NON TECHNICAL SUMMARY

1. Introduction

1. Seagreen Wind Energy Limited (hereafter referred to as 'Seagreen') was granted Section 36 consents and Marine Licences for Seagreen Alpha Offshore Wind Farm (OWF) (hereafter referred to as 'Project Alpha') and Seagreen Bravo OWF (hereafter referred to as 'Project Bravo') on 10 October 2014. The consents were subsequently varied on 28th August 2018 to remove the wind farm capacity limits. These consents are still extant. The OWFs (the wind turbines, their foundations and associated array cabling), together with the associated infrastructure of the Offshore Transmission Asset (Offshore Substation Platforms (OSPs), their foundations and the Offshore Export Cables), are referred to as the 'originally consented Project'.

2. This document provides a Non Technical Summary (NTS) of the Addendum to the Seagreen 2018 Environmental Impact Assessment (EIA) Report ('the 2018 EIAR'). This was produced to support applications for alternative consents for similar, but updated, designs of the OWF projects, in the same sea area, based on fewer, larger, higher capacity wind turbines and monopile foundations that have become available on the market since the 2014 consents were granted. This is termed 'the optimised Seagreen Project' and allows Seagreen to take advantage of advances in turbine design and monopile construction. The optimised Seagreen Project does not include the Offshore Transmission Asset as these assets remain as licenced in 2014 and the components are therefore not re-assessed in the current EIA Report.

3. This Addendum NTS includes:

- Brief information on the Applicant;
- The background to the project and project approach;
- A description of the project and its components;
- A summary of the Addendum EIA process;
- Summaries of the scope and findings of the technical assessments reported in the Addendum; and
- A summary conclusion.

2. Seagreen Wind Energy Limited

4. Seagreen Wind Energy Ltd is owned by SSE Renewables Developments (UK) Limited (SSER). SSER has extensive renewables development, asset management and operations experience and is one of the UK's leading energy companies.

3. The Seagreen Project

3.1 Project Background and Existing Consents

5. In 2010, Seagreen Wind Energy Limited, (the parent company of Seagreen Alpha Wind Energy limited (SAWEL) and Seagreen Bravo Wind Energy limited SBWEL) was awarded exclusive development rights to the Firth of Forth Round 3 Offshore Wind Farm Development Zone (Zone 2) by the Crown Estate, under its third round of offshore wind licencing arrangements.

6. In 2012, SAWEL and SBWEL, on behalf of Seagreen, submitted an application for development consent to construct and operate two OWFs, Seagreen Alpha and Seagreen Bravo within the Firth of Forth Development Zone. The associated infrastructure required to facilitate the export of power to the national electricity transmission grid (the Transmission Asset), was also included within that application.

7. Consent for Seagreen Alpha and Seagreen Bravo OWFs and the Offshore Transmission Asset was awarded by Scottish Ministers in October 2014. The consents were confirmed in November 2017, following legal challenge by the RSPB to the consent award decision. The consents received in 2014 and confirmed in 2017 are hereafter referred to as 'the original consents' and the original development for which consent was sought (Seagreen Alpha and Seagreen Bravo), are hereafter referred to as 'the originally consented projects'.

8. The Onshore Transmission Asset (the onshore export cable from landfall at Carnoustie to a new substation at Tealing) was subject to a separate planning application under the Town and Country Planning (Scotland) Act 1997 and was granted in principle by Angus Council in 2013. Planning permission in principle for the Onshore Transmission Asset was extended by Angus Council in December 2016, following re-application by Seagreen.

9. The original consents and licences received in 2014, as varied in August 2018, are not affected by the current applications for the optimised Seagreen Project and therefore remain valid. It is Seagreen's intention to construct either the originally consented Project, or the optimised Seagreen Project presented within the 2018 EIAR and this Addendum. No changes are proposed to the Offshore Transmission Asset, this remains as licensed in 2014 and therefore those components have not been re-assessed.

3.2 The Optimised Seagreen Project

10. Since submission of the original consents applications, advances have been made in design and technology within the offshore wind farm industry, including increases in wind turbine size and capacity, improvements to foundation design and energy optimisation. To enable such advances to be included within the project design, Seagreen is seeking new consents for optimised projects within the same boundaries as the originally consented projects.

11. The Project area of the OWFs considered within the optimised application is the same as that considered within the originally consented project. The location and boundary of the Zone, Project Alpha and Project Bravo are shown in NTS Figure 1 at the end of this NTS (reproduced from the 2018 EIAR). At its closest point the Project lies approximately 27km offshore, east of the Angus coastline in the North Sea, in the outer Firth of Forth and Firth of Tay region. In total, the Project covers an area of approximately 391km^2.

4. Purpose of the Addendum

12. The purpose of this Addendum to the 2018 EIAR is to support an application for two Section 36 Consents under the Electricity Act 1989 and two Marine Licences under the Marine and Coastal Access Act 2009 and Marine (Scotland) Act 2010, for optimised OWF projects within the same application boundaries as the originally consented projects. This Addendum to the 2018 EIAR provides clarification and an updated assessment for those components of the proposed optimised Project Alpha and Project Bravo OWFs as requested by Marine Scotland in November 2018.

13. This Addendum updates the assessment of the potential ornithological impacts of the optimised Seagreen Project for the operational period only and considers both Project Alpha and Project Bravo alone and Project Alpha and Project Bravo combined. This Addendum also considers the optimised Seagreen Project in combination with other wind farm and infrastructure projects.

14. An updated ornithology Habitats Regulations Appraisal (HRA) has also been prepared for the optimised Seagreen Project based on the same design parameters as described in the Seagreen 2018 EIA Report. This provides Scottish Ministers with the information necessary to determine whether the development of the optimised Seagreen Project will have an adverse effect on the integrity of any European sites. The ornithology HRA is included in this Addendum in Section 3.

5. Project Description

15. The optimised Seagreen Project comprises Project Alpha and Project Bravo OWFs with a maximum of 70 Wind Turbine Generators (WTGs) in each Project and a maximum of 120 WTGs in total across both sites, referred to in this document as Project Alpha and Project Bravo combined.

16. The optimised Seagreen Project has reduced infrastructure compared to the originally consented Project (2014) which included up to 75 WTGs in both Project Alpha and Project Bravo (up to 150 in total) and up to six meteorological masts.

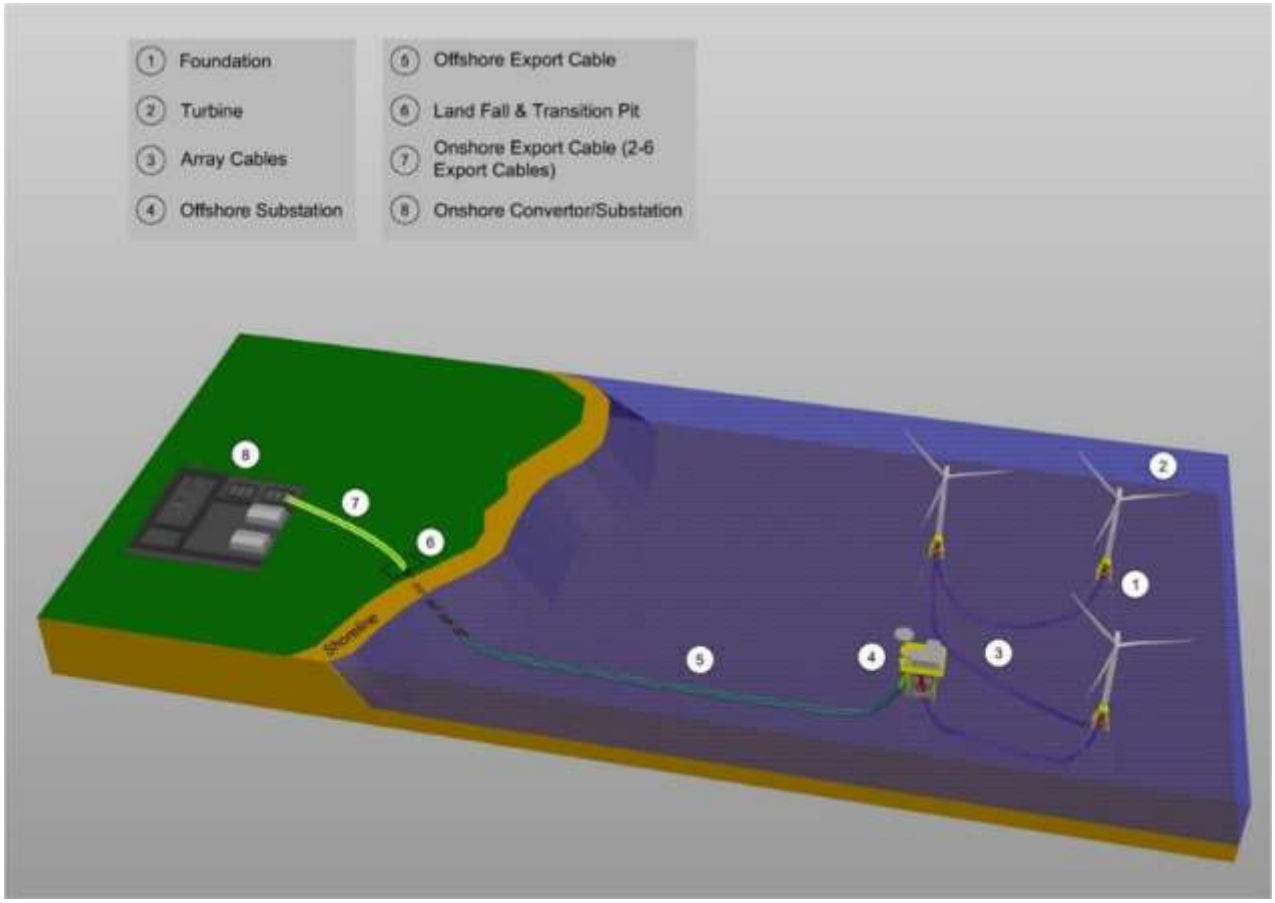
17. These projects comprise the following:

- Up to 70 wind turbine generators in each, with a total number of 120 turbines across both projects;
- Subsea array cables;
- Up to three wave buoys each (up to six in total across both sites);
- Scour protection and cable protection (where appropriate); and
- All foundations, substructures, fittings and cable crossings.

18. The 'Transmission Asset Project' which includes the OSPs, OSP foundations, OSP interconnector cables and export cables to transport the power generated by the OWFs to the Grid was licensed separately. No further changes are proposed and consequently, there is no further assessment of those assets within this EIA Report.

19. Plate 1 provides an overview of project components (including those already licensed) for context. The location and boundary of the Zone, Project Alpha and Project Bravo are shown in NTS Figure 1.

Plate 1. Illustration of the Seagreen Project Components



20. The key design parameters for the optimised Seagreen Project are summarised in Table 1. Design parameters are provided for Project Alpha, Project Bravo and where relevant, for the wind farms combined. Those design parameters which have been optimised since the original consents are highlighted for ease of reference.

Table 1. Key Parameters of Optimised Project Alpha and Project Bravo

Key Parameter	Optimised Design Envelope		
	Project Alpha	Project Bravo	Combined
Area (km^2)	197	194	391
Distance from shore (closest point) (km)	27	38	27
Maximum number of Wind Turbine Generators (WTGs)	70	70	120
Maximum rotor diameter	220	220	220
Maximum hub height above lowest Astronomical Tide (LAT) (m)	170	170	170
Maximum blade tip height above LAT (m)	280	280	280
Minimum blade tip clearance above LAT (m)	32.5	32.5	32.5
Minimum separation distance between turbines (m)	1,000	1,000	1,000
Colour of WTG	Pale matt grey/off-white colour and will include aviation lighting		
Max number of Gravity Base Structure (GBS) foundations	70	70	120
Max number of pin piled jacket foundations	70	70	120
Max number of suction caisson jacket foundations	70	70	120
Maximum number of monopile foundations	70	35	70
Scour protection	Maximum volume of scour protection for the optimised project for GBS foundation option is 900,000m^3 (less than GBS WCS scenario assessed in the 2012 Offshore ES: 1,734,000m^3)		
Wave buoys	Up to six		

6. The Environmental Impact Assessment Process

6.1 Overview

21. Environmental Impact Assessment (EIA) is an iterative tool for examining and assessing the impacts and effects of the construction, operation and decommissioning stages of a development on the environment. The purpose of an EIA is to carry out an independent assessment of the 'likely significant effects' of a project, both adverse and beneficial. It is a systematic and evidence based process and comprises the following broad stages:

- Scoping of issues to be considered within the EIA;
- Collection of baseline data, through surveys, consultation and desk based study, to describe and characterise the existing environmental conditions, as a basis for the impact assessment process;
- Identification and assessment of potential environmental impacts and conclusions on the likely significance of impacts identified; and
- Identification of mitigation measures and monitoring, or management strategies that can be applied, to avoid, reduce, or remove identified adverse impacts and the subsequent assessment of residual impact significance.

6.2 Scoping

22. The scope of this Addendum is based on comments received from Marine Scotland and Scottish Natural Heritage, including comments and requests for clarification on ornithology, following the submission of the 2018 EIAR. As a result of this the scope of the Addendum is reduced from that of the 2018 EIAR and covers ornithology only. It is based on further consultation with these bodies and underpinned by the advice and methodology provided by the Scoping Opinion from Marine Scotland Licensing Operations Team (MS-LOT, 2017).

23. Details on the receptors and assessments scoped in EIA are described in this Addendum (Part 2, Section 2) and summarised below.

24. This Addendum considers the topic of ornithology for the operational period only. This is because no revision was required to the other topics included in the 2018 EIAR and also because impacts on ornithology during construction and decommissioning were agreed to be not significant. The Addendum includes cross reference to the location of this information in the original 2018 EIAR in Annex 6. The Addendum includes a restricted list of species, five compared to six, because it was agreed that there would be no significant effects on herring gull and therefore no additional assessment was required for this species.

6.3 Assessing Impact Significance

25. Impact significance is determined using a combination of the sensitivity of the receptor and the magnitude of the potential impact. The magnitude and sensitivity of receptors are defined as either Negligible, Low, Medium or High.

26. Following identification of receptor value and sensitivity and magnitude of effect, the significance of impact is determined using the Impact Assessment Matrix (IAM), set out in Table 3 below. This matrix has been applied to most of the assessments within the EIA Report.

Table 2. Significance of Impact – Impact Assessment Matrix

Value/ Sensitivity	Magnitude			
	High	**Medium**	**Low**	**Negligible**
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

27. Potential impacts identified as major or moderate are generally considered to be significant in EIA terms and mitigation may be required, while impacts identified as minor or negligible are generally considered to be not significant in EIA terms. For the purposes of this EIA report, impacts assessed are considered adverse (negative) unless otherwise stated.

6.4 Consultation

28. Further to the consultation undertaken in support of the optimised Seagreen Project applications in 2018, detailed consultation was undertaken with Marine Scotland and SNH to define the scope and the assessments presented in this Addendum. Key further correspondence and advice received is collated in Annex 5 in Part 2 of this Addendum.

7. Summary of Environmental Impacts

7.1 Introduction

29. The following section summarises the potential environmental impacts associated with the optimised Seagreen Project, as detailed in this Addendum. The summary is split into 'Scope of Assessment' which describes what has been considered and 'Summary of Assessment' which describes the key findings of the assessment and discusses mitigation measures, where relevant.

7.2 Ornithology

7.2.1 Scope of Assessment

30. The ornithology assessment considers the potential effects that may occur during the operation of the wind farm including disturbance and displacement (birds moving from an area they use due to the project) on kittiwake, guillemot, razorbill and puffin and collision mortality (potential bird deaths due to collisions with wind turbines) on gannet and kittiwake.

31. In accordance with the 2017 Scoping Opinion from Marine Scotland these potential impacts and receptors are scoped in due to changes in the wind turbine design, namely the inclusion of a larger rotor diameter to that previously considered, availability of further survey data for the site and updated methods relating to the assessment of displacement and collision mortality impacts.

32. All other potential impacts on birds are scoped out because the findings of the assessments completed for the 2018 EIAR remains valid.

33. Additional survey data was collected from the areas of Project Alpha and Project Bravo during the 2017 breeding season using a boat-based survey method. This was to better understand the current environment. On this occasion, the methods were extended to include more accurate estimation of the flight heights of birds and to survey a larger area than that surveyed in 2011/2012, including a buffer around the proposed wind farm areas. These survey data have been used to update, interpret and verify the results of surveys undertaken to inform the assessment of impacts on offshore ornithology in the 2012 Offshore ES.

7.2.2 Summary of Assessment

34. The reduction in turbine numbers from a maximum of 150 for Project Alpha and Project Bravo combined for the originally consented project to 120 for the optimised Seagreen Project, combined with the increased separation distance between turbines (from 610m to 1000m) reduces potential collision risk and displacement for birds. To further reduce the potential impact of collision risk for birds, Seagreen implemented a design change during this EIA process. The minimum distance between the tip of turbine blades and the sea surface (minimum blade tip clearance) was increased from 29.8m to 32.5m (above Lowest Astronomical Tide). This change increases the area below the turbine blades in relation to bird flight, reducing the likelihood of collisions because birds at sea tend to fly relatively close to the water surface.

35. The significance of potential impacts due to disturbance and displacement from Project Alpha, Project Bravo and Project Alpha and Project Bravo combined remain the same as those assessed in the 2012 EIA for the originally consented Project, despite the calculation of displacement effects over a larger area than was previously assumed, due to the addition of the 2km buffer area around the site. No significant displacement impacts are predicted on any species due to those projects alone or cumulatively with any other relevant projects.

36. The potential magnitude of impacts due to collision mortality from Project Alpha, Project Bravo and Project Alpha and Project Bravo combined are generally lower than those previously assessed in the 2012 Offshore ES. The use of fewer, larger turbines typically reduces the risk of collision for seabirds, notwithstanding changes in assessment methodology, which now includes consideration of non-breeding season effects including those from other wind farms in the wider North Sea. For gannet and kittiwake no significant impacts are predicted due to collision mortality arising from these projects or cumulatively with other relevant projects and therefore no additional mitigation measures are proposed.

37. The results of this assessment update the previous assessment (the 2018 EIA) of the potential ornithological impacts of the optimised Seagreen Project for the operational period.

38. An ornithology monitoring plan will be developed to validate the findings of the EIA. The monitoring plan will be agreed with Marine Scotland and Seagreen will continue to consult with relevant stakeholders to inform the selection of the most appropriate monitoring methods for ornithological receptors.

8. Habitats Regulations Appraisal

39. The EU Habitats and Birds Directives require that certain habitats and species are given legal protection through a network of protected sites, the Natura 2000 network of sites. The Habitats and Birds Directives are transposed into domestic law in Scotland. The Natura 2000 network includes Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), collectively known as European sites in Scottish law.

40. The competent authority (in this case the Scottish Ministers) must consider whether a plan or project has the potential to have an adverse effect on the integrity of a European site. The process by which the developer provides the Scottish Ministers with the necessary information for them to complete an assessment appropriate to the requirements of the Habitats and Birds Directives is known as a Habitats Regulations Appraisal (HRA). Under this process, where a likely significant effect is identified for a plan or project, either alone, or in combination with other plans or projects, an Appropriate Assessment (AA) is required to assess the implications with regards to the conservation objectives of the European site.

41. This Addendum includes an updated HRA for the optimised Seagreen Project that has been undertaken to assist Marine Scotland on behalf of Scottish Ministers, as competent authority in undertaking an AA. The Addendum HRA is based on the 2017 Scoping Opinion provided by MS-LOT and further consultation following the submission of the 2018 EIAR to define a reduced list of European sites, qualifying interests and effects that required clarification or further assessment. Seagreen also undertook consultation with Scottish Natural Heritage (SNH) and other key consultees in relation to the scope of the Addendum HRA.

42. Accordingly, the Addendum HRA includes the following European sites:

- Forth Islands SPA;
- Fowlsheugh SPA;
- St Abb's Head to Fast Castle SPA; and
- Outer Firth of Forth and St Andrews Bay Complex proposed SPA (pSPA).

43. The scope of the HRA considers the following effects on species at the above SPAs:

- Displacement and barrier effects — in respect of kittiwake, guillemot, razorbill and puffin; and
- Collision mortality — in respect of gannet and kittiwake.

44. For the scenarios described within the Addendum HRA, no adverse effects on the integrity of any SPA/pSPA are predicted because the species will remain viable components of the sites assessed with respect to the predicted impacts associated with Project Alpha and Project Bravo alone and Project Alpha and Project Bravo combined. The same conclusions are reached in respect of the impacts of these projects cumulatively with other projects in the Forth and Tay region and the wider North Sea.

45. Therefore, the HRA concludes that the optimised Seagreen Project, both alone and in-combination with other plans and projects, is predicted to result in no adverse effects on the integrity of European sites.

9. Conclusion

46. Since consent award for the originally consented projects in 2014, advances have been made in design and technology within the offshore wind farm industry, including increases in wind turbine size and capacity, improvements to foundation design and energy optimisation. To enable such advances to be included within the project design, Seagreen is seeking additional consents for optimised projects within the same boundaries as the originally consented projects. It is Seagreen's intention to construct either the originally consented Project, or the optimised Seagreen Project presented within the 2018 EIAR and this Addendum.

47. This Addendum provides clarification and updates to the 2018 EIAR which assessed the potential impacts of the optimised Seagreen Alpha OWF project, the optimised Seagreen Bravo OWF project and the Seagreen Alpha and Seagreen Bravo projects combined (the optimised Seagreen Project) on relevant environmental parameters scoped into the assessment.

48. The conclusion of the 2018 EIAR and this Addendum is that given the successful implementation of the stated mitigation measures committed to by Seagreen, combined with ongoing dialogue with interested stakeholders and the regulatory authorities, the predicted adverse impacts for the optimised Seagreen Project are considered to be acceptable. The precautionary and conservative nature of the ornithology assessment approach in this Addendum, based on worst case scenarios, also means that, in reality, any impacts are likely to be less than predicted.

10. Further Information

This Addendum can be viewed during the statutory consultation period at the following locations:

- **Angus Council Montrose Access Office**
  Town House
  High Street
  Montrose
  DD10 8QW
- **Arbroath Library**
  Hill Terrace
  Arbroath
  DD11 1AH
- **Carnoustie Library**
  21 High Street
  Carnoustie
  DD7 6AN
- **Dundee Central Library**
  The Wellgate
  Dundee
  DD1 1DB

49. Copies of the ES Addendum may be obtained from Seagreen (0141 224 7192 or info@seagreenwindenergy.com) at a charge of £10 for a copy on CD and £350 per hard copy. Copies of this non-technical summary are available free of charge.

50. Any representations to the application should be made by email to: The Scottish Government, Marine Scotland Licensing Operations Team mailbox at Seagreen.Representations@gov.scot or by post to: The Scottish Government, Marine Scotland Licensing Operations Team, Marine Laboratory, 375 Victoria Road, Aberdeen, AB11 9DB, identifying the proposal and specifying the grounds for representation.

11. References

MS-LOT (2017) Scoping Opinion for the proposed section 36 consent and associated marine licence application for the revised Seagreen phase 1 offshore project. 15 September 2017.