and construction methods proposed approach to assessment.
22 December 2011	Marine Scotland	Seagreen letter	Description for Marine Scotland of worst case scenario for near shore assessment and description of proposed approach proposed for detailed modelling of nearshore sediment transport.
13 February 2012	Marine Scotland	Marine Scotland letter	Marine Scotland acceptance of the proposed wave and sediment modelling approach as sufficiently rigorous for undertaking the EIA.
19 March 2012	Marine Scotland	Seagreen letter and Annex	Submission of update to Marine Scotland in support of the proposed approach to assessment based on a comparison between the Zone and baseline and assessment information from the Galloper Wind Farm (GWF) ES site.
3 May 2012	Marine Scotland and SNCBs	Marine Scotland e-mail	Response to update stating that the evidence presented by Seagreen Scotland, forms an acceptable approach for the EIA and welcoming the inclusion of the GWF information.

Seagreen has maintained an open dialogue with Marine Scotland and the SNCBs during the initial development of the assessment approach and its revision and adaptation in response to availability of further information and the evolution of the design parameters for assessment. At all stages Marine Scotland have responded positively and constructively and these are documented in Table 4 above. Where advice has been provided in respect of the proposed approach, the incorporation of this into Seagreen's EIA is provided in the Chapter 7: Physical Environment in the Seagreen Project ES.

Consultation on the water and sediment quality

Consultation by Seagreen in relation to water and sediment quality was directly linked to consultations on the physical environment (Tables 3 and 4) and benthic ecology and intertidal ecology (Tables 9 and 10) respectively, as these topics are directly linked. As a result no specific consultation on water and sediment quality took place. As described below, the topic was covered in related meetings, discussion of survey scopes and resulting data and correspondence with MS-LOT and the SNCBs

Table 5 summarises the key points of relevance to water and sediment quality that were highlighted in the statutory scoping response as requiring assessment within the EIA. Consultation meetings and key correspondence with MS-LOT are summarised in Table 6.

Table 5. Summary of statutory EIA scoping responses of relevance to water and sediment quality

Date	Consultee	Summary of key points	Seagreen response
January 2011	SEPA	Consult with SEPA (at an early stage) as the regulatory body responsible for the implementation of the Controlled Activities Regulations (CAR), to identify 1) if a CAR license is necessary and 2) clarify the extent of the information required by SEPA to fully assess any license application.	CAR license applications (if required) will be undertaken post marine licence and Section 36 (S36) consent. Not considered at this stage.
January 2011	SEPA	Footprint information for the cable corridor and transition pit should be provided in the ES, to allow the River Basin Management Plan (RBMP) classification to be updated and the assessment of cumulative impacts within the Diel's Heid to Carnoustie, and Scurdie Ness to Diel's Heid water bodies.	Considered and incorporated within the EIA.
January 2011	SEPA	Marine and transitional SAC and SPA are Water Framework Directive (WFD) Protected Areas. Therefore, their objectives are also RBMP objectives.	Considered and incorporated within the EIA.
January 2011	SEPA	Sensitive water uses, such as bathing waters and shellfish growing waters, and associated potential impacts should be assessed. The proximity to existing discharges and designated areas (i.e. estuarine abstractions and cooling water discharges), should also be assessed.	Considered and incorporated within the EIA.
January 2011	Association of Salmon Fishery Boards (ASFB)	Direct effects on fish of water quality changes through suspension of sediment in the water column disturbed during construction.	Considered and incorporated within the EIA.
January 2011	ASFB	Indirect effects of water quality changes through effects on food sources available to salmon and sea trout.	Considered and incorporated within the EIA.

Table 6. Consultation meetings and correspondence with stakeholders that apply to water and sediment quality

Date	Consultee	Form of consultation of evidence	Summary of key points
23 September 2010	Marine Scotland	Meeting	Phase 1 benthic survey plan presented, including proposed approach to collection of particle size data. Zone metocean survey plan presented and proposed approach to sediment processes introduced, with notification of formal to follow.
24 November 2010	Marine Scotland	Seagreen submission of Position Paper (e-mail)	Submission of Position Paper on Coastal and Seabed Impact Assessment based on a review of potential environmental impacts. The paper proposed a staged assessment method commensurate with latest guidance and proportionate to the scale of the environmental risks and sought to establish that where there was no pathway between source and receptor this could be scoped out of assessment. Topics covered were: <ul style="list-style-type: none"> • suspended sediment dispersion and deposition patterns resulting from installation activities; • changes in coastal morphology due to cable landfall; • scour protection; • wave energy dissipation and focusing; and • wave and current processes controlling sandbank [and sea bed] morphology.
21 January 2011	Marine Scotland	Meeting	Marine Scotland agreed in principle with the Position Paper but requested submission of a rigorous scientific evidence base to support 'scoping out' key areas of assessment. Seagreen agreed to revise and update the Position Paper.
18 August 2011	Marine Scotland	Seagreen submission of Position Paper update (e-mail)	Submission of revised position paper providing further evidence base to support Seagreen's position and providing an update on progress with desk-based research into empirical methods for assessments of scour hole development.
3 November 2011	Marine Scotland and SNCBs	Marine Scotland letter	Response from Marine Scotland to revised position paper incorporating comments from SNCBs. The Seagreen paper was welcomed and considered robust and the proposed approach for offshore was accepted. Further information regarding the proposed export cable landfall location and installation techniques was requested.
17 November 2011	Marine Scotland	Meeting (conference call)	Marine Scotland confirmed acceptance of the recommendation that detailed wave modelling not required was accepted. Approach to consideration of export cable impacts on the seabed and at the shoreline discussed. Marine Scotland confirmed that detailed modelling was not required over the full cable route Seagreen undertook to provide further details of potential landfall locations and construction methods proposed approach to assessment.
22 December 2011	Marine Scotland	Seagreen letter	Description for Marine Scotland of worst case scenario for near shore assessment and description of proposed approach proposed for detailed modelling of nearshore sediment transport.
13 February 2012	Marine Scotland	Marine Scotland Letter	Marine Scotland acceptance of the proposed wave and sediment modelling approach as sufficiently rigorous for undertaking the EIA.
19 March 2012	Marine Scotland	Seagreen letter and Annex	Submission of update to Marine Scotland (Seagreen, 2012b) in support of the proposed approach to assessment based on a comparison between the Zone and baseline and assessment information from the GWF ES site.
3 May 2012	Marine Scotland and SNCBs	Marine Scotland e-mail	Response to update stating that the evidence presented by Seagreen Scotland, forms an acceptable approach for the EIA and welcoming the inclusion of the GWF information.

Seagreen has maintained engagement with Marine Scotland in relation to water and sediment quality, through the directly related consultation on the physical environment and benthic ecology and intertidal ecology. These discussions are documented in Tables 5 and 6 above and are informed the baseline description and the assessment of impacts as described in Chapter 12: Water and Sediment Quality in the Seagreen Project ES.

Consultation on ornithology



This section has been prepared by AMEC in conjunction with Seagreen to document the consultation that has taken place on ornithology during the development of the Seagreen Project. It records the statutory and non-statutory stakeholder consultations which have been undertaken by Seagreen alone and also as part of the FTOWDG. Indirect consultation and advice received as part of TCE's SOSS group and through Marine Scotland is also documented.

Ornithology consultation with the Scottish Government's SNCB advisers, the JNCC and SNH, and key stakeholders such as Royal Society for the Protection of Birds (RSPB) commenced in 2009 ahead of the formal award of the Zone to Seagreen. This was in acknowledgement of the likely importance of the Zone for seabirds and the scale of survey campaign that would be required to characterise the area and optimise site locations within it. Extensive formal and informal consultation continued with these groups throughout the development process.

Consultation meetings and key correspondence with JNCC, SNH and key stakeholders are summarised in the following paragraphs. Where responses are statutory e.g. scoping opinion, or contain written advice which has been seminal to the development of the Phase 1 projects, details are presented in separate tables. Specifically these include the:

- statutory scoping opinion for Seagreen's offshore Phase 1 provided via MS-LOT;
- JNCC and SNH response to the Seagreen Year 1 Ornithology Survey Report (Seagreen, 2011d);
- JNCC and SNH response to the Seagreen HRA Screening Report; and
- JNCC and SNH response to FTOWDG cumulative discussion document (CDD) 2 report on ornithology (Royal Haskoning, 2010).

Details of how EIA specific comments were addressed are provided in the Seagreen Project ES, Chapter 10: Ornithology.

The FTOWDG was formed initially to collaborate on all aspects of cumulative and in-combination assessment. However, owing to the complexity of some environmental topics, an ecology sub-group was formed. In many cases, sub-group meetings focussed entirely on ornithology.

The group acted as a forum to define cumulative aspects requiring research or advice, compiled cumulative reports and undertook extensive collective consultation with Marine Scotland, JNCC, SNH and stakeholders. Meetings, including consultative meetings and reports are described below.

Similarly, in acknowledgment of the scale of ornithological issues for R3 offshore wind development as a whole, TCE set up the SOSS group as an enabling action to address research requirements at industry level. Although not strictly a consultative body, it has acted as an indirect means of consultation on a range of issues and advice relating to ornithology.

The stated aim of the group is to *“provide advice to the offshore wind farm industry with the aim of resolving the consenting challenges posed by the potential for offshore wind farms to impact bird populations”*. Its primary function was therefore to identify and execute research projects.

A steering group including representatives from regulatory bodies (including Marine Scotland), SNCBs (including JNCC and SNH), developers (including Seagreen), and stakeholders (including RSPB), was put in place to provide advice, design and oversee the work programme. Progress was monitored through regular steering group meetings held on the dates shown below:

- 15 July 2010 (inaugural meeting)
- 30 September 2010
- 20 January 2011
- 25 March 2011
- 16 May 2011
- 15 September 2011
- 30 January 2012
- 30 March 2012

The publications arising from various SOSS research projects have, in some cases, been adopted as ‘industry standard’ on the advice of the regulator and SNCBs and, as such, have been used to inform the impact assessment of the Seagreen Project. Key documents include:

- guidance on modelling bird collision for OWFs (Band, 2012);
- British Trust for Ornithology (BTO) report modelling flight height data for key species (Cook et al., 2012);
- Gannet Population Viability Analysis (PVA) (WWT Consulting et al., 2012); and
- a review of bird migration routes (Wright et al., 2012).

Currently, the SOSS group is being redefined to specifically address how the effects of OWFs can be measured post-construction. No further research projects of the type described above will be undertaken.

Following the suspension of ornithology research projects through SOSS, Marine Scotland has, through consultation with developers, SNCBs and stakeholders, identified outstanding research requirements in relation to seabirds in Scottish waters. The constitution of this group means that it has also formed a further indirect strand of advice and consultation. The inaugural meeting of the group was held on the 19 January 2012.

Details of completed and ongoing research projects can be found at <http://www.scotland.gov.uk/Topics/marine/marineenergy/Research/> Seagreen has fed into these projects via meetings, written comments on scopes and review of project outcomes.

As with SOSS, where developers have been advised to adopt reports as industry standard, Seagreen has used the outputs to inform their EIA and HRA reports. To date they include:

- assessment of the sensitivity of Scottish seabirds to interactions with offshore wind developments (Furness and Wade, 2012);
- population sizes of seabirds breeding in Scottish Special Protection Areas (SPAs) (Lewis et al., 2008); and
- effects of displacement from marine renewable developments on seabirds breeding at SPAs (McDonald et al., 2012).

In JNCCs and SNHs joint response to the Seagreen Phase 1 Scoping Report (letter dated 8 September 2010), the following key points were raised:

- zone survey design and methodology should be considered in relation to its ability to provide data suitable for determining baseline populations for EIA and sufficiency for HRA. Updated methodology should be provided;
- power analysis was recommended to determine the ability of the survey regime to detect changes in the densities of key species;
- the relevance of tracking studies to determine SPA connectivity and the assumptions to be made in the absence of tracking data were raised;
- the collection and use of co-variate data should be discussed further;
- data on migratory seabirds may not adequately be captured by boat-based surveys and barrier effects should be considered;
- account of collision risk modelling should include discussion of uncertainties. Due to lack of evidence, avoidance rates cannot be advised;
- population modelling may be appropriate for the consideration of HRA issues;
- the 1% criterion for determining population significance should be used with caution and supported by information on population size and status;
- further advice will be provided on cumulative impacts (based on the FTOWDG cumulative ornithology report – AMEC, 2010 and projects to be included. Compatibility of survey data between developers should be considered;
- further advice will be provided on cumulative impacts (based on the FTOWDG cumulative ornithology report) and projects to be included. Compatibility of survey data between developers should be considered;
- future designations should be considered;
- recommended that surveys are undertaken in sea states 4 or less only;
- recommended that surveys are undertaken in sea states 4 or less only;
- aerial survey data (as well as boat-based) could be used to provide population estimates with associated confidence intervals;
- HRA report could be structured on a species basis; and
- ECR cannot be screened out as a source of potential impacts at this stage.

Further consultation responses are documented in Tables 7 and 8.

Table 7. Non-statutory consultation: Seagreen consultation with SNCBs and key stakeholder

Date	Consultee	Form of consultation of evidence	Summary of outcomes
24 April 2009	RSPB and JNCC	Meeting	Introduction to Seagreen
10 November 2009	SNH/RSPB	Meeting (Presentation and minutes)	Introduction to project and proposed bird survey methods
17 December 2009	RSPB	Letter	Comments on survey methodology including the practicality of bird surveys for whole Zone. Further aerial surveys and bird tracking recommended.
8 February 2010	JNCC/SNH	Letter	Memorandum of Agreement stating JNCC main advisor for Zone but that SNH will also be consulted and most formal responses will be joint.
2 March 2010	JNCC/SNH	Meeting (Presentation and minutes)	Boat-based survey design (including input from CREEM) and methodology, aerial surveys and summary of initial survey finding. Seagreen to provide amended methodology and JNCC/SNH to provide formal written comment.
12 March 2010	JNCC/SNH	Letter	Comments on survey methods received requesting: more explicit aims; further information on transect offset; effects of glare and numbers of observers. Seagreen responded to queries by letter of 23/04/2010.
26 April 2010	Beth Scott, Aberdeen University	Meeting (Notes of meeting)	Discussion regarding methods of collecting co-variate data and its importance in determining bird distribution.
3 June 2010	JNCC/SNH	Meeting (Presentation and minutes)	Ornithology updates including ZAP report, Phase 1 scoping and cumulative issues.
4 June 2010	JNCC/SNH	Letter and method statement	Seagreen provide supporting information and revised boat-based methodology (Rev 05).
19 October 2010	JNCC/ SNH	Meeting (Presentation and minutes)	Post-scoping meeting to clarify key points raised in JNCC/ SNH scoping opinion including data collection, analysis and preliminary identification of key receptors.
30 June 2011	Marine Scotland/ JNCC /SNH	Letter and report	Seagreen Year 1 ornithology survey report issued for comment.
5 October 2011	Marine Scotland JNCC/SNH	Meeting (Presentation and minutes)	Discussion of: Year 1 findings including methods of population calculation; use of 'radial' and 'box' survey methods and DISTANCE correction; relocation of the Phase 1 sites based on bird distributions; preliminary values for collision and displacement; need for PVA; HRA methods.
21 October 2011	Marine Scotland/ JNCC/SNH	Letter and report	Seagreen HRA screening report and covering letter issued.
23 February 2012	Marine Scotland/ JNCC/SNH	Letter	HRA screening response received.

Table 8. Non-statutory consultation: FTOWDG meetings

Date	Consultee	Form of consultation of evidence	Summary of key points
10 June 2009	JNCC/SNH	Meeting (minutes)	Inaugural meeting between developers and TCE. Survey methods and transect orientations discussed. Cumulative Impact Assessment (CIA) paper proposed.
27 October 2009	JNCC/SNH	Meeting (minutes)	CIA approach, aerial surveys and Scottish Government consenting process discussed.
11 December 2009	JNCC/SNH	Letter	Comments on first cumulative report (ornithology). NOTE: this initial report did not incorporate the Round 3 Zone as the Agreement for Lease was not yet in place and ornithology work on the Zone only commenced in December 2009. However, advice provided was generic to the whole Firth of Forth region and was subsequently adopted by Seagreen.
16 December 2009	Internal meeting	Meeting (minutes)	Use of common survey methodologies (European Seabirds At Sea - ESAS).
6 January 2010	Internal meeting	Meeting (draft report)	Preliminary discussion regarding cumulative impacts discussion document.
29 January 2010	RSPB	Letter	RSPB response to first FTOWDG CIA report for ornithology.
9 February 2010	Internal meeting	Minutes	Terms of reference for ecology sub-group; SEA and AA; data sharing; possible FTOWDG research projects; responses to CIA report.
19 April 2010	Internal meeting	Minutes	Revisions to CIA document. Confirmation of CEH tracking projects.
4 June 2010	JNCC/SNH	Presentation	FTOWDG project update given by Seagreen.
15 June 2010	Internal meeting	Meeting (minutes)	SEA response; tracking studies, gannet literature review and possible migration studies.
18 August 2010	JNCC/SNH/ Marine Scotland/RSPB	Meeting (Presentation and minutes)	Developer updates; SEA; forthcoming CIA discussion document.
September 2010	Marine Scotland/JNCC/ SNH/RSPB	Report	FTOWDG issue updated CDD2: Cumulative Effects Report (including ornithology).
26 November 2010	Marine Scotland/JNCC/ SNH	Meeting (minutes)	Defining populations and foraging range; SPA linkage; 1% threshold; HRA; tracking studies.
14 January 2011	RSPB	Letter	Response to FTOWDG CDD2.
19 January 2011	Marine Scotland/JNCC/ SNH	Meeting (minutes)	Survey methods; SOSS projects, PVA, CEH 2011 tracking studies and impact assessment methodology.
11 February 2011	SNH/JNCC	Letter	Response to FTOWDG CDD2.
14 February 2011	SNH/JNCC	Letter	Comments on proposed FTOWDG tracking projects.
2 March 2011	Internal meeting	Meeting (minutes)	Cumulative issues; Plan for next SNCB meeting; provision of data on most abundant species.

Date	Consultee	Form of consultation of evidence	Summary of key points
7 April 2011	Marine Scotland/JNCC /SNH/ Bill Band	Meeting (minutes)	CRM including B. Band presentation; reference populations; cumulative issues; CRM for barnacle goose; tracking report update; identification of 10 most abundant species at each site.
17 May 2011	Internal meeting	Meeting (minutes)	SPA linkage, SOSS reports.
5 July 2011	RSPB	Presentation and email	FTOWDG update including project reports and proposed assessment. FTOWDG research reports provided to RSPB.
19 August 2011	Marine Scotland/JNCC /SNH	Meeting (minutes)	Marine Scotland request for cumulative collision and displacement estimates for each project; HRA and linkage; NIRAS bar-tailed godwit report.
19 January 2012	Marine Scotland/ JNCC/SNH & MDOWG	Meeting	Meeting to discuss Marine Scotland ornithology research packages.
2 April 2012	Marine Scotland/JNCC /SNH	Meeting (minutes)	Use of SOSS approach for migratory species; cumulative analysis (NIRAS) paper; Marine Scotland research project update.

NOTE: These meetings incorporated representatives from all developers with TCE acting as facilitator. Where Marine Scotland, SNCBs and stakeholders were also present, this is indicated.

Further consultation meetings, where advice has been provided, are listed below. Details of the way the comments have been incorporated into the EIA and HRA are provide in the relevant chapters of the Seagreen Project ES and/or supplements to the Seagreen Project ES and consent applications.

In JNCCs and SNHs joint response to the Seagreen Year 1 Ornithology Report (letter dated 10 August 2011), the following key points were raised:

- passage species (non-seabird) – methods of assessment to be agreed via SOSS; passage species (seabird) – further advice to be provided;
- use of DISTANCE software is recommended wherever possible for population estimates of birds on the water;
- queries raised regarding the assigning of birds in flight to radial distance bands and use of DISTANCE to correct for a decrease in detectability. Suggested this would be best discussed in a meeting, involving European Seabirds At Sea (ESAS) and DISTANCE experts. Other comments on use of DISTANCE provided;
- use of 1% criterion for determining sensitive species and population significance for HRA not advised;
- use of matrices for HRA not advised. Use of Institute of Ecology and Environmental Management (IEEM) guidance recommended for EIA;
- advise use of mean maximum foraging radii to determine zone of influence for breeding birds, primarily BirdLife database, but also any forthcoming publications and tracking data from FTOWDG, FAME and other projects;

- sandwich tern is a post-breeding feature of the Firth of Forth SPA;
- SNH Sitelink is the preferred (primary) source of SPA data rather than Stroud et al., 2001 and all SPA population data should be clearly referenced;
- care is required to avoid double counting when summing SPA populations;
- when determining connectivity, 'interference' of same species colonies should be considered;
- analysis should be carried out for data collected in sea state 4 and below although surveying may be carried out in higher sea states should they arise during survey. Frequency of unsuitable sea states should be provided;
- figure clarity important;
- provide Percival (2000) reference; and
- note that SPA qualifying and assemblage features have same level of protection. Provide site condition in accounts.

In MS-LOTs HRA Screening Opinion which included the views of the JNCC and SNH (letter dated 23 February 2012), the following key points were raised:

- advice for HRA screening is only provided in respect of breeding SPA seabird interests;
- possible approaches to HRA for seabird species during post-breeding, passage and overwintering periods and to HRA for non-seabird passage species (such as waders and freshwater ducks) are being considered by JNCC and SNH;
- the table provided to FTOWDG on 10 October 2011 on relevant breeding SPA populations is still a useful summary of SPA population counts at time of designation;
- advise including fulmar and gannet as qualifying interests of SPAs that are further afield;
- state the distance between Phase 1 and each SPA in the HRA report;
- illustrate key seabird foraging ranges from each SPA on a map. Foraging ranges should be used with an agreed error margin (for example, plus 1 standard deviation – as presented in Thaxter et al. 2011); Present a summary table of foraging ranges from all data sources referenced in the report, including the results from the FTOWDG tracking work;
- HRA screening for SPA bird interests would be better approached by explicit consideration of species presence according to season; and
- use of geographic range for migratory birds or birds outside breeding season not advised.

In MS-LOT, the JNCC and SNH response to FTOWDG CDD 2 – ornithology section only – (letter dated 11 February 2011), the following key points were raised:

- there should be an agreed approach to the way HRA is dealt with in relation to EIA and Cumulative Impact Assessment (CIA);
- first year of survey data required for all developments before advice on CIA can be provided;
- ornithology CIA report helpful and SNCBs are currently reviewing the long list of species to be included in CIA;
- document has not fully incorporated comments from scoping responses;
- FTOWDG need to have greater regard to the process of HRA as this will have precedence over EIA;

- key element of the conservation objectives (for SPAs) is the maintenance (in the long term) of the population of the (qualifying) species ‘as a viable component of the site’. No specific populations are quoted;
- assessment of potential impacts on population should be based on the most recent reliable population figures for the site, in the context of the current conservation status of the species, and any significant changes in site populations since ‘baseline’ figures (as recorded on the SPA citation at the time of classification of the site);
- Scottish SPA estimates should be based on data forms with reference to population review. The most up-to-date information should also be used to inform the assessment;
- for English SPAs use SPA review but where there is a discrepancy with the data form contact Natural England;
- conclusions drawn as part of the HRA process (as opposed to EIA) must relate specifically to site (SPA) populations;
- review the species sensitivity scoring used in [report] Table J in the light of emerging evidence and in context of Firth of Forth;
- may be appropriate to conduct impact assessment on a seasonal basis to inform relevant population size; and
- population modelling should capture uncertainty.

Consultation on benthic ecology and intertidal ecology

Seagreen has consulted regularly in respect of benthic ecology and intertidal ecology during the development of the Seagreen Project. This has primarily involved meetings, discussion of survey scopes and resulting data and correspondence with MS-LOT and the SNCBs.

Consultation regarding marine ecology commenced with the issue of the Phase 1 Scoping Report in July 2010 and the receipt of the scoping opinion from MS-LOT and the SNCBs. Formal and informal consultation continued through the development process, primarily through MS-LOT, to agree Seagreen’s proposed benthic survey scope and the availability of relevant data from MSS. Further meetings and dialogue with MS-LOT, MSS and SNCBs took place later in this process to discuss the survey results and their interpretation and to confirm the approach to assessment.

Table 9 summarises the key points of relevance to benthic ecology and intertidal ecology that were highlighted in the statutory scoping response as requiring assessment within the EIA. Consultation meetings and key correspondence with MS-LOT are summarised in Table 10.

Table 9. Summary of statutory EIA scoping responses of relevance to benthic ecology and intertidal ecology

Date	Consultee	Summary of key points	Seagreen response
January 2011	SNH and JNCC	Sandy substrates are potentially important. The EIA should fully assess the potential impacts on this habitat type.	Considered and incorporated within the EIA.
January 2011	SNH and JNCC	Value of extent lost or disturbed should be considered relevant to the particular habitat distribution within the development area (which will vary in vulnerability), and the effects on the processes which serve to maintain the habitat features and its associated communities.	Considered and incorporated within the EIA.
January 2011	SNH and JNCC	Scottish Government published a draft list of Priority Marine Features for which Marine Protected Areas (MPAs) may be an appropriate mechanism. SNH STW and the JNCC (offshore waters) have since published complete lists.	Considered and incorporated within the EIA.
January 2011	SEPA	All submissions should include information on likely timing and duration of the project, possible long-term locational and/or operational impacts and short-term construction impacts.	Presented in Seagreen Offshore Phase 1 ES Volume I <i>Chapter 5: Project Description</i> .
January 2011	SEPA	A baseline assessment of existing intertidal and subtidal habitats and species should be submitted as part of the ES.	Considered and incorporated within the EIA.
January 2011	SEPA	Please note that populations of <i>Ostrea edulis</i> have been found recently in the Firth of Forth. There is a need to ensure that this United Kingdom Biodiversity Action Plan (UKBAP) species are not present where works are proposed.	No <i>Ostrea edulis</i> were identified during either the benthic survey campaign or in the intertidal surveys. Data available through the National Biodiversity Network (NBN) gateway indicates that this species has been identified in the southern Firth of Forth on the coast to the west of North Berwick, but not in the vicinity of the Seagreen Project.
January 2011	SEPA	During the construction phase, it is important that good working practice is adopted and that habitat damage is kept to a minimum and within defined acceptable parameters. These should be controlled through an environmental management plan.	An environmental management plan will be completed prior to the commencement of any construction works.
January 2011	SEPA	The sub-tidal survey should also include a visual element as specified above, to identify possible habitats or species of conservation importance.	As part of the benthic survey campaign a drop down video sampling survey was completed.

Table 10. Consultation meetings and correspondence with stakeholders on benthic ecology and intertidal ecology

Date	Consultee	Form of consultation of evidence	Summary of key points
23 September 2010	Marine Scotland	Meeting	Preliminary discussion of approach to benthic sampling strategy and methods.
16 November 2011	Marine Scotland	Meeting	Seagreen presentation of sampling plan and method statement. Marine Scotland and JNCC also confirmed acceptance of the proposed distribution of sample points distribution and phased analysis of infaunal and chemical samples.
30 March 2011	Marine Scotland	Seagreen letter	Seeking confirmation of the proposed survey scope for the ECR corridor.
27 May 2011	Marine Scotland	MS-LOT letter	Confirming MSS acceptance of the proposed ECR corridor sampling strategy.
3 August 2011	Marine Scotland	Seagreen Letter	Seeking Marine Scotland confirmation that, based on the initial results of the phased analysis of chemical and infaunal samples collected, sufficient data was available to characterise the site for EIA purposes.
4 August 2011	Marine Scotland	MS-LOT email	Confirmation that MS LOT is content that the available results should be sufficient for benthic characterisation purposes.
12 March 2012	Marine Scotland, SNCBs	Meeting	Presentation and discussion of Seagreen benthic survey outcomes and habitat mapping to be reported as environmental baseline within ES.

Seagreen has continued to engage with Marine Scotland and the SNCBs throughout the development of the benthic survey scope and following receipt of the survey results. This has included discussion over subsequent habitat mapping based on the survey results and regarding particular features of interest, such as sandeels and sabellaria. These discussions are documented in Table 10 above and have informed the baseline description and the assessment of impacts as described in Chapter 11: Benthic Ecology and Intertidal Ecology in the Seagreen Project ES.

Consultation on natural fish and shellfish resource

Seagreen has consulted regularly in respect of natural fish and shellfish resources during the development of the Seagreen Project. This has also involved discussion in relation to commercial fisheries and migratory fish, which are directly linked topics. Consultation on natural fish and shellfish resources has primarily involved meetings, discussion of survey scopes and resulting data and correspondence with MS-LOT, the SNCBs, and The Association of Salmon Fisheries Boards (ASFB) and local District Salmon Fishery Boards (DSFBs).

Consultation regarding natural fish and shellfish resources commenced with the issue of the Phase 1 Scoping Report in July 2010 and the receipt of the scoping opinion from MS-LOT and the SNCBs. Formal and informal consultation continued through the development process, primarily through MS-LOT, to agree survey requirements and to access the extensive fisheries data available from MSS. Further meetings and dialogue with MS-LOT, MSS and SNCBs took place later in this process to discuss the survey results and their interpretation and to confirm the approach to assessment.

Table 11 summarises the key points of relevance to fish and shellfish resources were highlighted in the statutory scoping response as requiring assessment within the EIA. Consultation meetings and key correspondence with MS-LOT are summarised in Table 12.

Table 11. Summary of statutory EIA scoping responses of relevance to natural fish and shellfish resource

Date	Consultee	Summary of key points	Seagreen response
January 2011	JNCC, SNH and Marine Scotland	Impacts on fish (e.g. sandeels) should be considered in the context of species of conservation concern and those which are important for sustaining other important species (e.g. birds and marine mammals).	Considered and incorporated within the EIA.
January 2011	JNCC and SNH	Fish of conservation concern include qualifying interests of adjacent SACs (i.e. Atlantic salmon, sea lamprey and river lamprey, sparring, Allis and Twaite shad) and species listed as a priority on UKBAP, International Council for the Exploration of the Sea (ICES) and International Union for Conservation of Nature (IUCN) Red lists (i.e. European eels).	Considered and incorporated within the EIA.
January 2011	Marine Scotland	The ES will need to consider potential impacts on migratory fish including salmon, sea trout, lamprey and sandeels during all phases of the project.	Considered and incorporated within the EIA.
January 2011	JNCC and SNH	A recent review by Marine Scotland (Malcolm et al., in prep) summarises available information on the migratory routes and behaviour of Atlantic salmon, sea trout and European eel which may help inform assessment of the movement of some key species on the east coast of Scotland.	Considered and incorporated within the EIA.
January 2011	JNCC and SNH	The levels of noise production (from construction of the foundations) that can be expected should be set-out and, using published literature (including SNH report (Gill et al., in prep)), the impact, if any, this will have on fish movements and behaviour should be considered.	Considered and incorporated within the EIA.
January 2011	Marine Scotland	Noise assessments should take into consideration background noise.	Considered and incorporated within the EIA.
January 2011	JNCC and SNH	The levels of operational noise that is expected to be generated should be set-out, and the impact this may have on fish should be considered.	Considered and incorporated within the EIA.
January 2011	SEPA	There is a need to ensure that the native oyster (<i>Ostrea edulis</i>) is not present where works are proposed in the marine environment.	Considered and incorporated within the EIA.
January 2011	ASFB)	The proposed developments should be conducted in full consultation with the local District Salmon Fishery Boards and Fishery Trusts. The Trusts may have a particular interest in assessing potential impacts and monitoring the interactions between fish and developments such as these.	Considered and incorporated within the EIA.
January 2011	ASFB	Construction impacts to be considered: <ul style="list-style-type: none"> • physiological and behavioural effects of underwater noise and vibration; • direct effects on fish of water quality; and • indirect effects of water quality changes through effects on food. 	Considered and incorporated within the EIA.
January 2011	ASFB	Operational impacts to be considered: <ul style="list-style-type: none"> • physiological and behavioural effects of underwater noise and vibration; • electrical or magnetic field effects; and • indirect effects on fish of permanent changes in habitat. 	Considered and incorporated within the EIA.

Date	Consultee	Summary of key points	Seagreen response
January 2011	Marine Scotland	In cases where there is uncertainty over potential impacts it may be necessary for the developer to implement a monitoring strategy to assess the impacts on salmonid fish populations.	Considered and incorporated within the EIA.
January 2011	Marine Scotland	The fisheries sensitivity maps were compiled from a variety of sources, in some cases historical data and although they are a useful source of information, they are only indicative. For several species, there is more recent and/or site specific information available.	Considered and incorporated within the EIA.
January 2011	Marine Scotland	Species ecology and migratory behaviour should be considered.	Considered and incorporated within the EIA.
January 2011	Marine Scotland	The scoping report identifies considerable uncertainty associated with ECRs and the significance of electromagnetic field (EMF) impacts. Given the potential for cumulative and in combination effects in the area, these should remain in scope.	Considered and incorporated within the EIA.
January 2011	FEF	The importance of the proposed site for sandeel spawning will have to be addressed.	Considered and incorporated within the EIA.
January 2011	FEF	More information on elasmobranchs may be required and the effect of EMF on these as well as on fish and shellfish populations.	Considered and incorporated within the EIA.
January 2011	Scottish Anglers National Association Limited (SANA) and Sea Trout Group (STG)	SANA have concerns regarding potentially large changes in scouring and deposition of soft sea bed caused by turbine placement that could change sandeel spawning dynamics and even encourage fish and bird predation due to vorticing in tidal streams.	Considered and incorporated within the EIA. Seagreen Offshore Phase 1 ES Volume I <i>Chapter 7: Physical environment; Chapter 11: Benthic, and Chapter 12: Natural fish</i>
January 2011	SANA and STG	Concerned about the impact of noise and increased shipping transport on fish during the construction phase.	Considered and incorporated within the EIA. Seagreen Offshore Phase 1 ES Volume I <i>Chapter 12: Natural fish and Chapter 15: Shipping</i>
January 2011	SANA and STG	Major concerns about the impact of EMFs around subsea cables on the migratory behaviour of salmon.	Considered and incorporated within the EIA
January 2011	SANA	Developers must produce an account of the mitigating measures that they propose, accompanied by peer reviewed evidence of the efficacy of such measures.	Considered and incorporated within the EIA
February 2012	Marine Scotland	In response to the HRA screening. Consider the potential impacts of noise, EMF and perceived barrier effects. The potential for noise to affect migration should also be considered.	Considered and incorporated within the EIA
February 2012	JNCC/SNH	In response to HRA screening. Cumulative impacts in respect to SAC fish need to be considered.	Considered and incorporated within the EIA

Table 12. Consultation meetings and correspondence with stakeholders on natural fish and shellfish resource

Date	Consultee	Form of consultation of evidence	Summary of key points
23 September 2010	Marine Scotland	Meeting	Preliminary discussion of survey programme, including natural fish surveys.
16 November 2011	Marine Scotland	Meeting	Discussion of fisheries and salmonids and data requirements. Marine Scotland required Seagreen to provide written request for data.
4 February 2011	Marine Scotland	Seagreen letter	<p>Enquiry whether Marine Scotland would support removal of benthic trawls as a potential method for benthic and natural fish sampling or recommend another method of sampling.</p> <p>Seagreen’s proposed approach to assessment of potential fisheries impacts presented in an attached Annex (Seagreen, 2011) for comment by Marine Scotland and seeking confirmation that further sampling not required.</p> <p>Also requesting clarification in relation to point concerning migratory fish raised in Marine Scotland response to the offshore scoping report.</p>



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Date	Consultee	Form of consultation of evidence	Summary of key points
2 March 2011	Marine Scotland	Marine Scotland Letter	Response confirming requirement to undertake benthic trawls for epibenthic sampling but not for natural fish sampling. General comments and specific points addressing Seagreen's proposed approach to assessment. Acceptance of suggested approach regarding migratory fish but request for further dialogue.
15 June 2011	Marine Scotland	Seagreen letter	Formal request for provision of fisheries and associated data from Marine Scotland, in particular on marine fish and shellfish resources and migratory species.
17 June 2011	Marine Scotland	Marine Scotland letter (email)	Initial provision of fisheries data and papers, links to other data relevant data sources. Also suggestion for specific meeting.
1 August 2011	Marine Scotland	Meeting	Discussion of sources and availability of migratory fish data and ongoing studies at Marine Scotland. Discussion of approach to assessment by Seagreen. Discussion of data sources for non-migratory species and provision of some data by Marine Scotland. Particular reference to Marine Scotland studies of sandeels and sandeel habitat and fisheries research driven by Marine Strategy Framework Directive (MSFD) requirements. Discussion of potential for regional approach to post installation monitoring.
12 March 2012	Marine Scotland, SNCBs	Meeting	Discussion of underwater noise modelling outcomes for fish to be presented in the Seagreen ES.

Seagreen has continued to engage with Marine Scotland and the SNCBs and other relevant bodies in relation to the environmental baseline for natural fish and shellfish and to confirm the approach to impact assessment. These discussions are documented in Table 12 above and have informed the baseline description and the assessment of impacts as described in Chapter 12: Natural Fish and Shellfish Resource in the Seagreen Project ES.

Consultation on marine mammals

As with consultation on ornithology, statutory and non-statutory stakeholder consultations have been undertaken by Seagreen alone and also as part of the FTOWDG on marine mammals.

Marine mammal consultation with the Scottish Government's SNCB advisers, the JNCC and SNH, and key stakeholders such as the Whale and Dolphin Conservation Society (WCDS) commenced in early 2010 following award of the Zone to Seagreen. Extensive formal and informal consultation has continued with these groups throughout the development process to characterise the area and optimise OWF site locations within it to minimise impacts on marine mammals. Further details of how EIA specific comments were addressed are provided in the marine mammal's chapter (Chapter 13) Seagreen Project ES.

The potential for cumulative impacts from offshore wind developments in the Firth of Forth led to the early formation of the FTOWDG. During the initial meetings of the marine mammals environmental FTOWDG sub-group, a cumulative assessment strategy was developed, the finer details of which were agreed with Marine Scotland and SNCBs at a FTOWDG meeting held on 2 November 2011.

The purpose of the strategy document was to provide a brief outline as to the work collaboratively being carried out by the FTOWDG on marine mammals. Key aspects of the individual developers assessments defined within this process include:

- regional approach to underwater noise modelling;
- common approach to impact quantification using Statistical Algorithms for Estimating the Sonar Influence on Marine Megafauna (SAFESIMM);
- regional assessment of TCE aerial data;
- regional assessment of seal telemetry;
- identification of key species and appropriate populations to be assessed; and
- appropriate thresholds for assessments.

The strategy document does not provide methods on how to undertake impact assessment either individually or cumulatively as this is largely left to each individual developer. However, the aim of the FTOWDG work is to provide a consistent set of reports that can be used in the developers consent applications and therefore the cumulative and individual assessments should be largely aligned.

In addition it was agreed amongst the FTOWDG that all marine mammal data will be shared between developers. When practicable and appropriate the FTOWDG will also endeavour to ensure that the approaches taken within the assessments undertaken by each developer will be comparable.

All consultation meetings are documented in Table 13 and, where advice has been provided, details of the way it has been incorporated into the EIA and HRA are provide in the relevant chapters and supplements to the Seagreen Project's ES.



Table 13. Seagreen statutory and non-statutory consultation on marine mammals

Date	Consultee	Summary of key points
Meeting 2 November 2011	SNH and JNCC	<p>SNH agreed that assessment of noise impacts on behaviour will be based on the 90dBht; threshold; however, for cetaceans 75dBht will be assessed if potential impacts exist.</p> <p>SNH agreed on the use of the national population estimate for harbour porpoise (based on the SCANS II data for the North Sea) as the reference population for the Impact Assessment.</p> <p>SNH recommended that coastal distribution data collected by Sea Watch Foundation could be used to supplement offshore surveys.</p> <p>In relation to cumulative effects on harbour seal, SNH are aware of a number of additional (in addition to FTOWDG and MOWDG) cumulative schemes:</p> <ul style="list-style-type: none"> • Tay Bridge Refurbishment (Transport Scotland); • Victoria & Albert Museum in Dundee; • Forth Bridge Replacement Crossing; • Proposed Tidal Project at Montrose; • check with Local Planning Authorities for coastal schemes; • possible port redevelopment; and • seismic surveys. <p>In relation to bottlenose dolphins, SNH confirmed that regional population should be the reference population for impact assessment but with reference back to the conservation objectives of the SAC. More information required on the timescale for piling (individual events and the OWF as a whole). Also outlines any differences between foundation types.</p> <p>Present both 198 dB re 1 μPa²/s in addition to 186 dB re 1 μPa²/s for seals.</p> <p>SNH agree in the absence of a minke-whale audiogram humpback whale can be used as a proxy.</p>
29 March 2012	SNH	<p>SNH provided references which support that white-beaked dolphin in Scottish waters are part of the north west European Population.</p> <p>Advice to use the harbour seal population of the east coast management unit as the reference population for this species, and will take the Tay & Eden SAC population as being equivalent to this.</p>
30 March 2012	SNH and JNCC	<p>The east coast management unit should also be used for grey seals reference population.</p> <p>Key area of concern for harbour seals is the impact of displacement from foraging or transit habitats during piling. Modelling work should estimate the extent of the potential noise impacts zone(s) and numbers of seals that could be using the area.</p> <p>Advice that impacts of displacement in harbour seals should be considered in the context of a population level assessment framework.</p> <p>Due to the wide ranging nature of grey seals, the HRA process will only be applied to this species as a breeding interest (when the seals are associated with the Isle of May SAC and Berwickshire and North Northumberland Coast SAC).</p> <p>Potential risk of 'corkscrew deaths' in seals which have potentially been linked to the used of ducted propellers need to be considered.</p> <p>Potential impact of disturbance to pupping and moulting seals from cable laying activities need to be considered.</p> <p>Advice that the east coast bottlenose dolphin population is the reference population for each of the EIA, HRA and EPS licensing processes. We will take the SAC population as being equivalent to this.</p> <p>The cumulative impacts of the FTOWDG and Moray Firth OWFs should be considered together as the reference population for each is the same i.e. the east coast bottlenose dolphin population.</p> <p>The bottlenose dolphin densities generated by SMRU Ltd are not very robust.</p>

Date	Consultee	Summary of key points
2 April 2012	SNH, JNCC, Marine Scotland	Advice on the duration of breeding seasons for harbour (1st June – 31st August) and grey seal (1st October – 31st December). Sensitivity of these species is considered greater at these times of year. No breeding season is defined for bottlenose dolphin as females may give birth at any time of the year.
9 May 2012	SNH, JNCC	Request that 186 and 198 SEL are presented within the final assessment for seals.

Consultation on commercial fisheries

Seagreen has consulted regularly in respect of commercial fisheries during the development of the Seagreen Project, including specific consultation of the ECR corridor and landfall. This has also overlapped with discussion in relation to natural fish and shellfish resources, including migratory fish, which are directly linked topics. Linkages also exist to consultation that was carried out on the risk/ impact associated with fishing vessels undertaken as part of the consultation on shipping and navigation.

Consultation on commercial fisheries, including salmon and sea trout fisheries, has primarily involved meetings, correspondence and dialogue with Marine Scotland; fishery sector representatives and local fisheries bodies; individual fishermen and the ASFB and local DSFBs.

In addition to site-specific consultation and engagement undertaken by Seagreen, the FTOWDG has collaborated to hold joint discussions with commercial fisheries interests, including salmon fishing stakeholders. Seagreen is committed to ensuring that, where feasible, a collaborative approach is continued throughout future stages of development.

Consultation regarding commercial fisheries commenced with the issue of the Phase 1 Scoping Report in July 2010 and the receipt of the scoping opinion from MS-LOT. Formal and informal consultation with MS-LOT continued through the development process to access the extensive fisheries data available from MSS.

Table 14 summarises the key points of relevance to commercial fishing activities, which were highlighted in the statutory scoping response as requiring assessment within the EIA.

Table 15 summarises the key points of relevance to salmon and sea trout fisheries, which were highlighted in the statutory scoping response as requiring assessment within the EIA. The overlap with natural fish and shellfish resources should be noted.

Table 14. Summary of statutory scoping response concerning commercial fisheries

Consultee	Summary of key points	Seagreen Response
Marine Scotland	A more up to date analysis could be derived using VMS and landings data for vessels greater than 15m.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Baseline Environment and Appendix 11: Commercial Fisheries Technical Report</i>
Marine Scotland	VMS does not capture the detailed distribution of fishing activity by the smaller (under-15m) vessels which fish in the area, particularly in ICES rectangle 42E7. Shellfish fisheries are currently the most valuable fisheries in the area and a large proportion of the landings are taken by small boats.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Baseline Environment and Appendix 11: Commercial Fisheries Technical Report</i>
Marine Scotland	Cumulative and in-combination assessment should address the extent of temporary and permanent loss of access to fishing grounds and possible effects of displaced fishing effort.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Assessment of Impacts: Cumulative and In-Combination Effects</i>
Marine Scotland	Displaced effort may have direct economic effects, associated with increased steaming time, vessel costs and reduced catches if vessels have to compete with others in limited space (although in this case it would seem alternative fishing opportunities for small, locally based boats to displace elsewhere are likely to be limited).	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Impact Assessment-Construction Phase, Impact Assessment-Operation, Impact Assessment-Decommissioning</i>
Marine Scotland	Use of additional sources of information – ABP Mer’s report on the value of fisheries and Daniel Dunstone’s report on the Development of spatial information layers for commercial fishing and shellfishing in UK waters to support strategic siting of OWFs.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14; Baseline Environment and Appendix IA: Commercial Fisheries Technical Report</i>
Marine Scotland	Cumulative and in-combination effects should make the link between natural fish ecology and commercial fisheries. Cumulative impacts could be considered and the possible effects on coastal (fishing) communities might warrant a mention in the socio-economic section.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Assessment of Impacts-Cumulative and In-Combination Effects</i>
Fife Council Development Services	Impacts on operational fishing fleets from Fife’s East Neuk ports should be considered, particularly Pittenweem. The report does not appear to make reference to the East Neuk fishing industry.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Baseline Environment and Appendix IA: Commercial Fisheries Technical Report</i>
FEF	Fishermen (UK, European and nomadic) should be engaged in face-to-face meetings held at multiple locations. A number of contacts have been provided in the response that are not covered by Seagreen’s contacts list.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Baseline Environment and Appendix 12 Commercial Fisheries Technical Report</i>
FEF	If there was to be a proven economic impact on the fishery would there be a way to help fishermen diversify into new fisheries?	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Commercial fisheries</i>
FEF	If certain areas are out of bounds could other areas be re-opened?	n/a
FEF	Will it still be possible to creel in areas with buried cables?	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Impact Assessment-Operation</i>
RNLI	Concerns over increased potential for casualties due to the impacts on the major shipping routes and more particularly on those areas visited by the commercial fishing industry.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>

Table 15. Summary of statutory scoping response concerning salmon and sea trout fisheries

Consultee	Summary of key points	More detail on consultation
ASFB	Important salmon populations in the vicinity of the site include the Esk, Tay, Forth and Tweed.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Baseline Environment and Chapter 12: Natural Fish and Shellfish Resource</i>
ASFB	Effects arising from construction: <ul style="list-style-type: none"> • what effect would the construction processes have on fish?; • physiological and behavioural effects of underwater noise and vibration resulting from construction operations; • direct effects on fish of water quality changes through suspension of sediment in the water column disturbed during construction; • indirect effects of water quality changes through effects on food sources available to salmon and sea trout; and • will the effects of noise and mechanical disruption be assessed prior to construction and would on-going monitoring be put in place if the project is approved and completed? 	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Impact Assessment-Construction Phase and Chapter 12: Natural Fish and Shellfish Resource</i>
ASFB	Operational effects: <ul style="list-style-type: none"> • physiological and behavioural effects of underwater noise and vibration resulting from turbine operation; • are there likely to be electrical or magnetic fields associated with the installation and operation and will these have a discernable effect on salmon?; • indirect effects on fish of permanent changes in habitat; and • whilst salmon use the area primarily as a migration route and are unlikely to remain there for lengthy periods, the habits of sea trout are rather different and this species may use the area more extensively as a feeding area before migration into freshwater systems. Accordingly there may be a risk of more prolonged interaction with sea trout in relation to the site. 	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Assessment of Impacts-Operation and Chapter 12: Natural Fish and Shellfish Resource</i>
ASFB	The proposed developments should be conducted in full consultation with the local District Salmon Fishery Boards and Fishery Trusts. The Trusts may have a particular interest in assessing potential impacts and monitoring the interactions between fish and developments such as these.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Commercial fisheries</i>
SNH & JNCC	Fish of conservation concern include qualifying interests of adjacent SACs (i.e. Atlantic salmon, sea lamprey and river lamprey) and species listed as a priority on UKBAP, ICES and IUCN Red lists (i.e. European eels).	Seagreen Offshore Phase 1 ES Volume III <i>Appendix I2: Salmon and Sea Trout Technical Report and Volume I Chapter 12: Natural Fish and Shellfish Resource</i>
SNH & JNCC	A recent review by Marine Scotland (Malcolm <i>et. al.</i> , in prep) summarises available information on the migratory routes and behaviour of Atlantic salmon, sea trout and European eel which may help inform assessment of the movement of some key species on the east coast of Scotland.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix I2: Salmon and Sea Trout Technical Report and Volume I Chapter 12: Natural Fish and Shellfish Resource</i>

Consultee	Summary of key points	More detail on consultation
SNH & JNCC	Sea trout is a UKBAP Priority species which supports a number of fisheries in Scotland; many of these fisheries have undergone significant declines in the last 25 years. The draft report from Marine Scotland reviews the data available in relation to sea trout migration routes and behaviour.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix I2: Salmon and Sea Trout Technical Report and Volume I Chapter 12: Natural Fish and Shellfish Resource</i>
SNH & JNCC	A SNH report (Gill <i>et al.</i> , in prep) considers the current state of knowledge with regard to the potential impacts of noise, associated with marine renewable energy, on Atlantic salmon, sea trout and European eel.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Impact Assessment-Construction Phase, Impact Assessment-Operation, Impact Assessment-Decommissioning and Chapter 12: Natural Fish and Shellfish Resource</i>
Marine Scotland	The proposed development will need to consider potential impacts on migratory fish including salmon, sea trout, lamprey and sandeels during all phases of the project.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Impact Assessment-Construction Phase, Impact Assessment-Operation, Impact Assessment-Decommissioning and Chapter 12: Natural Fish and Shellfish Resource</i>
Marine Scotland	In cases where there is uncertainty over potential impacts it may be necessary for the developer to implement a monitoring strategy to assess the impacts on salmonid fish populations	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Outline Monitoring</i>

Seagreen has engaged the local and wider fishing industry from an early stage of the development of the Seagreen Project. In order to facilitate effective dialogue, a Fisheries Liaison Officer (FLO) and Fishing Industry Representatives (FIRs) with understanding of fisheries in the regional area of the development were appointed. Regular consultation has been undertaken and is ongoing, with the organisations listed below:

- Scottish Fishermen’s Federation (SFF);
- Scallop Association;
- Anglo Scottish Fishermen’s Association;
- Fishermen’s Mutual Association (Pittenweem);
- Arbroath and Montrose Fishermen’s Association;
- South East Scotland Inshore Fisheries Group.
- Dunbar Fishermen’s Association;
- Cockenzie and Port Seton Fishermen’s Association;
- Marine Scotland;
- Aberdeen District Fishery Office;
- Anstruther District Fishery Office;
- Eyemouth District Fishery Office; and
- South East Inshore Fisheries Group.

A regional sample of individual fishermen was also consulted in relation to the baseline for fisheries activity and for the distribution of relevant project information.

Meetings and key correspondence with consultees are summarised in Table 16.

Table 16. Consultation meetings and correspondence with commercial fisheries stakeholders

Date	Consultee	Form of consultation of evidence	Summary of key points
2010	Marine Scotland – for distribution on to licensed fishermen on the east coast	Letter to identify and inform fishermen of proposed developments on the Scottish east coast	Stakeholders identified and baseline information gathered.
2010 – 2012	Sample of regional fishermen and their representatives	Informal meetings to gather evidence about fishing activities	Information was collected to inform the fisheries baseline. Views and concerns were also noted.
2010 – 2012	Sample of regional fishermen	Questionnaires	Information was collected inform the fisheries baseline. Views and concerns were also noted.
15 February 2011 to 17 February 2011	Open to all fisheries stakeholders	FTOWDG fisheries stakeholder meetings	Meetings with local fishermen at Arbroath, Anstruther and Dunbar to introduce projects and discuss the development process.
27 April 2011	Arbroath Static Gear Fishermen’s Association	Meeting	To discuss survey requirements along the export cable corridor. Additional information to inform the EIA was gathered.
24 April 2012 to 26 April 2012	Open to all fisheries stakeholders	FTOWDG fisheries stakeholder meetings	Meetings with local fishermen at Arbroath, Anstruther and Dunbar to provide project updates. Discuss baseline data and the approach to assessment and to seek input to further ongoing dialogue.

Consultation was undertaken and is ongoing with the organisations listed below:

- ASFB;
- Esk DSFB;
- Tay DSFB;
- Forth DSFB;
- Tweed DSFB; and
- Usan Salmon Fisheries Ltd.

FTOWDG has also held joint discussions with DSFBs and their members, as well as statutory consultees.

Meetings and key correspondence with commercial fisheries consultees are summarised in Table 17.

Meetings and key correspondence with salmon and sea trout fishery consultees are summarised in Table 18.

Table 17. Consultation meetings and correspondence with commercial fisheries stakeholders

Date	Form of consultation and evidence	Summary of key points
15 February 2011 to 17 February 2011	FTOWDG fisheries stakeholder meetings	Meetings with local fishermen at Arbroath, Anstruther and Dunbar to introduce projects and discuss the development process.
24 April 2012 to 26 April 2012	FTOWDG fisheries stakeholder meetings	Meetings with local fishermen at Arbroath, Anstruther and Dunbar to provide project updates. Discuss baseline data and the approach to assessment and to seek input to further ongoing dialogue.

Table 18. Consultation meetings and correspondence with salmon and sea trout fishery stakeholders

Date	Consultee	Form of consultation of evidence	Summary of key points
2010 – 2011	ASFB – for distribution on to DSFBs on the east coast	Emails and letter, including questionnaires for distribution to members	Information gathering to inform the baseline. Views and concerns were also noted.
2010 – 2011	Salmon Net Fishing Association of Scotland	Emails and letter, including questionnaire for distribution to members	Information gathering to inform the baseline. Views and concerns were also noted.
2010 – 2011	Local DSFBs	Informal meetings to gather baseline information	Information was collected inform the fisheries baseline. Views and concerns were also noted.
13 January 2012	DSFBs	FTOWDG DSFBs stakeholder meeting	Meetings with relevant DSFBs, Marine Scotland and salmon netting interests to introduce projects, discuss the development wok undertaken to date and the approach to assessment and further dialogue.

Consultation on shipping and navigation

Seagreen has consulted regularly in respect of shipping and navigation during the development of the Seagreen Project, including specific consultation on navigational risk. This has also overlapped with discussion in relation to commercial fisheries and the risk and impact to fishing vessels, which is a directly linked topic.

Seagreen attended the R3 MCA stakeholder event on 17 February 2010 where safety issues relating to offshore wind installations were presented.

Consultation on shipping and navigation primarily focused on the requirement to carry out a Navigational Risk Assessment (NRA) and associated consultation for the Seagreen Project; however in addition to site-specific consultation and engagement undertaken by Seagreen, the FTOWDG has collaborated to undertake a survey-based consultation with shipping and navigation stakeholders in the Firth of Forth region.

Consultation regarding shipping and navigation commenced with the issue of the Phase 1 Scoping Report in July 2010 and the receipt of the scoping opinion from MS-LOT. Table 19 summarises the key points of relevance to shipping and navigation activities, which were highlighted in the statutory scoping response as requiring assessment within the EIA.

Table 19. Summary of statutory scoping response concerning shipping and navigation

Consultee	Summary of key points	Seagreen response
Fife Council Development Services	The impact on the Port of Rosyth should be assessed in terms of possible future development of European shipping routes.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA</i>
Forth Estuary Forum	The Forth Estuary Forums stated that they would like to see high quality, temporally sensitive navigational data to be collected, rather than an average over several years of existing data.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation and Appendix J1: NRA</i>
Forth Ports	Forth Ports noted that they will be interested in obtaining the results of the navigation study and are more than willing to assist studies. Forth Ports are fully supportive of the OWF development and are available to contribute to the planning and construction process both from a navigation point of view and the utilisation of port facilities.	n/a
Marine Scotland	The NRA should be carried out according to Marine Guidance Note (MGN) 371.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA</i>
MCA	The NRA should be submitted in accordance with MGN 371 (and 372) and the DfT/MCA Methodology for Assessing the Marine Navigational Safety Risks of OWFs.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA</i>
MCA	Particular attention should be paid to cabling routes and burial depth and, subject to the traffic volumes, an anchor penetration study may be necessary.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA (ECR NRA)</i>
MCA	Radar effects of OWFs on ship's radars are an important issue and subject to further discussion within the radar sub group of <i>Nautical Offshore Renewable Energy Liaison (NOREL)</i> . The radar effects will need to be assessed on a site specific basis.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation and Appendix J1: NRA</i>
MCA	Radar survey data collected in summer 2011 accepted by MCA on 16/08/11 (by email) in accordance with MGN 371 Annex 1 paragraph 2.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>
NLB	As part of the formal application, the NLB would require that a full NRA is undertaken. NLB assumes that any formal recommendations for lighting and marking will be given through the Coast Protection Act 1949 – Section 34 process.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA</i>
RNLI	The RNLI raised concern over increased potential for casualties due to the impacts on the major shipping routes and more particularly on those areas visited by the commercial fishing industry.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 14: Commercial fisheries; Chapter 15: Shipping and Navigation and Appendix J1: NRA</i>
RYA	The RYA would expect that recreational boating should be considered under Shipping and Navigation (including the NRA) as well as in Tourism and Recreation.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 19: Socio-economics and Appendix J1: NRA</i>

Key marine and navigational stakeholders were consulted as part of the Seagreen Project NRA and the EIA. The following stakeholders were consulted:

- Maritime and Coastguard Agency (MCA);
- Northern Lighthouse Board (NLB);
- Royal National Lifeboat Institute (RNLI);
- The Chamber of Shipping (CoS);
- Department for Transport (DfT);
- Royal Yachting Association (RYA);
- Fife Council Development Services;
- Forth Estuary Forum;
- Forth Ports;
- Marine Scotland;
- Kingdom Seafood/FMA Ltd;
- Anglo-Scottish Fisherman’s Federation; and
- SFF.

The potential for cumulative impacts from offshore wind developments in the Firth of Forth led to the early formation of the FTOWDG. During the initial meetings of the navigation FTOWDG sub-group, a scope for a regional study was developed and agreed.

The purpose of the regional study was to identify the key shipping and navigational receptors using the Firth of Forth; to contact them and request feedback on development of offshore wind in the region, and to report the findings of these consultations along with the process of identifying any potential alternative shipping and navigational routes (if necessary).

Consultation on navigation was carried out during the FTOWDG regional work to gather input from the marine community. The regional approach was presented by FTOWDG and discussed in separate meetings with the CoS and MCA on 11 January 2011. The result of the meetings was a commitment by FTOWDG to identify and contact all shipping companies to find out the impact of the proposed wind farms on their vessels. Further meetings were held with and presentations made to the following:

- Forth Ports Ltd;
- NLB;
- RYA; and
- DfT.

Shipping operators were identified and contacted for feedback on the impact of the Seagreen Project. A summary of the main feedback received is presented in Table 20 below.

Table 20. Summary of Shipping Operator Consultation

Shipping operator	Summary of response
Solstad (offshore vessels)	The regional developments will not affect their operations. In general, port callings are to Aberdeen or Peterhead. If vessels pass through the region following construction of OWFs, Solstad indicated that they would not have any problems navigating through the OWFs.
Transmarine Management ApS (tankers bound for Dundee)	Initial findings are that when Transmarine Management ApS ships are bound to Dundee (in-ward) the developments are not a problem, but when leaving Dundee for direction Skaw (Skagen), Denmark they will require re-routing.
SAGA Cruises (cruise vessels)	In general the proposals do not pose a safety risk to SAGA Cruise vessels.
Fred Olsen Cruises (cruise vessels)	Fred Olsen Cruises transit the area, especially during the summer months, however they have no concerns regarding the impact on operations.
James Fisher Everard (coastal tankers bound for Forth, Tay and Northern Ports)	No comments were supplied.
Armac Marine Management Ltd (cargo vessels bound for Montrose)	Some routes will be affected but provided that the constructions are adequately marked and correctly charted, Armac Marine Management Ltd does not have any concerns regarding safe navigation, (the opinion of several Masters in the company).

A hazard identification workshop was carried out in January 2012 as part of the NRA process. The workshop involved key marine and navigational stakeholders. During the workshop the key maritime hazards associated with the Seagreen Project were identified, along with associated scenarios prioritised by risk level. Note that indicative OWF layouts were not presented at the hazard workshop so it was assumed at the workshop that infrastructure could be located anywhere within the Project Alpha and Project Bravo sites.

Summary details of the main feedback from the regional study relevant to the Seagreen Project are provided in Table 21.

Table 21. Summary of the FTOWDG regional study consultation

Consultee	Summary of key points	Seagreen response
CoS	For shipping passing through the Firth of Forth Zone north/south from Aberdeen to north east England, the current alternative route scenario (vessels will pass east of all of the developments) is worthy of consideration, however it limits ships to 'non-sheltered waters', providing them with no inshore route for over 30 miles (assuming the entire Zone is developed). Dialogue with vessel operators and seasonal AIS data could provide some information about current navigation strategies in extreme weather circumstances.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA and J2: Regional study</i>
CoS	For shipping passing through Inch Cape and the Firth of Forth Zone from Montrose to Holland, there are merging traffic issues (tankers and cargo affected). If vessels pass west of developments/inshore, then this increases the density of shipping along an existing shipping route east and west of Bell Rock. Should also consider alternative route between Inch Cape and Neart na Gaoithe.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA and J2: Regional study</i>

Consultee	Summary of key points	Seagreen response
Forth Ports	General concerns were expressed regarding smaller vessels being pushed further offshore and the impact on them being further east and hence out in heavier weather.	Seagreen Offshore Phase 1 ES Volume III <i>Appendix J1: NRA and J2: Regional study</i>
MCA and DfT	It was emphasized that the assessment must consider what hazards are created by the suggested route changes and that reference is made to potential impacts of turbines on radar and how this is impacted on the route changes.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation, Appendix J1: NRA and J2: Regional study</i>

A copy of both the full NRA and the FTOWDG regional study can be found in Volume III: Appendix J of the Seagreen Project ES. For further details on how consultation informed these studies please refer to these documents.

Consultation on seascape, landscape and visual impact

Detailed consultation has taken place with statutory consultees including SNH, Marine Scotland and local planning authorities, which included Angus Council; Fife Council; East Lothian Council; and the Scottish Borders Council, on seascape, landscape and visual amenity. The nature and extent of these consultations is outlined below and has been done mainly through the collaborative SLVIA sub-group of the FTOWDG.

FTOWDG undertook consultation through two meetings with SNH, Marine Scotland and local planning authorities on 15 June 2011 and 26 July 2011. A key outcome of this consultation was the agreement of a list of viewpoints, which will be adopted by all developers for the purposes of SLVIA. These viewpoints are listed in Volume III Appendix K4 of the Seagreen Project ES.

A series of 'discussion documents' were prepared by FTOWDG, most recently on the Approach to Assessment of Landscape, Seascape and Visual Cumulative Effects (FTOWDG, 2011). This set out a methodology and approach to the assessment of cumulative impacts, which will form the basis for SLVIA for all FTOWDG developments. This methodology is included in Volume III Appendix K1 of the Seagreen Project ES.

A regional seascape character assessment, including an appraisal of sensitivity to OWF development, was undertaken by the landscape consultants representing the developers of the FTOWDG. This document is included in Volume III Appendix K2 of the Seagreen Project ES., and effectively set the baseline for assessing impacts on seascape character for all the FTOWDG developments.

The site specific SLVIA methodology and viewpoints for the Seagreen Project were agreed with SNH via email correspondence on 21 September 2011.

Table 22 details the statutory consultation which was undertaken for the Seagreen Project SLVIA and outlines any action taken by Seagreen as a result of the response, or has provided justification as to why no action was taken.

Table 22. Summary of statutory consultation responses for the Seagreen Project SLVIA

Consultee	Summary of key points	Seagreen response
SNH and JNCC	SNH recommend that SLVIA is carried out with best practice guidance documents.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA</i>
SNH & JNCC	SNH make the following recommendations: <ul style="list-style-type: none"> wind farm design should be resolved through an iterative EIA process, ensuring that the schemes in this development cluster are complementary and respect design principles; that there is a liaison meeting between the FTOWDG and SNH to discuss SLVIA for each proposal, and cumulatively, prior to work being commissioned; that Chartered Landscape Architects, preferably a team of two, carry out (cumulative) SLVIA; that developers, preferably co-ordinated through FTOWDG, make contact with Natural England in respect of cross-border impacts; and that a cumulative SLVIA is co-ordinated jointly via FTOWDG. 	Undertaken during the FTOWDG process as outlined above
SNH & JNCC	In respect of this Round 3 zone, cumulative landscape and visual impacts will arise for each individual wind farm proposal in the zone in combination with: <ol style="list-style-type: none"> other OWF proposals in the same zone. (Zone 2); other OWF proposals in the same region. (The outer Firths of Forth & Tay); other onshore wind farms approved / in the planning system. 	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Impact Assessment- Decommissioning</i>
SNH & JNCC	For the cumulative visual impact assessment, SNH recommend an initial zone of theoretical visibility (ZTV) for cumulative study out to a radius of 50km, noting that onshore patterns of wind farm development will be relevant to the study.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Impact Assessment- Decommissioning</i>
SNH & JNCC	Viewpoints should be selected after negotiation with Marine Scotland, SNH and the relevant planning authorities and public consultation.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Existing Environment</i>
SNH & JNCC	Viewpoint selection should be based on the identification of potentially sensitive receptors (people, places and activities) and potentially significant views, locations or landscapes, taking into account the likely impacts of the development. Viewpoints will ideally be the same for EIA assessment as they will be for Cumulative Impact Assessment. Viewpoints should be selected to cover a range of view types and viewers.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Existing Environment</i>
SNH & JNCC	Any (cumulative) SLVIA report should provide the following information to reference each visualisation: the precise location of the viewpoint (including 12 figure OS grid reference and a brief description), its orientation to and distance from the proposed development, the viewpoint height, nature of view (width of view in degrees and bearing of key foci within view) and conditions of assessment – including date, time of day, weather conditions and visual range. It is helpful if this information is presented alongside each visualisation including a small insert map (based on a 1:50,000 OS base map) to show the viewpoints detailed location and direction.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Impact Assessment- Decommissioning</i>
SNH & JNCC	The characteristics visible from each viewpoint that are sensitive to wind farm development should be described and assessed, particularly in relation to the changes the development would cause. Factors such as season, weather, air clarity, movement, orientation to prevailing winds, elevation of the wind farm in relation to the viewer, and any screening elements may be relevant. The design and layout of the turbines and other components of the wind farm, as it would appear from each viewpoint, should also be described and assessed.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Impact Assessment- Construction Phase</i>
SNH & JNCC	Details of the types of receptors, and an assessment of their sensitivity, should be included.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA Existing Environment</i>



Consultation on archaeology and cultural heritage

As advisors to Scottish Government the principal consultee with regard to archaeology and cultural heritage is Historic Scotland. Historic Scotland is routinely consulted with regard to the cultural heritage considerations within a development. This is most directly achieved through the standard scoping process, provided for in the provision of a scoping response. Details of Historic Scotland's response to Seagreen's Offshore Phase 1 Scoping Report are provided in Table 23 below.

Further consultation was undertaken during a meeting between Seagreen and Historic Scotland on the 16 August 2011 to discuss and agree the approach and methodology for the Seagreen Project archaeology and cultural heritage assessment and associated mitigation. The approach and methodology as discussed and agreed with Historic Scotland was subsequently employed for the impact assessment.

Further, consultation was sought with Historic Scotland on the 2 April 2012 with regard to the impacts of the development on the setting of key onshore and island cultural heritage receptors. This consultation was sought following revisions to Project Alpha and Project Bravo site boundaries in early 2012. The subsequent consultation with Historic Scotland discussed the boundary revisions, and the requirement for assessment of those cultural heritage sites as identified in the initial baseline review. It was agreed that due to the extended distances of these assets from Project Alpha and Project Bravo (i.e. beyond the initial 25km buffer), and that no significant impacts were identified as a result of the boundary changes the potential indirect impacts on the setting of cultural heritage assets would not be taken forward to impact assessment. For clarity, and in order to present a robust approach to potential setting impacts, it was agreed that the cultural heritage sites identified in the initial baseline review would be included in the ES chapter baseline.

Table 23 also documents the consultation between Seagreen and Historic Scotland which was undertaken for archaeology and cultural heritage, and outlines any action taken by Seagreen as a result of the advice Historic Scotland offered, or has provided justification as to why no action was taken.

Table 23. Historic Scotland consultation responses on marine archaeology and cultural heritage

Summary of key points	Seagreen response
Direct impacts on undesignated wrecks in the survey area and various recorded maritime cultural heritage assets.	Considered and incorporated within the EIA
Indirect impacts to assets on the seabed or at the coasts edge, and possibly beyond, that may be caused by alteration to tidal currents, sedimentary regimes and changes to the chemical balance of the water and seabed sediments.	Considered and incorporated within the EIA
A CIA should be undertaken.	Considered and incorporated within the EIA
Archaeological analysis of the geological borehole data gathered for the study area.	Considered and incorporated within the EIA
Approach and methodology for the archaeology and cultural heritage impact assessment	This was discussed and agreed at a meeting with Historic Scotland on 16 August 2011. The approach and methodology agreed during discussions was employed for the assessment.
Impacts on the setting of terrestrial and coastal assets should be considered, such as the Bell Rock Lighthouse.	This was considered following the initial scoping response based on the original Phase 1 boundary. Subsequent Project Alpha and Project Bravo boundary revisions resulted in further consultation with Historic Scotland (email dated 2 April 2012). The response from Historic Scotland (email dated 27 April 2012) agreed that due to the extended distances of the Project Alpha western boundary from the coast and the Bell Rock, and that there were no significant impacts identified due to the changes that the setting element would not be taken forward to assessment. It was also agreed that the baseline established during the initial study based on the Phase 1 boundary would be included in the chapter baseline to ensure a through and robust approach.

Consultation on military and civil aviation

Seagreen has sought regular consultation in respect to the safeguarding of aviation and radar in and around the sites of Project Alpha and Project Bravo. For an early stage potential impacts with respect to aviation and radar associated with the Transmission Asset Project were scoped out, therefore consultation has focused on OWF development only.

Consultation regarding aviation and radar commenced with the issue of the Phase 1 Scoping Report in July 2010 and the receipt of the scoping opinion from MS-LOT. Initial aviation consultation was undertaken for the entire Zone and was in accordance with the guidance set out in the Civil Aviation Authority's (CAA) Civil Aviation Publication (CAP) 764, Policy and Guidelines on Wind Turbines Version 4 (CAA, 2012). Some elements of that consultation guidance are specific to onshore developments and are not relevant to Project Alpha and Project Bravo which, at their closest point, are over 27km and 38km offshore respectively.

A summary of the key points raised by consultees in relation to aviation and radar during the consultation process, along with the locations of where these key points have been addressed in the Seagreen project ES, are presented in Table 24.

Table 24. Summary of statutory scoping response concerning military and civil aviation

Date	Consultee	Summary of key points	Seagreen response
17 August 2010	MOD (in relation to entire Firth of Forth Offshore Area)	<ul style="list-style-type: none"> • ATC Radar Royal Air Force (RAF) Leuchars • Air Defence Radar • Low Flying 	Considered and incorporated within the EIA.
17 September 2010	BAA Airports	Assessment of impact on Aberdeen and Edinburgh Airport operations – no issues as confirmed in Scoping Opinion.	n/a
4 June 2010	CAA Directorate of Airspace Policy	No observations except to contact NERL and lighting advice.	n/a
9 October 2010	Highlands and Islands Airports Ltd	Possible impact on RAF Leuchars radar in relation to Dundee Airport (covered by MOD response).	Considered and incorporated within the EIA.
27 August 2010	NERL	Response to scoping report – generic response offering further consultation.	n/a
5 April 2012	MOD Seagreen Project Consultation Performa's issued	No response to date from MOD.	n/a
5 April 2012	NATS Seagreen Project Consultation Performa's issued	No response to date from NATS.	n/a

Seagreen held a meeting with the National Air Traffic Services (NATS) on 23 November 2010 to present the Firth of Forth Zone and the development approach and timescales. There was a further meeting with the NATS on 11 June 2012. At the meeting Primary Surveillance Radar were discussed and NATS confirmed that they will only let a condition if there is an existing solution and that they will only set conditions that are achievable. Consultation has been initiated with the MOD, but, as a result of their policy of not responding to pre-planning applications, has yet to progress.

Seagreen also attended the NATS offshore wind information day on 3 September 2011.

Seagreen will continue to seek engagement with the MOD and with NATS following receipt the submission of the Seagreen project applications. Further details of the assessment of impacts of the Seagreen project on military and civil aviation safeguarding can be found in Chapter 18: Military and Civil Aviation in the Seagreen Project ES.

Consultation on socio-economics, tourism and recreation

Marine Scotland were consulted during the scoping stage of this project and they referred to the Scottish Planning Policy (SPP): A statement of the Scottish Government’s policy on nationally important land use planning matters, where socio economic benefit is confirmed as a material consideration. In addition they were keen to stress that this also aligned with the Scottish Government’s priority to grow the Scottish economy as well as their own policy statement – Securing a Renewable Future: Scotland’s Renewable Energy.

Since the Scoping Opinion was issued by Marine Scotland in January 2011 there have been no significant concerns raised with regards to the socio-economic, tourism and recreation aspects of the Seagreen Project. Table 25 summarises key points that were highlighted by the consultees in the Scoping Opinion.

Table 25. Summary of consultation on socio-economics, tourism and recreation

Consultee	Summary of key points	Seagreen response
Marine Scotland	The concept of economic benefit as a material consideration is explicitly confirmed in the consolidated SPP. This fits with the priority of the Scottish Government to grow the Scottish economy and, more particularly, with our published policy statement —Securing a Renewable Future: Scotland’s Renewable Energy , and the subsequent reports from the Forum for Renewables Development Scotland (FREDS), all of which highlight the manufacturing potential of the renewables sector. The application should include relevant economic information connected with the project, including the potential number of jobs, and economic activity associated with the procurement, construction operation and decommissioning of the development.	Seagreen Offshore Phase 1 ES Volume I <i>Chapter 19: Socio-economics</i> . Economic benefits have been assessed utilising industry guidance.

Consultee	Summary of key points	Seagreen response
RYA	<p>Stipulated navigation safety for recreational vessels should be considered. Including information from the UK Coastal Atlas of Recreational Boating.</p> <p>RYA noted the proposals for the operational phase are unlikely to affect recreational routes due to the clearance of 22m and noted they did not believe operational safety zones were required.</p> <p>Noted concerns associated with:</p> <ul style="list-style-type: none"> • navigational safety; • location including visual intrusion and noise; and • end of life. 	<p>Recreational vessel safety is considered in Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>.</p> <p>The need for and extent of operational safety zones is presented in Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>.</p> <p>Navigational Safety is covered in Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>.</p> <p>Seagreen Offshore Phase 1 ES Volume I <i>Chapter 16: SLVIA</i> considers the impacts on visual receptors including sea based receptors.</p> <p>The Seagreen Project has an anticipated operational lifespan of 50 years. At this point a decision will be taken as to whether the site will continue to operate, be repowered or decommissioned.</p> <p>Decommissioning is discussed Seagreen Offshore Phase 1 ES Volume I <i>Chapter 5: Project Description</i>.</p> <p>Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i> states the baseline recreational activity for both the Project Alpha and Project Bravo site. For both sites the activity was low.</p> <p>Recreational vessels are moving through the area and as such as temporary receptors with regard to noise. As such a quantitative assessment of airborne noise has been scoped out from this ES.</p> <p>Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i> states the baseline recreational activity for both the Project Alpha and Project Bravo site. For both sites the activity was low.</p> <p>Recreational vessels are moving through the area and as such as temporary receptors with regard to noise. As such a quantitative assessment of airborne noise has been scoped out from the EIA.</p>
East Lothian Council	<p>Noted that the landfall in its current location does not affect East Lothian, however this could occur if it was relocated.</p> <p>Noted due to the location of the Phase 1 sites (Project Alpha and Project Bravo) being some 60km from the East Lothian coast no significant visual effects are expected.</p>	<p>The landfall position is near to Carnoustie in Angus and hence the opinion of East Lothian Council remains as stated.</p>
Fife Council	<p>Noted the presence of leisure sailing ports such as Anstruther and Tayport harbour.</p> <p>Mention of the Port of Methil and Burntisland should be referred to with regard to construction and maintenance.</p>	<p>Recreational sailing is considered in Seagreen Offshore Phase 1 ES Volume I <i>Chapter 15: Shipping and Navigation</i>.</p> <p>This chapter identifies potential support bases for construction, maintenance and supply chain activities however no commitment to facilities can be made at this stage of the development and procurement process.</p>

Seagreen also issued Marine Scotland with an update letter on 2 March 2012. The purpose of the letter was to confirm the approach to assessment of socio-economics in the EIA and to ensure that Marine Scotland were comfortable that the approach still complied with the necessary scope of a socio-economic assessment for a project of this nature.

Marine Scotland confirmed in a meeting held on 12 March 2012 that they accepted the approach presented by Seagreen.

In addition to EIA focused consultation, Seagreen have made presentation to local commerce groups and economic and development departments of local authorities. This has included a presentation at Angus College in March 2011, and two presentations to Fife Council in May 2010 and again in July 2011.

SEAGREEN PROJECT CONSULTATION ON HRA

In Seagreen's detailed EIA scoping report submitted to Scottish Ministers on the 23 July 2010, Seagreen acknowledged the need to take account of the potential impact on European sites, and the possible need for Appropriate Assessment (AA) under the EU Habitats Directive (EC Directive 92/43/CEE) regime in relation to consent applications for the Seagreen Project.

As the first stage of the HRA and in order to identify the need for and refine the scope of the necessary AA, Seagreen submitted the Seagreen Offshore Phase 1 HRA Screening Report to Marine Scotland in October 2011.

The HRA screening approach built upon consultation undertaken with key regulators including Marine Scotland, the JNCC and SNH. In particular advice regarding relevant European sites was confirmed in a Joint JNCC and SNH response (dated 8 September 2010) to the Phase 1 Scoping Report.

In undertaking the HRA it is required that the project is considered alone and in combination with other projects which cumulatively are likely to have significant effects upon the relevant European Sites. Seagreen has been a leading partner in the work of the FTOWDG, which has worked collaboratively on the standardisation of methods and data sharing across all of the developers to enable better assessment of cumulative impacts. In November 2010, FTOWDG produced a cumulative discussion document (CDD 2) on the approach to assessment of cumulative effects which highlighted specific Natura species and designated sites that would focus a suite of technical studies to inform the HRA, EIA and cumulative impact assessment (CIA) process.

As part of the early consultation and dialogue with JNCC and SNH the discussion and identification of relevant Special Areas of Conservation (SACs) was undertaken. This also formed part of the Phase 1 Scoping Report and associated consultation. In their joint scoping response JNCC and SNH confirmed that eight SACs should be considered as a starting point for the HRA process.

As part of the early consultation and dialogue with JNCC and SNH the discussion and identification of relevant SACs has been undertaken. This further consideration also formed part of the offshore scoping report and associated consultation.

Consultation between FTOWDG, TCE, JNCC, Marine Scotland and SNH identified the need to assess impacts on marine mammals at a regional scale and establish connectivity between animals sighted within the site-specific boat surveys and SACs.

A meeting between Seagreen and the WDCS on 11 November 2010 focussed on the requirement for the FTOWDG to assess how bottlenose dolphin from the Moray Firth SAC use the inner Tay during the summer months.

A suite of technical studies were subsequently commissioned in order to determine how Natura species of marine mammals use the regional waters of the STW sites and the Zone.

At a meeting with TCE and the Sea Mammal Research Unit Ltd (SMRU Ltd) on 14 January 2011, TCE highlighted that FTOWDG must work with the Moray Firth Wind Development Group (MFWDG) to ensure that impact assessment methodologies are aligned with regard to the Moray Firth bottlenose dolphin population.

A meeting between Seagreen and Marine Scotland on 1 August 2011 focussed on the requirement for AA of the riverine SACs in Scotland and North of England which are identified for their migratory fish features (primarily the Atlantic Salmon and River Lamprey). It was concluded at the meeting that due to the unknown behaviour of these fish species when they return to the sea there was the potential for connectivity and therefore further consideration would be required.

The SPAs included in the HRA screening stage were identified as part of an iterative process undertaken with the FTOWDG, the JNCC, SNH and the RSPB.

Initial meetings between FTOWDG, TCE, JNCC and SNH defined the area over which cumulative impacts on birds might extend. All qualifying and assemblage species for SPAs within this region were then collated into 'key features' and screened to identify those species which were unlikely to require cumulative assessment. The results were published in the Cumulative Study Report Ornithology (AMEC, 2010) issued via FTOWDG to JNCC, SNH and RSPB.

Comments from these organisations were incorporated into a final version in a revised report. Subsequently, JNCC and SNH reviewed and screened the tables to provide FTOWDG with a list of all SPAs and features which should be scoped in to cumulative assessment (and by default, the HRA process).

Seagreen received a response to the HRA Screening Report from Marine Scotland incorporating advice from SNH and JNCC on 23 February 2012. Clarification of a number of matters raised in this response was sought by Seagreen and a further response was provided by Marine Scotland on 30 July 2012. The HRA Screening Report and the responses draw together the relevant matters which require to be included within the HRA and confirm those SACs and SPAs which require to be considered. Seagreen met with Marine Scotland on 30 May 2012 to discuss the proposed approach to submission of HRA information with the consent applications including timing. Seagreen intend to provide relevant information for Marine Scotland as Competent Authority to undertake an AA and submitted details confirming the proposed approach methodology to Marine Scotland on 22 August 2012. Seagreen will continue to engage with Marine Scotland and relevant consultees as necessary with regard to HRA during the determination process.

CONCLUSIONS AND FUTURE CONSULTATION

Since January 2010 when the first formal consultation on the Zone commenced, Seagreen has taken a proactive approach to consultation. Feedback has been sought on the design, assessment and development proposals and all responses have been considered, and wherever practicable, have been taken into account by Seagreen in preparing its licence applications for submission.

A variety of methods were used to engage with the community and other stakeholders, including for example the public information event held in 2011 and 2012.

Where possible, Seagreen has responded positively and proactively to responses received during the consultation process. Where these responses have led to changes, Seagreen has carefully considered whether such changes warrant any further consultation and if so, to what extent. This has been guided by the potential influence that any subsequent consultation, if undertaken, could have had on the revised proposals.

Noticeable changes to, or within, the order limits made since statutory consultation was undertaken at Scoping are shown in Table 26.

Table 26. Summary of noticeable changes as a result of consultation since Seagreen Project Scoping Stage

Topic	Recommendation following consultation	Seagreen response
Ornithology	Recommendation that the original Phase 1 boundary may have a significant impact due to predicted level of collision for key protected species based on 2010 data.	Relocate the Project Alpha and Project Bravo site boundaries to the east to reduce collision risk.
Marine mammals	Potential for effects upon passage of bottlenose dolphins due to piling noise. Potential auditory injury and behavioural impacts due to piling noise on harbour seals foraging within or in close proximity to the Zone.	Relocate the Project Alpha and Project Bravo site boundaries to the east to reduce potential effects.
Commercial fisheries	Potential conflict with fishing activity, principally scallop dredging, with higher intensity in western part of Phase 1.	Relocate the Project Alpha and Project Bravo site boundaries to the east to reduce potential conflict with fishing activity.
Natural fish and shellfish resources	Potential for effects upon migratory fish due to piling noise.	Relocate the Project Alpha and Project Bravo site boundaries to the east to reduce potential impact upon migratory fish.
Commercial fisheries and shipping and navigation	Consultation with the fishing industry as well as the consultation associated with the NRA highlighted the need to provide protection to vessels from snagging on array and export cables.	Bury the array cables and export cables wherever feasible. Based on currently available information it is considered possible that up to 90% burial could be achieved and where cable burial cannot be achieved protection measures will be installed such as rock armouring or placement of concrete mattresses.
Landside construction impacts	Public consultation comments included a request for further details on potential impacts to the land.	Following a letter (issued on 02 March 2011) to Marine Scotland, followed by a meeting with Marine Scotland on 12 March 2012, it was agreed that landside construction impacts would not be taken through to detailed assessment at the ES stage as was originally outlined in the Seagreen Phase 1 Scoping Report. Therefore, this ES only assesses the marine elements of the Seagreen Project up to MHWS. Assessment of landside impacts potentially arising from the Seagreen Project (including shore crossings and transition pits) above MLWS will be fully assessed within the Phase 1 Onshore ES which will be submitted to Angus Council as part of a separate planning application for consent for the onshore elements of development.

During the determination process Seagreen will seek to develop an appropriate monitoring programme which will be carried out in consultation with Marine Scotland, the SNCBs and other interested stakeholders, as appropriate. Any necessary environmental management measures identified within the Seagreen Project ES will be developed and agreed with Marine Scotland.

Seagreen will continue to keep relevant communities and interested stakeholders informed of the progress made with the Seagreen project application. Particular emphasis will be put on Community Councils, local authority councillors, MPs and MSPs in the coastal area most local to the Seagreen Project. Seagreen will also continue to update any members of the public who have previously engaged with Seagreen or asked to be kept informed. Seagreen will also keep the project website up to date at www.seagreenwindenergy.com and any significant developments will be communicated to local and national press.

Seagreen has committed to the formation of a regional Working Group to facilitate future engagement of the fishing industry by the FTOWDG. This will likely include representatives of all the fishing activities identified in the Forth and Tay area, FTOWDG developers, Marine Scotland and TCE. The objectives of the Working Group may include, but not necessarily be limited to:

- the development of collaborative mitigation options; and
- defining aspects of construction management plans which can feasibly be standardised.

In addition to the mitigation measures associated with the construction phase, dialogue between the fishing community and Seagreen will be ongoing throughout the operational phase. It is anticipated that the Working Group will provide a forum for ongoing operational engagement, including:

- protocol for the navigation of OWF operations and maintenance vessels to and from the site (i.e. agreement of transit lanes to minimise interference to fishing activities); and
- established procedures in the event of interactions between wind farm operation activities and fishing activities (i.e. claims for lost and/or damaged gear).

Any responses received during the Seagreen Project applications consultation period will be taking into consideration.

REFERENCES

- AMEC (2010). *Cumulative Study Report Ornithology REVISED (Forth Array, Inch Cape, Neart na Gaoithe and Firth of Forth Round 3 Zone)*. FLOWDG. August 2010.
- Band, B. (2012). *Using A Collision Risk Model To Assess Bird Collision Risks For Offshore Windfarms*. Report for SOSS. Available at <http://www.bto.org/science/wetland-and-marine/soSS/projects>
- Cook, A., Johnston, A., Wright, L. and Burton, N. (2011). *A review of flight heights and avoidance rates of birds in relation to offshore wind farms*. Report for SOSS. BTO.
- CAA (2011). Directorate of Airspace Policy, Civil Aviation Authority (January 2012). *Civil Aviation Publication 764 CAA Policy and Guidance on Wind Turbines Version 4 Change 1*. The Stationary Office (TSO), UK.
- Furness R. and Wade, H. (2012). *An assessment of the sensitivity of Scottish seabirds to interactions with offshore wind developments*. Report to Marine Scotland.
- Gill, A.B., Huang, Y., Gloyne-Philips, I., Metcalfe, J., Quayle, V., Spencer, J. & Wearmouth, V. (2009). *COWRIE 2.0 Electromagnetic Fields (EMF) Phase 2: EMF-sensitive fish response to EM emissions from sub-sea electricity cables of the type used by the offshore renewable energy industry*. Commissioned by COWRIE Ltd (project reference COWRIE-EMF-1-06).
- Gill, A.B., & Taylor, H. (2001). *The potential effects of electromagnetic fields generated by cabling between offshore wind turbines upon elasmobranch fishes*. CCW Science Report No. 488, September 2001.
- Lewis, M., Lye, G., Pendlebury, C., Walls, R. (2012). *Populations sizes of breeding seabirds in Scottish SPA's*. Work Package E. Commissioned by Scottish Government (Marine Scotland).
- Malcolm, I.A., Godfrey, J. and Youngson, A.F. (2010). *Review of migratory routes and behaviour of Atlantic salmon, sea trout and European eel in Scotland's coastal environment: implications for the development of marine renewables*.
- Marine Scotland (2010). *Seagreen Round 3 Offshore Wind Farm Phase 1 Firth of Forth Scoping Opinion*. Issued MS-LOT to Seagreen 28 November 2010.
- Marine Scotland (2012). *MS-LOT to Seagreen Response to HRA Screening Report*. Issued February 2012.
- McDonald, C., Searle, K., Wanless, S. and Daunt, F. (2012). *Effects of displacement from marine renewables on seabirds breeding at SPAs*. Draft report for Marine Scotland.
- Royal Haskoning (2010). *Scottish Territorial Waters Offshore Wind Farms – East Coast - Second Discussion Document – Cumulative Impacts*. Report for FLOWDG.
- Seagreen (2010a). *Zone Appraisal and Planning – Firth of Forth Zone Characterisation*. Document number A6SW/SEAG-Z-DEV260-SWR-017- A3.
- Seagreen (2010b). *Seagreen Phase 1 Scoping Report*. Document number A6SW/SEAG-Z-DEV230-SWR-020- AS.
- Seagreen (2010c). *Seagreen paper on coastal and seabed impact assessment*. Document Number A4MR/SEAG-Z-DEV240-SRP-052.
- Seagreen (2011a). *Seagreen Phase 1 Scoping Report Onshore Grid Connection Works*. Document number A4MR/SEAG-Z-DEV235-CRP-053.
- Seagreen (2011b). *Offshore Phase 1 Habitats Regulations Appraisal (HRA) Screening Report*. Document number A4MR/SEAG-Z-DEV200-SRP-094.
- Seagreen (2011c). *Position Paper Update. Further Evidence Base*. Document Number A4MR/SEAG-Z-DEV240-SRP-085.
- Seagreen (2011d). *Year 1 Round 3 Zone Ornithology Survey December 2009 – December 2010 report*. Document number A4MR/SEAG-Z-DEV210-CRP-080.
- Seagreen (2011e). *Seagreen Phase 1 Seascape, Landscape and Visual Impact Assessment methodology*. Document Number A4MR/SEAG-Z-DEV200-SEA-SNH-093.
- Seagreen (2012a). *Seagreen Phase 1 Offshore Project Environmental Statement*. Document Number A4MR/SEAG-Z-DOC100-SFPR-060.
- Stroud, D.A., Chambers, D., Cook, S., Buxton, N., Fraser, B., Clement, P., Lewis, P., McLean, I., Baker, H. & Whitehead (eds) (2001). *The UK SPA network: its scope and content*. Three Volumes. JNCC, Peterborough, UK. Available at <http://jncc.defra.gov.uk/page-1412>
- Thaxter, C.B, Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos S., Bolton, M., Langston, R.H.W and Burton, N.H.K (2012). *Seabird foraging ranges as a tool for identifying candidate marine protected areas*. *Biological Conservation*, doi:10.1016/j.biocon.2011.12.009.
- Wright, L.J., Ross-Smith, V.H., Massimino, D., Dadam, D., Cook, A.S.C.P. & Burton, N.H.K. (2012). *Strategic Ornithological Support Services Project SOSS-05: Assessing the risk of offshore wind farm development to migratory birds designated as features of UK Special Protection Areas (and other Annex 1 species)*. BTO Research Report No. 592, British Trust for Ornithology, Thetford, UK: 192pp.
- WWT Consulting Ltd (2012). *Strategic Ornithological Support Services Project SOSS-04: Gannet Population Viability Analysis – Demographic data, population model and outputs*. British Trust for Ornithology, Thetford, UK: 63pp.



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