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Seagreen S36C Application

Environmental Appraisal Report

April 2022

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Rev	Date	Reason for Issue	Originator	Checker	Approver
01	06/04/2022	Draft For client review	Jack Smith	James Memory	Alex Thompson
02	19/04/2022	Final	James Memory	James Memory / Alex Thompson	Michael Walker

Key Terms & Definitions

Term	Definition
2012 ES	When referring to the original 2012 Environmental Statement produced for the Seagreen Project.
2014 Consents	Seagreen Alpha S36 Consent, Seagreen Alpha Marine Licence, Seagreen Bravo S36 Consent, Seagreen Bravo Marine Licence and Offshore Transmission Asset Marine Licence (all as varied).
the Variation	The project activities outlined in the project description in this report comprising the: WTG parameter changes in respect of 36 WTGs comprising: Maximum rotor diameter: 167 m to 242 m Maximum blade chord width: 5.4 m to 7.6 m Maximum tip height above LAT: 209.7 m to 285 m Minimum air gap above LAT: 29.8 m to 34 m Maximum hub height above LAT: 126.2 m to 165 m Maximum steel/iron seabed deposits: 13,000 tonnes to 22,560 tonnes. References to the Variation also take into account the actual parameters of the 114 turbines under construction – see Table 2.2.
Offshore Transmission Asset (OTA) to Carnoustie	Cable corridor and assets running from the west of Seagreen Project Area red line boundary landing to Carnoustie.
Optimised Design Application	Optimised Design Application, scoped in 2017, submitted in 2018, currently under determination.
Seagreen 1A or SG1A Project	The transmission asset to Cockenzie.
Seagreen Alpha	Seagreen Alpha Offshore Wind Farm (OWF) within the phase 1 development area of the Firth of Forth round 3 offshore wind zone.
Seagreen Alpha Marine Licence	The marine licence dated December 2019 with reference: Marine Licence - 04676/19/0.
Seagreen Alpha S36 Consent	The section 36 consent dated August 2018 with reference Seagreen Alpha S36 Consent.
Seagreen Bravo	Seagreen Bravo OWF within the phase 1 development area of the Firth of Forth round 3 offshore wind zone.
Seagreen Bravo Marine Licence	The marine licence dated December 2019 with reference Marine Licence - 04677/19/0.
Seagreen Bravo S36 Consent	The section 36 consent dated August 2018 with reference Seagreen Bravo S36 Consent.
Seagreen Alpha and Bravo Transmission Asset Marine Licence	Seagreen Transmission Asset connecting from Seagreen Alpha and Bravo to grid connection point, Marine Licence dated March 2019 with reference Marine Licence - 04678/19/0.
Seagreen Project	The total project as currently consented, comprising the Seagreen Alpha, Seagreen Bravo consents and Offshore Transmission Asset to Carnoustie.

References to Key Documents

Reference	Summary	Location*
Optimised Design Application Appropriate Assessment	2018 Appropriate Assessment (AA) to accompany the 2018 Optimised Design Application (ODA).	Optimised Design Application AA
Optimised Design Application Scoping Report	Pre-application scoping report submitted to Marine Scotland – Licensing Operations Team (MS-LOT) in 2017 to inform the ODA EIA.	Optimised Design Application Scoping Report
Optimised Design Application Environmental Impact Assessment	2018 ODA Environmental Impact Assessment (EIA), submitted to vary the 2014 consent for Alpha and Bravo, application undetermined.	Optimised Design Application EIA
Optimised Design Application Scoping Opinion	Pre-application scoping opinion provided by MS-LOT to SSE in 2017 to inform the ODA EIA in response to the ODA Scoping report.	Optimised Design Application Scoping Opinion
2012 Environmental Statement	Original 2012 Seagreen Alpha and Bravo Environmental Statement (ES) to accompany the marine Licence and Section 36 applications.	2012 ES
2012 ES Scoping Opinion	Pre-application scoping opinion provided by MS-LOT to SSE in 2010 to inform the 2012 ES in response to the 2012 ES Scoping report.	2012 ES Scoping Opinion
2014 Marine Protected Area Assessment	MS-LOT Marine Protected Area (MPA) Assessment associated with the 2012 ES.	2014 MPA Assessment
2014 Appropriate Assessment	2014 AA to accompany the 2012 ES.	2014 AA
2020 Piling Strategy	The overall aims and objectives of the OWF Piling Strategy are to provide detailed information on the piling activities for installation of the WTG foundations, including setting out the anticipated timing, location, duration and maximum hammer energy to be used.	2020 Piling Strategy
Seagreen Bravo Marine Licence 2014	Marine Licence granted to Seagreen Bravo Wind Energy Limited (SBWEL) following submission of Application in 2012.	Seagreen Bravo Marine Licence 2014
Seagreen Alpha Marine Licence 2014	Marine Licence granted to Seagreen Bravo Wind Energy Limited (SBWEL) following submission of Application in 2012.	Seagreen Alpha Marine Licence 2014
Seagreen Transmission Asset Marine Licence 2014	Marine Licence granted to Seagreen Alpha Wind Energy Limited (SAWEL) and Seagreen Bravo Wind Energy Limited (SBWEL).	Seagreen Transmission Asset Marine Licence 2014
2018 Seascape, Landscape and	Seascape, Landscape and Visual Impact Assessment Chapter in the 2018 ODA.	2018 Seascape, Landscape and Visual Impact Assessment (SLVIA)

Reference	Summary	Location*
Visual Impact Assessment (SLVIA)		
2012 Navigational Risk Assessment (NRA)	NRA Technical Appendices to accompany the 2012 ES.	2012 Navigational Risk Assessment (NRA)
2018 Navigational Risk Assessment	Navigational Risk Assessment (NRA) Technical Appendices to accompany the 2018 ODA.	2018 Navigational Risk Assessment
2021 Design Statement	This design statement is designed to identify final OWF designs, and sets out changes in the design and layout, set out key criteria that have informed final designs, indicate how seascape, landscape and visual impacts have been addressed and mitigated, illustrate through a set of agreed representative viewpoint locations the final OWF and OTA design and layout.	2021 Design Statement
2020 Development Specification and Layout Plan	The aims and objectives of the Development Specification and Layout Plan are to provide details of the proposed specification and layout in so far as it relates to the 150 WTGs, spare locations and their associated foundations, across the Site and Inter-array Cables.	2020 Development Specification and Layout Plan
2020 Construction Programme	The overall aim of the Construction Programme is to set out the intended construction programme for the Seagreen Project.	2020 Construction Programme
Marine Pollution Contingency Plan	The overall aims and objectives of the MPCP are to provide detailed information to those involved in the construction of the Seagreen Project on the actions and reporting requirements in the event of a pollution incident originating from offshore operations relating to the Seagreen Project.	Marine Pollution Contingency Plan
Construction Environmental Management Plan (CEMP)	The overall aims and objectives of the Offshore CEMP are to detail to those involved in the construction of the Seagreen Project, the series of measures and requirements to manage environmental aspects based on commitments made by Seagreen and the requirements of the consent conditions.	Construction Environmental Management Plan

*It was agreed with Marine Scotland Licencing Operations Team in pre-application discussions that the above documents could be referenced in the report text and a hyperlink provided to their website where a copy of the document is located.

Acronym / Abbreviation	Full Text
AA	Appropriate Assessment
AD	Air Defence
CAA	Civil Aviation Authority
CEMP	Construction Environmental Management Plan
EIA	Environmental Impact Assessment
ES	Environmental Statement
GBS	Gravity Based Structure
HRA	Habitats Regulations Appraisal
km	Kilometres
LAT	Lowest Astronomical Tide
Ltd	Limited
m	Metre
MOD	Ministry of Defence
MPA	Marine Protected Area
MS-LOT	Marine Scotland – Licensing Operations Team
MW	Mega Watt
NATS	National Air Traffic Services
ODA	Optimised Design Application
OSP	Offshore Substation Platform
OWF	Offshore Wind Farm
PAD	Protocol for Archaeological Discovery
PRMS	Primary Radar Mitigation Scheme
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAWEL	Seagreen Alpha Wind Energy Limited
SBWEL	Seagreen Bravo Wind Energy Limited
SEPA	Scottish Environmental Protection Agency
SG1A	Seagreen 1A
SNH	Scottish Natural Heritage
UK	United Kingdom
WSI	Written Scheme of Investigation
WTG	Wind Turbine Generator

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1. Introduction

1.1 Background

In October 2014, Scottish Ministers awarded consents and licences to Seagreen Wind Energy Ltd (SWEL) for the Seagreen Project under Section 36 of the Electricity Act 1989, Part 4 of the Marine (Scotland) Act 2010 and the Marine and Coastal Access Act 2009 to construct and operate Seagreen Alpha and Bravo Offshore Wind Farms (OWFs) and associated infrastructure of the Offshore Transmission Asset (OTA) (the Seagreen Project). In 2018, the Seagreen Project's OWF licences were varied to remove the consented OWF capacity limits to allow the installation of higher rated WTGs. In 2019, the OTA to Carnoustie licence was varied to accommodate an alternative landfall installation method. Together, these are referred to as the "2014 Consents". Section 1.3 presents an overview of the consented Seagreen Project.

To accommodate proposed parameter changes to the Seagreen Project, SWEL is requesting a variation to the Seagreen Alpha Section 36 Consent[1] and the Seagreen Bravo Section 36 Consent[2] for the Seagreen Project under section 36C (S36C) of the Electricity Act 1989. SWEL also requests that should the variation of the section 36 consents be granted, the associated Seagreen Alpha Marine Licence[3] and the Seagreen Bravo Marine Licence[4] are also varied by the Scottish Ministers under section 72 of the Marine and Coastal Access Act 2009 and section 30 of the Marine (Scotland) Act 2010. Finally, SWEL is also requesting a variation to the existing Marine Licence, varied in 2019, associated with the OTA to Carnoustie[5]. This Environmental Appraisal supports the variations outlined above.

The proposed parameter changes include:

- Increased size of 36 of the consented wind turbine generators (WTGs); and
- Increased weight of seabed steel deposits associated with the offshore substation platforms (OSPs).

For the purpose of this report, these parameter changes are referred to as "the Variation". References to the Variation also take into account the actual parameters of the 114 turbines under construction – see Table 2.2.

On 17th of January 2022, SWEL requested a Screening Opinion from Scottish Ministers (see Appendix A) via the Marine Scotland Licensing Operations Team (MS-LOT) in regard to the Variation proposed to the Seagreen Alpha and Bravo Section 36 Consents[1, 2], associated Marine Licences[3, 4] and the OTA

[1] Seagreen Alpha S.36 Consent
[2] Seagreen Bravo S.36 Consent
[3] Seagreen Alpha Marine Licence
[4] Seagreen Bravo Marine Licence
[5] Seagreen Transmission Asset Marine Licence

Marine Licence[5]. To support the request for a Screening Opinion, SWEL submitted a Screening Report (Seagreen S36C Application Screening Report[6]), with the main purpose of:

1) Demonstrating why the Variation would not lead to a development fundamentally or substantially different in terms of scale, characteristics, and/or nature from what is authorised under existing consents and therefore can appropriately be authorised under Section 36C of the Electricity Act 1989; and

2) Based on further technical assessment, demonstrating the Variation will not give rise to any likely significant adverse environmental effects on the environment compared to the consented Seagreen Project, and as such does not require an EIA under the Environmental Impact (EIA) Regulations (the Electricity Works (EIA) (Scotland) Regulations 2017) (**Electricity Works EIA Regulations**) and the Marine Works (EIA) (Scotland) Regulations 2017) (**Marine Works EIA Regulations**).

A Screening Opinion under the Electricity Works EIA Regulations and Marine Works EIA Regulations was made by Scottish Ministers on 13th April 2022. This concluded that the Variation to the Seagreen Alpha and Bravo Section 36 Consent, and OTA Marine Licence do not comprise EIA development under the Electricity Works EIA Regulations or the Marine Works EIA Regulations and therefore an EIA is not required to be carried out in respect of the Variation.

1.2 Report Purpose

This Environmental Appraisal has been prepared to support an application to vary the Seagreen Alpha and Bravo Section 36 Consents[1, 2], associated Marine Licences[3, 4] and the OTA Marine Licence[5]. The purpose of this report is to summarise technical assessments presented in the Seagreen S36C Application Screening Report (full Screening Report provided in Appendix A), detail additional information requested by stakeholders during pre-application consultation and provide any relevant updates between submitting the Seagreen S36C Application Screening Report and the submission of the S36C Application.

1.3 Overview of Consented Seagreen Project

The Seagreen Project is located in the North Sea, in the outer Firth of Forth and Firth of Tay region. It comprises the Offshore Wind Farms (OWFs) (which includes the Wind Turbine Generators (WTGs), their foundations and associated array cabling), together with associated infrastructure of the Offshore Transmission Asset (OTA) (which includes the Offshore Substation Platforms (OSPs) and their foundations and the offshore export cable which will make landfall at Carnoustie and connect to the

[6] Seagreen S36C Application Screening Report

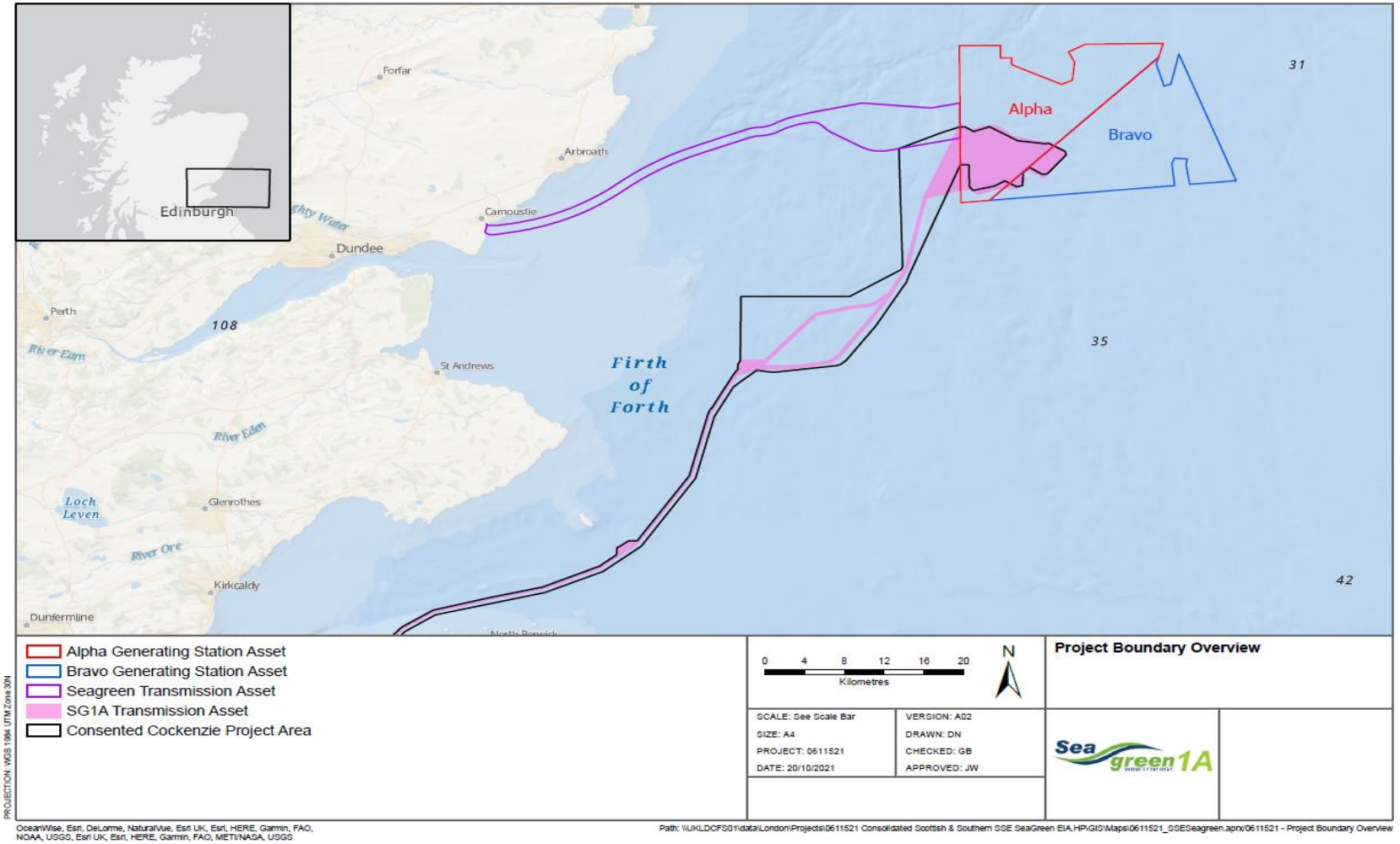
Tealing substation). The consents described in Section 1.1 give permission for the installation and operation of up to 150 WTGs, 5 OSPs and associated electrical infrastructure to export to Carnoustie. As described in the 2020 Construction Programme[7], 114 of the 150 consented WTGs are currently under construction (which began in September 2021) and have a grid connection into Tealing, Angus.

To maximise energy generation and facilitate full export capacity for the Seagreen Project, Seagreen 1A (SG1A) Limited obtained a marine licence for an additional export cable (approximately 108 km) from the consented Seagreen Project Area to an identified landfall location at Cockenzie[8]. This will include one high voltage export cable to mean high water springs (MHWS), cable landfall and connection to the onshore infrastructure. This connection is planned to accommodate the remaining 36 consented but not constructed WTGs under the 2014 Consents. Figure 1.1 provides an overview of the location of the components described above.

[7] 2020 Construction Programme

[8] Seagreen 1A Marine Licence

Figure 1.1 Project Location Overview and Components



2. Proposed Seagreen Project Variation

2.1 Rationale

As noted in Section 1, SWEL is proposing to vary the 2014 Consents to allow for the following changes:

- Increased size of 36 of the consented but not constructed WTGs; and
- Increased weight of seabed steel deposits associated with the OSPs.

The proposed changes are required to maximise supply chain opportunities and the production of renewable energy to meet government targets, and to ensure the most optimal technology solution can be deployed at the site both from an environmental impact and cost of technology perspective. Table 2.1 summarises the proposed parameter changes.

Table 2.1 Summary of Proposed Parameter Changes

Change Description	Parameter	Consented (2014 Consents)	Proposed
Increased size of 36 of the consented WTGs	Maximum rotor diameter	167 m	242 m
	Maximum blade chord width	5.4 m	7.6 m
	Maximum tip height (above LAT)	209.7 m	285 m
	Minimum tip height (air gap) (above LAT)	29.8 m	34 m
	Maximum hub height (above LAT)	126.2 m	165 m
Increased weight of seabed steel deposits associated with the OSPs	Steel seabed deposits	13,000 tonnes	22,560 tonnes

SWEL expect to be able to carry out all substantive offshore works within the four-year indicative construction programme envisaged in the 2012 ES.

Further details of the changes described above are provided in sections 2.2 and 2.3 .

2.2 Proposed increased size of 36 of the consented WTGs

The WTG layout will be designed to best utilise the available wind resource while at the same time seeking to reduce environmental effects and impact on other marine users and considering suitability of ground conditions.

The maximum height of the 36 varied WTGs is expected to be up to 285 m from Lowest Astronomical Tide (LAT) to the blade tip in the vertical position, however, new WTGs available on the market at the time of construction will be considered and their detailed dimensions are not yet known. The nacelles and rotor will be mounted upon a cylindrical steel tower; which will, in turn, be supported by a substructure and foundation, the design and type of which is yet to be confirmed. Table 2.2 presents the proposed WTG parameters comprising part of the Variation and compares these to what is currently consented. The table also presents the parameters for the 114 WTGs currently under construction.

Where assessments are based on an identified WTG to be deployed, the dimensions used in the assessments have been rounded to one decimal place (noting this aligns with the level of accuracy for setting parameter dimensions as in the S36 consent).

Table 2.2 WTG Proposed Parameter Changes

Parameter	2014 Consented Project Parameters	Seagreen Parameters (applicable to 114 of 150 consented WTGs under construction)	Proposed Change (applicable to 36 of 150 consented WTGs not under construction)	Description
Minimum tip height above LAT (clearance/air gap)	29.8 – 42.7 m	37 m	34 – 45 m	This is the air gap between the lowest point of the WTG blade rotation and the sea surface, referenced to the LAT.
Distance from shore (closest point)	27 km	27 km	27 km	The minimum distance from shore of any WTG remains unchanged.
Indicative capacity of WTGs	7 MW (generating cap removed in 2018)	7 MW (generating cap removed in 2018)	16 MW	WTG capacity is the amount of energy a WTG would produce if it ran 100% of the time at optimal wind speeds.
Maximum number of WTGs	150	114 under construction of Phase 1	150 (the Variation)	The maximum number of WTGs within the consented Seagreen Alpha and Bravo red line boundary remains unchanged.

Parameter	2014 Consented Project Parameters	Seagreen Parameters (applicable to 114 of 150 consented WTGs under construction)	Proposed Change (applicable to 36 of 150 consented WTGs not under construction)	Description
Split of WTGs between Alpha and Bravo OWF	75/75	75/75	75/75	Split between Alpha and Bravo refers to the maximum number of WTGs to be located between the two OWFs.
Maximum tip height above LAT	209.7 m	205 m	285 m	This is the highest point of the blade rotation measured from the sea surface and referenced to the LAT.
Maximum blade chord width	5.4 m	5.4 m	7.6 m	WTG blade chord width refers to the width of the wing measured in the direction of airflow.
Maximum rotor diameter	122 – 167 m	164 m	242 m	Rotor diameter refers to the diameter the wind WTG hub will sweep.
Minimum separation distance between WTGs	1 km	1 km	1 km	Separation distance refers to the distance between one WTG and the next.
Maximum hub height above LAT	87.1 – 126.2 m	119 – 123 m	118 – 165 m	The hub height of a WTG refers to the height at which the hub sits and is the top of the “tower”. The hub is also the centre of the WTG blades rotation point, the point at which the blades are attached to the WTG tower and where the generator is housed.
RPM	4 – 14 rpm	5 – 14 rpm	3 – 14 rpm	Rotations Per Minute (RPM) refers to the number of complete rotations (full 360 degrees) the WTG blades turn in a minute of rotation.

2.3 Proposed increased weight of seabed steel deposits associated with the OSPs

OSPs are critical aspects of OWFs. They collect power produced by WTGs and connect this energy to the grid. The OSP will consist of a topside, some form of foundation and substructure, with cables connecting from the WTGs and to shore. As presented in Table 2.3, the total seabed deposits of steel/iron necessary for OSP installation are likely to be heavier than consented and is the only parameter in relation to OSPs that requires a variation.

Table 2.3 Proposed OSP Parameter Changes

Parameter	Current consent (as assessed in 2012 ES or 2018 variation)	Proposed	Description
Number of OSPs	up to 5 OSPs	Unchanged	The offshore platforms effectively act as a gathering station for the power generated by the WTGs. The export cables carrying the power generated by the WTGs originate at the OSPs.
OSP Rating	C. 220kV	Unchanged	This value (220kV) represents the maximum voltage exported per export cable.
OSP foundation options	Piled jacket, suction piled jacket, Gravity Base Structure (GBS)	Unchanged	The foundation is the structure upon which the Platform Topsides are mounted and comprises a structure that is set on, or in the seabed.
Worst-case total OSP direct footprint	47,939 m^2	Unchanged	Relates to the area of ground/seabed taken up by the area of the OSP foundation.
Maximum steel/iron deposit	13,000 tonnes	22,560 tonnes	The total amount of steel to be deposited on/in the seabed as part of the OSP installation. This represents the steel of the jacket structure along with the piles associated with fixing the jackets in place.
Maximum concrete deposit	42,000 m^3 (approx.)	Unchanged	The total amount of concrete to be deposited on/in the seabed as part of the OSP installation.
Maximum silt deposit	130,000 m^3 (max)	Unchanged	The total amount of silt to be deposited on/in the seabed as part of the OSP installation.
Maximum sand deposit	130,000 m^3 (max)	Unchanged	The total amount of sand to be deposited on/in the seabed as part of the OSP installation.
Maximum stone/rock/gravel	435,000 m^3	Unchanged	Stone/rock/gravel are used to prevent scour from the base of the jackets.

Parameter	Current consent (as assessed in 2012 ES or 2018 variation)	Proposed	Description
(size range 50 – 200 mm) deposit			

2.4 Draft requested changes to Seagreen Section 36 Consents

In accordance with Regulation 3 of The Electricity Generating Stations (Application for Variation of Consent) (Scotland) Regulations 2013, the requested changes to the Seagreen Alpha and Bravo Section 36 Consents are presented in Appendix B of this report. Equivalent changes are also requested to the relevant marine licences.

These changes apply to:

- Annex 1: Description of the Development; and
- Annex 2: Conditions of the Section 36 Consent. Based on the nature of the required changes to this Annex, two drafting options have been presented for Marine Scotland's consideration:
    - Option 1: This option shows each relevant condition as individually amended so that they may be discharged separately for each phase. These changes have been highlighted yellow in Appendix B.
    - Option 2: This option includes the addition of one catch-all condition which makes clear that the Company will notify the Scottish Ministers where they intend to discharge the relevant conditions on a phased basis. These changes have been highlighted green in Appendix B.

2.5 Consultation Summary

Based on information presented in the Seagreen S36C Application Screening Report, it was concluded that the Variation will not give rise to any likely significant adverse environmental effects, alone or in combination with other projects, compared to the consented Seagreen Project assessed in the 2012 ES.

Scottish Ministers in their Screening Opinion also concluded that the proposed changes to the 2014 Consents are not considered to be EIA development under the Electricity Works EIA Regulations or the Marine Works EIA Regulations and therefore an EIA is not required to be carried out in respect of the Variation.

Table 2.4 summarises responses received in the Screening Opinion and pre-application consultation meetings, and details how SWEL have incorporated those inputs into this Environmental Appraisal.

Table 2.4 Consultation Summary

Consultee	Format	Summary of Comments	SWEL Response
Royal Society for the Protection of Birds (RSPB)	Meeting on 03/02/2022	• For ease of reference, please could the different collision risk modelling (CRM) be referred to as the stochastic and deterministic for consistency. • We recommend use of the Johnson et al (2014) with corrigendum avoidance rates. • Bowgen and Cook (2018) avoidance rates are based on data from one site and we do not recommend their use here. • A JNCC commissioned review on avoidance rates is taking place, however the timescale for publication is currently unknown. • Presentation of the 2018 optimised design results alongside the original (2012) 150 turbine and this proposed change (114 as built and 36 as proposed) would be useful. • We note the monitoring programme is not proposed to change. • The CRM for the 2012 application changed several times – different parameters were used in the original submission, later update and AA produced by Marine Scotland. This makes comparing the existing consent, original consent and the proposed development more challenging. We would welcome a summary data table (similar to Table B in the Marine Scotland AA in 2014) being provided. For clarity, we suggest this table should take into consideration the other permitted development in the Forth and Tay area (and further afield if relevant) with a commentary as to which Forth and Tay windfarm impact (e.g., whether the original or revised design of various windfarms) was used in their assessments.	The CRM completed within the Seagreen S36C Application Screening Report has been updated based on this feedback and is presented within Appendix C of this Environmental Appraisal.
NatureScot	Meeting on 04/03/2022 Screening Opinion	Overall, we are content with the approaches and findings outlined in the Screening Report and annex reports such that we agree that there would be no material change to predicted ornithology or seascape/landscape impacts from the proposed variation.	The CRM completed within the Seagreen S36C Application Screening Report has been updated based on this feedback and is presented within Appendix C of this Environmental Appraisal.

Consultee	Format	Summary of Comments	SWEL Response
	Consultation Response	Therefore, NatureScot consider that the proposed variation would not require a full EIA to support the variation application. We are content with the CRM approach outlined in the Screening Report and Annex 1 but advise that 'flapping' flight should only be used for kittiwake and herring gull, with 'gliding' used for gannet instead. We also welcome the updated Band CRM using flight heights from Johnston et al. (2014), which we understand from our meeting with Seagreen will be presented alongside the variation application. NatureScot also noted that although they agreed with the conclusion of no Likely Significant Effects (LSE) on protected sites, a full LSE screening and consideration of the need for an Appropriate Assessment should be presented in the Environmental Appraisal to accompany the S36C variation application. We have reviewed Annex 2 and agree that the increase in turbine height would be discernible from viewpoints 2 and 5, resulting in significant effects, as noted in the original (2012) ES. However, given the distance from shore and the current cumulative scenario(s), we agree with the conclusions of the Annex 2 report that the overall findings would not be materially different to those in the 2012 ES. Therefore, NatureScot agree that there is no requirement to undertake a new SLVIA for the proposed variation.	A screening of LSE on protected sites and consideration of the need for an Appropriate Assessment is presented in Section 3.5.
Marine Scotland	Screening Opinion	In considering the characteristics and location of the Proposed Development, and characteristics of the potential impacts, the Scottish Ministers are of the opinion that an EIA is not required to be carried out in respect of the Proposed Works under the 2007 MW Regulations or the 2017 EW Regulations.	An Environmental Appraisal will be submitted in support of the application.

Consultee	Format	Summary of Comments	SWEL Response
Angus Council	Screening Opinion Consultation Response	Angus Council is satisfied that the S36 variation proposal would not result in impacts of significance that are new or materially different to those of the consented Seagreen Project.	Noted
East Lothian Council (ELC)	Screening Opinion Consultation Response	If the increased size of the turbines will lead to the need for further onshore works, this is part of the overall project and should be considered in coming to a Screening Opinion. As this has not been noted in the Screening Report, I assume that no further onshore works will be required in relation to these works. In daylight, we do not consider there will be a significant effect that is different from that shown in the original EIA due to the distance. However, there could be an increase in the number or change to the location of aviation lights at night due to the increased hub height. This is a concern when viewed against the backdrop of the Bass Rock from North Berwick mainly. It would be helpful if a wireline of the existing and proposed aviation lighting could be provided to allow us to consider if this is likely to result in a significant change. If there are no changes to the proposed onshore works within East Lothian, and no change to the visibility of night lighting, we do not consider that EIA assessment is required for impacts on East Lothian. If there is a significant increase in the visibility of lighting from East Lothian, or if there are changes to the onshore works, further assessment may be required.	SWEL confirmed with ELC that the larger WTGs proposed in the Variation do not require any changes to the export cable or onshore works. Regarding visual impacts from night lighting, the night lighting on the 36 larger wind turbines being proposed in the Variation will not be visible from any point of the East Lothian coast. SWEL has also considered inland locations and note that there would be theoretical visibility of turbine hubs from the summit of North Berwick Law (187m), which is a key elevated viewpoint for Neart na Gaoithe wind farm. SWEL have compared both the consented and the Variation, and while the latter are further above the horizon, there are no more hubs visible than in the consented scheme. So, there would not be any more lights visible from this viewpoint. In addition, the Seagreen turbines are all seen behind Neart na Gaoithe and Inch Cape in the view so the viewer will not notice any change as a result of the Variation. On this basis,

Consultee	Format	Summary of Comments	SWEL Response
			SWEL do not consider that there is any justification for further wireframe analysis. See Section 3.2.2 for further information.
Dundee City Council	Screening Opinion Consultation Response	Dundee City Council has no comment on the screening consultation.	Noted
Fife Council	Screening Opinion Consultation Response	Having looked through the submitted Screening Report, I am of the view that we would not offer any contrary view to the findings therein, with the re-sizing of some of the wind turbines and the addition of a second export cable unlikely to significantly impact further on the environment than has already been assessed through the environmental assessments carried out to date, though we would expect NatureScot to have been consulted on these matters in any event.	Noted
Historic Environment Scotland	Screening Opinion Consultation Response	We are content to agree with the findings included within the EIA Screening Report (17 January 2022) prepared in support of the variations that the changes proposed would not give rise to significant impacts on our historic environment interests further to those already identified in the Environmental Statement (2012) prepared in support of the original consents. We note from the EIA Screening Report (17 January 2022) that potential impacts on marine historic environment features will be minimised through the implementation of a mitigation strategy involving the avoidance of any potential archaeological anomalies or known wrecks. We note that this mitigation strategy will be detailed in a Written Scheme of Investigation (WSI)/ Protocol for Archaeological Discoveries (PAD) prepared	Noted

Consultee	Format	Summary of Comments	SWEL Response
		for the proposals. On the basis of this embedded mitigation, we are content that significant impacts on marine historic environment features are unlikely. Section 4.8 (Archaeology and Cultural Heritage) of the EIA Screening Report (17 January 2022) does not include an analysis of potential impacts caused by the proposed increases in turbine heights and rotor diameters on the setting of terrestrial heritage assets located onshore. We have, however, undertaken a review of the Environmental Statement (2012) and the updated wireline visualisations prepared in support of Section 4.13 (Seascape, Landscape & Visual). While we note that there is likely to be some increased visibility of the proposals in views from coastal heritage assets, we are nevertheless content that these changes will not give rise to significant impacts on the setting of heritage assets in out remit.	
Scottish Borders Council	Screening Opinion Consultation Response	We do not consider that the variation in tip height of 36 of the consented 150 turbines from 209.7m to 285m would cause environmental impacts on the Scottish Borders which would warrant an Environmental Impact Assessment. In terms of landscape and visual effects we have assessed the potential impact on Scottish Borders receptors, including the Berwickshire Coast Special Landscape Area. The wireline images (Appendix 2 of the Screening Report) from viewpoints at distances of approximately 38 – 50km from the Fife coast demonstrate that the site will be visible, depending on the angle of elevation, as a distant feature on the horizon but the increased height is likely to be barely perceptible. Our Landscape Architect considered that with a distance of 60km or more from the Berwickshire coast the potential impacts on Scottish Borders receptors are unlikely to be significant and therefore an EIA is not required.	Noted

Consultee	Format	Summary of Comments	SWEL Response
Scottish Environmental Protection Agency (SEPA)	Screening Opinion Consultation Response	As SEPA only provides comments in relation to onshore related aspects, we have no comments to make in relation to this screening opinion.	Noted

3. Technical Assessment

3.1 Introduction

Potential impacts of the Variation were assessed within the Seagreen S36C Application Screening Report, which concluded that the Variation would not give rise to any likely significant adverse environmental effects and was therefore screened out of the requirement for EIA. Updated assessments were undertaken within the Seagreen S36C Application Screening Report to investigate potential impacts on receptors relating to ornithology, seascape, landscape and visual and military and civil aviation. For the remaining technical topics, no new or materially different impacts were identified compared to the consented Seagreen Project previously assessed in the 2012 ES and subsequent post-consent documentation.

Based on information provided in MS-LOT's Screening Opinion, and feedback received from consultees since the submission of the Seagreen S36C Application Screening Request, additional environmental information was requested to accompany the S36C Application. The additional requested environmental information relates to the following topics:

- Ornithology (see Section 3.2);
- Landscape, Seascape and Visual (see Section 3.3);
- Military and Civil Aviation Activities (see Section 3.4); and
- HRA (see Section 3.5).

Table 3.1 summarises topic specific conclusions of the S36C Application Screening Report, and specifies additional environmental information provided within this Environmental Appraisal to support the S36C Application.

Table 3.1 Topic Specific Summary Table

Topic	Seagreen S36C Application Screening Report Conclusion	Additional Environmental Information Required
Archaeology and Cultural Heritage	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.8 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Benthic & Intertidal Ecology	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.6 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Commercial Fisheries	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.7 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Fish and Shellfish	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.2 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
HRA	No material change in impacts previously assessed and no likely significant effects compared to the consented Seagreen project as it is being constructed as identified in Section 4.15 of the Screening Report as a result of the change proposed by the Variation.	Yes – based on feedback from NatureScot, screening of LSE on protected sites and consideration of the need for an Appropriate Assessment is presented in Section 3.5.
Landscape, Seascape & Visual	Section 4.13 of the Screening Report identified that there was a potential for temporary or long-term indirect effects on seascape character and views from sensitive receptors, such as residential properties, recreational receptors on core paths or at promoted hilltop locations.	Yes – based on feedback from ELC, potential night time visual impacts are discussed further in Section 3.3.

Topic	Seagreen S36C Application Screening Report Conclusion	Additional Environmental Information Required
	Section 3.3 below reproduces and summarises the assessment undertaken in the Screening Report, which involved updating wireline visualisations from the same viewpoints as presented in the 2012 ES, ODA and 2021 Design Statement. The updated modelling concluded that the Seagreen Project as it is being constructed combined with the Variation would cause no further significant effects compared to the as consented project.	
Marine Mammals	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.3 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Military & Civil Aviation Activities	Section 4.14 of the Screening Report identified that there was a potential for the Variation to increase detection by radar installations with potential implications on radar performance. Section 3.4 below reproduces and summarises the work undertaken in the Screening Report which identifies that existing mitigation measures from the 2012 ES are acceptable to mitigate impacts from the Variation on relevant aviation activities and that residual impacts of the Variation are therefore considered not significant.	Yes – further information about the existing mitigation measures proposed in the 2012 ES is presented in Section 3.4.
Ornithology	Section 4.11 of the Ornithological assessment in the Screening Report stated that an increase in WTG parameters would increase swept area, and the air gap between lowest blade height and LAT. Section 3.2 below reproduces and summarises the updated CRM using both the 2012 Band model and the latest sCRM that was undertaken which show that the project as it is being constructed combined with the Variation will have equal to or significantly lower collision risks than the project as currently consented. As a result, it was, therefore, possible to conclude that no material increase to impacts from the Seagreen Project as currently consented were identified and that it was appropriate for the Variation to be screened out of the requirement for an EIA.	Yes – based on feedback from RSPB and NatureScot, the CRM presented in Seagreen S36C Application Screening Report has been updated and is presented within Appendix C of this Environmental Appraisal.

Topic	Seagreen S36C Application Screening Report Conclusion	Additional Environmental Information Required
Other Marine Users	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.10 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Physical Environment	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.4 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Shipping & Navigation	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.12 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Socioeconomic, Tourism and Recreation	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.9 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.
Water and Sediment Quality	No material change in impacts previously assessed, and no likely significant effects and no significant adverse effects on the environment identified in Section 4.5 of the Screening Report as a result of the change proposed by the Variation.	No – based on information provided within the Seagreen S36C Application Screening Report and consultation responses received to date, no further information was deemed necessary.

3.2 Ornithology

3.2.1 Screening Report Summary

3.2.1.1 Assessment Method

Additional ornithological modelling was undertaken in the Seagreen S36C Application Screening Report (refer to Section 4.11 and Annex 1 of the Seagreen S36C Application Screening Report for further details) to determine if the Variation will have likely significant effects or significant adverse effects over the originally consented project. CRM was undertaken to compare the 150 WTGs as consented to the 114 WTGs being constructed plus the 36 proposed WTGs. Two CRM methods were used, the first replicated the original CRM undertaken to support the 2014 Consents and the second used the most up to date stochastic CRM (sCRM) as per the latest Marine Scotland guidance[9].

Installation of the 36 proposed larger WTGs combined with the 114 WTGs under construction will increase the total combined rotor swept area[10] of the Seagreen Project, as well as increase the maximum tip height for the 36 proposed larger WTGs, compared to the consented Seagreen Project. The 114 WTGs being constructed have a larger air gap[11] than the WTGs previously assessed in the consented Seagreen Project (in the 2012 ES), and the 36 proposed larger WTGs will have a larger air gap compared to the WTGs assessed in the consented Seagreen Project.

As a result of the Variation, disturbance, displacement and barrier impacts during construction and operation are not considered to be materially different compared to the consented Seagreen Project and were not considered in the assessment. This was determined as the proposed increase in seabed steel deposits would not cause a material increase in construction activity or vessel movements, and the 36 proposed larger WTGs remain within the consented 'red line' boundary.

Following advice from Marine Scotland and Scottish Natural Heritage (SNH) (now NatureScot), the modelling focused on the following three main receptor species:

- northern gannet;
- black-legged kittiwake; and
- herring gull.

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[9] Stochastic collision risk model for seabirds in flight - gov.scot (www.gov.scot)

[10] Rotor Swept Area is defined as the area of the circle delineated by the tips of the blades of the wind turbine for a horizontal axis wind turbine.

[11] The air gap is defined as the gap between the surface of the water and the lowest point of the turbine blades through a rotation.

Table 3.2 presents a summary of the CRM input parameters modelled in the 2012 ES[12] (scenario named 2014 Consents) and the Seagreen S36C Application Screening Report (Variation).

Table 3.2 WTG Number, Size, Swept Area and Air Gap of Seagreen Project Scenarios

Seagreen Project Scenario	Number of WTGs	Blade Length	Swept Area Combined (Individual)	Air gap
2014 Consents	150 WTGs as consented	83.5 m	3,285,600 m^2 (150 x 21,904 m^2)	29.8 m
Variation	114 WTGs under construction + 36 WTGs varied (150 WTGs total)	114 WTGs with 82 m blade length 36 WTGs with 118 m blade length	4,153,056 m^2 (114 x 21,124 m^2 and 36 x 44,000 m^2)	114 WTGs x 37 m and 36 WTGs x 34 m

3.2.1.2 CRM Results

The 2012 Band model results for both gannet and kittiwake showed a significant reduction in predicted collision mortalities when comparing between the consented project and the project as being constructed plus the Variation with herring gull mortalities marginally increasing. The sCRM showed a significant reduction in predicted collision mortalities for gannet and kittiwake and a small reduction in mortalities for herring gull. Absolute herring gull collision mortalities predicted by the 2012 Band model between the two modelled scenarios should be treated with caution due to no flight height proportional data being available. The increased air gap of the 36 WTGs associated with the Variation is therefore unable to be taken account for within the 2012 Band model herring gull outputs. The sCRM model outputs are considered more representative of herring gull collision mortalities, which take account of the increased air gap associated with the Variation and show a decrease in mortality.

Taking account of model limitations associated with herring gull flight heights, updated CRM using both the 2012 Band model and the latest sCRM showed that the project as it is being constructed combined with the Variation will have equal to or significantly lower collision risks than the project as currently consented. As the Variation will not materially increase predicted seabird collisions, an update to cumulative impacts was deemed not necessary.

[12] 2012 ES Chapter 10: Ornithology Section 10.163

3.2.2 Consultation Summary

Based on responses received in the Screening Opinion and pre-application consultation meetings with the RSPB and NatureScot (detailed in Table 2.4), the following recommendations were made with regards to the CRM undertaken in the Seagreen S36C Application Screening Report:

- The use of the Johnson et al (2014) for flight height data with corrigendum avoidance rates; and
- 'Flapping' flight should only be used for kittiwake and herring gull, with 'gliding' used for gannet instead.

3.2.3 Further Assessment

Based on feedback from RSPB and NatureScot, the CRM presented in the Seagreen S36C Application Screening Report has been updated and summarised within this section of the Environmental Appraisal. Table 3.3 shows estimated annual mortalities using the adjusted Band CRM Option 2 model for the as consented and as constructed plus Variation scenarios. All other model inputs apart remained consistent with the original modelling as presented in Section 3.2.1. The sCRM results remain unchanged from the Seagreen S36C Application Screening Report and are therefore not presented below.

Table 3.3 Predicted Annual Collision Mortality Results Comparing 150 WTGs as Consented with 114 WTGs as Constructed + 36 WTGs as Proposed in the Variation using the 2012 CRM (Band Model) with adjusted flight heights (Johnston et al 2014) and flight type for gannet

Model	Species	Predicted Annual Collision Mortalities	
		150 WTGs as Consented[1]	114 WTGs as Constructed[2] + 36 WTGs as Proposed in the Variation[3]
2012 CRM	**Gannet** (98.9% avoidance)	596	317
	Kittiwake (98.9% avoidance)	586	347
	Herring Gull (99% avoidance)	28	22

Notes:

[1] 88% on-time, 14 rpm, 29.8 m air gap, 83.5 m rotor radius, 5.4 m blade width

[2] 90% on-time, 8.8 rpm, 37 m air gap, 82 m rotor radius, 5.4 m blade width

[3] 90% on-time, 14 rpm, 34 m air gap, 121 m rotor radius, 7.6 m blade width

Full updated CRM results are detailed in Appendix C. Similar to the CRM undertaken in the Seagreen S36C Application Screening Report, the updated modelling shows a significant reduction in predicted collision mortalities for gannet and kittiwake when comparing between the consented project and the Variation. The updated modelling also shows a reduction in predicted collision mortalities for herring gull, mainly due to the Johnston et al (2014) data including flight height proportions for the species (i.e., taking into account the increased air gap of the project as being constructed plus the Variation).

3.2.4 Conclusion

Updated CRM using the recommendations outlined by the RSPB and NatureScot showed that the Variation (taking into account the actual parameters of the 114 turbines under construction) will have significantly lower collision risks than the project as currently consented. The Variation will not cause any material increase to impacts and does not lead to any likely significant adverse effects.

As the Variation will not materially increase predicted seabird collisions, an update to cumulative impacts is not necessary as it will not change cumulative impact assessments undertaken by more recent developments.

3.3 Landscape, Seascape and Visual

3.3.1 Screening Report Summary

3.3.1.1 Assessment Method

The following impacts during construction, operation and decommissioning of the landscape, seascape and visual amenity assessment were assessed in the Seagreen S36C Application Screening Report which followed the methodology set out in the 2012 ES:

- Impacts on landscape elements;
- Impacts on seascape character;
- Impacts on landscape character;
- Impacts on landscape designations; and
- Impacts on visual amenity.

Table 3.4 notes potential implications of the proposed parameter changes associated with the Variation on the landscape, seascape and visual amenities.

Table 3.4 Implications of Proposed Parameter Change on Landscape, Seascape and Visual

Proposed Parameter Change	Potential Implications on Effect Significance
Increased size of WTGs	Potential temporary or long-term indirect effects on seascape character and views from sensitive receptors, such as residential properties, recreational receptors on core paths or at promoted hilltop locations.

Proposed Parameter Change	Potential Implications on Effect Significance
Increased weight of OSPs	Increased weight of the steel deposits on the seabed will have no additional impacts compared with what was assessed in the 2012 ES.

Additional wireline visualisations were undertaken in the Seagreen S36C Application Screening Report (refer to Section 4.13 and Annex 2 of the Screening Report for further details) to determine if the Variation will have likely significant effects or significant adverse effects over the originally consented project. The wireline visualisations compared the 150 WTGs as consented to the 114 WTGs being constructed plus the 36 proposed larger WTGs, where cumulative impacts were also assessed. The visualisations were completed from the same eight viewpoints as presented in the 2012 ES[13] and reconsidered within both the ODA[14] and 2021 Design Statement[15] submitted to Marine Scotland in response to the S36 Consent Condition 13 and Marine Licence Condition 3.2.2.7. Details of these eight viewpoints are presented in Table 3.5.

Table 3.5 Landscape, Seascape and Visual Features Identified

VP No.	Viewpoint	Primary Visual Receptors	Other Visual Receptors within the vicinity	Distance (approx.)
VP1	Garron Point	Golfers	Walkers, railway travellers, motorists	38 km
VP2	Beach Road Kirkton St. Cyrus	Residents, walkers	motorists	31 km
VP3	White Caterhun Hill Fort	Residents, visitors	Local road users	51 km
VP4	Montrose	Residents, visitors	Motorists, cyclists	32 km
VP5	Braehead of Lunan	Cyclists, residents, road users	Visitors	35 km
VP6	Arbroath Signal Tower	Visitors, walkers	Residents	40 km
VP7	Carnoustie	Residents, visitors, including to the beach	Motorists, cyclists	48 km
VP8	Fife Ness	Walkers, visitors	Residents, motorists	49 km

The Seagreen S36C Application Screening Report did not include any offshore components of the Seagreen Project as it was concluded that they will have no direct impact on any landscape features.

[13] 2012 ES Chapter 16: Seascape, Landscape and Visual Amenity Section 16.137
[14] Optimised Design Application Chapter 13: Seascape, Landscape and Visual Amenity Section 13.194
[15] 2021 Design Statement Section 5.4

The visualisations took account of proposed parameter changes in combination with the worst-case scenarios from other projects which had reached a level of detail to allow an accurate model representation. This included Inch Cape OWF, Neart na Gaoithe OWF and Kincardine OWF. At the time of writing the Seagreen S36C Application Screening Report, Forthwind OWF and Berwick Bank OWF were both at the scoping stage and were assessed qualitatively.

3.3.1.2 Wireline Visualisation Results

It was concluded that, based on professional judgement, the changes to the appearance of the Seagreen OWF arising from the Variation would not be sufficient to increase the level of effect experienced by any landscape, seascape or visual receptor and significant effects would be the same for the Variation as was set out in the 2012 ES. Furthermore, wireline visualisations showed that the Seagreen Project, as it is being constructed, with the Variation will cause no likely significant effect compared to the assessment completed as part of the 2014 Consents. Any developments consented after the 2014 Consents were issued will have considered the Seagreen Project in their cumulative impact assessments. As the Variation will cause no increase to landscape, seascape and visual impacts from the Seagreen Project, an update to the cumulative assessment was not deemed necessary.

3.3.2 Consultation Summary

ELC responded to the Seagreen S36C Screening Report requesting further information, specifically for confirmation of no further onshore works being required and confirmation there is no change in night time visibility of the 36 larger WTGs.

In response, SWEL confirmed that the proposed larger WTGs do not require any changes to the export cable or onshore works. The Variation only relates to the increase in size of 36 of the 150 consented turbines and consented steel volumes associated with the offshore substation.

Regarding visual impacts, the night lighting on the 36 larger WTGs being proposed in the Variation were confirmed not to be visible from any point of the East Lothian coast (including Bass Rock). As the Seagreen Project is located 66 km from Bass Rock, the hubs of the proposed WTGs will be below the horizon. The wireframes from the eight viewpoints previously assessed in the 2012 ES presented in the Seagreen S36C Screening Report also show that the proposed hub heights are below the horizon.

SWEL also considered inland locations and note that there would be theoretical visibility of WTG hubs from the summit of North Berwick Law, which is a key elevated viewpoint for Neart na Gaoithe wind farm. SWEL compared both the consented Seagreen Project and the Variation, and while the latter are further above the horizon, there are no more hubs visible than in the consented scheme, and therefore no more lights visible from this viewpoint. In addition, the Seagreen WTGs are all seen behind Neart na Gaoithe and Inch Cape in the view so the viewer will not notice any change as a result of the Variation.

Based on this response, ELC confirmed no further assessment work is required and as far as interests with the council are concerned, agree EIA is not required.

3.3.3 Conclusion

Based on updated wireline visualisations produced in the S36C Screening Report, which included visualisations from the same eight viewpoints as presented in the 2012 ES and reconsidered within both the ODA and 2021 Design Statement, show that the Variation (taking into account the actual parameters of the 114 turbines under construction) will cause no further significant effects compared to the as consented project. As the Variation will not cause any further significant effects, an update to cumulative impacts is not necessary as it will not change cumulative impact assessments undertaken by more recent developments.

3.4 Military and Civil Aviation Activities

3.4.1 Screening Report Summary

3.4.1.1 Assessment Method

The Seagreen S36C Application Screening Report details that Mitigation Agreements are currently in place between SWEL and the key aviation stakeholders. These are summarised in the respective Ministry of Defence (MOD) and National Air Traffic Services (NATS) Primary Radar Mitigation Schemes, which were approved by Scottish Ministers in June 2021.

The screening assessment identified the AD RRHs at Buchan and Brizlee Wood, the NATS Primary Surveillance Radars at Perwinnes and Allanshill and the MOD's Primary Surveillance Radar at Leuchars Station as potential constraints that would require mitigation (as secured by Condition 20 – 22 of the 2014 Consents). Condition 23 of the 2014 Consents required SWEL to submit a Primary Radar Mitigation Scheme ("PRMS") for approval by the Scottish Ministers prior to the erection of any WTGs in respect of the Seagreen Project. SWEL submitted a PRMS in April 2021, which was accepted by Scottish Ministers in June 2021.

Similar to the outcome of the Military and Civil Aviation Assessment in the 2012 ES, the proposed parameter changes would cause effects on military and civil aviation activities prior to mitigation measures being applied.

3.4.1.2 Assessment Results

Radar Line-of-Sight Assessments were undertaken in the Seagreen S36C Application Screening Report by both primary aviation stakeholders and 3rd-party technical specialists for sample WTG locations within the red line boundary of the Variation. The results of this exercise demonstrated potential visibility for at least some of the WTG positions to all of the radar listed below with the exception of NATS Allanshill Radar, which is not predicted to detect any WTGs under the assessed configuration:

- MOD AD RRH Buchan;
- MOD AD RRH Brizlee Wood;
- NATS Perwinnes Primary Surveillance Radar; and
- MOD Primary Surveillance Radar Leuchars Station.

3.4.2 Conclusion

SWEL has undertaken engagement with NATS and Civil Aviation Authority (CAA) and reached agreement in principle that existing mitigation measures are acceptable to mitigate impacts from the Variation on relevant aviation activities.

SWEL initially undertook a technical assessment to support the interim AD mitigation proposal in December 2019. As a result of this Variation, SWEL tasked Serco to update this model with the revised parameters in order to assure all stakeholders that there would be no additional impact caused to either RRH Buchan or RRH Brizlee Wood. This report was delivered to both SWEL and the MOD in January 2022 stating no additional impact is caused and that no additional mitigation is required to that already agreed in the existing AD Radar Mitigation Scheme. SWEL are continuing to engage with MOD and anticipate to have confirmation that further mitigation for the Variation does not need to be agreed through the application process. Residual impacts of the Variation are therefore considered not significant.

3.5 Information to inform Habitat Regulations Appraisal (HRA)

3.5.1 Introduction

This information which is provided to inform an HRA is undertaken in the context of the existing consents, which were issued by Scottish Ministers in 2014, following the completion of an Appropriate Assessment (AA). The AA concluded, subject to appropriate conditions being attached to the consents, that the Seagreen Alpha and Seagreen Bravo developments, both, alone or in combination with other projects, would not adversely affect the integrity of any European Site (Marine Scotland, 2014a).

The Variation is within the same application boundary as the originally consented project (2014 Consents) and the ODA. Data collected to inform the 2012 ES and the ODA are considered to remain appropriate sources of information to inform the assessment of impacts for this HRA. The 2012 ES and ODA includes a range of detailed project specific surveys and site characterisation studies to define baseline conditions.

The HRA process is a step-by-step process which involves:

- Stage 1 – Screening: Determination of likely significant effect (LSE) on a European Site (alone or in combination with other projects or plans).
- Stage 2 – Appropriate Assessment (AA): Assessment of implications of LSE on the conservation objectives of a European Site to ascertain whether the proposal will adversely affect the integrity (ecological functions) of a European Site.
- Stage 3 – Assessment of Alternative Solutions: Determination that the conservation objectives and status of the European Site will outweigh any consideration of costs, delays or other aspects of an alternative solution.

- Stage 4 – Assessment of Imperative Reasons of Overriding Public Interest (IROPI): Assessment of compensatory measures where there are human health or safety considerations or environmental benefits and where there are no alternative solutions and adverse impacts remain.

This section presents the screening (Step 1) and subsequent assessment of implications of LSE (Step 2) due to the Variation on the conservation objectives of any identified European Site.

3.5.2 Legislative Context

The Council Directive 92/43/EEC (the Habitats Directive) was adopted in 1992, providing a means for the European Union to meet its obligations under the Bern Convention. The aim of the Directive is to maintain or restore natural habitats and wild species listed on the Annexes at a favourable conservation status. This protection is granted through the designation of European Sites and European Protected Species (EPS). The European Directive (2009/147/EC) on the conservation of wild birds (The Birds Directive) provides a framework for the conservation and management of wild birds within Europe. The Directive affords rare and vulnerable species listed under Annex I of the Directive, and regularly occurring migratory species, protection through the identification and designation of Special Protection Areas (SPAs).

The Directives have been transposed into Scottish Law by various regulations, those of relevance to the Variation include:

- The Conservation (Natural Habitats &) Regulations 1994 (as amended);
- The Conservation of Habitats and Species Regulations 2017; and
- The Conservation of Offshore Marine Habitats and Species Regulations 2017 (which apply to marine licences and Section 36 applications within the Scottish Offshore region).

Despite the recent changes to the Habitats Regulations, following the United Kingdom's (UK's) exit from the European Union, the HRA process remains unchanged (Scottish Government, 2020).

3.5.3 Project background

There have been two previous AAs undertaken by MS-LOT for the Seagreen Project. The first was undertaken in 2014 in support of the consent decision, the second was as part of the 2018 ODA (the AA was published but the application has not been determined).

3.5.4 Potential effects of the Variation

Table 3.6 presents a high-level description of the parameter changes associated with the Variation compared to the consented Seagreen Project. Full details of the Variation are presented in Section 2.2 and 2.3.

Table 3.6 Proposed Parameter Changes

Proposed Parameter Change	High Level Description
WTGs	Increase in size of up to 36 (of the 150 consented) WTGs
OSP	Increase in OSP steel seabed deposits

The Variation (taking into account the actual parameters of the 114 turbines under construction) will increase the total combined rotor swept area[16] of the Seagreen Project, as well as increase the maximum tip height for 36 WTGs, compared to the consented Seagreen Project. The 114 WTGs being installed have a larger air gap than the WTGs previously assessed in the consented Seagreen Project, and the proposed parameter changes for the 36 proposed WTGs will have a larger air gap compared to the WTGs assessed in the consented Seagreen Project.

To determine whether qualifying features could be subject to a potential LSE arising from the Variation, and subsequently qualifying for further assessment in an AA, the following information has been taken into account when considering qualifying features:

- Geomorphological conservation importance;
- Contribution to the function of the European Site;
- Species conservation importance;
- Current conservation status;
- Numbers recorded within the zone of influence;
- Proximity of breeding colonies;
- Temporal-spatial distribution of birds within regional waters;
- Habitat association patterns within the zone of influence and adjacent waters; and
- Foraging dynamics (the distribution and seasonal abundance of prey species within regional waters).

3.5.5 Step 1: LSE Screening

3.5.5.1 Introduction

'Screening' is a term used to describe the initial stage (Step 1) of the Habitats Regulations Appraisal and is the process which initially identifies the likely impacts from a project or plan upon a European Site, either alone or in combination with other projects or plans and considers whether these impacts may be significant. The screening stage allows consideration for all Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) and their features where LSE can be expected to occur, where LSEs are very unlikely, and are uncertain but potentially could be significant, therefore, either

[16] Rotor Swept Area is defined as the area of the circle delineated by the tips of the blades of the wind turbine for a horizontal axis wind turbine.

eliminating them from further consideration or providing a clear scope for aspects of the Project that will require AA.

By adopting the 'source-pathway-receptor' approach it is possible to consider the potential for a LSE on each relevant SAC and SPA to arise during the Project lifecycle i.e., the source of the impact (proposed works), the pathway for the impact (the route the source takes to reach the receptor such as physical loss of habitat), and the receptor (e.g., marine mammals, fish, birds, and habitats).

Given that the Variation does not result in a clear impact pathway to marine mammals, benthic ecology or geomorphological processes, it is determined that a LSE cannot occur and as a result a HRA screening of SACs has been eliminated from further consideration. However, due to the proposed 36 larger WTGs having the potential to cause a LSE on protected sites designated for ornithological features, SPAs are included in this HRA screening.

The aim of this section is to determine if any SPA qualifying features could be subject to a potential LSE arising from the Variation. For there to be a potential for a LSE on a qualifying SPA species population three conditions need to be satisfied as follows:

- the receptor population under consideration needs to regularly use the area;
- the receptor must be sensitive to one or more potential impacts of the Variation; and
- the population using the area must be sufficiently large in the context of the size and status of the SPA for an adverse effect on the population to be plausible.

The below sections address these points with reference to species ranging behaviour and seasonal movements, sensitivity to the potential impacts, and assessing the importance of the area for specific species.

3.5.5.2 Relevant Special Protection Areas

Relevant SPAs to be considered are presented in Table 3.7 and are based on the SPAs assessed within the original 2014 AA and the 2019 AA completed by Marine Scotland for the ODA.

Table 3.7 Protected sites assessed in the original 2014 AA and the 2019 AA undertaken for the ODA by Marine Scotland. Marine Scotland concluded no adverse effect on the integrity of all protected sites assessed (sites assessed are highlighted green).

Designated Site	2014 AA of the Seagreen Alpha, Seagreen Bravo, Inch Cape and Neart na Gaoithe OWFs	2019 AA for the ODA
Buchan Ness to Collieston Coast SPA		
Fowlsheugh SPA		
Forth Islands SPA		
St Abb's Head to Fast Castle SPA		
Outer Firth of Forth and St Andrews Bay Complex SPA[1]		

Designated Site	2014 AA of the Seagreen Alpha, Seagreen Bravo, Inch Cape and Neart na Gaoithe OWFs	2019 AA for the ODA
[1] The Outer Firth of Forth and St Andrews Bay Complex SPA became a pSPA in October 2016 and was fully designated as a SPA in December 2020 between the dates of when the previous HRA was undertaken in 2019 and this HRA in 2022.		

Buchan Ness to Collieston Coast SPA

The Buchan Ness to Collieston Coast SPA comprises a 15 km stretch of cliffs with a seaward extension of approximately 2 km that includes the seabed, water column and surface (Scottish Natural Heritage, 2009a). The SPA is located 71.7 km from the Seagreen Project.

The most recent colony counts (2017) (Scottish Natural Heritage, 2017b) for the qualifying interests screened into this assessment reflect their conservation status. There is no change in the Unfavourable' conservation status of kittiwake (11,482 pairs) and herring gull (3,115 pairs) (Scottish Natural Heritage, 2018e).

There is no site management in relation to the SPA (Scottish Natural Heritage, 2010b).

The conservation objectives for this European Site (Scottish Natural Heritage 2006d) are to avoid deterioration of the habitats of the qualifying species (not relevant to the impacts assessed in this HRA) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained. To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species (not relevant to the impacts assessed in this HRA);
- Structure, function and supporting processes of habitats supporting the species (not relevant to the impacts assessed in this HRA); and
- No significant disturbance of the species.

Fowlsheugh SPA

The Fowlsheugh SPA comprises a 10.15 ha stretch of cliffs between 30 m and 60 m high with a 2 km seaward extension including the seabed, water column and surface (Scottish Natural Heritage, 2009c). The SPA is located 27.5 km from the Seagreen Project.

The SPA regularly supports in excess of 20,000 individual seabirds in the breeding season including herring gull (125 pairs) and kittiwake (9,655 pairs) (Scottish Natural Heritage, 2017b). Kittiwake has maintained 'Favourable' conservation status whereas herring gull is in an 'Unfavourable' and declining conservation status (Scottish Natural Heritage, 2018g). It is noted however that for kittiwake there has been an on-going population decline since the designation of the Site of Special Scientific Interest

(SSSI) that underpins the SPA. The decline is considered to be "consistent with national trends, thought to be linked to changes in food supply outside the designated site" (Scottish Natural Heritage, 2011b).

The site is managed under a management plan by the RSPB that includes the provision of visitor interpretation, measures to prevent disturbance to the birds on the cliffs and the management of the cliff top grassland (Scottish Natural Heritage, 2011c).

The conservation objectives for this European Site (Scottish Natural Heritage 2006e) are to avoid deterioration of the habitats of the qualifying species (not relevant to the impacts assessed in this HRA) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained. To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species (not relevant to the impacts assessed in this HRA);
- Structure, function and supporting processes of habitats supporting the species (not relevant to the impacts assessed in this HRA); and
- No significant disturbance of the species.

Forth Islands SPA

The Forth Islands SPA comprises of a series of islands supporting the main seabird colonies in the Firth of Forth (Inchmickery, Isle of May, Fidra, The Lamb, Craigleith, Bass Rock and Long Craig) with the seaward extension of approximately 2 km including the seabed, water column and surface (Scottish Natural Heritage, 2009b). The SPA is located 48.7 km from the Seagreen Project.

The SPA regularly supports in excess of 20,000 individual seabirds in the breeding season including the following qualifying interests screened into this assessment including kittiwake (4,663 pairs), herring gull (6,580 pairs), and gannet (75,259 pairs) (Scottish Natural Heritage, 2017b) reflect that all these qualifying interests have maintained a 'Favourable' conservation status other than kittiwake which is in an 'Unfavourable' conservation status and declining (Scottish Natural Heritage, 2018f).

The conservation objectives for this European Site (Scottish Natural Heritage 2011b) are to avoid deterioration of the habitats of the qualifying species (not relevant to the impacts assessed in this HRA) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained. To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species (not relevant to the impacts assessed in this HRA);

- Structure, function and supporting processes of habitats supporting the species (not relevant to the impacts assessed in this HRA); and
- No significant disturbance of the species.

Site management is currently restricted to the removal of tree mallow *Lavatera arborea* to allow puffins to get to their burrows (Scottish Natural Heritage, 2010c). Wider management issues outside the scope of site management include pollution, winter mortality rates of adult birds and the impacts of fisheries and climate change on the availability and suitability of food supplies in the breeding season (Scottish Natural Heritage, 2010c).

The management for the Isle of May, a component of the SPA, is included under the umbrella of the National Nature Reserve (NNR) Management Plan (Scottish Natural Heritage, 2015) which seeks to:

- Ensure the reserve continues to provide appropriate nesting habitat for the range and populations of breeding seabirds; and
- Manage the island to protect and where possible enhance habitats and species.

St Abb's Head to Fast Castle SPA

The St Abb's Head to Fast Castle SPA comprises an area of sea cliffs and coastal strip stretching over 10 km with a seaward extension extending approximately 1 km into the sea that includes the seabed, water column and surface (Scottish Natural Heritage, 2009c). The SPA is located 65.7 km from the Seagreen Project.

The most recent colony counts for kittiwake (2,779 pairs) and herring gull (325 pairs) (Scottish Natural Heritage, 2017b) reflect kittiwake and herring gull are in 'Unfavourable Declining' conservation status (Scottish Natural Heritage, 2018h).

There is no site management in relation to the SPA as it is thought that a widespread decline in the sandeel population is responsible for the unfavourable condition for kittiwake and herring gull (Scottish Natural Heritage, 2011d).

The conservation objectives for this European Site (Scottish Natural Heritage 2006f) are to avoid deterioration of the habitats of the qualifying species (not relevant to the impacts assessed in this HRA), or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained. To ensure for the qualifying species that the following are maintained in the long term:

- Population of the species as a viable component of the site;
- Distribution of the species within site;
- Distribution and extent of habitats supporting the species (not relevant to the impacts assessed in this HRA);
- Structure, function and supporting processes of habitats supporting the species (not relevant to the impacts assessed in this HRA); and
- No significant disturbance of the species.

Outer Firth of Forth and St Andrews Bay Complex SPA

The Outer Firth of Forth and St Andrews Bay Complex SPA is a large estuarine and marine area encompassing two existing SPAs (St Abb's Head to Fast Castle SPA and Forth Islands SPA) that will protect the key structural and functional relationships that create and maintain the sites' integrity. The SPA supports a wide range of seabird prey species throughout the year and the abundance of sandeels is of particular importance to breeding puffin, razorbill, guillemot, kittiwake and to a lesser extent gannet (Scottish Natural Heritage & JNCC, 2016a). All these qualifying interests have not yet been assessed for their condition.

During the breeding season, the seabird qualifying interests have extensive marine foraging ranges extending far beyond the boundary of the SPA. Outside of the breeding season the seabird qualifying interests disperse into the North Sea and further afield; the majority returning to their respective breeding colonies in successive seasons. The SPA is located 29.3 km from the Seagreen Project.

The qualifying interests screened into this assessment include gannet (10,950 individual), kittiwake (12,020 individuals) and herring gull (3,040 individuals) in the breeding season, as well as herring gull (12,310 individuals) and kittiwake (3,190 individuals) in the non-breeding season (Scottish Natural Heritage & JNCC, 2016a).

The spatial distribution of qualifying interests within the SPA varies between species. The distribution of gannet (7.0 birds/km^2) and kittiwake (5 to 10 birds/km^2, locally higher at 43.4 birds/km^2) are concentrated offshore, specifically in the outermost Firth of Forth for gannet and more generally the outer reaches of the SPA for kittiwake. Herring gull is a ubiquitous species but the night time roosting distribution at sea within the SPA is not known (Scottish Natural Heritage & JNCC, 2016a).

There is currently no specific data of substantial population changes over "previous decades or even centuries" for any of the qualifying interests (Scottish Natural Heritage & JNCC, 2016a).

Scottish Natural Heritage and JNCC's advice on management of the SPA is detailed in Scottish Natural Heritage & JNCC's 'Advice to Support Management' (2016b). The aim of the advice is to ensure, where marine activities pose a risk of causing a significant effect, that the conservation objectives for each qualifying interests are achieved. The advice covers all marine activities that may cause an effect on a sensitive qualifying interest, but specifically includes:

- The use of mobile fishing gear;
- The use of static fishing gear;
- Harvesting intertidal shellfish and bait;
- Navigational dredging and disposal;
- Ports and Harbours activities;
- Development or expansion of ports and harbours;
- Recreational activities; and

- Renewable wind energy developments.

With respect to the originally consented project, providing that the mitigation measures as agreed by the Forth and Tay Regional Advisory Group (FTRAG) are deployed on a project specific basis, there are no additional management options (Scottish Natural Heritage & JNCC, 2016b).

Since the Outer Firth of Forth and St Andrews Bay Complex SPA was only fully designated as a SPA in December 2020, the Conservation and Management Advice is still being developed by NatureScot and the Joint Nature Conservation Committee (JNCC). However, draft conservation objectives have been developed and it is noted that the high-level conservation objectives are unlikely to change. Furthermore, it is noted that the draft conservation objectives should be used for HRA of plans or projects. The draft conservation objectives for this European Site are as follows:

- To ensure that the qualifying features of the Outer Firth of Forth and St Andrews Bay Complex SPA are in favourable condition and make an appropriate contribution to achieving Favourable Conservation Status.
- To ensure that the integrity of the Outer Firth of Forth and St Andrews Bay Complex SPA is restored in the context of environmental changes by meeting the objectives below for each qualifying feature:
  - The populations of qualifying features are viable components of the site;
  - The distributions of the qualifying features throughout the site are maintained by avoiding significant disturbance of the species; and
  - The supporting habitats and processes relevant to the qualifying features and their prey/food resources are maintained, or where appropriate restored, at the Outer Firth of Forth and St Andrews Bay Complex SPA.

3.5.5.3 LSE Screening Results

The 2012 ES[17] assessed the following impacts as part of the ornithology assessment:

- collision risk during operation;
- direct habitat loss during construction;
- disturbance from construction activities such as the movement of construction/ decommissioning vessels and piling;
- displacement during the operational phase, resulting in loss of foraging / roosting area; and
- impacts on bird flight lines (i.e., barrier effect) and associated increased energy use by birds for commuting flights between roosting and foraging areas.

[17] 2012 ES Chapter 10: Ornithology Section 10.518

As described in the Seagreen S36C Application Screening Report, the only impact of the Variation to ornithological features that required further assessment was collision risk during operation. The remaining impacts noted above did not require further assessment due to:

- Project activities remaining within the as assessed project boundary (red line boundary);
- Turbine locations not being moved within the project boundary; and
- No increase in construction timeline or number of vessel movements.

Within the 2017 Screening Opinion[18] Scottish Ministers advised that CRM is required for gannet, herring gull and kittiwake features. Therefore, the following qualifying species populations are identified as having potential for LSEs arising from the Variation and are summarised in Table 3.8 below. These sites and features are screened into Step 2 of the HRA process.

Table 3.8 European Sites designated for which LSE cannot be discounted

Designated Site	Feature	Potential LSE
Buchan Ness to Collieston Coast SPA	Herring gull Kittiwake	In all cases, the potential for LSE arises due to the potential for increased risk to seabirds due to collision with rotating turbine blades where an increased mortality may reduce species' survival rates. In order to determine whether there is potential for a LSE with respect to the Variation, CRM has been undertaken in consultation with NartureScot and Marine Scotland (see Appendix C) with the aim of showing the project as it is being constructed combined with the Variation will have significantly lower collision risks than the project as currently consented.
Fowlsheugh SPA	Herring gull Kittiwake	
Forth Islands SPA	Gannet Herring gull Kittiwake	
St Abb's Head to Fast Castle SPA	Herring gull Kittiwake	
Outer Firth of Forth and St Andrews Bay Complex SPA	Gannet Herring gull Kittiwake	

3.5.6 Step 2: Appropriate Assessment

3.5.6.1 Assessment of the Variation

Additional ornithological modelling was undertaken to determine if the Variation will have an Adverse Effect on the Integrity of the screened in SPAs. CRM was undertaken to compare the 150 WTGs as

[18] 2017 Scoping Opinion Page 31

consented to the 114 WTGs being constructed plus the 36 proposed WTGs. A summary of model inputs and outputs is presented in Section 3.2 (refer to Appendix C for full results)

The revised CRM modelling for the Variation (taking into account the actual parameters of the 114 turbines under construction) compared to the 150 WTGs as consented, shows a decrease in estimated annual mortality for gannet, kittiwake and herring gull for both the 2012 Band CRM and sCRM models.

Updated CRM modelling showed that the project as it is being constructed combined with the 36 proposed WTGs will have significantly lower collision risks than the project as currently consented. The Variation will therefore not cause any material increase to impacts will not lead to an adverse effect on the integrity of any feature of a European Site either when considered alone or in combination with other plans and projects.

3.5.6.2 Mitigation Measures

As outlined in the Seagreen S36C Application Screening Report, the Ornithology Monitoring Strategy for the Seagreen Project (encompassing all 150 WTGs) reflects the Forth and Tay Regional Advisory Group Ornithology sub-group's determination of seabird monitoring priorities for the Forth and Tay OWFs and the conclusions of the Seagreen 2012 ES and 2013 Addendum which seeks to:

- Determine the extent of displacement or barrier effects around the WTGs for kittiwake, puffin and razorbill;
- Determine flight heights, avoidance behaviour and collision risk to gannet and kittiwake;
- Monitor seabird colonies (number of birds, and productivity), to assess if there are detectable changes in productivity or population that can be attributed to displacement, barrier effects or collisions from the Seagreen Project; and
- Compile an up-to-date pre-construction baseline against which post construction monitoring can be compared, to test the predictions within the ES, and to identify any detectable changes.

The agreed monitoring approach comprises a 5 year programme of studies overlapping the pre-construction, construction and operation phases for the Seagreen Project and the monitoring programme represents a significant financial commitment by SWEL, with the total committed cost of approximately £4million over the 5 year programme.

3.5.6.3 Conclusions

This report has been undertaken in accordance with relevant legislation, guidance and consultation with MS-LOT and NatureScot. It is also undertaken on a precautionary basis, including in relation to the estimation of the magnitude of predicted impacts. Precautionary assumptions and methods have been used at all stages.

Despite the precautionary nature of the assessment, this HRA does not identify any indication that the Variation would cause an adverse effect on the integrity of any European Site either alone or in combination with other plans and projects. When viewed in relation to the effects of the originally

consented Project, the worst case for the Variation (taking into account the actual parameters of the 114 turbines under construction) will by design have less of an impact on birds.

Consequently, it is considered that the Variation represents an improvement on the consented Project (which was consented on the basis of no adverse effect on the integrity of any European Site), in that the predicted effects from the Variation on the SPAs considered will be lower than those that would arise from the construction and operation of the consented Project, when considered on a like for like basis.

4. Cumulative Assessment

The Seagreen Project lies in the vicinity of other projects which have the potential to affect receptors in a cumulative fashion, namely Inch Cape OWF, Neart Na Gaoithe OWF and Berwick Bank OWF. Based on assessments completed in the Seagreen S36C Application Screening Report and this Environmental Appraisal it is concluded that as the Variation will not cause any further significant effects compared to the consented Project, an update to cumulative effects would not be necessary as it will not change cumulative effects assessments undertaken by more recent developments.

5. Mitigation and Monitoring

The 2012 ES identified mitigation and monitoring approaches (for the 150 WTGs) which have been agreed. Given the Variation will not cause any significant effects compared to the 2012 ES which supported the 2014 Consents, the requirement for additional mitigation and monitoring was deemed not necessary.

6. Conclusion

6.1 Increased size of 36 of the consented but not constructed WTGs;

Results from the Seagreen 36C Application Screening Report and the additional assessment work undertaken for Ornithology (Section Table 3.2), Landscape, Seascape and Visual (Section 3.3), Military and Civil Aviation Activities (Section 3.4) and HRA (Section 3.5) in support of the S36 variation application confirm the Variation will not give rise to any LSE or significant adverse environmental effects, alone or in combination with other projects, compared to the consented Seagreen Project assessed in the 2012 ES.

6.2 Increased weight of seabed steel deposits associated with the OSPs with the OTA Marine Licence.

The proposed increase in weight of the steel deposits on the seabed will have no additional or materially different impacts that require further assessment to be completed compared with the 2012

ES. As a result, the increase in deposits will not affect any of the conclusions presented in the 2012 ES and subsequent application documentation.

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