Appendix A: Inch Cape Offshore Wind Farm Section 36 Variation Application - Screening Report

Inch Cape
OFFSHORE LIMITED

Document Reference	IC02-INT-EC-OFL-001-INC-RPT-002	**Revision**	2

Date	30 June 2022
Date of Next Review	N/A
Classification	Public

Inch Cape Offshore Wind Farm Section 36 Variation Application – Screening Report

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Acronyms & Abbreviations

Acronym	Term
AA	Appropriate Assessment
DSLP	Development Specification and Layout Plan
EIAR	Environmental Impact Assessment Report
ICOL	Inch Cape Offshore Limited
LAT	Lowest Astronomical Tide
MSL	Mean Sea Level
MW	Megawatt
OfTW	Offshore Transmission Works
OSP	Offshore Substation Platform
SAR	Search And Rescue
SLVIA	Seascape, Landscape and Visual Impact Assessment
WTG	Wind Turbine Generator

Glossary

Defined Term	Meaning
Development Area	The area for the Wind Farm, within which all WTGs, inter-array cables, interconnector cables, OSPs and the initial part of the Offshore Export Cable and any other associated works must be sited. As stipulated in the Crown Estate agreement for lease.
The Wind Farm	The Inch Cape Offshore Wind Farm

Executive Summary

Inch Cape Offshore Limited (ICOL) intends to request a variation to the existing Section 36 Consent under Section 36C of the Electricity Act 1989 and, should this be granted, Marine Licence 16781 – Offshore Wind Farm (OWF) (Revised Design), in accordance with section 30(3) of the Marine (Scotland) Act 2010 (2010 Act).

The proposed changes (the Proposed Variation) are required to optimise wind farm efficiency and enable utilisation of the best available technological solution for the site, taking into account the results of site investigations and detailed engineering design. The Proposed Variation maximises the potential for renewable energy production to meet government targets, and ensures the most optimal technology solution can be deployed at the site both from an environmental impact and cost of technology perspective.

The Proposed Variation will capture the following in relation to the Wind Farm:

- Altered turbine spacing to allow an optimised border layout to maximise wind resource use;
- Increased hammer energy required to successfully install the foundations; and
- Confirmed parameters pertinent to the Preferred Design Scenario[1].

This document has been produced to provide the supporting information to inform the request for Screening Opinion for the Proposed Variation.

Following review of the 2013 Environmental Statement and 2018 Environmental Impact Assessment Report, and further consideration of environmental effects arising from the Proposed Variation, no further significant impacts were identified to arise from the Proposed Variation, and it is considered that no EIA is required.

[1] Summarised in Table 2.1

1 Introduction

1.1 Background

1 The Inch Cape Offshore Wind Farm (the Wind Farm) and Offshore Transmission Works (OfTW), hereafter referred to as The Development, is being developed by Inch Cape Offshore Limited (ICOL) (see Figure 1.1).

2 In 2014, the Scottish Ministers granted ICOL Section 36 and Marine Licence consents for the construction and operation of an offshore wind farm and a marine licence for the construction and operation of offshore transmission works. The licences granted to ICOL in 2014 (along with those for other Forth and Tay projects, Seagreen Alpha and Bravo and Neart na Gaoithe) were subject to a petition for judicial review in early 2015. A decision was made by the UK Supreme Court in November 2017 to uphold the Scottish Ministers' decisions to grant the offshore consents.

3 In 2018, ICOL submitted a new application with a revised design that would allow the development of a project that could utilise progressions in turbine technology since the 2014 consent. The revised design was aimed at reducing the environmental impacts and increasing the cost competitiveness of the project, primarily by reducing the overall number of turbines and increasing the height of the turbines being installed. Section 36 and Marine Licence Consents for the revised design were granted by Scottish Ministers in 2019.

4 Since the consent for the revised design was received, ICOL have also sought variations to the existing consents, firstly to allow for increased maximum generation capacity of 1000 MW (variation awarded July 2020) and secondly to remove the maximum generation capacity from the Section 36 consent (approved July 2021).

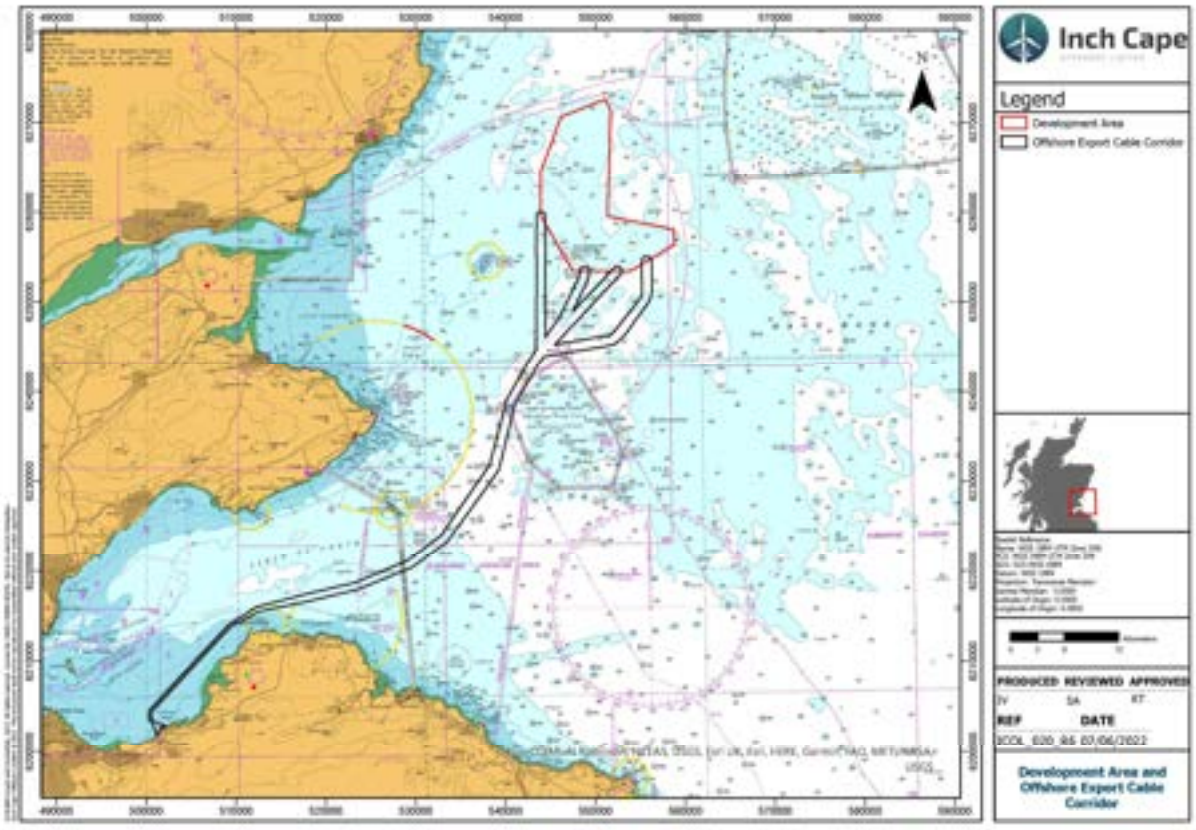

Figure 1.1: Inch Cape Offshore Development Area and Offshore Export Cable Corridor

1.2 Intention to Vary Existing Consents

5 ICOL intends to request a variation to the existing Section 36 Consent under Section 36C of the Electricity Act 1989 and, should this be granted, Marine Licence 16781 – Offshore Wind Farm (OWF) (Revised Design), in accordance with section 30(3) of the Marine (Scotland) Act 2010 (2010 Act).

6 The Proposed Variation is required to optimise wind farm efficiency and enable utilisation of the best available technological solution for the site, taking into account the results of site investigations and detailed engineering design. The Proposed Variation maximises the potential for renewable energy production to meet government targets and ensures the most optimal technology solution can be deployed at the site both from an environmental impact and cost of technology perspective.

7 ICOL would like to request a screening opinion for the Proposed Variation from the Scottish Ministers via MS-LOT.

8 ICOL considers that the Proposed Variation should be screened out for the purposes of EIA in terms of the Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the Electricity Works EIA Regulations) and the Marine Works (Environmental Impact Assessment)

(Scotland) Regulations 2017 (the Marine Works EIA Regulations) (together, the EIA Regulations).

9 Under the EIA Regulations, development will be considered EIA development if it either:

1. constitutes Schedule 1 Development; or
2. constitutes Schedule 2 Development and is likely to have significant effects on the environment having regard to the factors set out in Schedule 3.[2]

10 Schedule 2 paragraph 2 of the Electricity Works EIA Regulations states that the following will constitute EIA development:

> *"Any change to or extension (including a change in the manner or period of operation) of development of a description listed in schedule 1 or in paragraph 1 of this schedule [Schedule 2] where that development is already authorised, executed, or in the process of being executed, and the change or extension may have significant adverse effects on the environment."*

11 The Proposed Variation is a change to an already authorised generating station and, as such, would constitute Schedule 2 development (and thus require an EIA) if the Proposed Variation were to have significant adverse effects on the environment. Development which comprises a change requires EIA only if the change or extension is likely to have significant environmental effects.

12 As demonstrated in this Screening Report, the Proposed Variation will not have significant adverse effects on the environment. The Proposed Variation does not constitute EIA development and therefore it is appropriate to screen the Proposed Variation out of the requirement for EIA.[3]

13 MS-LOT's guidance note: Application for Variation of section 36 consents[4] also confirms at paragraph 31 that where a *"proposed variation is unlikely to have significant environmental effects, no EIA Report or process would be required in respect of the variation application."*

1.3 Scope of this document

14 This document has been produced to provide the supporting information to inform the request for a Screening Opinion for the Proposed Variation, and contains the following:

[2] Namely, having regard to the characteristics of the works (e.g., the size and design of the works, cumulation with other existing works and/or approved works, the use of natural resources, in particular land, soil, water and biodiversity, etc.), the location of the works and characteristics of the potential impact (e.g. the magnitude and spatial extent of the impact, the nature of the impact, etc.).

[3] The position under the Marine Works EIA Regulations is broadly similar to that under the Electricity Works EIA Regulations.

[4] MS-LOT (2019). Energy consents: applications for variation of section 36 consents guidance. Available at https://www.gov.scot/publications/applications-variation-section-36-consents/documents/

- Details of the Proposed Variation (Section 2);
- Screening for potential for change of effect (Section 3);
- Further consideration of the significance of any change in effect (Section 4);
- Summary of considerations (Section 5).

15 The Proposed Variation has been considered and whether these changes could result in significant effects which are new or materially different to those of the consented Inch Cape Wind Farm. This is based on MS-LOT's latest guidance note: Application for Variation of section 36 consents[5].

[5] MS-LOT (2019). Energy consents: applications for variation of section 36 consents guidance. Available at https://www.gov.scot/publications/applications-variation-section-36-consents/documents/

2 Project Description and Proposed Variation

2.1 Existing Project Characteristics

2.1.1 Description of Development

16 The Section 36 Consent describes the Consented Development as offshore energy generating station comprised of :

1. *No more than 72 three-bladed horizontal axis Wind Turbine Generators ("WTGs"), each with:*
    - b) *A maximum height to blade tip of 291 metres (measured from Lowest Astronomical Tide ("LAT"));*
    - c) *A maximum rotor diameter of 250 metres;*
    - d) *A minimum blade tip clearance of 27.4 metres (measured from LAT);*
    - e) *A maximum blade width of 7.8 metres; and*
    - f) *A nominal turbine spacing of 1,278 metres.*
2. *No more than 72 substructures and foundations and ancillary equipment.*
3. *No more than 190 km of inter-array cabling.*

The total area within the Development site boundary is 150 km^2.

2.1.2 WTG Layout

17 Layout is not specified in the Section 36 Consent (or Marine Licence) but was anticipated to be a grid or offset grid configuration (Figure 4.1, Figure 4.2). The Original Development included 213 WTGs with a nominal minimum spacing of 820 m as the worst case, while the Revised Development encompassed 72 WTGs with a nominal minimal spacing of 1,278 m.

Source: Inch Cape Offshore Wind Farm Environmental Impact Assessment Report (2018) Chapter 7 – Project Description

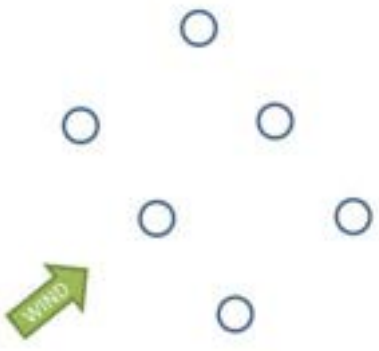

Figure 2.1: Illustration of a 'Grid' Configuration

Figure 2.2: Illustration of 'Offset Grid' Configuration

18 The layout of the wind farm is subject to a design optimisation process including selection and

procurement of WTGs, and is dependent on several factors including:

- Prevailing wind direction, as WTG rows must be orientated to benefit from the dominant wind direction;
- Distance from adjacent WTG to maximise efficiency of energy capture;
- Geological conditions;
- Bathymetry;
- Physical and spatial constraints; and
- Environmental considerations.

2.2 Proposed Changes to Wind Farm Parameters and Variation Requirements

19 The Proposed Variation will capture the following in relation to the engineering design of the Development:

- Altered spacing to allow an optimised layout to maximise wind resource capture;
- Increased hammer energy required to successfully install the WTG foundations; and
- Confirmed parameters pertinent to the Preferred Design Scenario.

2.2.1 Optimised Border and Minimum Spacing

20 Recent site geotechnical data has been collected for 80 potential WTG locations, of which 72 locations will be chosen for WTG placement, arranged in an optimised border layout. This would result in an increase in WTGs around the border of the Development Area, with the remaining WTGs arranged in a grid in the centre of the Development Area, and a change of the minimum spacing to 1,025 m. A variation is required to change the nominal WTG spacing of 1,278 m in Marine Licence 06781 and Section 36.

21 Wind farm layout is not specified in the Section 36 Consent (or Marine Licence), however there is a general requirement to comply with the assessment and conclusions of the EIAR and the approved Development Specification and Layout Plan (DSLP).

22 Updated wirelines have been presented in Appendix D.

2.2.2 Hammer Energy

23 In order to be able to successfully pile monopile foundations in all ground conditions expected within the Development Area, it is anticipated that a 5,500 kJ hammer will be required.

24 Hammer energy is not specified in the Section 36 Consent (or Marine Licence), however there is a general requirement to comply with the assessment and conclusions of the EIAR and the approved Piling Strategy.

2.2.3 Preferred Design Scenario

25 As described in 2.1.1 above, the Section 36 Consent sets out parameters, but provides by condition 7 that the Development must be constructed and operated in accordance with the Application (which includes the EIAR). The ornithology chapter of the EIAR assessed two design scenarios, A and B (see Table 2.1). The two scenarios (A and B) represent two designs to represent the extent of the design envelope, each giving a maximum rotor swept area below 50 m above mean sea level of 87,000 m^2 (a commitment in the EIAR, see for example Table 11.4, "Worst Case Scenario Definition"). The Marine Licence sets out parameters for both of these assessed design scenarios ("Part 2 – The Works"), but provides that where the final design agreed through the DSLP falls between A and B, the collision risk to birds must be no greater than assessed in the Appropriate Assessment. The Marine Licence also provides by condition 3.1.1 that the works must be constructed and operated in accordance with the Application (which includes the EIAR). Both the Section 36 Consent and Marine Licence provide a condition requiring approval of the DSLP (Section 36 condition 12, Marine Licence section 1.4 and condition 3.2.2.9 respectively).

26 aAt this time a Preferred Design Scenario (in terms of WTG numbers and dimensions and number of OSPs) for the Wind Farm has been identified. The Preferred Design Scenario falls within a combination of parameters from A and B. For completeness, in order to demonstrate that for the Proposed Design Scenario the collision risk to birds is no greater than assessed in the Appropriate Assessment, Collision Risk Modelling (CRM) for the Preferred Design Scenario is included within this screening report as Appendix A. The updated wirelines in Appendix D present the Preferred Design Scenario, which includes the reduction in turbine spacing. The Proposed Variation will also clarify that the Preferred Design Scenario falls between A and B in terms of the Marine Licence, to ensure full alignment between the Section 36 Consent and Marine Licence. For the avoidance of doubt, CRM will also be submitted along with the DSLP for approval under the Section 36 and Marine Licence conditions.

Table 2.1: Comparison of the 2018 EIAR Revised Design/2019 Consents with the Preferred Design Scenario

Parameter	Section 36	Marine Licence Scenario A	Marine Licence Scenario B	Preferred Design Scenario	Comparison
No more than X, three-bladed horizontal axis WTG	72	72	40	72	Does not exceed maximum number of turbines 72
A maximum height to blade tip of X metres (measured from Lowest Astronomical Tide ("LAT"));	291	215	291	270.7	Does not exceed worst case maximum blade tip of 291 m
A maximum rotor	250	167	250	236	Does not exceed

Parameter	Section 36	Marine Licence Scenario A	Marine Licence Scenario B	Preferred Design Scenario	Comparison
diameter of X metres;					worst case rotor swept area 250 m
A minimum blade tip clearance of X metres (measured from Mean Sea Level "MSL");	27.4	32.6	27.6	34.7	Does not exceed worst case and provides increased minimum clearance to comply with 87,000m^2 commitment
A maximum blade width of X metres; and	7.8	6.0	7.8	5.1	Does not exceed worst case
A nominal turbine spacing of X metres.	1,278	1,278	1,278	1,025	Reduction in minimum spacing screened in this report.
Number of Offshore Substation Platforms	Up to 2	Up to 2	Up to 2	1	Reduction in number Maximum numbers of OSP

2.3 Proposed Variation

27 The proposed variations to the project description are set out in the above sections and summarised in Table 5.1 below. The Proposed Variation will also clarify that the definition of Application documents which must be complied with in terms of the Section 36 Consent and Marine Licence should include this Screening Report, if accepted. This is to ensure that the proposed increase to hammer energy (which is not otherwise a consent parameter) must be complied with.

3 Review of Existing Environmental Effects

28 Following a review of the existing consents, the potential environmental impacts considered in the 2013 ES and 2018 EIAR for the Development that are relevant to the Proposed Variation are reviewed in Appendix B and summarised in Table 3.1. This review and all subsequent assessments have been undertaken with particular regard to the environmental sensitivities of the geographical area that may be affected through a review of relevant designated sites (Table 3.2). The designated sites described includes all those considered in the Habitats Regulations Appraisals (HRA) undertaken for the Project for the existing consent, and has been updated to include any additional (i.e. recently designated) sites considered relevant to this screening request. Topics were considered not to require additional information or review where impacts of the Proposed Variation will be less than or equal to those assessed or described in the 2018 EIAR (or 2013 EIA where topics were scoped out of the 2018 EIAR). Additional information is provided in Section 4, where required.

Table 3.1: Summary of EIAR review process and Identification of Further Consideration Requirements

Receptor	Requires further consideration in this report?			Comment
	Optimised Border and Reduced Minimum Spacing	Increased Hammer Energy	Preferred Design Scenario	
Metocean and Coastal Processes	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the 2013 ES.
Underwater noise	No	Yes	No	Assessed under Marine Mammals and Natural Fish and Shellfish.
Benthic Ecology	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the 2013 ES.
Natural Fish and Shellfish	No	Yes	No	Increased hammer energy has the potential to affect noise-sensitive species.
Marine Mammals	No	Yes	No	Increased hammer energy has the potential

Receptor	Requires further consideration in this report?			Comment
	Optimised Border and Reduced Minimum Spacing	Increased Hammer Energy	Preferred Design Scenario	
				to affect noise-sensitive species.
Ornithology	No	No	Yes	Minimum spacing and hammer energy are not parameters relevant to the ornithological assessment undertaken. Assessment based on a maximum extent of the Development Area (150 km2). The ornithology chapter of the EIAR assessed two design scenarios. The two scenarios represent designs which were compliant with a maximum rotor swept area below 50 m above mean sea level of 87,000 m^2 (a commitment in the EIAR) and the worst case design envelope. The Preferred Design Scenario is also compliant with the 87,000m^2 commitment and the maximum design envelope parameters. Collision Risk Modelling has been provided to confirm compliance.
SLVIA	Yes	No	Yes	Changes to the layout and spacing have the potential to alter the appearance of the development from landscape and visual receptors.
Cultural Heritage and Marine Archaeology	Yes	No	No	Changes to the layout and spacing have the potential to alter the appearance of the development from Cultural Heritage receptors.
Commercial Fish	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the

Receptor	Requires further consideration in this report?			Comment
	Optimised Border and Reduced Minimum Spacing	Increased Hammer Energy	Preferred Design Scenario	
				2013 ES and 2018 EIAR.
Shipping and Navigation	Yes	No	No	Reduced turbine spacing has the potential to affect search and rescue operations.
Socio-Economics and Tourism	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the 2013 ES and 2018 EIAR.
Military and Civil Aviation	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the 2013 ES and 2018 EIAR.
Other Human Considerations	No	No	No	Overall reduction in installation activity compared to the worst case design envelope assessed due to the reduced number of structures to be installed. Impact is less than or the same as assessed in the 2013 ES and 2018 EIAR.

Table 3.2: Relevant designated sites

Site Name	Minimum distance to Development Area (km)
Firth of Forth Banks Complex MPA	1.3
Outer Firth of Forth and St Andrews Bay Complex SPA	9.8
Montrose Basin SPA	19.6

Site Name	Minimum distance to Development Area (km)
River South Esk SAC	24.0
Firth of Tay and Eden Estuary SAC	25.0
Firth of Tay and Eden Estuary SPA	25.8
Barry Links SAC	26.4
Firth of Forth SPA	27.1
Forth Islands SPA	29.0
Isle of May SAC	32.0
Fowlsheugh SPA	33.0
River Tay SAC	37.3
River Dee SAC	45.4
Berwickshire and North Northumberland Coast SAC	52.0
St Abb's Head to Fast Castle SPA	53.0
River Tweed SAC	62.8
Imperial Dock Leith SPA	76.1
Buchan Ness to Collieston Coast SPA	82.0
River Teith SAC	109.2
Slamannan Plateau SPA	113.0
Moray Firth SAC	142.1
Upper Solway Flats and Marshes SPA	168.0

4 Further Technical Considerations

29 Where identified as required in Appendix B and Table 3.1, further information and consideration of environmental effects arising from the proposed changes are provided in this section.

4.1 Natural Fish and Shellfish

30 Hearing specialists are sensitive to changes in hammer energy as a result in changes to noise during piling. An analysis of pile driving using greater hammer energies was undertaken and compared to the original assessment in consultation with MSS and NatureScot, and concluded that despite the increase in energy, injury or mortality effects are only likely to affect a small number of individuals due to the lack of large aggregations predicted in the area. Some interaction with spawning and nursery habitats is expected, however such interactions are considered not to affect key or high intensity areas of those habitats, or affect such a small proportion that any effects would be negligible.

31 No new or materially different significant effects will arise as a result of the Proposed Variation, and the conclusions of the 2018 EIAR for fish of no significant impacts remain valid. Therefore the need for further EIA can be screened out. In line with ongoing discussions with MSS and NatureScot, final methodology and mitigation will be agreed and approved via the Piling Strategy.

4.2 Marine Mammals

32 Marine mammals are sensitive to changes in hammer energy as a result in changes to noise during piling. All other receptors are not sensitive to changes in noise.

33 An analysis of pile driving using greater hammer energies was undertaken in consultation with MSS and NatureScot and compared to the 2018 assessment, and concluded the following:

- For instantaneous PTS, although the maximum impact ranges were up to 710 m for monopiles and 600 m for pin piles for very high frequency cetaceans, they were ≤60 m for the other hearing groups (low frequency cetaceans, high frequency cetaceans, phocid seals in water). Appropriate use of mitigation (i.e., activation of an acoustic deterrent device) will ensure that no animals are present within the zone of potential impact. The potential impact (with mitigation) of instantaneous PTS is therefore considered to be zero, i.e., no effect.
- For cumulative PTS and displacement, the numbers of individuals (of the different species) estimated to have the potential to be exposed to noise levels sufficient to induce the onset of cumulative PTS or a behavioural response (displacement) were greater than those presented in the 2018 EIAR. This is the result of a combination of factors, namely; use of a different noise modelling approach, use of different species density surfaces, use of different noise dose-behavioural response relationships, and use of greater hammer energies. However, when expressed as percentages of the relevant reference populations and used to predict the significance of the potential effects, these potential impacts were considered to result in nil,

minor, or moderate effects only. Using the same criteria (for predicting significance of effects) as the 2013 ES and 2018 EIAR, these potential effects were not significant.

34 No significant effects will therefore arise in view of the Proposed Variation, and the conclusions of the 2018 EIAR for marine mammals of no significant impacts remain valid. Therefore the need for further EIA can be screened out. In line with ongoing discussions with MSS and NatureScot, final methodology and mitigation will be agreed and approved via the Piling Strategy.

4.3 Ornithology

35 Final methodology and mitigation will be agreed and approved via the DSLP. As noted in Section 2.2.3 above, a Preferred Design Scenario (in terms of WTG numbers and dimensions and number of substations) for the Wind Farm has been identified. CRM for the Preferred Design Scenario is included within this screening report to confirm that it does not affect ornithology collision risk modelling (Appendix A).

4.4 Seascape, Landscape and Visual Considerations

4.4.1 Existing Assessment

36 Chapter 12 of the 2018 EIAR presents an assessment of the potential effects of the Inch Cape Offshore Wind Farm project on seascape, landscape and visual receptors. This was undertaken in accordance with best practice at the time and the relevant professional guidance has not changed since the preparation of the SLVIA.

37 The 2018 EIAR considered a design envelope with between 40 and 72 WTGs of up to 291 m blade tip height. At the time of undertaking the EIAR, the worst-case scenario for the SLVIA assessment in the context of the other consented offshore windfarms (Neart na Gaoithe and Seagreen) was considered to be fewer larger WTGs, as agreed with Scottish Natural Heritage (SNH) and Marine Scotland at the Design Meeting of 29/09/2017 (see Table 12.4 in the SLVIA Chapter (ICOL,2018)). Therefore, the assessment was carried out for 40 WTGs with a tip height of 291 m.

38 The scope of the SLVIA was agreed with NatureScot (then Scottish Natural Heritage) and the local planning authorities within the 50 km study area: Aberdeenshire Council, Angus Council, Dundee City Council, Fife Council and East Lothian Council. The scope was agreed through a combination of the EIA scoping process and consultation meetings, all of which is reported in the 2018 EIAR, Chapter 12.2.

4.4.1.1 Baseline

39 The baseline assessment in the SLVIA described the relevant seascape, landscape and visual receptors, based on published documents where relevant. For the Proposed variation, a high-level review of the baseline context has been undertaken to identify any potential changes that could affect the assessment judgements. The review comprised identifying any changes to published landscape character assessment and landscape designations. Given the SLVIA was completed in 2018 it is not anticipated that there would be any fundamental changes to the distribution of visual

receptors that would alter the previous assessment judgements.

40 The seascape baseline is set out in the Regional Seascape Character Assessment, included as Appendix 12D to the 2018 EIAR. No changes are understood to have taken place that would affect this regional scale assessment.

41 At the time of writing the SLVIA included in the 2018 EIAR, the landscape character assessment for Scotland was published in a series of regional landscape character assessments. These have been superseded by NatureScot's national landscape character assessment[6]. Whilst there are some differences between the regional landscape character assessments and the replacement national landscape character assessment, the scale of assessment is the same, the landscape character types remain comparable and the content of the landscape character assessment is similar.

42 Reviewing landscape designations within the Study Area, these are broadly consistent with those considered in the SLVIA. There were no National Parks or National Scenic Areas within the Study Area and this has not changed since the preparation of the SLVIA. A very small part of one Wild Land Area (no. 16 Lochnagar - Mount Keen) just overlaps with the outer edge of the Study Area, but this was not assessed in the SLVIA. There are no changes in the local landscape designations applicable in Aberdeenshire, Angus, Dundee City, or Fife council areas. There has been a change within East Lothian, with a Special Landscape Areas (SLA) Supplementary Planning Guidance[7] published in 2018. This document post-dates the SLVIA and was not considered in the 2018 EIAR. The Study Area for the SLVIA overlaps with a small part of East Lothian coastline, to the east of North Berwick. This coastline forms part the Tantallon Coast SLA, however, the same coastline previously formed part of the North Berwick to Dunbar Coast Area of Great Landscape Value (AGLV). Therefore, the value associated with this area of landscape/coastline was reflected in the SLVIA.

43 Overall, it is considered that there are no material changes to the baseline context that would affect the judgements made in the SLVIA.

4.4.1.2 Cumulative Context

44 The SLVIA considered the potential effects of the proposed Inch Cape Offshore Wind Farm in the context of existing and proposed wind farms in the Study Area. This included multiple offshore and onshore wind farms. The key cumulative wind farm developments in the vicinity of the Proposed Development are the consented Neart na Gaoithe and Seagreen offshore wind farms. These developments form important baseline context for the Proposed Development as they will typically be seen either simultaneously or in successive views and therefore these offshore wind farms are

[6] NatureScot, https://www.nature.scot/professional-advice/landscape/landscape-character-assessment/scottish-landscape-character-types-map-and-descriptions

[7] East Lothian Council (adopted 30th October 2018) Local Development Plan 2018, Special Landscape Areas, Supplementary Planning Guidance

included in the wireline visualisations (described in Section 4.4.6 below).

45 The most up to date project information available for the Neart na Gaoithe and Seagreen offshore wind farms has been used for the wireline preparation:

- Neart na Gaoithe - 54 WTGs with a blade tip height of up to 208 m; and
- Seagreen - 150 WTGs, with 114 WTGs at 205 m to blade tip height and 36 WTGs at 285 m to blade tip height.

4.4.1.3 Predicted Effects of the Consented Development

46 The 2018 EIAR assessed the potential impacts of the proposed Inch Cape Offshore Wind Farm during construction, operation and decommissioning, including potential effects on:

- Seascape character;
- Landscape character;
- Landscape designations; and
- Visual amenity.

47 The 2018 EIAR identified the potential for the proposed WTGs to give rise to a number of daytime and night time significant effects on seascape, landscape and visual amenity when considered in addition to the operational and consented offshore and onshore wind farms. Chapter 12 of the EIAR and the associated appendices detail the nature and extent of these predicted effects, a summary of the potential effects is provided in Section 12.13 Conclusions and Summary of Effects.

4.4.2 Effect of the Proposed Variation

48 The Proposed Variation seeks to alter the design of the Proposed Development in order to optimise the layout in terms of energy output. The key parameters that would change in relation to potential seascape, landscape and visual effects are:

- A reduction in the height of the turbines, approximately 274 m to blade tip height compared with 291 m for the consented development;
- An energy optimised layout of 72 WTGs, compared with 40 WTGs in a grid layout (the layout considered in the SLVIA); and
- A reduction in the number of OSPs from two to one.

49 The above changes are all within the development envelope covered by the consent.

4.4.2.1 Zone of Theoretical Visibility Analysis

50 Comparative ZTVs presented in Appendix C, Figures 1 and 2 (blade tip and hub height respectively) have been prepared to show the predicted differences in theoretical visibility between the parameters applied in the SLVIA for the consented development and the Proposed Variation (the

energy optimised layout). These show that there are very limited differences in the overall predicted pattern of visibility between the 2018 and the energy optimised layout that is the subject of the Proposed Variation. This is partly attributable to the fact that both layouts would involve wind WTGs being distributed throughout the Development Area.

51 Overall, the Proposed Variation would slightly reduce the footprint or pattern of the ZTV. This reduction is due to the slightly lower WTG heights (both the hub height and tip height). Both hub height and blade tip ZTVs are prepared for wind energy developments as they provide an indication of the proportion of the WTGs that would be seen at locations within the Study Area. In the case of this development, a hub height ZTV also provides an indication of the potential visibility of aviation lighting. The most conspicuous change to the ZTV is the reduction in theoretical visibility from the Proposed Variation on the sea surface, beyond the 50 km Study Area used for the SLVIA. This is due to the lower height WTGs having less visibility resulting from the earth's curvature. There are small variations in the ZTV pattern within terrestrial areas beyond the 50 km Study Area, e.g. in the vicinity of the Tay estuary. However, these are not sufficient to materially affect the overall pattern of predicted visibility and previous SLVIA findings.

4.4.2.2 Analysis of Visualisations

52 New wireline visualisations have been prepared using the same methodology as was applied for the 2018 EIAR to assist in the assessment of whether the Proposed Variation layout is likely to have any additional significant effects from those assessed in the 2018 SLVIA. Wireline visualisations have been prepared for all 26 viewpoints that were included in the 2018 EIAR. (see Appendix D). In addition, for completeness, the Additional Wirelines that were included in the 2018 EIAR have been updated to show the Proposed Variation layout (see Appendix E). Note that while it is proposed to construct 72 WTGs, there are currently 79 potential WTG locations, which are still going though final refinement. Therefore, the wirelines show 79 WTGs as this as this illustrates WTGs occupying all the available locations within the Development Area.

53 As described above, the wireline visualisations take account of the proposed parameter changes for Inch Cape Offshore Wind Farm in combination with Seagreen and Neart na Gaoithe offshore wind farms, based on the most up to date design information available for these projects.

54 Appendix D, Figures 1 to 26 present wireline visualisations for the consented development and Proposed Variation side by side. The judgements made in the 2018 EIAR have been reviewed in the context of the proposed variation.

55 There would be limited change to the horizontal extent of Inch Cape OWF as both the consented development and the Proposed Variation include WTGs throughout most of the Development Area. However, there is generally a small increase in the extent of the view that would be occupied by the WTGs, on one or both sides of the array, as a result of the Proposed Variation. As the extent of the Development Area remains the same there is limited difference in the intervening distance between the receptors and the closest WTG.

56 There would be a reduction in the hub height and tip height of the WTGs as a result of the Proposed Variation. However, this difference is not very apparent in the wirelines and similar is expected to be the case in the field. Consequently, it is considered that the height reductions would not influence the previous assessment judgements.

57 At the time of preparing the 2018 EIAR 40 WTGs, of the tallest turbine height being considered, in a grid layout across the Development Area was assessed in the SLVIA. The Proposed Variation seeks to allow for an energy optimised 72 turbine layout. The general consequence of the Proposed Variation is a reduction in the gaps apparent from some viewpoint locations in the 40 WTG layout. However, the arrangement of WTGs within the energy optimised layout has resulted in a more irregular and dense composition of WTGs than was the case with the 40 WTG layout assessed in the EIAR.

58 The assessment judgements relating to each viewpoint included in the SLVIA have been reviewed using the wirelines that are presented in Appendix D, Figures 1 to 26. On the whole it is considered that the number and location of significant effects would remain as assessed in the 2018 EIAR.

59 Therefore, overall the changes to the appearance of the Inch Cape Offshore Wind Farm arising from the Variation do not change the significant effects experienced by any seascape, landscape or visual receptors compared with those identified in the 2018 EIAR. The distribution of significant effects for the Proposed Variation is expected to be the same as was set out in the 2018 EIAR.

4.4.2.3 Cumulative considerations

60 The wireline visualisations show the Inch Cape Offshore Wind Farm in the context of the Neart na Gaoithe and Seagreen offshore wind farms. Inch Cape Offshore Wind Farm was granted consent in 2018 and any developments proposed after this was issued, will have considered Inch Cape in their cumulative impact assessments. The Proposed Variation will not result in any notable change to the location or overall extent of the Wind Farm and therefore the potential for the Proposed Variation to result in changes to cumulative effects on seascape, landscape and visual receptors is considered to be unlikely. Therefore, an update to the cumulative assessment is not considered to be necessary.

4.4.3 Conclusions and Screening Outcome

61 There have been no material changes in the baseline context of the Proposed Development, e.g. changes to the published landscape character assessment or landscape designations, that would alter the judgements made in the 2018 EIAR.

62 The analysis undertaken in relation to the ZTVs that compare the Proposed Development that was assessed in the 2018 EIAR and the Proposed Variation shows very limited changes to predicted visibility.

63 The wireline visualisations that have been prepared for the 26 viewpoints assessed in the EIAR, demonstrate that the appearance of Inch Cape Offshore Wind Farm would change as a

consequence of the Proposed Variation.

64 Assessment based on review of the comparative wirelines indicates that there would be no change in the distribution of likely significant effects on seascape, landscape or visual amenity, and the existing assessment remains valid in view of the Proposed Variation. It is therefore appropriate for the Proposed Variation to be screened out of the requirement for an EIA in respect of landscape, seascape and visual receptors.

4.5 Cultural Heritage and Marine Archaeology

4.5.1 Existing Assessment

65 Chapter 13 of the 2018 EIAR presented an updated assessment of the potential impacts upon cultural heritage and marine archaeology receptors predicted to arise from the Inch Cape Offshore Wind Farm and Offshore Transmission Works (The Development). This examined a cultural heritage and marine archaeology baseline across a very wide geographic area, within and around The Development. The EIAR examined onshore receptors that may experience an impact to their setting, as defined in Managing Change in the Historic Environment: Setting (HES, 2016). The assessment was undertaken in accordance with best practice at the time and the relevant professional guidance has not significantly changed since the preparation of the assessment present in the EIAR.

66 The scope of the assessment was agreed through a combination of the EIA scoping process and consultation meetings, all of which is reported in the 2018 EIAR, Chapter 13.2. The scope of the EIA was further discussed with East Lothian Council (ELC). This covered those impacts that had been agreed to be scoped in – potential impacts to setting of the Historic Environment in East Lothian during the operation and maintenance phase of the Wind Farm but following creation of illustrative additional wirelines, there was no agreement to include Receptors from East Lothian (see Appendix E).

4.5.2 Setting Baseline

67 The Receptors considered for the impact to setting assessment were Listed Buildings or Scheduled Monuments. These sites were identified by Angus Council and Fife Council from their Historic Environment Records (HER) as cultural heritage within the Zone of Theoretical Visibility (ZTV) of the Wind Farm that have settings that are directly related to the sea or have significance in their visual and physical interaction with the sea. These consist of the following:

Table 4.1: Cultural heritage assets considered with respect to setting effects

Name	Designation	Reference Number	Distance to Wind Farm	Viewpoint
Bell Rock Lighthouse Signal Tower, Ladyloan	Category A – listed structure	HB no. 21230	19.63 km	11[8]
Bell Rock Lighthouse	Category A – listed structure	HB no. 45197	7.9 km	Appendix E, Figure 7
Tentsmuir Coastal Defences	Scheduled Monument	Index no. 9712	33.16 km	16*
St Andrews Cathedral and adjacent ecclesiastical remains	Scheduled Monument	Index no. 90260, HB nos. 40585, 40586, 40587, 40588, 40589, 40592	34.53 km	18*
St Andrews Castle	Scheduled Monument	Index no. 90259, HB no. 40599	34.53 km	18*
Crail Airfield, pillbox, Foreland Head	Scheduled Monument	Index no. 6461	27.37 km	23*

68 It is considered that there are no material changes to the baseline context that would affect the judgement made in the previous assessments.

69 The impacts were assessed to be at most **minor / moderate** for effects from the operation of the Wind Farm upon the setting of cultural heritage receptors. On a cumulative basis, impacts were assessed to be at most **minor / moderate**. Therefore, all impacts were found to be not significant in EIA terms.

4.5.3 Effects of the Proposed Variation

70 The Proposed Variation seeks to alter the design of the consented Development. The key

[8] Wirelines from each of these viewpoints can be found in Appendix C

parameters that would change in relation to cultural heritage and marine archaeology are:

- A reduction in the height of the turbines, approximately 274 m to blade tip height compared with 291m for the consented development;
- An optimised layout of 72 WTGs, compared to 40 WTGs in a grid layout; and,
- Installation of one Offshore Substation Platform (OSP), compared to two.

71 The assessment presented in Chapter 13 of the 2018 EIAR took into consideration the worst case scenarios defined by The Development for impacts on archaeology and cultural heritage, including setting – the tallest turbines and the greatest number of structures that would represent the worst case impacts. It is important to note, that known marine cultural heritage seabed receptors have been previously assessed and identified and reflects embedded mitigation in the design of the optimised layout, avoiding impacts to these receptors.

72 Therefore, the overall Proposed Variation does not alter the previously assessed worst case impacts, and as discussed in Section 4.4.2 of this report, there are very limited differences in the overall predicted pattern of visibility between the 2018 and optimised layout of the Proposed Variation.

4.5.4 Conclusion and Screening Outcome

73 There are no material changes to the cultural heritage and marine archaeology baseline context of The Development, including the receptors considered for the setting impact assessment.

74 The 2018 assessment considered the worst case impacts on the setting of cultural heritage and resulted in no significant impact in EIA terms. A review of updated wirelines produced by SLVIA, indicate no significant effects will arise from the Proposed Variation and the conclusions of likely significant effects on the setting of cultural heritage in the original assessment remain valid.

75 No significant effects will arise in view of the Proposed Variation, and the conclusions of the 2018 EIAR for cultural heritage and archaeology of no significant impacts remain valid.

76 Therefore, based on professional opinion it is judged that the Proposed Variation is screened out of the requirement for an EIA in respect to cultural heritage and marine archaeology.

4.6 Shipping and Navigation

4.6.1 Existing Assessment

77 Shipping and navigation impacts have been previously assessed within:

- The original Environmental Statement (2013); and
- The Revised Design Environmental Impact Assessment (EIA) Report (2018).

78 This included assessment of the following impacts of relevance to shipping and navigation:

- Increased transit times and distances (deviations);
- Increased vessel to vessel collision;
- Vessel to structure allision;
- Effects on anchoring operations;
- Increased need for emergency response activities and restricted access to casualties
- Effect on marine radar systems; and
- Increase of visual confusion (cumulative only).

79 All impacts were assessed to be at most **minor / moderate with mitigation** for the project in isolation. On a cumulative basis[9], impacts were assessed to be at most **moderate with mitigation**.

80 Therefore, all impacts were found to be not significant in EIA terms with the identified mitigation in place.

4.6.2 Effects of Proposed Variation

81 The impacts included within the previous assessments (see Section 4.6.1) have been considered against the proposed envelope changes (see Section 2.2) to determine whether any may have effects on the previously determined significance rankings. The outputs of this process are summarised in Table 4.2.

Table 4.2: Effects of Envelope Changes

Impact	Envelope Change Effects
Increased transit times and distances (deviations) for	Existing assessments assumed maximum developable area in terms of displacement and as such worst case has already been assessed.
Increased vessel to vessel collision	Existing assessments assumed maximum developable area in terms of displacement (and therefore collision) and as such worst case has already been assessed.
Vessel to structure allision	Number of structures is not changing, and reduction in minimum spacing is not considered to be such that significant changes would be expected.

[9] Cumulative issues were addressed as part of the Forth and Tay Offshore Wind Developers Group (FTOWDG) collaborative work at the time of the initial EIA. The FTOWDG collaborative work included Inch Cape, Neart na Gaoithe, and the Round 3 Zone Two (now Seagreen and Berwick Bank).

Impact	Envelope Change Effects
Effects on anchoring	No envelope changes of relevance.
Increased need for emergency response activities and restricted access to casualties	Envelope changes are not considered as likely to lead to increased incident rates. The layout will be Marine Guidance Note (MGN) 654 (MCA, 2021) compliant and agreed with MCA to ensure suitable SAR access is facilitated noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.
Effect on marine radar	No envelope changes of relevance.
Increase of visual confusion	Potential for irregular layouts / non linear boundaries was considered within the cumulative assessment in the 2018 Revised Design EIA Report and therefore worst case has already been assessed. The layout will be MGN 654 compliant and agreed with MCA noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.

82 In summary, no material changes in significance are anticipated based on the envelope changes assuming the same mitigations in place under the Revised Design (2018) EIA Report are in place (see Section 4.6.1).

4.6.3 Consultation

83 Following the review of previous reports (see Sections 4.6.1 and 4.6.2), consultation was undertaken with the MCA and NLB as the key stakeholders of relevance to agree an appropriate approach to shipping and navigation impacts within the Proposed Variation application. Based on the output of the preliminary assessment of potential effects of the envelope changes undertaken (see Table 4.2 it was proposed to the Maritime Coastguard Agency (MCA) and Northern Lighthouse Board (NLB) that shipping and navigation impacts were screened out of further assessment. Having reviewed the envelope changes, both MCA and NLB agreed with this approach and confirmed they were content for shipping and navigation impacts to be screened out for the purposes of the Proposed Variation application.

84 It is noted that consultation is ongoing with the MCA and NLB in terms of defining a final layout and other matters of relevance (e.g., Search and Rescue, lighting and marking). The final layout will be MGN 654 (MCA, 2021) compliant, and will be confirmed with both MCA and NLB in advance of the submission of the DSLP.

4.6.4 Conclusion and Screening Outcome

85 The proposed envelope changes are not considered as resulting in any new or materially different

changes to the results of the shipping and navigation assessments already undertaken for shipping and navigation, and as such the significance of impacts previously determined remain valid on an in isolation and cumulative basis. The envelope changes have been presented to the MCA and NLB as the key stakeholders of relevance to shipping and navigation, and both agreed with these findings and were content for shipping and navigation impacts to be screened out for the purposes of the Proposed Variation.

4.7 Cumulative considerations

86 Following review and further consideration of existing environmental effects, the proposed changes are not anticipated to have significant environmental effects and no new or materially different impacts have been identified, therefore no change in cumulative or in-combination effects is anticipated.

4.8 Habitats Regulation Assessment (HRA)

87 An Appropriate Assessment (AA) of the Revised Design dated 14/03/2019 concluded that there will be no adverse effects on the site integrity on any designated site where mitigation is applied in line with the conditions set out in the Marine Licences and Section 36.

88 Following review and further consideration of existing environmental effects, no new or materially different impacts have been identified leading to an increase in significant effects on HRA features, therefore these is no change to HRA.

89 As noted at 2.2.3 above, CRM for the Preferred Design Scenario is included with this screening report.

4.9 Conclusion and Screening Outcome

90 Following review of the 2013 ES and 2018 EIAR, and further consideration of environmental effects arising from the proposed changes, no new or materially different impacts have been identified, therefore it is appropriate to screen the Proposed Variation out of the requirement for EIA.

5 Summary and Recommendations

91 The Proposed Variation does not give rise to any new or materially different impacts and so does not require EIA. The anticipated changes to the design and the proposed resolution are summarised in Table 5.1. Proposed alterations to consents are summarised in Table 5.2.

Table 5.1: Summary of Proposed Variation

	Optimised Border and Nominal Minimum Spacing	Increased Hammer	Preferred Design Scenario
2013 EIAR/ 2014 Consent	Grid / offset grid layout, minimum spacing of 1,000 m	2,400-4,500 kJ, max 5,000 kJ	n/a
2018 EIAR/ 2019 Consent (current)	Grid / offset grid layout, Nominal minimal spacing of 1278 m	5000 kJ (90% energy 4500 kJ)	See Table 2.1
Change required	Change layout to Optimised Border, Decrease minimum spacing to 1,025 m	Increase energy to 5,500 kJ	Confirmation Preferred Design Scenario is within the parameters assessed in the 2018 AA
Proposed resolution	Variation required to ML 06781 and Section 36 to change nominal minimum spacing to 1,025 m	Variation required to ML 06781 and Section 36 to permit increase in hammer energy	Variation required to ML 06781 to clarify condition wording
Conclusion of Screening Report	No EIA	No EIA	No EIA

Table 5.2: Proposed Alterations to Section 36 Consent and Marine Licence 06781

Condition	Proposed revision of condition text
Section 36	
Paragraph 1.4	The offshore generating station shall be comprised of: No more than 72 three-bladed horizontal axis Wind WTG Generators ("WTGs"), each with: a) A maximum height to blade tip of 291 metres (measured from Lowest Astronomical Tide ("LAT")); b) A maximum rotor diameter of 250 metres; c) A minimum blade tip clearance of 27.4 metres (measured from LAT); d) A maximum blade width of 7.8 metres; and e) A nominal WTG spacing of ~~1,278~~ 1,025 metres. 2. No more than 72 substructures and foundations and ancillary equipment; and 3. No more than 190 km of inter-array cabling.
Marine Licence 06781 – Generating Station	
Part 2, Section 2.1 Condition 4	An offshore energy generating station at the Site located approximately 15-22km off the Angus coastline, to the east of the Firth of Tay, as shown in Figure 1, comprised of either: 4. A) No more than 72, three-bladed horizontal axis Wind Turbine Generators ("WTG") each with; a. A maximum height to blade tip of 215 metres (measured from Lowest Astronomical Tide ("LAT")); b. A maximum rotor diameter of 167 metres; c. A minimum blade tip clearance of 32.6 metres (measured from Mean Sea Level ("MSL")); d. A maximum blade width of 6.0 metres; and e. e. A nominal turbine spacing of ~~1,278 metres~~1,025 metres. OR; B) No more than 40, three-bladed horizontal axis WTG each with; f. A maximum height to blade tip of 291 metres (measured from LAT); g. A maximum rotor diameter of 250 metres; h. A minimum blade tip clearance of 27.6 metres (measured from MSL); i. A maximum blade width of 7.8 metres; and j. A nominal turbine spacing of ~~1,278~~ 1,025 metres. Where the final design agreed through the Development Specification and Layout Plan ("DSLP") falls between A and B, the collision risk to birds must be no greater than assessed in the Appropriate Assessment. A final design falls between A & B where it falls within a combination of parameters taken from A and B. If required by Scottish Ministers the Applicant must provide evidence of this using the best available science.

Appendix A Collision Risk Estimates for Key Seabird Species at Inch Cape Offshore Wind Farm

REPORT

Collision Risk Estimates for Key Seabird Species at Inch Cape Offshore Wind Farm

Comparisons with consent design scenarios

Client: Inch Cape Offshore Limited

Reference: PB2991-RHD-ZZ-XX-RP-Z-0001

Status: S0/P01.01

Date: 11 0000 2022

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Document title:	Collision Risk Estimates for Key Seabird Species at Inch Cape Offshore Wind Farm
Subtitle:	Comparisons with consent design scenarios
Reference:	PB2991-RHD-ZZ-XX-RP-Z-0001
Status:	P01.01/S0
Date:	11 0000 2022
Project name:	Post-consent ornithology advice
Project number:	PB2991-101-101
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Date:	08/06/22
Approved by:	Ross Bower
Date:	08/06/22

Classification
Confidential

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Acronyms

CRM	Collision risk modelling
EIAR	Environmental Impact Assessment Report
ICOL	Inch Cape Offshore Limited
LAT	Lowest Astronomical Tide
MSL	Mean sea level
SOSS	Strategic Ornithological Support Services
SPA	Special Protection Area

1 Introduction

In 2018, ICOL submitted a new application for the Inch Cape Offshore Wind Farm with a revised design that would allow the development of a project that could utilise progressions in turbine technology since the 2014 consent. The revised design was aimed at reducing the environmental impacts and increasing the cost competitiveness of the project, primarily by reducing the overall number of turbines and increasing the height of the turbines being installed. Section 36 and Marine Licence Consents for the revised design were granted by Scottish Ministers in 2019.

The Inch Cape Offshore Wind Farm Section 36 Consent sets out parameters, but provides by condition 7 that the Development must be constructed and operated in accordance with the Application (which includes the submitted EIAR). The ornithology chapter of the EIAR assessed two design scenarios (referred to as A and B). The two scenarios represent the extent of the design envelope, each giving a maximum rotor swept area below 50 m above mean sea level of 87,000 m2 (a commitment in the EIAR, see for example Table 11.4, “Worst Case Scenario Definition”). The Marine Licence sets out parameters for both of these assessed design scenarios (“Part 2 – The Works”), but provides that where the final design agreed through the Development Specification and Layout Plan (“DSLP”) falls between design scenarios A and B, the collision risk to birds must be no greater than assessed in the Appropriate Assessment (Marine Scotland 2019). The Marine Licence also provides by condition 3.1.1 that the works must be constructed and operated in accordance with the Application (which includes the EIAR). Both the Section 36 Consent and Marine Licence provide a condition requiring approval of the DSLP.

Since the revised design of the Inch Cape Offshore Wind Farm was consented1, a preferred design scenario (in terms of turbine numbers and dimensions) for the Wind Farm has been identified. It falls within a combination of the parameters from design scenarios A and B. For completeness, in order to ensure that for the proposed design scenario the collision risk to birds is no greater than as assessed in the Appropriate Assessment, CRM for the preferred design scenario is included within this report. For the avoidance of doubt, CRM will also be submitted along with the DSLP for approval under the Section 36 and Marine Licence conditions.

This report compares the predicted collision mortality for the current preferred design with the design scenarios on which the consent is based. This is undertaken for each of the three species of seabird for which collision mortality was considered to be relevant effect pathway in the assessment for the Project – i.e. gannet, kittiwake and herring gull (Marine Scotland 2017, ICOL 2018a).

2 Predicting collision mortality

2.1 Turbine parameters

The turbine parameters which are relevant to CRM are presented for the revised design and for the two designs assessed at consent in Table 1.

Table 1. Comparison of the turbine parameters relevant to the estimation of collision mortality using the SOSS offshore CRM (Band 2012) for the preferred design and for the two design scenarios assessed at consent.

[1] *Microsoft Word - ICOL Revised Design - ANNEX C Decision Notice and Conditions - V3 - FINAL (marine.gov.scot)*

Parameter	Preferred Design	Design Scenario A	Design Scenario B
Number of turbines	72	72	40
Number rotors per turbine	3	3	3
Hub height (m)[1]	152.7	116.1	152.6
Rotor radius (m)	118	83.5	125
Height to upper blade tip (m)[1]	270.7	199.6	277.6
Height to lower blade tip (m)[1]	34.7	32.6	27.6
Maximum blade width (m)	5.1	6.0	7.8
Rotor speed (rpm)[2]	7.19	8.72	5.72
Pitch (°)[2]	4.38	10	10
Monthly time operational (%)[2]	94	80	80

[1]Values are given relative to MSL because the CRM is calculated relative to MSL. MSL is taken as 2.9m above LAT for the development area.
[2]Presented as the annual average as calculated from monthly-specific estimates. The monthly and species-specific seasonal period values are given in Appendix A.

It is also the case that the nominal turbine spacing associated with the refined design (i.e. 1,025m) will decrease compared to the values set out for the two designs assessed at consent (i.e. 1,278m for both designs). However, turbine spacing does not affect collision estimates (as calculated by the SOSS offshore CRM) and is not included as a parameter in this model.

2.2 Methods and approach

To determine the predicted collision mortality associated with the refined turbine parameters, CRM was undertaken exactly as for the assessment with only the turbine parameters changed in line with the details in Table 1 (ICOL 2018a). Thus, the 'Band spreadsheet' version of the SOSS offshore CRM was used (Band 2012), with the model options, avoidance rates, nocturnal activity rates and bird parameters consistent with what was used in the assessment and as detailed in Table 2. The mean monthly bird flight densities for each species were also unaltered from the values used in the submission (compare Appendix A with Annex 11C.1 in ICOL 2018a). Recent advice from Marine Scotland and NatureScot on undertaking CRM continues to advocate the use of the 'Band spreadsheet' version of the SOSS offshore CRM (Marine Scotland 2022, NatureScot 2021).

Table 2. Model options and avoidance rates used in the CRM for each species, together with species-specific flight behaviour and morphological parameters.

Species	Band model option[1]	Avoidance rate[2]	Nocturnal activity score	Bird length (m)[3]	Wingspan (m)[3]	Flight speed ($m.s^{-1}$)[4]	Flight type
Gannet	2	98.9%	1 (=0%)	0.94	1.73	14.9	Flapping
Kittiwake	2	98.9%	2 (=25%)	0.39	1.08	13.1	Flapping

Herring gull[5]	3	99.5%	2 (=25%)	0.60	1.44	12.8	Flapping

[1]Details of model options are provided in Band (2012), with the flight height data of Johnston *et al.* (2014a,b) used in each case.
[2]Avoidance rates used for each species are as advised for the relevant model option by SNCBs (2014).
[3]From BTO Birdfacts (https://www.bto.org/about-birds/birdfacts) [Accessed 10/05/2018].
[4]From Pennycuik (1997) for gannet and Alerstam *et al.* (2007) for kittiwake and herring gull.
[5]CRMs for herring gull were undertaken using both options 2 and 3 in the assessment for the revised design of the Inch Cape Offshore Wind Farm but with the assessment based on the option 3 outputs (ICOL 2018b,c).

2.3 Collision estimates

The collision estimates calculated for the preferred design are lower than the worst-case design on which the consent was based for each of the three species considered (Table 3). This is the case irrespective of whether the estimates are considered for the full annual period or for the breeding season of each species[2] (noting that the effects apportioned to the key SPA populations of the these three species are substantially higher for the breeding than non-breeding season – ICOL 2018c). For all three species, the collision estimates for the preferred design are close to the lower of the estimates for the two designs assessed at consent, representing a reduction of approximately 10 – 15% from the worst-case estimates for gannet and kittiwake.

Table 3. Comparison of annual and breeding season collision estimates for the preferred design and for the two designs assessed at consent (with the worst-case on which consent based shown in bold). Comparisons are undertaken for the three species for which collision mortality was considered a relevant effect pathway in the assessment for the Project.

Species	Preferred design		2018 EIAR design scenarios			
			A		B	
	Annual	Breeding season	Annual	Breeding season	Annual	Breeding season
Gannet	105	98	105	96	**117**	**108**
Kittiwake	61	36	64	36	**72**	**40**
Herring gull	2	1	**3**	**1**	2	1

3 Conclusions

The turbine parameters for the Inch Cape Offshore Wind Farm have been refined in relation to the detailed specification of the turbine model to be deployed by the Project. The collision estimates associated with the preferred design are lower than the worst-case for collision mortality assessed at consent for each of the three seabird species for which collision mortality was considered a relevant effect pathway in the assessment for the Project. Therefore, for the preferred design the collision risk to birds is no greater than assessed in the Appropriate Assessment.

[2] *As defined by NatureScot in Guidance note - Seasonal definitions for birds in the Scottish Marine Environment.pdf (nature.scot)*

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Appendix A: Excel worksheets showing the input parameters used for the collision risk models undertaken for the refined turbine design

Gannet

COLLISION RISK ASSESSMENT			used in overall collision risk sheet								used in available hours sheet				
Sheet 1 - Input data			used in migrant collision risk sheet								used in large array correction sheet				
			used in single transit collision risk sheet or extended model								not used in calculation but stated for reference				
	Units	**Value**		**Data sources**											
Bird data															
Species name		**Gannet**													
Bird length	m	0.94													
Wingspan	m	1.73													
Flight speed	m/sec	14.9													
Nocturnal activity factor (1-5)		1													
Flight type, flapping or gliding		flapping													
				Data sources											
Bird survey data			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daytime bird density	birds/sq km		0.1505	0.556	0.5785	2.1745	4.328	3.7765	3.6285	5.134	1.512	1.0355	0.193	0	
Proportion at rotor height	%	1.1%													
Proportion of flights upwind	%	50.0%													
				Data sources											
Birds on migration data															
Migration passages	birds		0	0	0	0	0	0	0	0	2000	4000	0	0	
Width of migration corridor	km														
Proportion at rotor height	%														
Proportion of flights upwind	%	50.0%													
	Units	**Value**		**Data sources**											
Windfarm data															
Name of windfarm site		**IC - Large**													
Latitude	degrees	56.49													
Number of turbines		72													
Width of windfarm	km	6.774													
Tidal offset	m														
	Units	**Value**		**Data sources**											
Turbine data															
Turbine model															
No of blades		3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Rotation speed	rpm	7.01	7.51	7.51	7.25	7.03	6.90	6.84	6.86	7.01	7.19	7.27	7.39	7.56	
Rotor radius	m	118													
Hub height	m	152.7	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Monthly proportion of time operational	%		94.49%	95.56%	93.99%	93.06%	90.03%	90.08%	90.49%	92.91%	93.31%	95.52%	96.90%	96.42%	
Max blade width	m	5.100													
Pitch	degrees	3.57	6.20	5.81	4.84	3.26	3.62	3.51	2.79	3.17	3.84	4.32	5.01	6.16	

Murray Grant:
Not relevant: No option 1 models run

RPM		
Breeding	Aut Pass	Spr Pass
7.01	7.33	7.46

Pitch		
Breeding	Aut Pass	Spr Pass
3.57	4.66	5.75

Kittiwake

COLLISION RISK ASSESSMENT			used in overall collision risk sheet								used in available hours sheet				
Sheet 1 - Input data			used in migrant collision risk sheet								used in large array correction sheet				
			used in single transit collision risk sheet or extended model								not used in calculation but stated for reference				
	Units	**Value**		**Data sources**											
Bird data															
Species name		Ki													
Bird length	m	0.39													
Wingspan	m	1.08													
Flight speed	m/sec	13.1													
Nocturnal activity factor (1-5)		2													
Flight type, flapping or gliding		flapping													
				Data sources											
Bird survey data			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Daytime bird density	birds/sq km		0.2	0.048	0.569	0.612	0.839	1.998	3.682	0.487	2.495	1.591	0.628	0.347	
Proportion at rotor height	%	0.80%													
Proportion of flights upwind	%	50.0%													
				Data sources											
Birds on migration data															
Migration passages	birds		0	0	0	4000	2000	0	0	0	2000	4000	0	0	
Width of migration corridor	km	8													
Proportion at rotor height	%	75%													
Proportion of flights upwind	%	50.0%													
	Units	**Value**		**Data sources**											
Windfarm data															
Name of windfarm site		Inch Cape													
Latitude	degrees	56.49													
Number of turbines		72													
Width of windfarm	km	6.774													
Tidal offset	m	0													
	Units	**Value**		**Data sources**											
Turbine data															
Turbine model		Large turbine													
No of blades		3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Rotation speed	rpm	6.93	7.51	7.51	7.25	7.03	6.90	6.84	6.86	7.01	7.19	7.27	7.39	7.56	
Rotor radius	m	118													
Hub height	m	152.7	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Monthly proportion of time operational	%		94.49%	95.56%	93.99%	93.06%	90.03%	90.08%	90.49%	92.91%	93.31%	95.52%	96.90%	96.42%	
Max blade width	m	5.100													
Pitch	degrees	3.27	6.20	5.81	4.84	3.26	3.62	3.51	2.79	3.17	3.84	4.32	5.01	6.16	

RPM		
Breeding	Aut Pass	Spr Pass
6.93	7.28	7.32

Pitch		
Breeding	Aut Pass	Spr Pass
3.27	4.50	5.03

murray.grant:
Not relevant: No option 1 models run

Herring gull

COLLISION RISK ASSESSMENT
Sheet 1 - Input data

Colour key:
- used in overall collision risk sheet
- used in migrant collision risk sheet
- used in single transit collision risk sheet or extended model
- used in available hours sheet
- used in large array correction sheet
- not used in calculation but stated for reference

	Units	Value	Data sources											
Bird data														
Species name		**Herring gull**												
Bird length	m	0.60												
Wingspan	m	1.44												
Flight speed	m/sec	12.8												
Nocturnal activity factor (1-5)		2												
Flight type, flapping or gliding		flapping												

			Data sources											
Bird survey data			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Daytime bird density	birds/sq km		0.1001021	0.0484165	0	0	0.0244738	0.1218324	0	0.0242601	0	0.0252525	0.0483092	0.1472915
Proportion at rotor height	%	5.0%												
Proportion of flights upwind	%	50.0%												

Murray Grant: Not relevant: No option 1 models run

			Data sources											
Birds on migration data														
Migration passages	birds		0	0	0	0	0	0	0	0	2000	4000	0	0
Width of migration corridor	km													
Proportion at rotor height	%													
Proportion of flights upwind	%	50.0%												

	Units	Value	Data sources
Windfarm data			
Name of windfarm site		**IC - Large**	
Latitude	degrees	56.49	
Number of turbines		72	
Width of windfarm	km	6.774	
Tidal offset	m		

	Units	Value	Data sources											
Turbine data														
Turbine model														
No of blades		3	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rotation speed	rpm	6.93	7.51	7.51	7.25	7.03	6.90	6.84	6.86	7.01	7.19	7.27	7.39	7.56
Rotor radius	m	118												
Hub height	m	152.7	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Monthly proportion of time operational	%		94.49%	95.56%	93.99%	93.06%	90.03%	90.08%	90.49%	92.91%	93.31%	95.52%	96.90%	96.42%
Max blade width	m	5.100												
Pitch	degrees	3.27	6.20	5.81	4.84	3.26	3.62	3.51	2.79	3.17	3.84	4.32	5.01	6.16

RPM	
Breeding	Non-breed
6.93	7.42

Pitch	
Breeding	Non-breed
3.27	5.39

Appendix B Environmental Impact Assessment Review

Appendix B.1 Construction (and Decommissioning)

This review encompasses the 2013 ES as updated in the 2018 EIAR.

Table B.1: Summary of Environmental Effects during Construction (and Decommissioning) Phase –a topic summary is provided in Section 3 and where relevant further consideration is provided in Section 4.

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
Metocean and Coastal Processes	Modification to water levels, currents, waves due to the presence of construction / installation vessels	Negligible	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Increase in SSC due to dredging prior to GBS installation; scour pit formation around jacket pit structures inter-array cable burial	Negligible	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Modification to seabed features due to deposition of sediment from GBS dredging	Near field: Minor / moderate Far-field: Negligible / minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to seabed features through scour	Near field: Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a	No	No change or increase

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	pit formation around jacket foundations	Far-field: Negligible / minor	reduction of potential impacts. A change in layout will not alter this.		in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to seabed features due to deposition of sediment from Deposition of sediment from jacket scour	Near field: Minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field: Negligible / minor	Hammer Energy Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to seabed features due to deposition of sediment from Deposition of inter-array cable burial	Near field: Minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field: Negligible / minor	Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to seabed features due to disturbance by installation vessels	Near field: Negligible / minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field: Negligible / minor	<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Modification to the hydrodynamic regime, sediment regime and seabed	Near field Designated Sites (Geological) - both low and high tolerance: N/A	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field Designated Sites (Geological) - both low and high tolerance: Minor / moderate	Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to the hydrodynamic regime, sediment regime and seabed	Near field Designated Sites (non-geological): N/A	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			reduction of potential impacts. A change in layout will not alter this.		
		Far-field Designated Sites (non-geological): Negligible	<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Benthic Ecology	Direct temporary disturbance of seabed habitats caused by construction based activities	Minor to minor / moderate	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Indirect impacts of temporary increases in suspended sediment concentrations (SSC) from construction based activities	Minor to minor / moderate	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Deposition of resuspended sediments leading to smothering	Minor to minor / moderate	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Release of contaminants (PAH, PCB, organotins) bound in sediments	Minor to minor / moderate	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Release of contaminants (metals) bound in sediments	Negligible to negligible / minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a	No	No change or increase

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			reduction of potential impacts. A change in layout will not alter this.		in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Secondary impacts of decreased primary production due to increased SSC within the water column	Negligible / minor to minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Natural Fish and Shellfish	Direct temporary habitat disturbance	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
		SAC qualifying species: minor / moderate Shellfish: negligible / minor	Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Indirect disturbance as a result of sediment deposition and temporary increases in SSC	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Impact is not altered by changes to hammer energy.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
		SAC qualifying species: minor / moderate Shellfish: negligible / minor	Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Barrier effects, disturbance or physical injury associated with construction noise	Mobile fish species: negligible / minor to minor Hearing specialists: minor to moderate Prey species: minor to minor / moderate	Hearing specialists are sensitive to changes in hammer energy as a result in changes to noise during piling. All other receptors are not sensitive to changes in noise.	Yes	Hearing specialists only

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
		Electro-sensitive elasmobranchs: negligible / minor to minor SAC qualifying species: minor / moderate to moderate Shellfish: negligible / minor to minor			
Marine Mammals	Disturbance from increased noise (excluding piling and noise associated with geophysical survey)	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Disturbance from increased noise from geophysical systems	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Displacement/PTS from piling	Minor	Marine mammals are sensitive to changes in hammer energy as a result in changes to noise during piling.	Yes	Receptor sensitive to change in hammer energy
	Collision risk and barrier effect from increased vessel movement	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Use of ducted propeller leading to risk of corkscrew injury	Harbour seals: moderate in the medium term, minor in the long term Grey seals: minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Accidental pollution events	Minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Impact is not altered by changes to hammer energy.		
			The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Changes in prey availability	Minor	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Hammer Energy Impact is not altered by changes to hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Ornithology	Direct Disturbance	Negligible	Optimised Border The overall reduction in installation activity due to the reduced number of structures from 2013 EIA will result in a reduction of potential impacts during construction. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Impact is not altered by changes to hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Indirect effects on birds via prey species	Negligible – Minor/Moderate	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures from 2013 EIA will result in a reduction of potential impacts during construction. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Cultural Heritage and Marine Archaeology	Damage or removal of heritage features from direct physical impacts	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. Embedded mitigation measures will be implemented for the Revised Design, including Archaeological Exclusion Zone (AEZs) for known receptors, and standard practice Written Scheme of Investigation (WSI) (and any supporting activity Method Statements) and Protocol for Archaeological Discoveries (PAD) for potential / unknown receptors.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			reduction of potential impacts. Embedded mitigation measures will be implemented for the Revised Design, including Archaeological Exclusion Zone (AEZs) for known receptors, and standard practice Written Scheme of Investigation (WSI) (and any supporting activity Method Statements) and Protocol for Archaeological Discoveries (PAD) for potential / unknown receptors.		
	Damage or removal of features	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Commercial Fisheries	Direct temporary habitat disturbance	Negligible / minor to minor / moderate	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Impact is not altered by changes to hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Indirect disturbance as a result of sediment deposition and temporary increases in suspended sediment concentrations (SSC)	Negligible / minor to minor / moderate	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Impact is not altered by changes to hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Barrier effects disturbance or physical	Negligible / minor to moderate	Assessed for scallops, *Nephrops*, crab and lobster, squid, sea trout and salmon. Optimised Border	No	No change or increase

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	injury associated with construction noise		The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		in impact anticipated
	Temporary loss or restricted access to fishing grounds	Moderate / major (scallop) Minor / moderate (squid, creel)	Assessed for scallops, squid and creel fisheries. <u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			reduction of potential impacts. A change in layout will not alter this.		
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Safety issues for fishing vessels	No safety risks (providing contractors adhere to requirements)	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Obstacles on seabed	No safety risks	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Increased steaming times to fishing grounds	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	Displacement of fishing activity into other areas	Moderate (Scallop fishery) Minor / moderate (squid and creel)	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Interference to fishing activities arising from	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a	No	No change or increase

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
	navigational conflict		reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		in impact anticipated
Shipping and Navigation	Allision with partially constructed structures	Negligible/Minor	<u>Optimised Border</u> Number of structures unchanged, no change in impact expected. <u>Hammer Energy</u> Impact is not altered by changes to hammer energy.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario The maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design and therefore no change or a reduction in impact expected.		
	Increased transit times and distances	Negligible/Minor	Optimised Border Extent of wind farm unchanged, no change in impact expected.	No	No change or increase in impact anticipated
			Hammer Energy Impact is not altered by changes to hammer energy.		
			Preferred Design Scenario Extent of wind farm unchanged, no change in impact expected.		
	Vessel to vessel collision risk	Negligible/Minor	Optimised Border Vessel numbers unchanged, no change in impact expected.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Hammer Energy Impact is not altered by changes to hammer energy.		
			Preferred Design Scenario Vessel numbers unchanged, no change in impact expected.		
	Fishing gear snagging on partially constructed structures	Negligible/Minor	Optimised Border Number of structures unchanged, no change in impact expected.	No	No change or increase in impact anticipated
			Hammer Energy Impact is not altered by changes to hammer energy.		
			Preferred Design Scenario Vessel numbers unchanged, no change in impact expected.		
Socio-Economics and Tourism	Construction employment	Negligible / minor (positive)	Optimised Border Impact anticipated to be positive.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario Impact anticipated to be positive.		
	Wider economic impacts	Minor (positive)	Optimised Border Impact anticipated to be positive.	No	No change or increase in negative impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		
			Preferred Design Scenario Impact anticipated to be positive.		
	Tourism and recreation visual impacts	Minor / moderate	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Tourism accommodation impacts	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
Military and Civil Aviation	Impacts on radar	No effect	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. WTG blades will not be rotational during construction, and prior to commissioning, and agreed mitigation will be in place prior to commencement, and was scoped out of EIA for the revised Development. No change to impact is anticipated as a result of this variation.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this. WTG blades will not be rotational during construction, and prior to commissioning, and agreed mitigation will be in place prior to commencement, and was scoped out of EIA for the revised Development. No change to impact is anticipated as a result of this variation.		
	Physical obstruction	No effect	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. Embedded mitigation, including appropriate marking, lighting and notification during construction (and decommissioning) will reduce any risk to aviation, and was scoped out of EIA for the revised Development. No change to impact is anticipated as a result of this variation.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design will not alter this. Embedded mitigation, including appropriate marking, lighting and notification during construction (and decommissioning) will reduce any risk to aviation, and was scoped out of EIA for the revised Development. No change to impact is anticipated as a result of this variation.		
Other Human Considerations	Marine Recreational Activity	Moderate / major	Optimised Border The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. Hammer Energy Receptor is not sensitive to changes in hammer energy.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Unexploded Ordnance	Minor	<u>Optimised Border</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Receptor is not sensitive to changes in hammer energy.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design		

Topic	Aspect	Residual predicted effect in 2013 ES as updated by 2018 EIAR	Explanation of residual effect	Additional consideration required for Proposed Variation?	Reasoning
			Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Appendix B.2 Operation and Maintenance

Table B.2: Summary of Environmental Effects during Operation and Maintenance Phase – a topic summary is provided in Section 3 and where relevant further consideration is provided in Section 4.

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
Metocean and Coastal Processes	Modification of water levels due to the presence (blocking effect) of maintenance vessels subsurface structures	Negligible	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Modification of currents due to the presence (blocking effect) of maintenance vessels subsurface structures	Negligible	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification of waves due to the presence (blocking effect) of	Negligible	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	maintenance vessels subsurface structures		<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to the seabed due to changes in the metocean and sediment regimes	Near field: Minor / moderate	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field: Negligible / minor	<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Modification to seabed through deposition of material disturbed during cable re-burial	Near field: minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field: Negligible / minor	Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Design Scenario is no greater than considered in the Original or Revised Design.		
	Modification to the hydrodynamic regime, sediment regime and seabed	Near field Designated Sites (Geological) - both low and high tolerance: N/A	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field Designated Sites (Geological) - both low and high tolerance: Minor / moderate	<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Modification to the hydrodynamic regime, sediment regime and seabed	Near field Designated Sites (non-geological): N/A	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
		Far-field Designated Sites (non-geological): Negligible	Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
Benthic Ecology	Loss of original habitat	Minor to minor / moderate	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Changes in hydrodynamic regime and sediment transport	Negligible / minor to minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Scour and associated sediment transportation leading to changes in habitats	Minor to minor / moderate	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Colonisation of introduced substrata leading to a change in the benthic ecology and/or biodiversity	Minor to minor / moderate	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Introduced Substrata Facilitating Spread of NIS	Minor to minor / moderate	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Potential release of pollutants from operation plant	Minor to minor / moderate	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Responses to electromagnetic fields and thermal emissions	Negligible / minor to minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
	Temporary habitat disturbance from operations and maintenance (O&M) activities	Negligible / minor to minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			the Preferred Design Scenario is less than considered in the Original or Revised Design.		
Natural Fish and Shellfish	Long term loss of original habitat	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor SAC qualifying species: minor / moderate Shellfish: negligible / minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Behavioural responses to EMF, associated with cabling	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor SAC qualifying species: minor / moderate Shellfish: negligible / minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.	No	No change or increase in impact anticipated
	Disturbance or physical injury	Mobile fish species: negligible / minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential	No	No change or increase in

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	associated with operational noise	Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor SAC qualifying species: minor / moderate Shellfish: negligible / minor	impacts, with no increase in operational requirements. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		impact anticipated
	Reduced fishing activity within Development Area	Mobile fish species: negligible / minor Hearing specialists: minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
		Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor SAC qualifying species: minor / moderate Shellfish: negligible / minor	<u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Creation of new habitat due to presence of project infrastructure	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
		Electro-sensitive elasmobranchs: negligible / minor SAC qualifying species: minor / moderate Shellfish: negligible / minor	<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Temporary habitat disturbance from O&M activities	Mobile fish species: negligible / minor Hearing specialists: minor Prey species: minor / moderate Electro-sensitive elasmobranchs: negligible / minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
		SAC qualifying species: minor / moderate Shellfish: negligible / minor	impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised Design.		
Marine Mammals	Disturbance from increased anthropogenic noise (non-piling) i.e. operational noise	Minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is less than considered in the Original or Revised.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Collision risk and barrier effect from increased vessel movement	Minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Use of ducted propellers leading	Minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential	No	No change or increase in

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	to risk of corkscrew injury		impacts, with no increase in operational requirements. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		impact anticipated
	Loss of habitat	Minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Creation of habitat	Minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Effects of EMF	Minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Toxic contamination	Minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
Ornithology	Collision	Moderate	Optimised Border Minimum spacing is not parameters relevant to the ornithological assessment undertaken	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The Preferred Design Scenario is compliant with a maximum rotor swept area below 50 m above mean sea level of 87,000 m2 (a commitment in the 2018 EIAR) and the worst case design envelope parameters. Collision Risk Modelling has been provided to confirm compliance.		
	Displacement/ Barrier	Moderate	Optimised Border Minimum spacing is not parameters relevant to the ornithological assessment undertaken		
			Hammer Energy Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario The extent of the Wind Fam is unchanged in the Preferred Design Scenario.		
SLVIA	Effects of the WTGs and OSPs on landscape, seascape and visual receptors	Moderate to major	Optimised Border Changes to the layout and spacing have the potential to alter the appearance of the development from landscape and visual receptors.	Yes	Possible change in significance
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario Changes to the layout and spacing have the potential to alter the appearance of the development from landscape and visual receptors.		
Cultural Heritage and Marine Archaeology	Damage or removal of heritage features resulting from direct physical impacts	Minor	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Embedded mitigation measures will be implemented for the Revised Design, including Archaeological Exclusion Zone (AEZs) for known receptors, and standard practice Written Scheme of Investigation (WSI) (and any supporting activity Method Statements) and Protocol for Archaeological Discoveries (PAD) for potential / unknown receptors.		
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this. Embedded mitigation measures will be implemented for the Revised Design, including Archaeological Exclusion Zone (AEZs) for known		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			receptors, and standard practice Written Scheme of Investigation (WSI) (and any supporting activity Method Statements) and Protocol for Archaeological Discoveries (PAD) for potential / unknown receptors.		
	Setting changes	Minor to moderate	<u>Optimised Border</u> Impact is based on visibility of the Wind Farm from each of the receptors and was assessed as not significant. The height of structures is consistent with what was assessed. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	Yes	Possible change in significance
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> Impact is based on visibility of the Wind Farm from each of the receptors and was assessed as not significant. The height of structures is consistent		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			with what was assessed. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this.		
Commercial Fisheries	Long term loss of original habitat	Negligible / minor to minor / moderate	Assessed for scallop, *Nephrops*, crab and lobster, squid, sea trout and salmon. Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Design Scenario is no greater than considered in the Original or Revised Design.		
	Behavioural responses to EMF associated with cabling	Negligible / minor to minor / moderate	Assessed for scallop, *Nephrops*, crab and lobster, squid, sea trout and salmon. <u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Disturbance or physical injury associated with operational noise	Negligible / minor to minor / moderate	Assessed for scallop, *Nephrops*, crab and lobster, squid, sea trout and salmon. Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	Effect on fish and shellfish resources due to reduced fishing effort within the Development Area	Negligible / minor (positive)	Optimised Border It is anticipated that the Development would result in some loss or restriction of access to fishing grounds, which would result in a local increase in fish and shellfish resources. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario It is anticipated that the Development would result in some loss or restriction of access to fishing grounds, which would result in a local increase in fish and shellfish resources. The Preferred Design Scenario will not change this.		
	Creation of new habitat due to the presence of	No impact to minor / moderate (positive)	Optimised Border Assessed as not significant but positive, not expected to change. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	project-specific infrastructure		Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario Assessed as not significant but positive. The Preferred Design Scenario will not alter this		
	Temporary habitat disturbance via O&M activities	Negligible / minor to minor / moderate	Optimised Border The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in installation activity due to the reduced number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario will not alter this as the		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			maximum number of structures in the Preferred Design Scenario is no greater than considered in the Original or Revised Design.		
	Complete loss or restricted access to fishing grounds	Minor / moderate to moderate	<u>Optimised Border</u> Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Safety issues for fishing vessels	No safety risks	<u>Optimised Border</u> Assessed from the Original Development as no safety risk. The Revised Development is considered to have less of an impact. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> Assessed from the Original Development as no safety risk. The Revised Development is considered to have less of an impact. The overall reduction in the number of structures to be installed		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Obstacles on the seabed	No safety risks	<u>Optimised Border</u> Navigational risks associated with obstacles on the seabed are considered as part of wider risks to navigation. Compliance with safety measures such as safety/exclusion zones and recovery of dropped objects will remain in place. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> Navigational risks associated with obstacles on the seabed are considered as part of wider risks to navigation. Compliance with safety measures such		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			as safety/exclusion zones and recovery of dropped objects will remain in place. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Increased steaming times	Negligible / minor to minor	<u>Optimised Border</u> Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Displacement of fishing activity	Minor / moderate (Squid, creel) Moderate (scallop)	Optimised Border Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Interference to fishing activities arising from navigational conflict	Minor	Optimised Border Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			operational requirements. A change in layout will not alter this. <u>Hammer Energy</u> Changes in hammer energy only relevant to construction. <u>Preferred Design Scenario</u> Fishing will not be excluded from the Development area, however the combined introduction of infrastructure and safety zones are expected to deter some fishing activity. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
Shipping and Navigation	Increased transit times and distances (deviations) for	Moderate	<u>Optimised Border</u> No change in impact expected as maximum extent of the Wind Farm unchanged.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	commercial vessels		Hammer Energy Changes in hammer energy only relevant to construction. Preferred Design Scenario No change in impact expected as maximum extent of the Wind Farm unchanged.	No	No change or increase in impact anticipated
	Increased vessel to vessel collision	Minor	Optimised Border No change in impact expected.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction. Preferred Design Scenario No change in impact expected.	No	No change or increase in impact anticipated
	Creation of vessel to structure allision risk	Minor / Moderate	Optimised Border No change in impact expected.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated
			Preferred Design Scenario No change in impact expected.		
	Effects on anchoring operation	Negligible / minor	Optimised Border No change in impact expected.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated
			Preferred Design Scenario No change in impact expected.		
	Impacts on emergency response activities and restricted	Minor	Optimised Border Envelope changes are not considered as likely to lead to increased incident rates. The layout will be Marine Guidance Note (MGN) 654 (MCA, 2021) compliant and agreed with MCA to ensure suitable	No	

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
	access to casualties		SAR access is facilitated noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.		
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated
			<u>Preferred Design Scenario</u> Envelope changes are not considered as likely to lead to increased incident rates. The layout will be Marine Guidance Note (MGN) 654 (MCA, 2021) compliant and agreed with MCA to ensure suitable SAR access is facilitated noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.		
	Effect on marine radar systems	Negligible/ Minor	<u>Optimised Border</u> No change in impact expected.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated
			Preferred Design Scenario No change in impact expected.		
	Increase of visual confusion	Moderate	Optimised Border Potential for irregular layouts / non linear boundaries was considered within the cumulative assessment in the 2018 Revised Design EIA Report and therefore worst case has already been assessed. The layout will be MGN 654 compliant and agreed with MCA noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Preferred Design Scenario Potential for irregular layouts / non linear boundaries was considered within the cumulative assessment in the 2018 Revised Design EIA Report and therefore worst case has already been assessed. The layout will be MGN 654 compliant and agreed with MCA noting this aligns with the embedded mitigations in place under the 2018 Revised Design EIA Report.		
Socio-Economics and Tourism	Operation and Maintenance (O&M) employment	Negligible / minor (positive)	Optimised Border No Change or increase in impact anticipated.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario No Change or increase in impact anticipated.		
	Wider economic impacts	Minor (positive)	Optimised Border No Change or increase in impact anticipated.	No	No change or increase in

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction. Preferred Design Scenario No Change or increase in impact anticipated.		impact anticipated
	Tourism and recreation visual impacts	Minor	Optimised Border Consideration of the potential for tourism and recreation visual effects during the construction (and decommissioning) phase and the O&M phase has been scoped out of the assessment after agreement by MS-LOT in their Scoping Opinion that it is not required subject to confirmation that the Scottish Marine Recreation and Tourism Survey published in 2015 and strategic framework for Scotland's Marine Tourism Sector is consulted to confirm the results do not result in a material change in the socio-economic activity. This has been consulted and it can be confirmed that they do not result in a material change.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			The height of structures is consistent with what was assessed. A change in layout will not alter this.		
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> Consideration of the potential for tourism and recreation visual effects during the construction (and decommissioning) phase and the O&M phase has been scoped out of the assessment after agreement by MS-LOT in their Scoping Opinion that it is not required subject to confirmation that the Scottish Marine Recreation and Tourism Survey published in 2015 and strategic framework for Scotland's Marine Tourism Sector is consulted to confirm the results do not result in a material change in the socio-economic activity. This has been consulted and it can be confirmed that they do not result in a material change.		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			The height of structures is consistent with what was assessed. The Preferred Design Scenario will not alter this.		
	Tourism accommodation impacts	Minor	<u>Optimised Border</u> Consideration of the potential for tourism and recreation visual effects during the construction (and decommissioning) phase and the O&M phase has been scoped out of the assessment after agreement by MS-LOT in their Scoping Opinion that it is not required subject to confirmation that the Scottish Marine Recreation and Tourism Survey published in 2015 and strategic framework for Scotland's Marine Tourism Sector is consulted to confirm the results do not result in a material change in the socio-economic activity. This has been consulted and it can be confirmed that they do not result in a material change. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario Consideration of the potential for tourism and recreation visual effects during the construction (and decommissioning) phase and the O&M phase has been scoped out of the assessment after agreement by MS-LOT in their Scoping Opinion that it is not required subject to confirmation that the Scottish Marine Recreation and Tourism Survey published in 2015 and strategic framework for Scotland's Marine Tourism Sector is consulted to confirm the results do not result in a material change in the socio-economic activity. This has been consulted and it can be confirmed that they do not result in a material change. The height of structures is consistent with what was assessed. The Preferred Design Scenario will not alter this.		

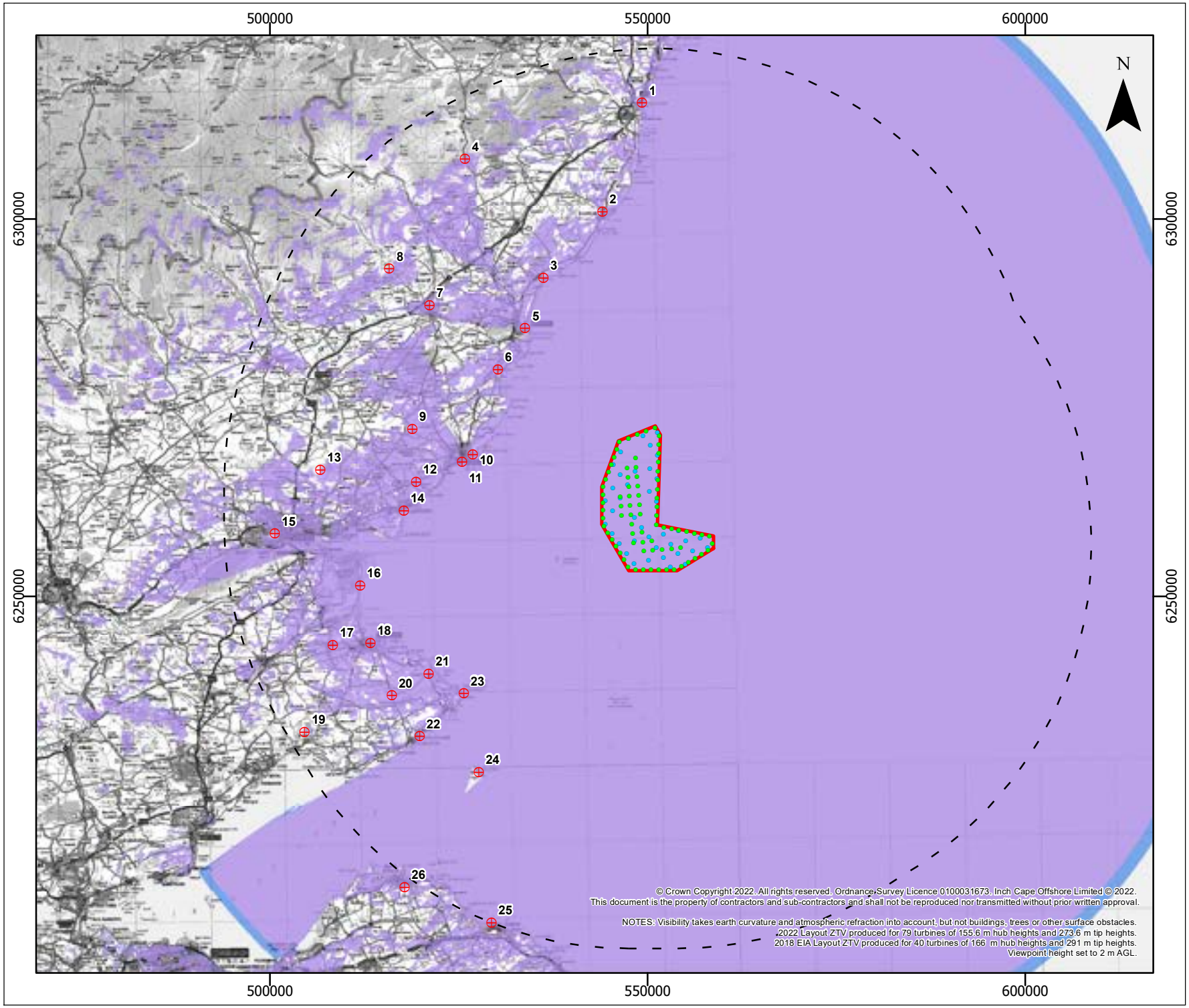
Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
Military and Civil Aviation	Impacts on radar	No significant effect	Optimised Border Following implementation of mitigation measures and Radar Mitigation Scheme (RMS), significant effects resulting from blade rotation will be avoided. No change to this impact is anticipated. The height of structures is consistent with what was assessed. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario Following implementation of mitigation measures and Radar Mitigation Scheme (RMS), significant effects resulting from blade rotation will be avoided. No change to this impact is anticipated. The height of structures is consistent with what was assessed. The overall reduction in the number of structures to		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this.		
	Physical obstruction	No significant effect	<u>Optimised Border</u> The height of structures is consistent with what was assessed. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The height of structures is consistent with what was assessed. The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. The Preferred Design Scenario will not alter this		

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
Other Human Considerations	Marine Recreational Activity	Minor / moderate (recreational sailing) Negligible (all other activities)	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. A change in layout will not alter this.	No	No change or increase in impact anticipated
			<u>Hammer Energy</u> Changes in hammer energy only relevant to construction.		
			<u>Preferred Design Scenario</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario is within the worst case envelope assessed,		
	Unexploded Ordnance	Minor	<u>Optimised Border</u> The overall reduction in the number of structures to be installed will result in a reduction of potential impacts, with no increase in operational requirements. A change in layout will not alter this.	No	No change or increase in impact anticipated

Topic	Aspect	Residual predicted effect	Explanation of effect	Additional Assessment required?	Reasoning
			Hammer Energy Changes in hammer energy only relevant to construction.		
			Preferred Design Scenario The overall reduction in the number of structures to be installed will result in a reduction of potential impacts. The Preferred Design Scenario is within the worst case envelope and will not alter this		

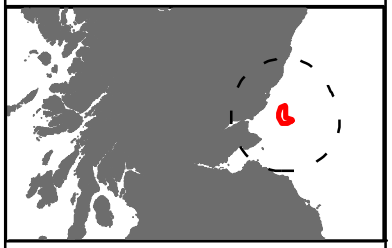
Appendix C: Inch Cape Offshore Wind Farm Comparative ZTVs



Inch Cape

Legend

- Development Area
- 50 km Radius Study Area
- 2022 Proposed Turbine Layout
- 2018 EIA Turbine Layout
- Viewpoint
- Zone of Theoretical Visibility at Blade Tip of 2022 Proposed Layout
- Zone of Theoretical Visibility at Blade Tip of 2018 EIA Layout



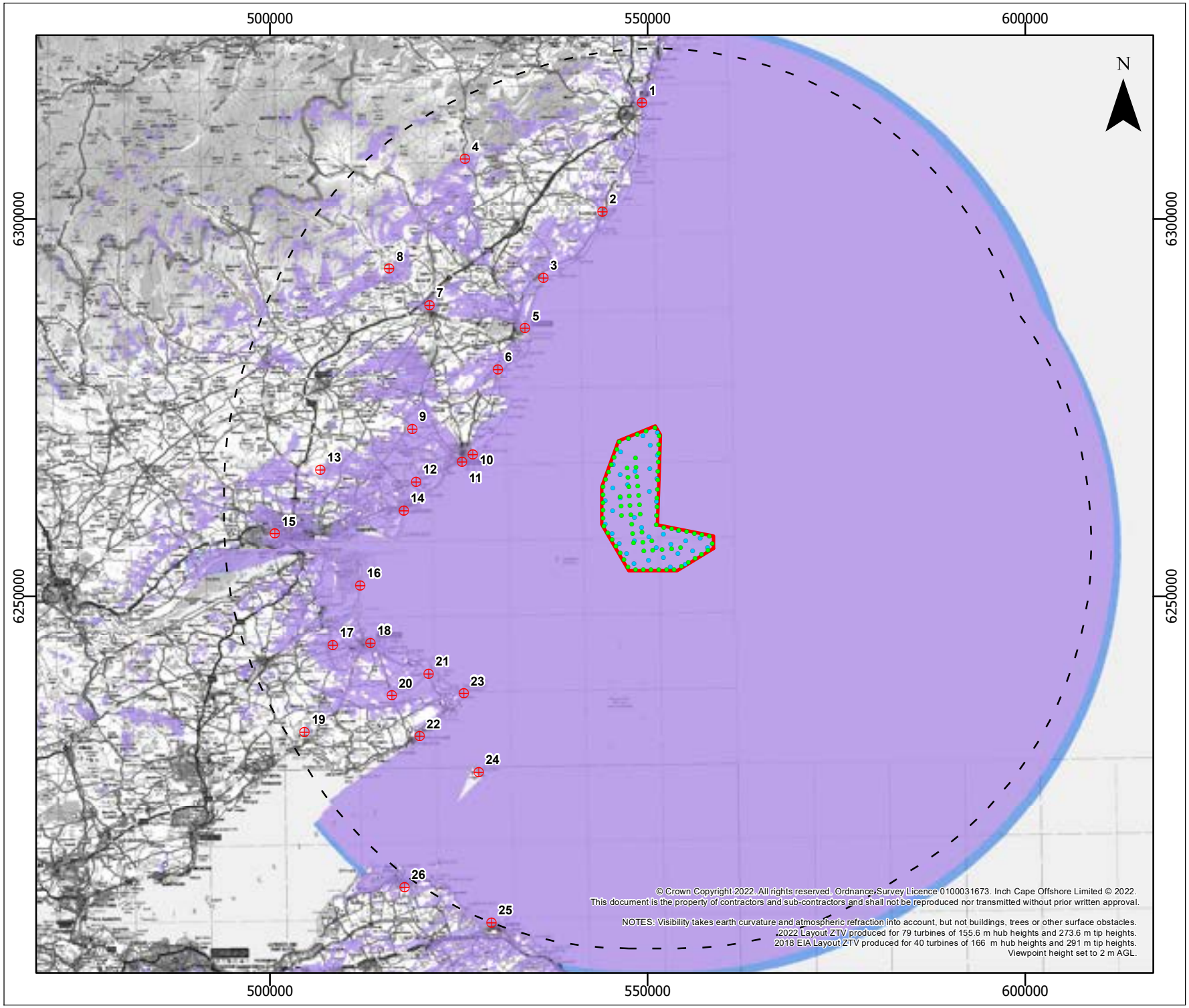
Spatial Reference
Name: WGS 1984 UTM Zone 30N
PCS: WGS 1984 UTM Zone 30N
GCS: GCS WGS 1984
Datum: WGS 1984
Projection: Transverse Mercator
Central Meridan: -3.0000
Latitude of Origin: 0.0000
Longitude of Origin: 0.0000

Kilometers
0 10 20

PRODUCED	REVIEWED	APPROVED
FM	DH	GG

REF DATE
GB200491_M_596_A
10/05/2022

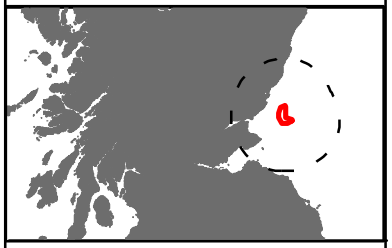
Figure 1
Comparative ZTV of Blade Tip Heights



Inch Cape

Legend

- Development Area
- 50 km Radius Study Area
- 2022 Proposed Turbine Layout
- 2018 EIA Turbine Layout
- Viewpoint
- Zone of Theoretical Visibility at Hub of 2022 Proposed Layout
- Zone of Theoretical Visibility at Hub of 2018 EIA Layout



Spatial Reference
Name: WGS 1984 UTM Zone 30N
PCS: WGS 1984 UTM Zone 30N
GCS: GCS WGS 1984
Datum: WGS 1984
Projection: Transverse Mercator
Central Meridan: -3.0000
Latitude of Origin: 0.0000
Longitude of Origin: 0.0000

Kilometers
0 10 20

PRODUCED	REVIEWED	APPROVED
FM	DH	GG

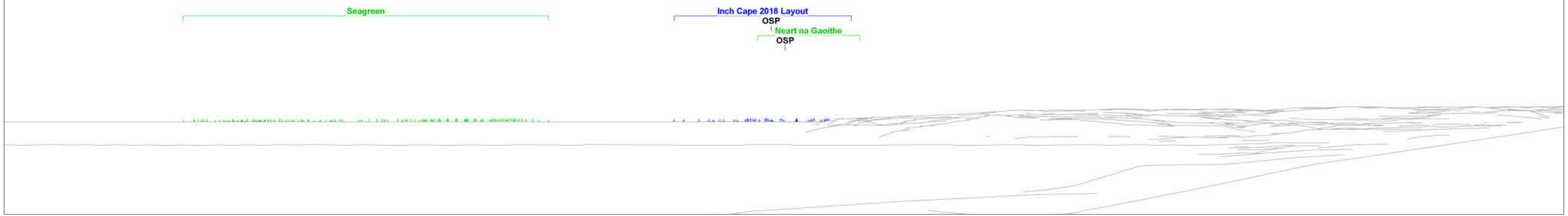
REF DATE
GB200491_M_597_A
10/05/2022

Figure 2
Comparative ZTV of Hub Heights

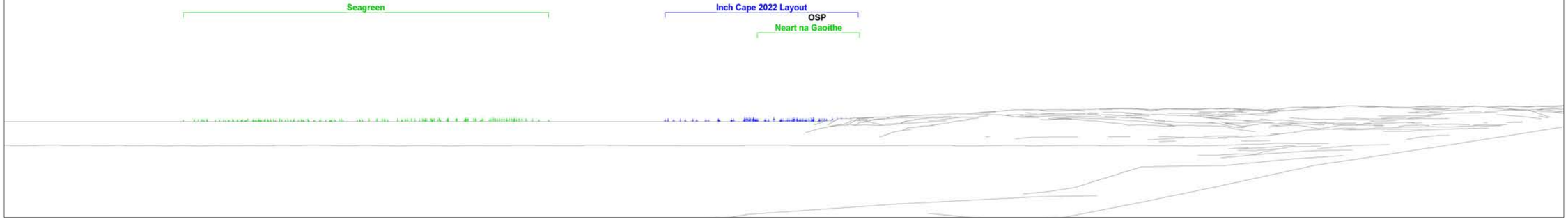
Appendix D: Inch Cape Comparative Wireline Visualisations SLVIA

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	388592 E 787597 N
Elevation:	54.4 m AOD
Direction of View:	181°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	43.1 km
Hubs Visible (155.6 m):	66 (of 79)
Tips Visible (273.64 m):	74 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

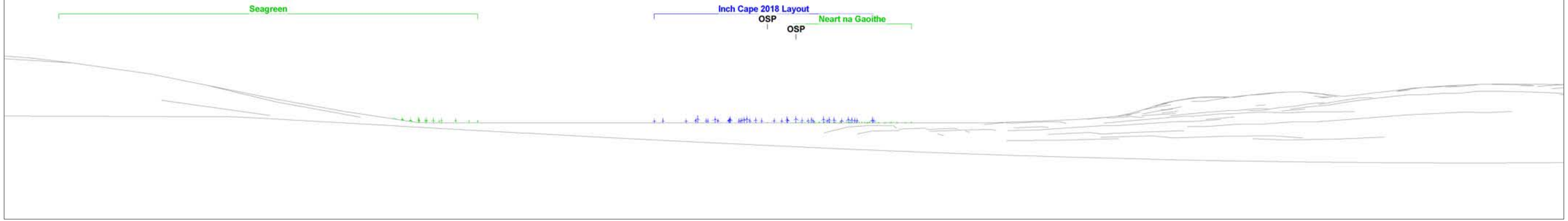
REF: GB200491_V_001

Figure 1
VP1 - Garron Point

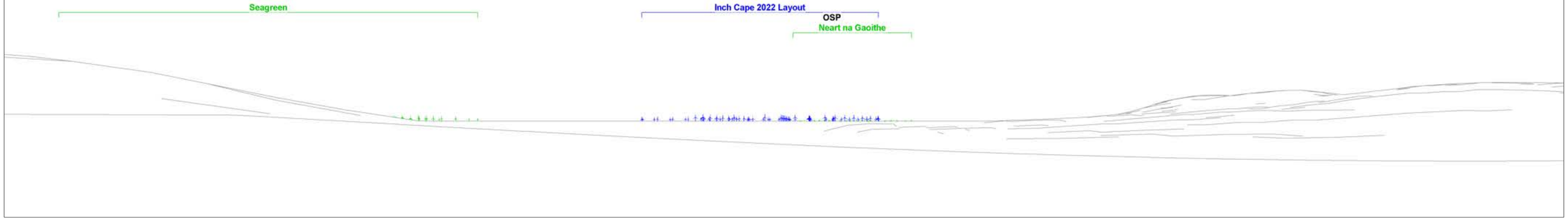
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	383156 E 773289 N
Elevation:	41.6 m AOD
Direction of View:	174°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	29.5 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

Date: 09/06/2022 | Revision: A

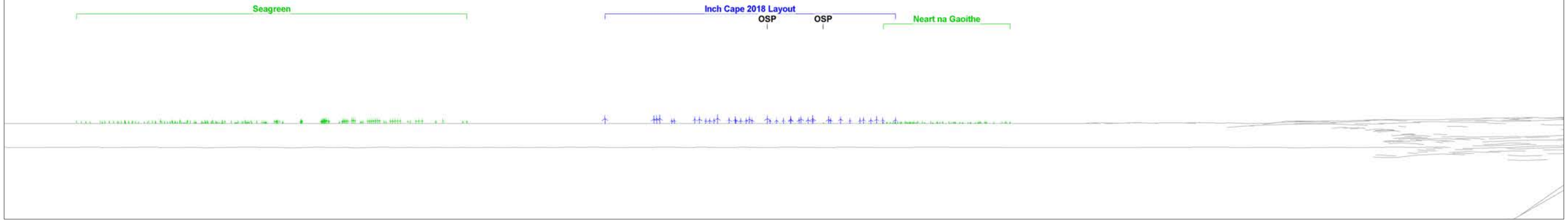
REF: GB200491_V_001

Figure 2
VP2 - A92 North of Inverbervie

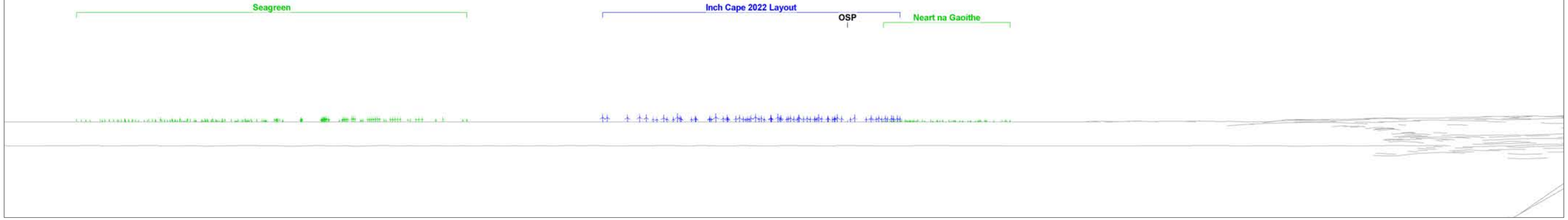
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	375185 E 764643 N
Elevation:	77.4 m AOD
Direction of View:	158°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	24.0 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

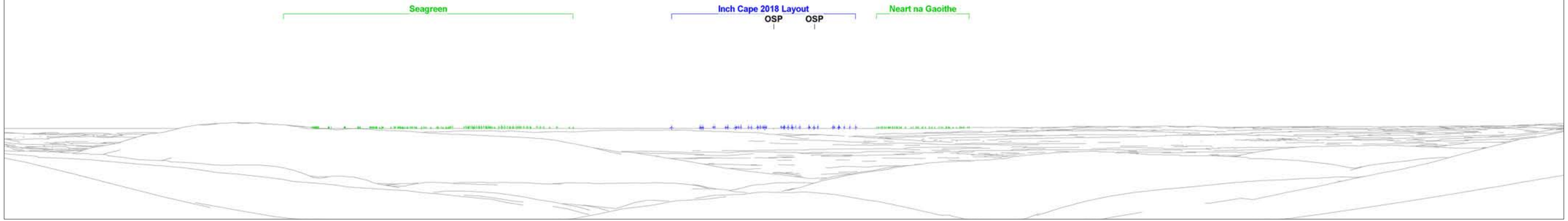
REF: GB200491_V_001

Figure 3
VP3 - Beach Road, Kirkton, St Cyrus

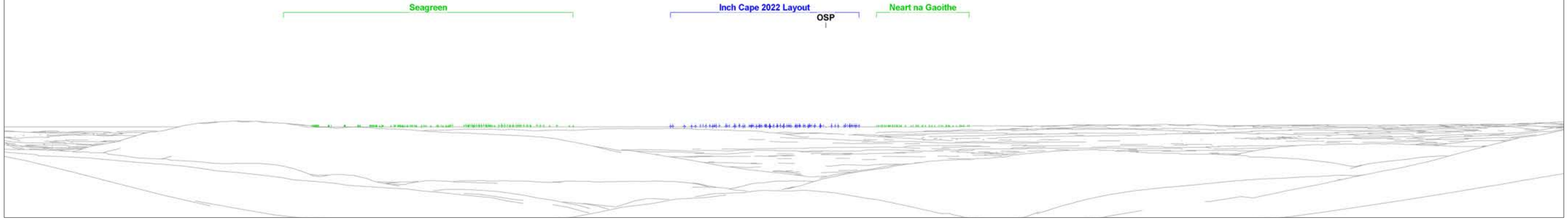
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	365039 E 780480 N
Elevation:	423.4 m AOD
Direction of View:	154°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	42.7 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

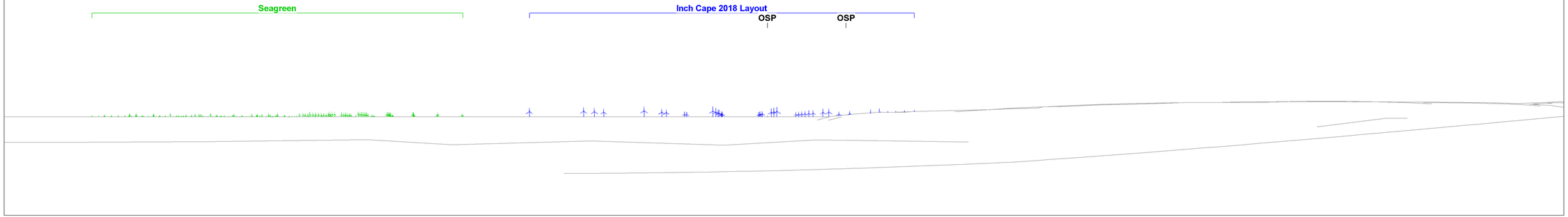
REF: GB200491_V_001

Figure 4
VP4 - Cairn o' Mount

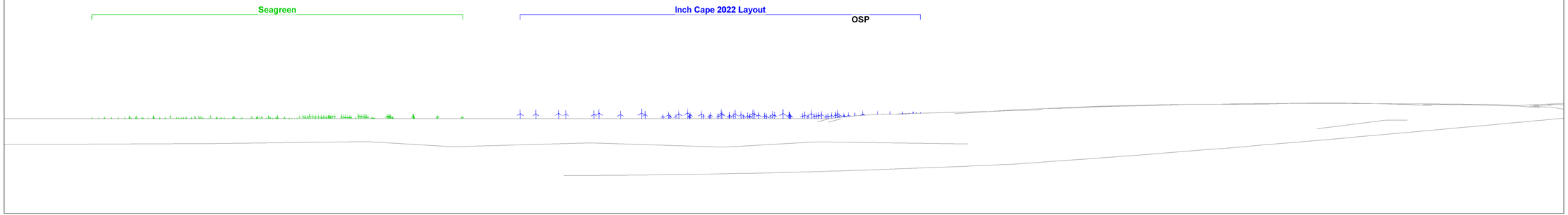
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	372686 E 757957 N
Elevation:	7.7 m AOD
Direction of View:	149°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	19.6 km
Hubs Visible (155.6 m):	66 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

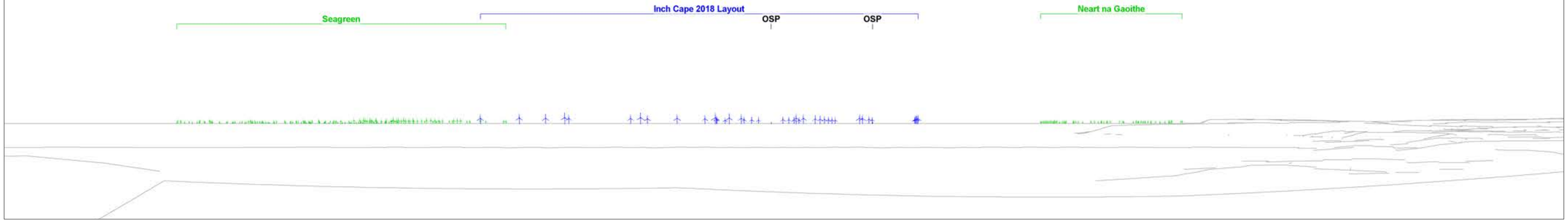
REF: GB200491_V_001

Figure 5
VP5 - Montrose

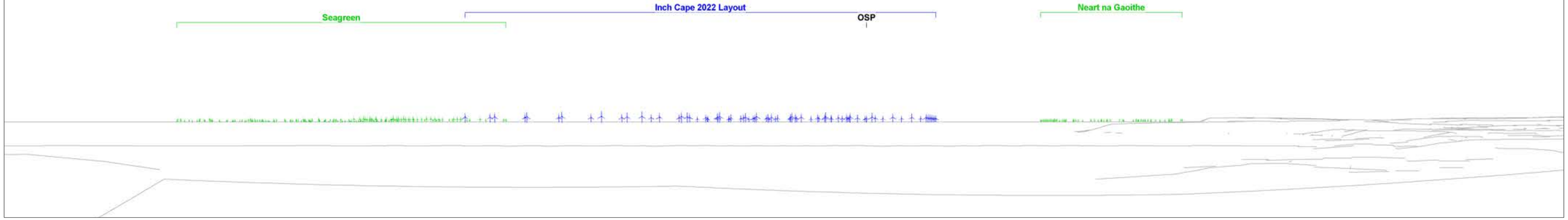
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape
OFFSHORE LIMITED

Viewpoint and Photography Data

OS Reference:	368088 E 752598 N
Elevation:	73.4 m AOD
Direction of View:	136°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	18.8 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

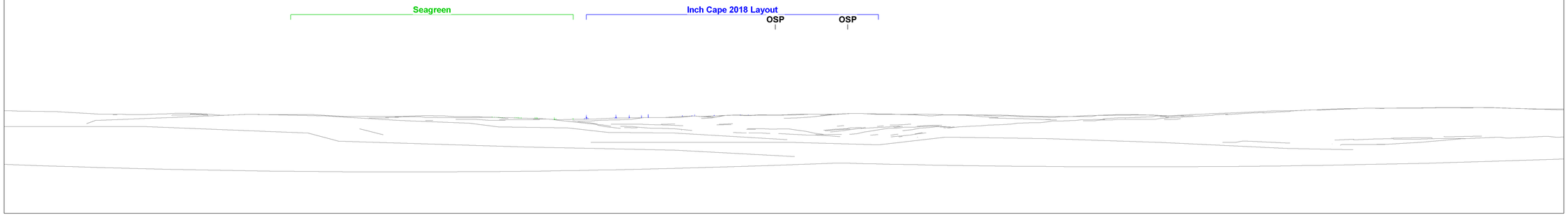
REF: GB200491_V_001

Figure 6
VP6 - Braehead of Lunan

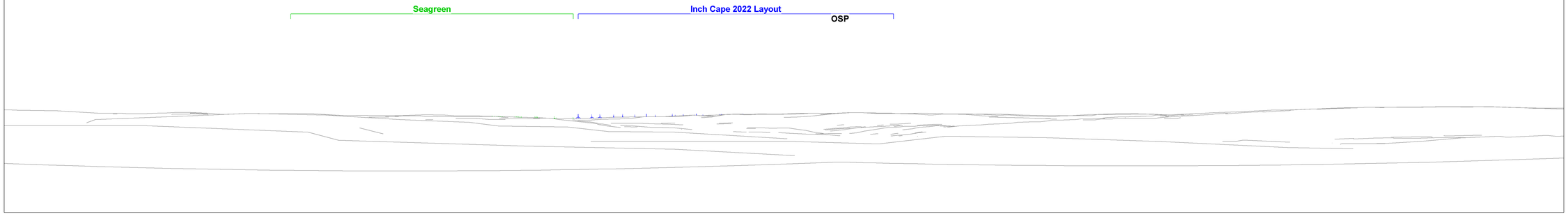
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape OFFSHORE LIMITED

Viewpoint and Photography Data

OS Reference:	360070 E 761235 N
Elevation:	83.1 m AOD
Direction of View:	135°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	31.0 km
Hubs Visible (155.6 m):	5 (of 79)
Tips Visible (273.64 m):	17 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

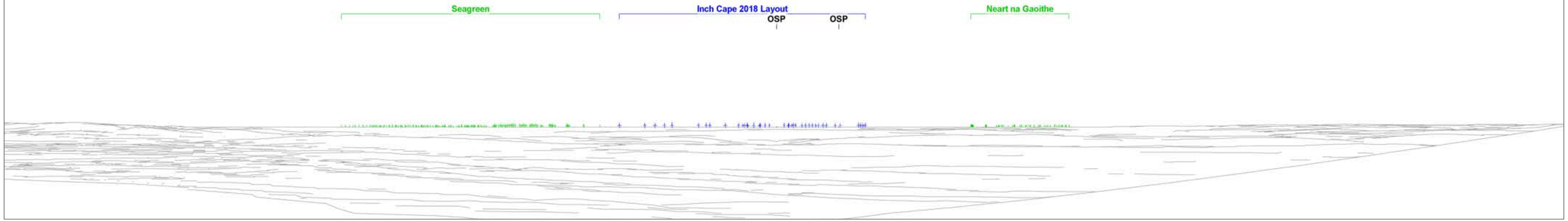
REF: GB200491_V_001

Figure 7
VP 7 - Brechin

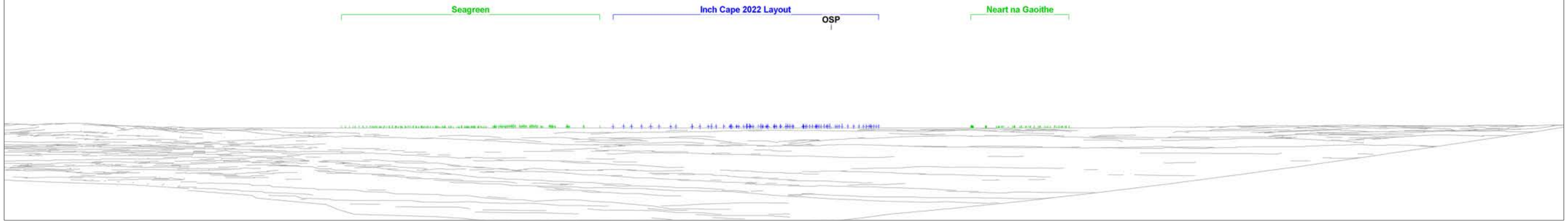
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	354820 E 766090 N
Elevation:	294.3 m AOD
Direction of View:	135°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	38.1 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

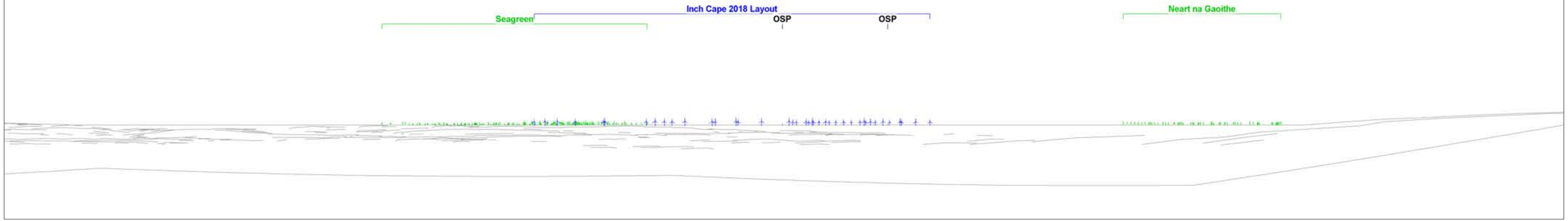
REF: GB200491_V_001

Figure 8
VP 8 - White Caterthun Hill Fort

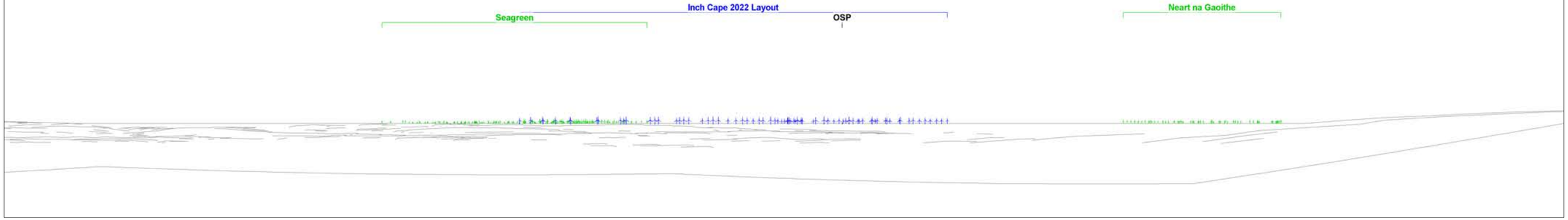
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	357540 E 744863 N
Elevation:	149.2 m AOD
Direction of View:	111°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	26.4 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

Date: 09/06/2022 | Revision: A

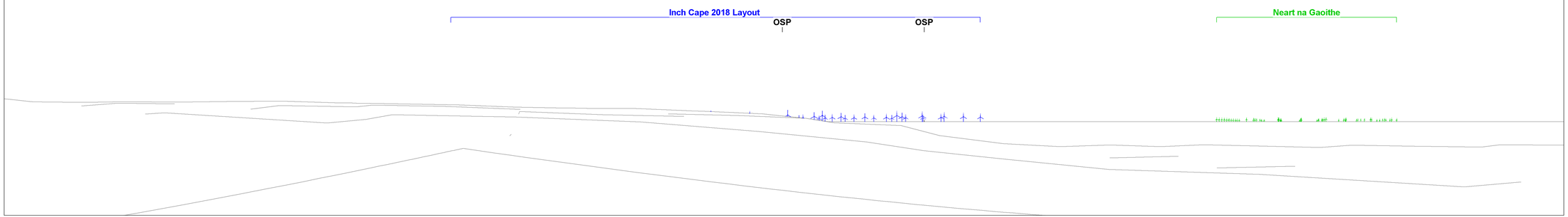
REF: GB200491_V_001

Figure 9
VP 9 - Minor Road South of Cairn-conon Hill

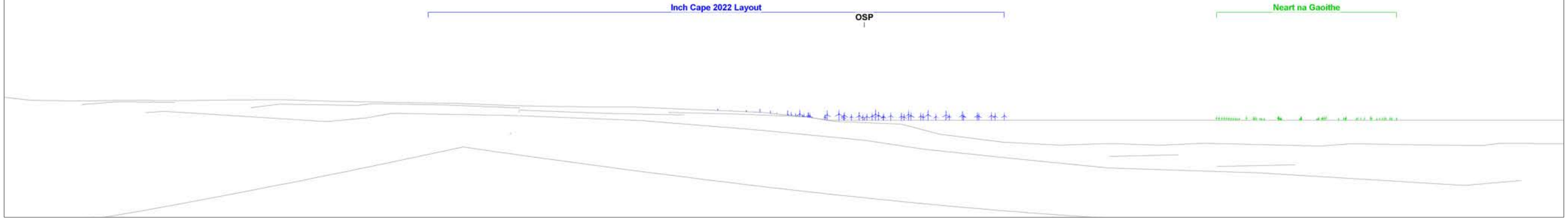
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	365503 E 741346 N
Elevation:	13.9 m AOD
Direction of View:	110°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	17.8 km
Hubs Visible (155.6 m):	38 (of 79)
Tips Visible (273.64 m):	52 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

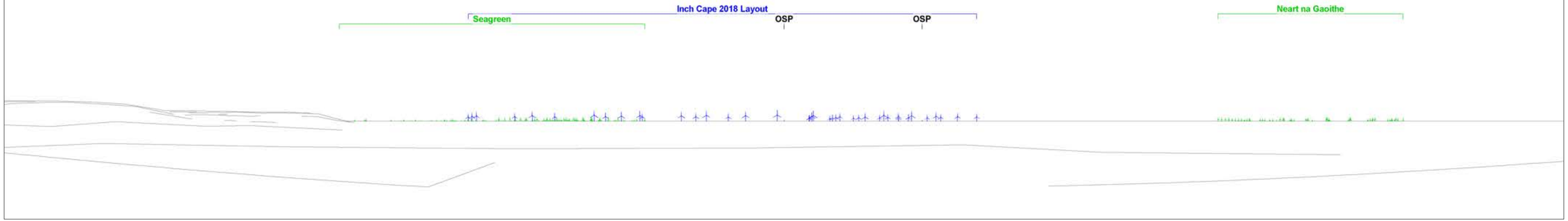
REF: GB200491_V_001

Figure 10
VP 10 - Clifftop Path North of Victoria Park

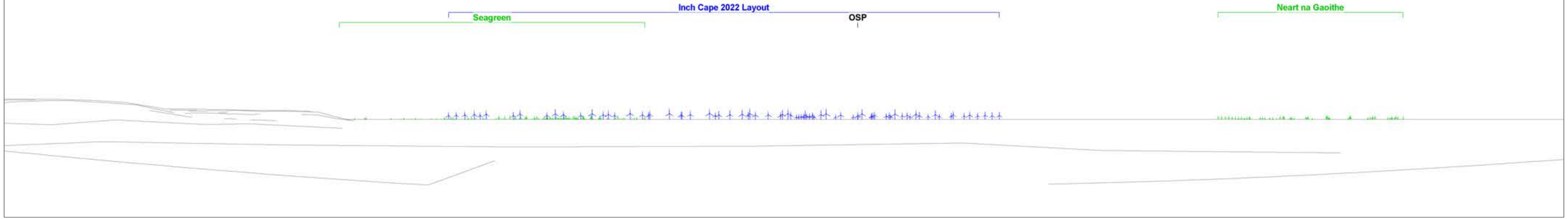
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	364047 E 740440 N
Elevation:	6.4 m AOD
Direction of View:	107°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	19.0 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

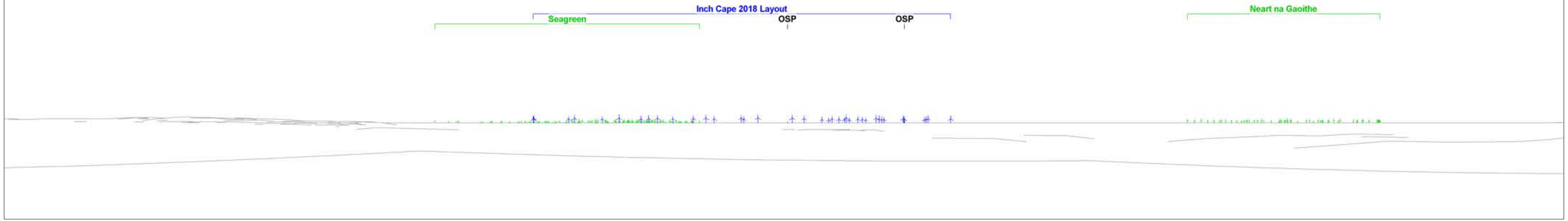
REF: GB200491_V_001

Figure 11
VP 11 - Arbroath Signal Tower

Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout

Inch Cape

Viewpoint and Photography Data

OS Reference:	357949 E 737832 N
Elevation:	43.7 m AOD
Direction of View:	99°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	24.7 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

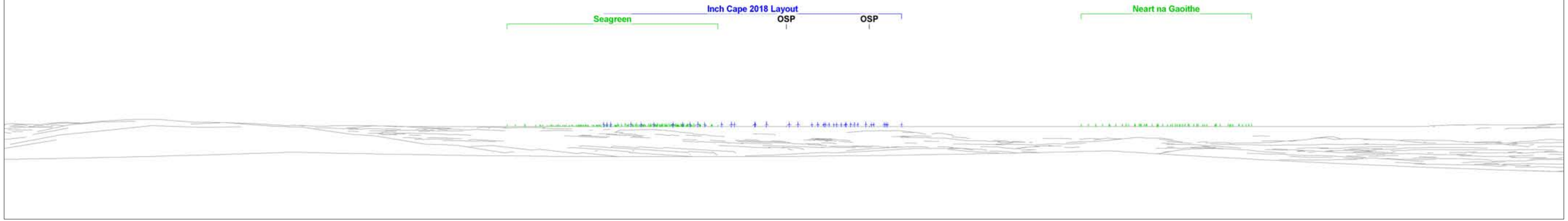
REF: GB200491_V_001

Figure 12
VP 12 - A92 East of Muirdrum

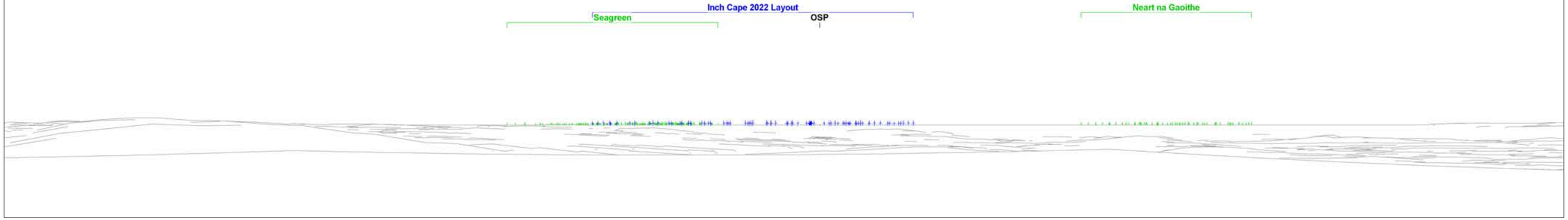
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	345259 E 739627 N
Elevation:	253.8 m AOD
Direction of View:	98°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	37.5 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

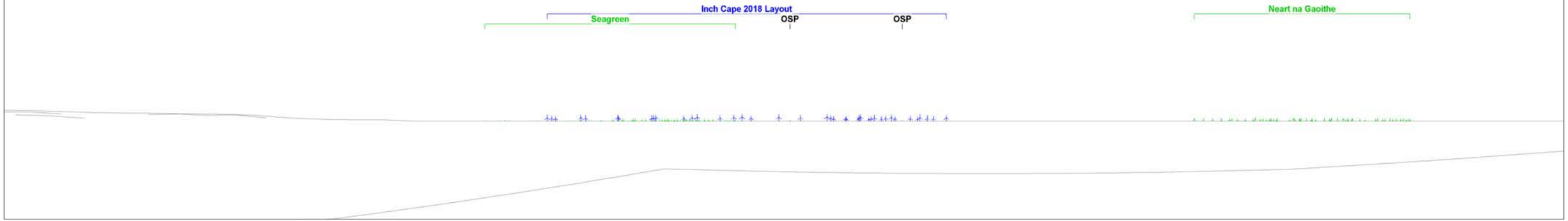
REF: GB200491_V_001

Figure 13
VP 13 - Dodd Hill

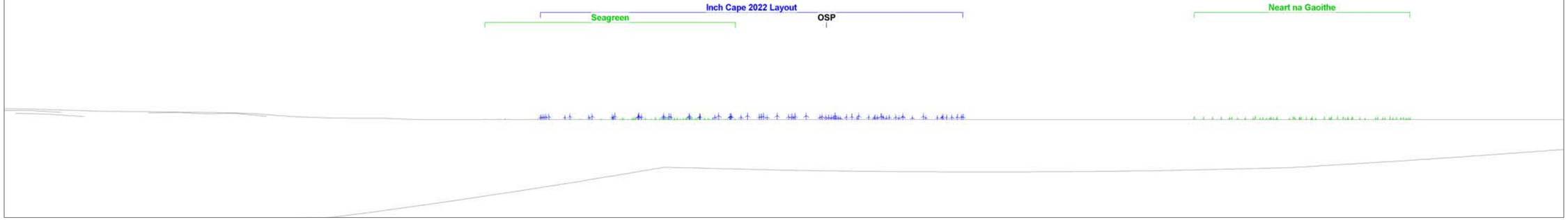
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	356249 E 734093 N
Elevation:	5.5 m AOD
Direction of View:	91°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	26.4 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced:	LW
Reviewed:	FM
Approved:	GG

natural power

Date: 09/06/2022 | Revision: A

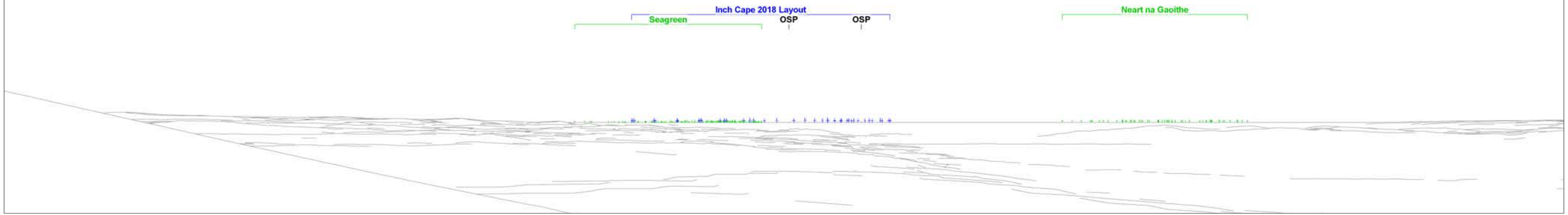
REF: GB200491_V_001

Figure 14
VP 14 - Carnoustie

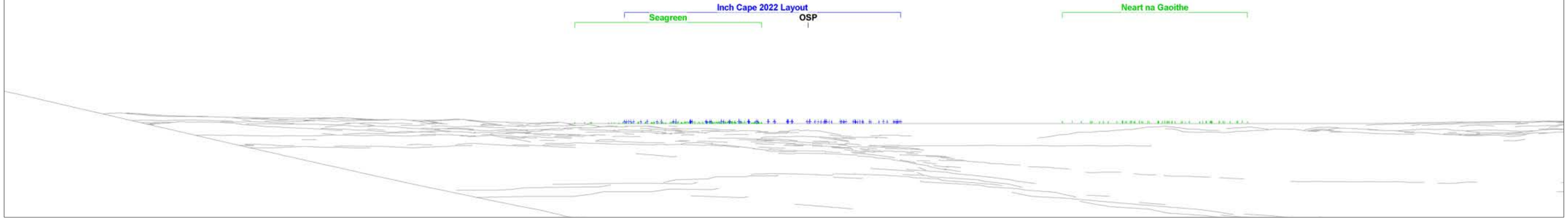
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	339153 E 731282 N
Elevation:	168.4 m AOD
Direction of View:	88°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	43.5 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

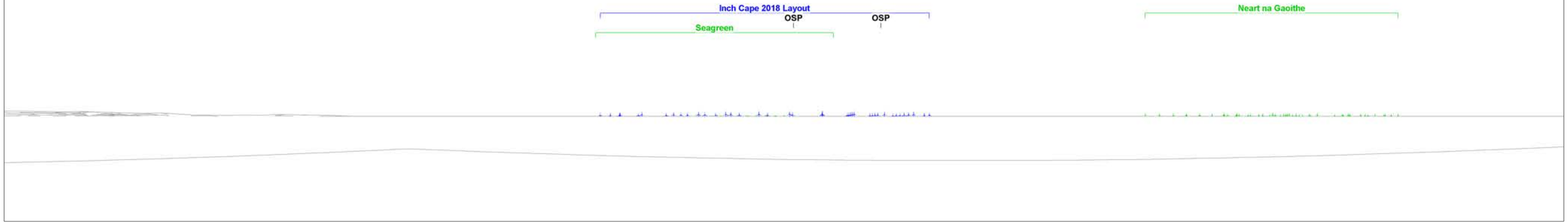
REF: GB200491_V_001

Figure 15
VP 15 - Dundee Law

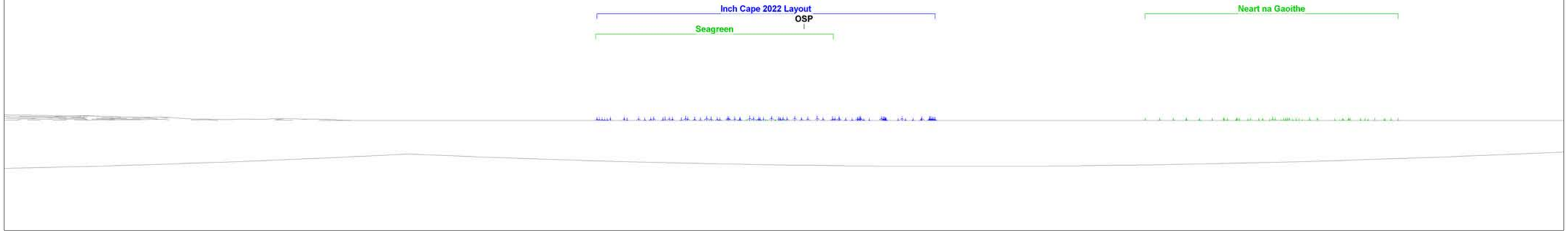
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	350325 E 724227 N
Elevation:	0 m AOD
Direction of View:	76°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	33.2 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

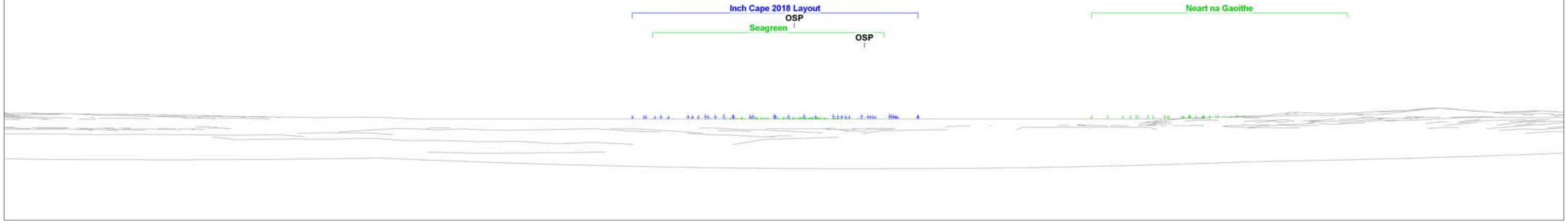
REF: GB200491_V_001

Figure 16
VP 16 - Tentsmuir

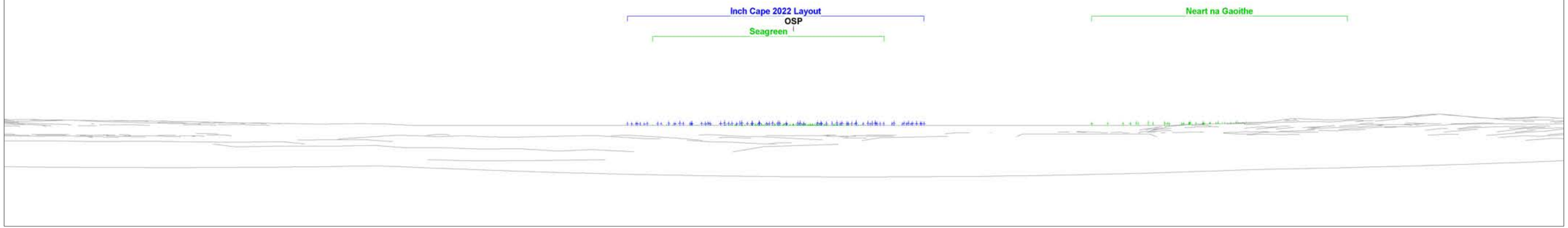
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	346619 E 716408 N
Elevation:	67.8 m AOD
Direction of View:	68°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	39.2 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced:	LW
Reviewed:	FM
Approved:	GG

natural power

Date: 09/06/2022 | Revision: A

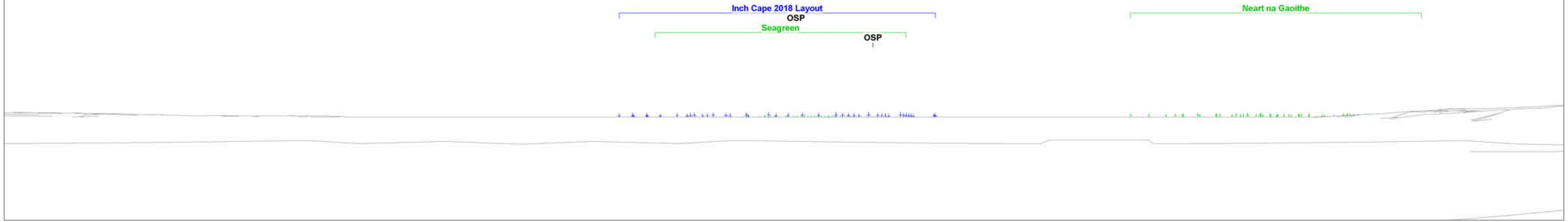
REF: GB200491_V_001

Figure 17
VP 17 - Strathkinness

Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout

Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	351572 E 716671 N
Elevation:	16.5 m AOD
Direction of View:	65°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	34.6 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

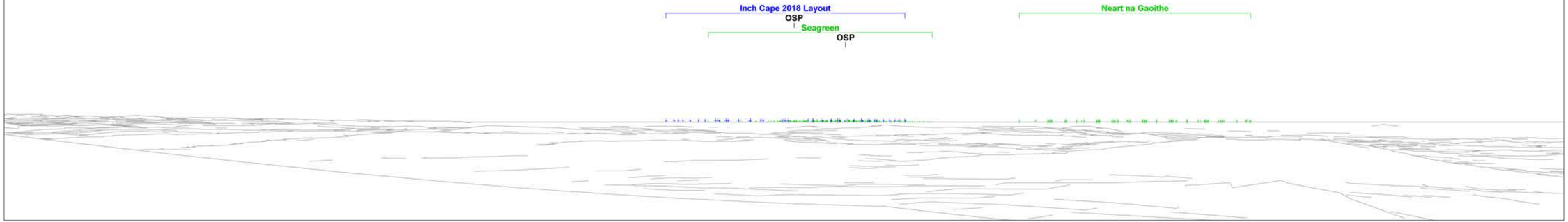
REF: GB200491_V_001

Figure 18
VP 18 - St Andrews, East Scores

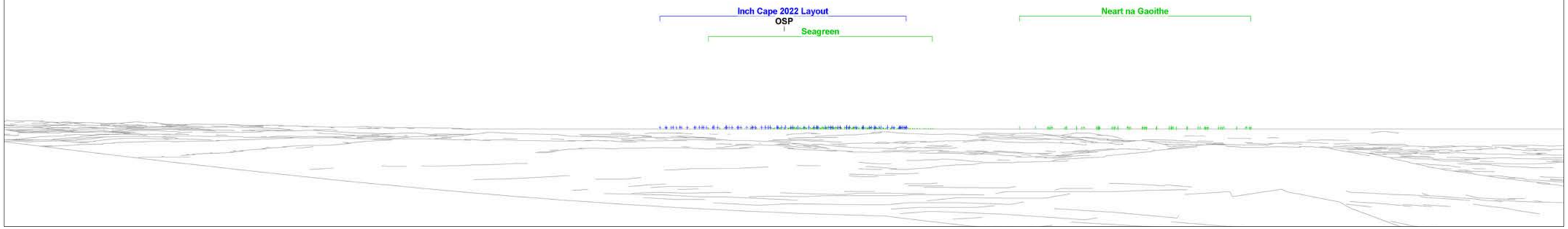
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	342704 E 704979 N
Elevation:	284.9 m AOD
Direction of View:	58°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	48.0 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

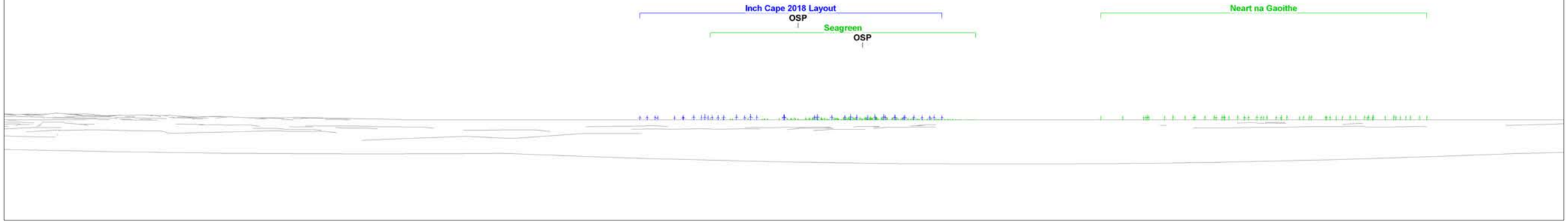
REF: GB200491_V_001

Figure 19
VP 19 - Largo Law

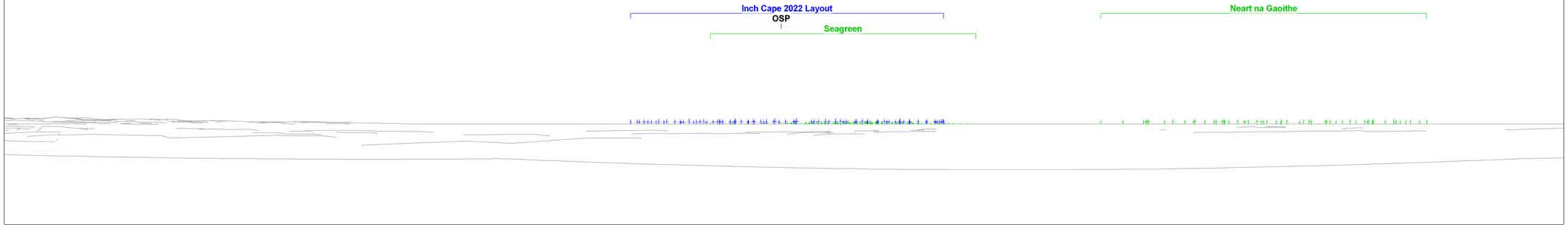
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	354324 E 709610 N
Elevation:	115.4 m AOD
Direction of View:	55°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	35.6 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

Date: 09/06/2022 | Revision: A

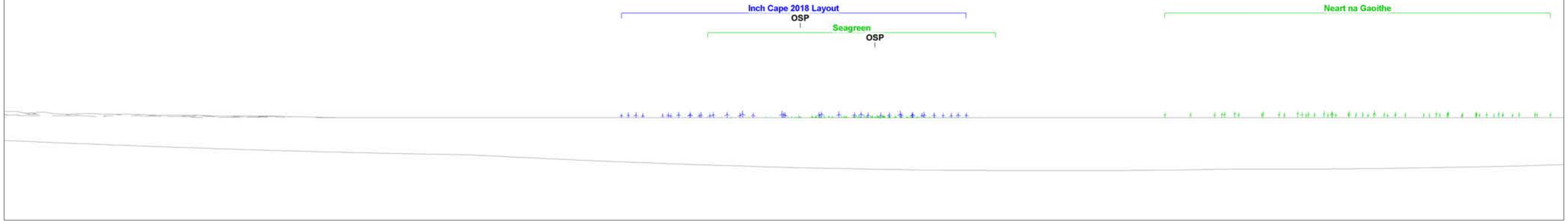
REF: GB200491_V_001

Figure 20
VP 20 - B9131 South of Dunino

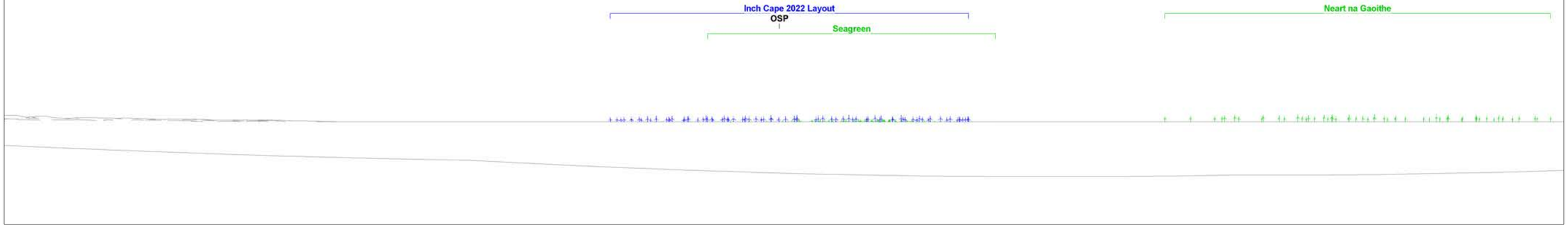
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	359221 E 712449 N
Elevation:	25.5 m AOD
Direction of View:	54°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	29.6 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

Date: 09/06/2022 | Revision: A

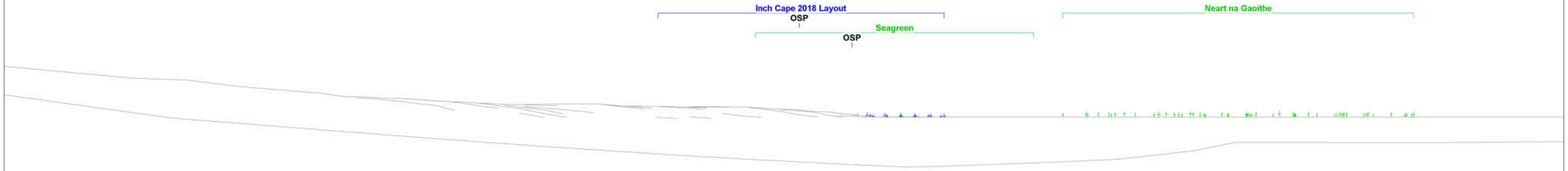
REF: GB200491_V_001

Figure 21
VP 21 - Kingsbarns

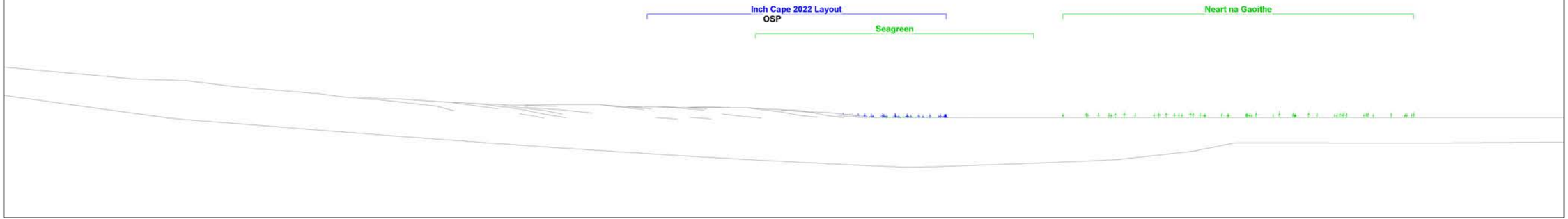
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	357901 E 704166 N
Elevation:	9.1 m AOD
Direction of View:	46°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	35.5 km
Hubs Visible (155.6 m):	23 (of 79)
Tips Visible (273.64 m):	28 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

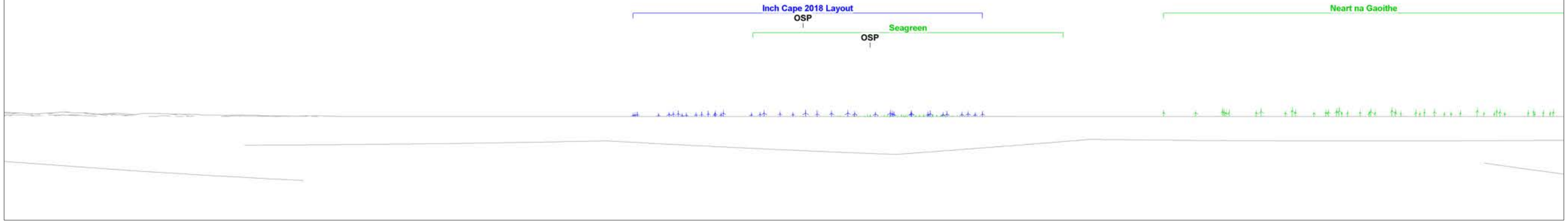
REF: GB200491_V_001

Figure 22
VP 22 - Anstruther Easter

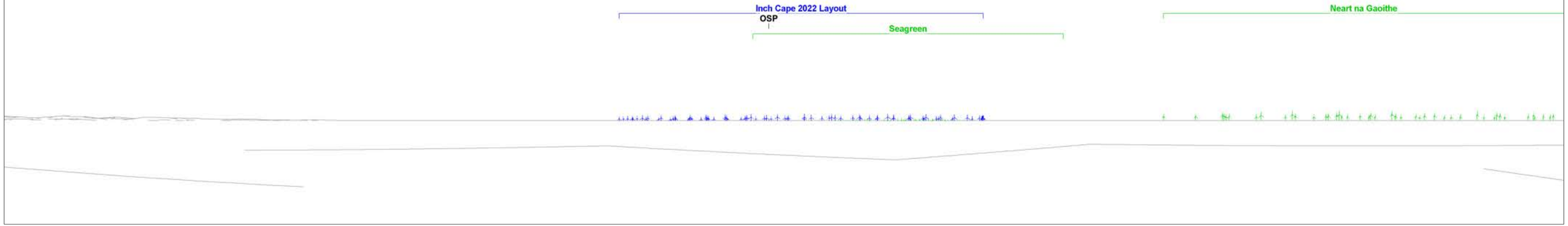
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	363844 E 709759 N
Elevation:	3.4 m AOD
Direction of View:	45°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	27.4 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

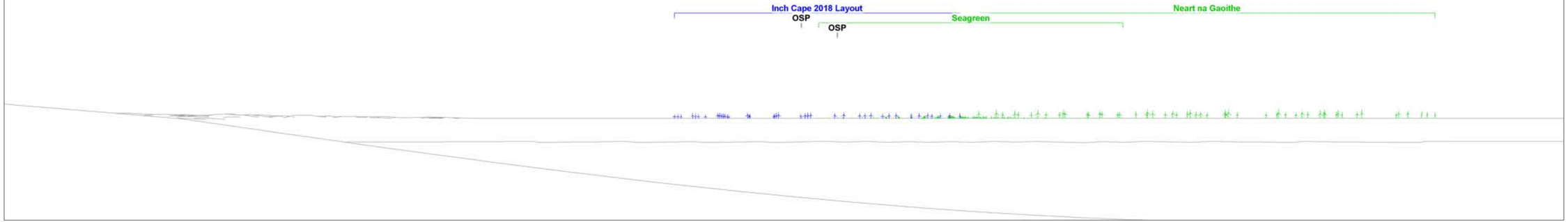
REF: GB200491_V_001

Figure 23
VP 23 - Fife Ness, Lochaber Rock

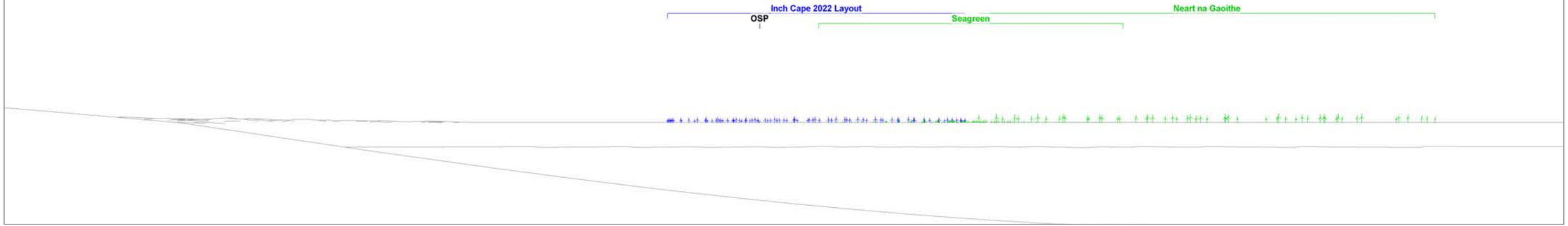
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	365655 E 699329 N
Elevation:	45.2 m AOD
Direction of View:	33°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	33.6 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

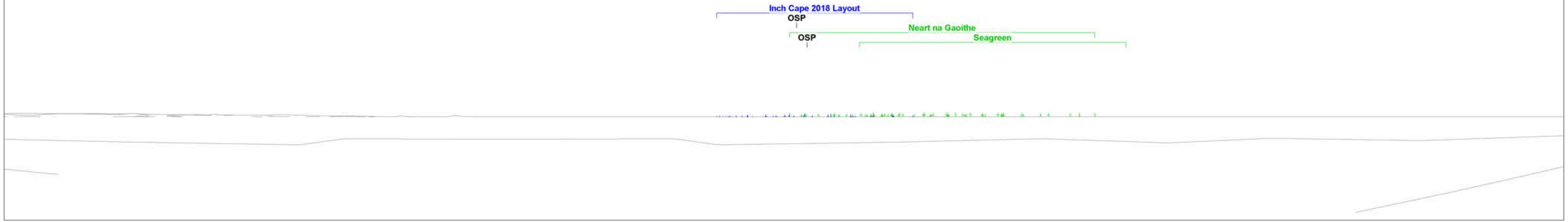
REF: GB200491_V_001

Figure 24
VP 24 - Isle of May

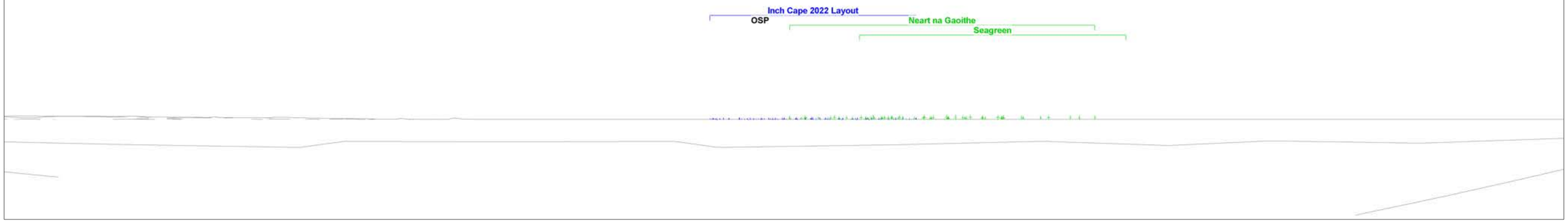
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	367101 E 679377 N
Elevation:	2.4 m AOD
Direction of View:	21°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	50.4 km
Hubs Visible (155.6 m):	47 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced:	LW
Reviewed:	FM
Approved:	GG

natural power

Date: 09/06/2022 | Revision: A

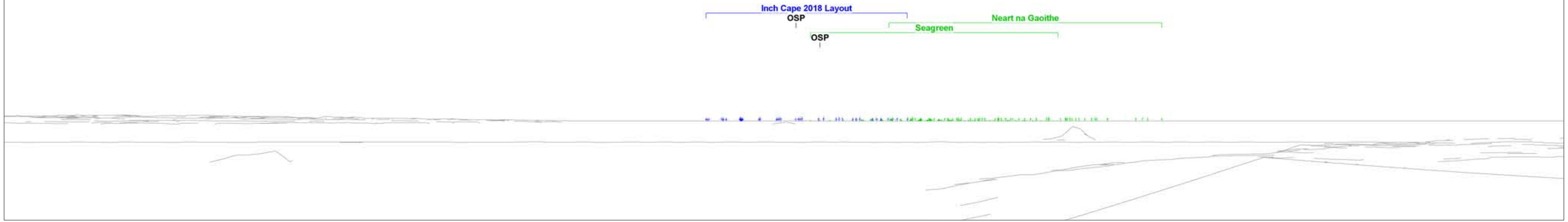
REF: GB200491_V_001

Figure 25
VP 25 - Dunbar

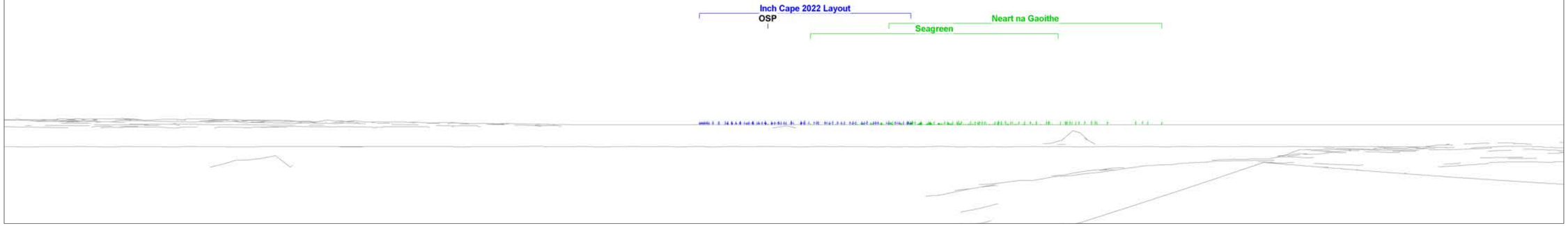
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	355639 E 684246 N
Elevation:	184.7 m AOD
Direction of View:	33°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	1.5 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	51.7 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 09/06/2022 | Revision: A

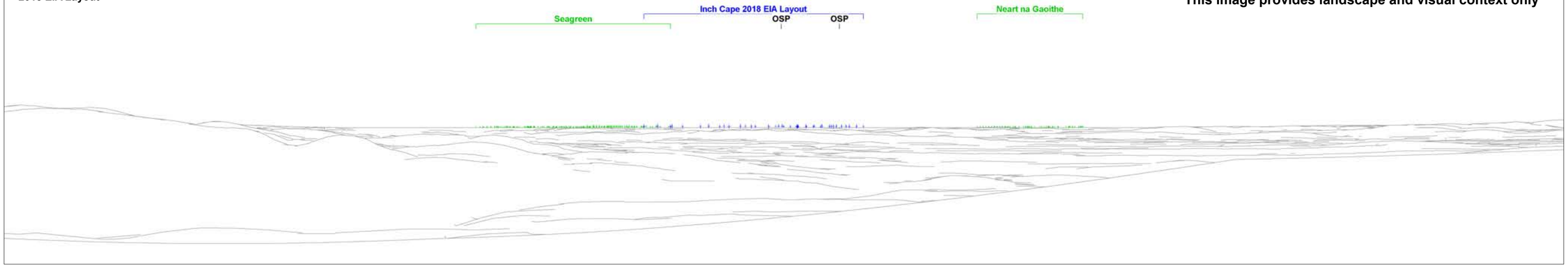
REF: GB200491_V_001

Figure 26
VP 26 - Berwick Law

Inch Cape Wind Farm

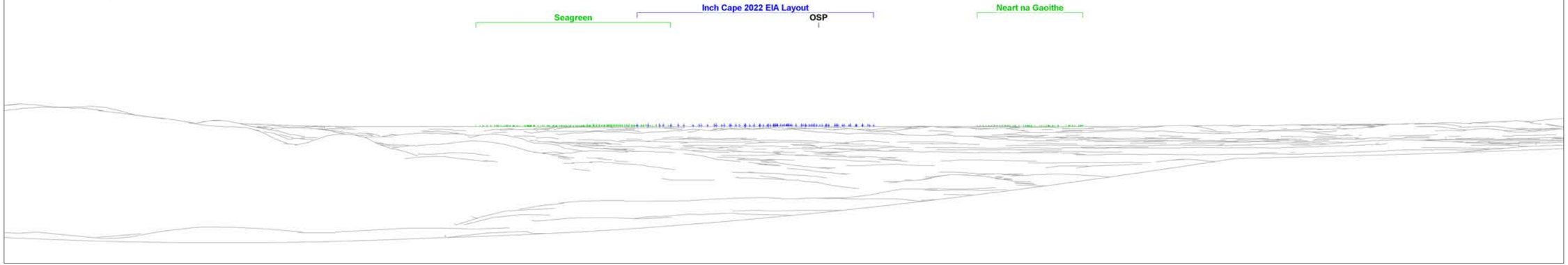
Appendix E: Inch Cape Offshore Wind Farm Additional Wirelines

2018 EIA Layout



This image provides landscape and visual context only

2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	337425 E 761351 N
Elevation:	375 m AOD
Direction of View:	119°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	51.03 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 06/06/2022 | Revision: A

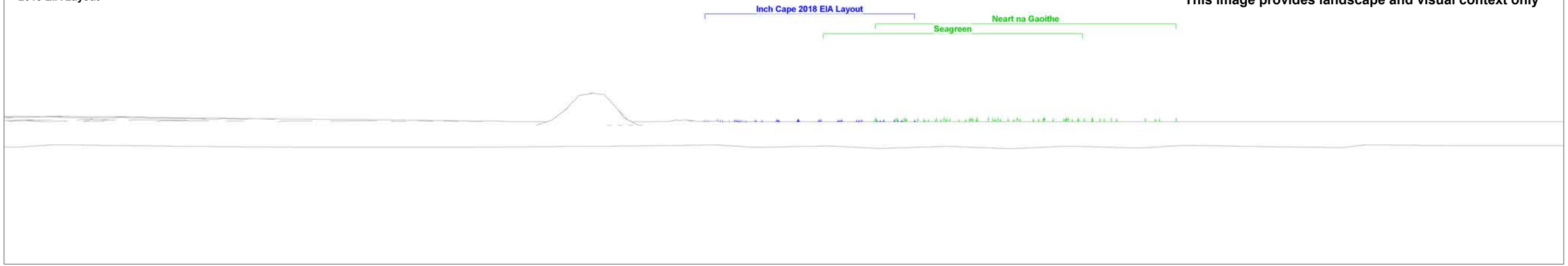
REF: GB200491_V_002

Figure 1
VPA - Airlie Monument

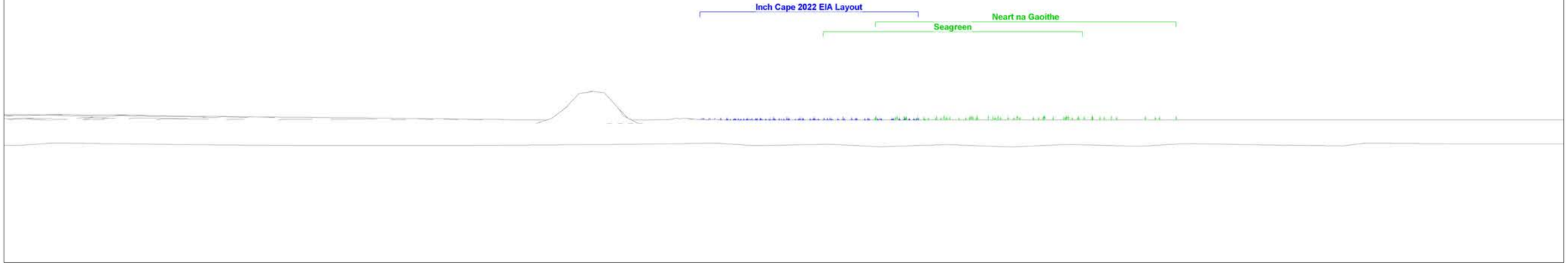
Inch Cape
Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	359604 E 685080 N
Elevation:	13 m AOD
Direction of View:	30.19°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	48.73 km
Hubs Visible (155.6 m):	63 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 06/06/2022 | Revision: A

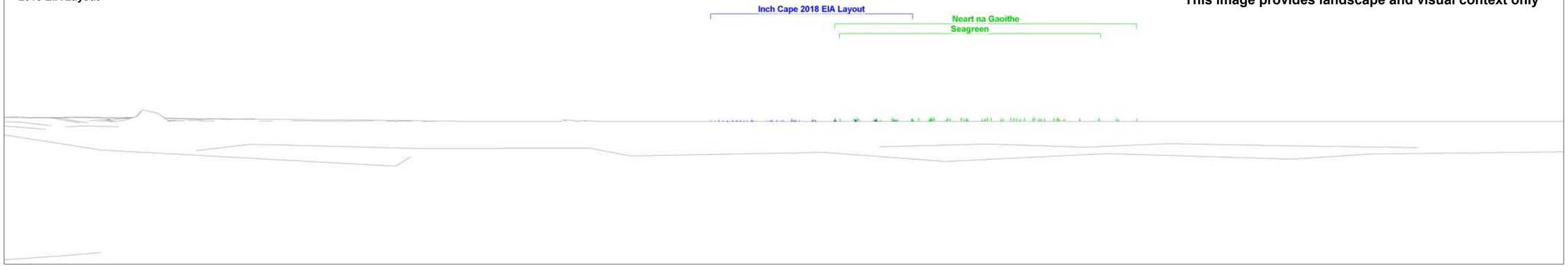
REF: GB200491_V_002

Figure 2
VPB - Tantallon Castle

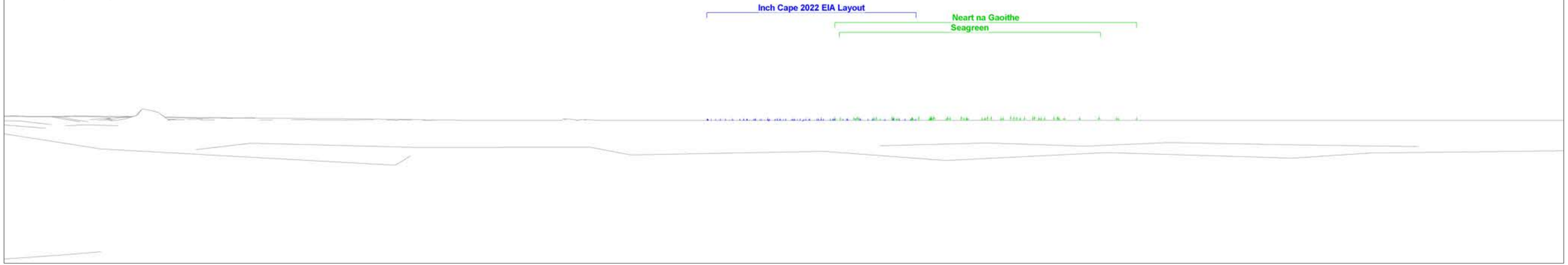
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	362608 E 681834 N
Elevation:	7 m AOD
Direction of View:	25.96°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	50.03 km
Hubs Visible (155.6 m):	57 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

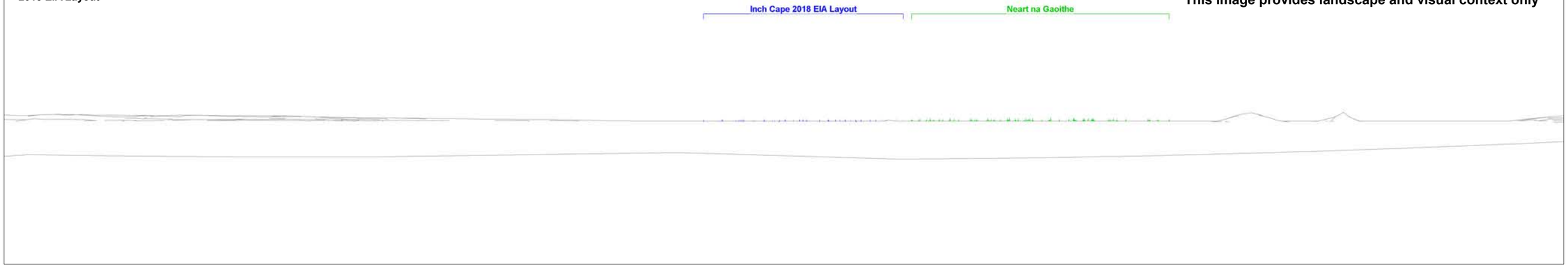
Date: 06/06/2022 | Revision: A

REF: GB200491_V_002

Figure 3
VPC - Ravenshaugh Sands

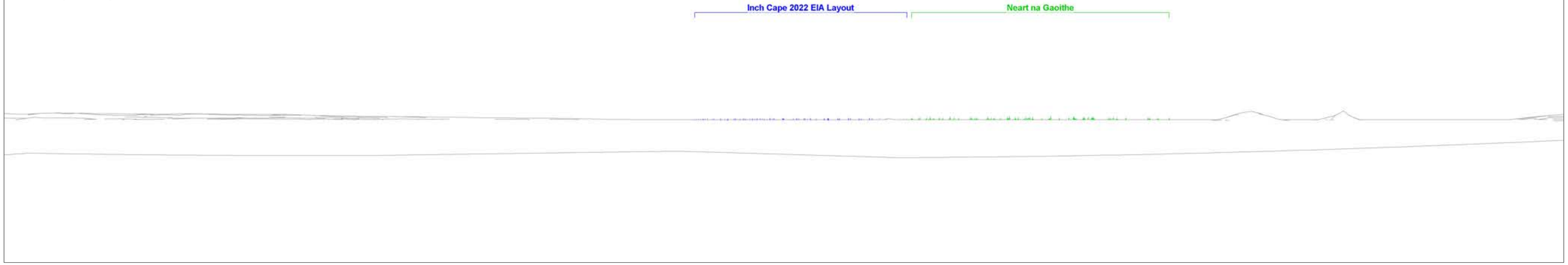
Inch Cape
Wind Farm

2018 EIA Layout



This image provides landscape and visual context only

2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	351891 E 685943 N
Elevation:	4 m AOD
Direction of View:	37.06°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	52.62 km
Hubs Visible (155.6 m):	24 (of 79)
Tips Visible (273.64 m):	75 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 06/06/2022 | Revision: A

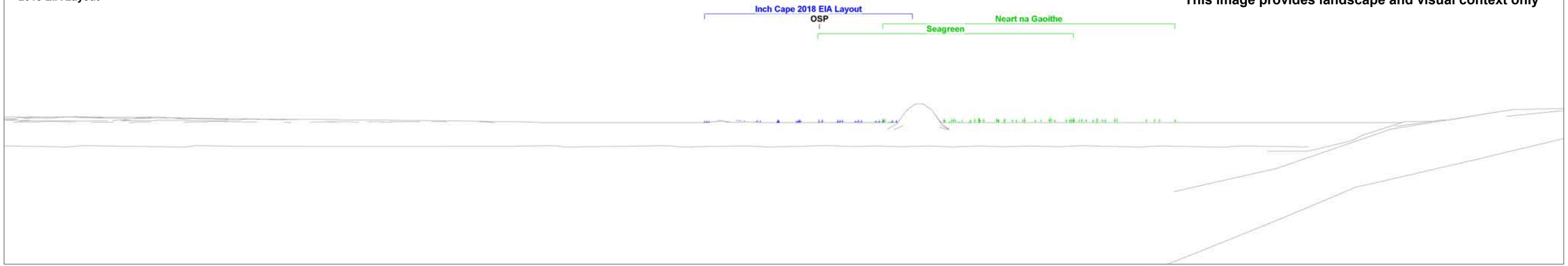
REF: GB200491_V_002

Figure 4
VPD - Yellow Craig

Inch Cape
Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout

Inch Cape Offshore Limited

Viewpoint and Photography Data

OS Reference:	358200 E 685137 N
Elevation:	34 m AOD
Direction of View:	31.45°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	49.45 km
Hubs Visible (155.6 m):	56 (of 79)
Tips Visible (273.64 m):	70 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 06/06/2022 | Revision: A

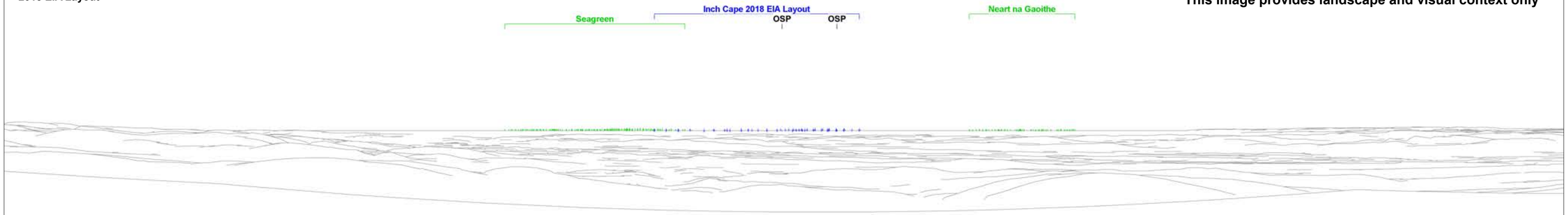
REF: GB200491_V_002

Figure 5
VPE - Near A198

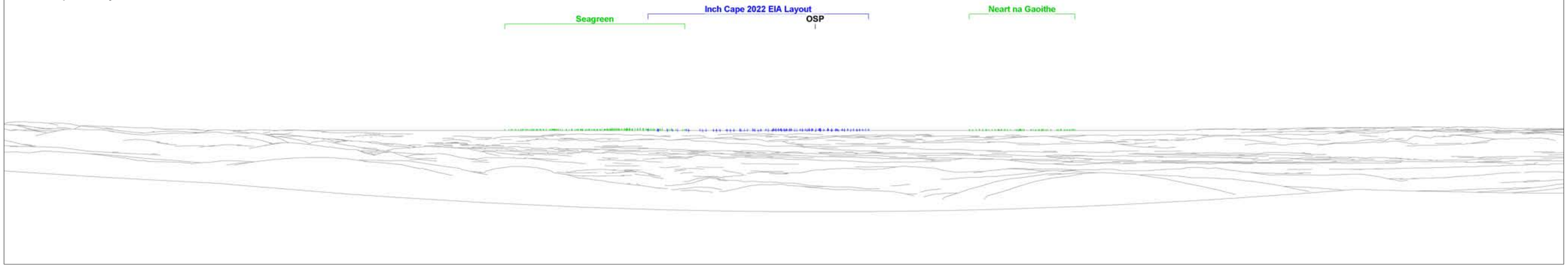
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape
OFFSHORE LIMITED

Viewpoint and Photography Data

OS Reference:	331884 E 760995 N
Elevation:	667 m AOD
Direction of View:	149°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	2.0 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	56.07 km
Hubs Visible (166 m):	79 (of 79)
Tips Visible (291 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 06/06/2022 | Revision: A

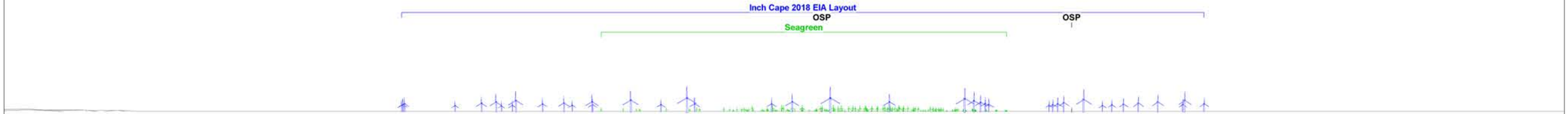
REF: GB200491_V_002

Figure 6
VPF - Cat Law

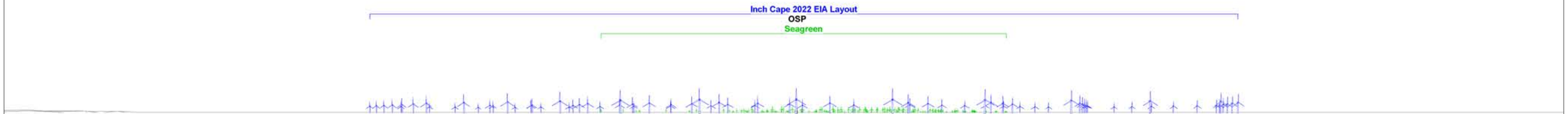
Inch Cape Wind Farm

2018 EIA Layout

This image provides landscape and visual context only



2022 Proposed Layout



Inch Cape

Viewpoint and Photography Data

OS Reference:	337425 E 761351 N
Elevation:	0 m AOD
Direction of View:	61.05°
Horizontal Field of View:	120° (cylindrical projection)
Camera Height:	33 m AGL
Principal Distance:	349 mm
Paper Size	841 x 297 mm (half A1)
Correct Printed Image Size:	731 x 135 mm
Camera:	NA
Lens:	NA
Focal Length:	NA
Date & Time Taken:	NA

Proposed Turbine Information (Inch Cape only, 2022 layout)

Nearest Turbine:	8.1 km
Hubs Visible (155.6 m):	79 (of 79)
Tips Visible (273.64 m):	79 (of 79)

Horizontal Scale of Map 1:50 000

0 1 2 km

Geodetic Parameters: OSGB 1936 BNG

Produced: LW
Reviewed: FM
Approved: GG

natural power

Date: 07/06/2022 | Revision: A

REF: GB200491_V_003

Figure 7
VP - Bell Rock Lighthouse

Inch Cape Wind Farm