CALEDONIA
Offshore Wind Farm

Code: UKCAL-CWF-CON-EIA-RPT-00007-7A05

Volume 7A Overview Chapter Appendices

Appendix 7-1 Cumulative Impact Assessment Methodology

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Volume 7A Appendix 7-1 Cumulative Impact Assessment Methodology

Code	UKCAL-CWF-CON-EIA-RPT-00007-7A05
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Acronyms and Abbreviations

BDMPS	Biologically Defined Minimum Population Scale
CEF	Cumulative Effects Framework
CIA	Cumulative Impact Assessment
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
GHG	Greenhouse Gas
INTOG	Innovation and Targeted Oil and Gas
km	kilometre
m	metre
MD-LOT	Marine Directorate– Licensing Operations Team
NETS	National Electricity Transmission System
NEEOG	North East and East Ornithology Group
NEOG	North East Ornithology Group
nm	Nautical Miles
NPF4	National Planning Framework 4
O&M	Operations and Maintenance
OECC	Offshore Export Cable Corridor
OnTI	Onshore Transmission Infrastructure
OWF	Offshore Wind Farm
PINS	Planning Inspectorate
RLB	Red Line Boundary
SLVIA	Seascape, Landscape and Visual Impact Assessment

ZoI	Zones of Influence

1 Cumulative Impact Assessment Methodology

1.1 Introduction

1.1.1.1 The Caledonia Offshore Wind Farm (OWF) comprises; Caledonia North and Caledonia South, collectively referred to as the 'Proposed Development (Offshore)' and the Onshore Transmission Infrastructure (OnTI) required to transfer the power from the Proposed Development (Offshore) to a connection to the National Electricity Transmission System (NETS), referred to as the 'Proposed Development (Onshore)'. Collectively, the Proposed Development (Offshore) and Proposed Development (Onshore) are referred to as the 'Proposed Development'.

1.1.1.2 As well as considering the impacts from the Proposed Development alone, the Environmental Impact Assessment (EIA) Regulations require consideration of the potential impacts that could occur cumulatively with other relevant plans, projects and activities. This technical appendix presents the methodology that has been used in the undertaking of the Cumulative Impact Assessment (CIA) within the Environmental Impact Assessment Report (EIAR) of the Proposed Development.

1.1.1.3 Cumulative impacts may arise within the construction and operation and maintenance (O&M) stages of the Proposed Development. Due to the anticipated lifetime of the Proposed Development, it is not possible to undertake a meaningful assessment of potential cumulative impacts for the decommissioning phase.

1.1.1.4 The objective of this document is to provide details on the methodology used for each of the assessments within the EIAR and to detail the longlist of projects, plans and activities that have been considered.

1.1.1.5 This CIA methodology applies to the following volumes of the EIAR:

- Volume 2: The Proposed Development (Offshore);
- Volume 3: Caledonia North;
- Volume 4: Caledonia South;
- Volume 5: The Proposed Development (Onshore); and
- Volume 6: Intertidal and Combined Assessments.

1.2 Legislation, Policy and Guidance

1.2.1.1 The requirement to assess cumulative effects is set out in Schedule 4 of the EIA Regulations which states within Schedule 4, paragraph 5:

"*The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development*".

1.2.1.2 The EIA Regulations also provide clarification of what are considered to be cumulative effects (Schedule 4, paragraph 5(e):

"*the cumulation of effects with other existing and/ or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources*".

1.2.1.3 There is currently no specific Scottish guidance on the methodology for assessing cumulative effects. The assessment of impacts employed in the preparation of this EIAR has therefore been informed by the following relevant legislation, policy and guidance:

- Guiding Principles for Cumulative Impacts Assessment in Offshore Wind Farms (RenewableUK, 2013[1]);
- Nationally Significant Infrastructure Projects: Advice on Cumulative Effects Assessment (PINS), 2024[2]);
- National Planning Framework 4 (NPF4) (Scottish Government, 2023[3]);
- A Handbook on Environmental Impact Assessment: Guidance for Competent Authorities, Consultees and Others Involved in the Environmental Impact Assessment Process in Scotland (NatureScot, 2018[4]); and
- Marine Scotland Consenting and Licensing Guidance For Offshore Wind, Wave and Tidal Energy Applications (Marine Directorate, 2018[5]).

1.3 Consultation

1.3.1.1 Feedback on the proposed EIA methodology was received as part of the Scoping Opinions received from Marine Directorate Licensing Operations Team (MD-LOT) (previously known as Marine Scotland) and Aberdeenshire Council. A summary of the key feedback received on the proposed CIA methodology are outlined below in Table 1–1, together with how these issues have been considered in the production of this technical appendix.

Table 1–1: Scoping Opinion Response

Consultee	Comment	Response
The Highland Council	Description of the Development - The description of development for an EIAR is often much more than would be set out in any planning application. An EIAR must include: ▪ the estimated cumulative impact of the project with other consented or operational development.	The CIA methodology is described in detail in this technical appendix (Volume 7A, Appendix 7-1: Cumulative Impact Assessment Methodology) including the identification, evaluation and assessment of likely significant cumulative impacts during construction, operation and maintenance phases of the Proposed Development.
The Highland Council	Environmental Elements Affected - The EIAR must provide a description of the aspects of the environment likely to be significantly affected by the development. The following paragraphs highlight some principal considerations. There are a number of onshore and offshore wind energy developments in the area and associated grid infrastructure projects and you are encouraged to use your understanding of these in assessing your development and the potential for cumulative effects to arise. The EIAR should fully utilise this understanding to ensure that information provided is relevant and robustly grounded.	The CIA methodology is described in detail in this technical appendix (Volume 7A, Appendix 7-1: Cumulative Impact Assessment Methodology) including the identification, of potential impacts that could occur cumulatively with other relevant plans, projects and activities. The CIA has considered all other relevant plans, projects and activities where details are publicly available three months prior to the Proposed Development consent applications being submitted.
The Highland Council	Leading from the assessment of the environmental elements the EIAR needs to describe the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative	

Consultee	Comment	Response
	effects of the development, resulting from: ▪ the existence of the development; ▪ the use of natural resources; and ▪ the emission of pollutants, the creation of nuisances and the elimination of waste.	
MD-LOT	The Scottish Ministers disagree that 'cumulative modifications to the wave and tidal regime and associated potential impacts to the sediment transport regime' are scoped out of the EIA Report. This impact pathways must be scoped in for further assessment. Any justification for scoping this receptor out, must be included within the EIA Report.	Caledonia Offshore Wind Farm Limited (hereafter referred to as 'the Applicant') has agreed to scope in cumulative modifications to the wave and tidal regime and associated potential impacts to the sediment transport regime, which is presented in Volumes 2, 3 and 4, Chapter 2: Marine and Coastal Processes.
NatureScot	The operational effect Cumulative modifications to the wave and tidal regime, & associated impacts to sediment transport is scoped out because there is "no likelihood of local or regional changes in sediment transport regime". However no detail is provided to justify this. We advise that this effect should be scoped in. Alternatively the developer may wish to submit, for our consideration, further justification in terms of any relevant evidence (observations or modelling results) from nearby and/or analogous offshore wind farms.	
MD-LOT	With regards to the CIA, the Scottish Ministers draw attention to the NatureScot representation (below).	The Applicant discussed the representation with NatureScot during consultation in June 2023. The subtle difference between baseline and existing environment was highlighted by NatureScot as the key point raised, specifically in terms of what should and should not be

Consultee	Comment	Response
		included in baseline (as it does not always take account of baseline plus change). This has been reflected in terminology used in Volumes 2, 3 and 4, Chapter 2: Marine and Coastal Processes.
NatureScot	It's unclear why the above cumulative effect is identified within the main scoping table (Table 6.2) rather than planned to be addressed through CIA (6.6). Regardless, section 4.3.1.6 is ambiguous, stating that existing operational projects nearby "will constitute part of the existing baseline conditions", but noting that some "ongoing effects … will need to be incorporated within the CIA". We advise that operational effects of existing projects on the wave, tide and sediment transport regime should be explicitly included within the CIA. Baseline conditions for Caledonia should be informed by the EIAs of those existing projects, i.e. by conditions before any of the Moray Firth OWFs were constructed.	
MD-LOT	Scottish Ministers agree with the NatureScot representation that the Developer should consider the cumulative effects of key impacts such as habitat loss or change, especially in relation to diadromous fish as well as key fish and shellfish species that contribute to ecological importance as a prey resource.	A cumulative assessment of the impacts on fish and shellfish receptors has been undertaken in Section 5.8 of Volumes 2, 3 and 4, Chapter 5: Fish and Shellfish Ecology.
NatureScot	The EIA Report should consider the cumulative effect of key impacts such as habitat loss/change especially in relation to diadromous fish as well as	

Consultee	Comment	Response
	key fish and shellfish species that contribute ecological importance as a prey resource. This may differ depending on the life stage being considered.	
NatureScot	As per the EIA Regulations, the Environmental Statement will need to address the cumulation of impacts with other existing and/or approved works. In the approach to the cumulative assessment and identification of other built and/or approved projects, it is suggested (paragraph 4.3.1.6) that some projects may not be taken forward and built as currently described and, as such, there is a level of uncertainty over the level of impacts which may arise. It is therefore proposed that the phase of the project will be considered when drawing conclusions on cumulative effects and the certainty of those.	The CIA takes into account the different phases of developments.
MD-LOT	The Scottish Ministers are content with the use the Cumulative Effects Framework. The Developer should agree the proposed list for the cumulative assessment with NatureScot and Marine Scotland. The Developer must implement the NatureScot representation regarding the cumulative assessment for breeding and non-breeding seasons within the EIA Report.	As discussed and agreed upon in post-scoping consultation, the Cumulative Effects Framework (CEF) tool has not become available within the timeframe for the preparation of the assessment of the Proposed Development (Offshore). It has therefore not been included as part of, or used to inform, the CIA.
NatureScot	We note and support the intention to use the CEF tool. Prior to completing the cumulative assessment NatureScot and Marine Scotland should be consulted with the proposed list.	A strategic project undertaken on behalf of the North East and East Ornithology Group (NEEOG) of ScotWind developers has produced a baseline dataset for the CIA, in

Consultee	Comment	Response
NatureScot	Cumulative assessment in the non-breeding season should include all relevant developments within the region defined for the species, either by BDMPS or other agreed approach.	which a long list of projects has been presented. The use of this dataset for this purpose has been agreed with NatureScot in consultation. The assessment has been undertaken implementing using the mean maximum foraging range plus one standard deviation of gannet (510km) during the breeding season and using the Biologically Defined Minimum Population Scales (BDMPS) regional population for non-breeding season, with the exception of guillemot where the calculated regional population has been used.
MD-LOT	Additionally, the Scottish Ministers also highlight the NatureScot representation that the approach to cumulative impact assessments for marine mammal interests, must be discussed with NatureScot, prior to the submission of the EIA Report.	The Applicant has consulted NatureScot on the approach to the CIA on 14 June 2024.
NatureScot	The approach to cumulative impacts assessment for marine mammal interests for Habitat Regulation Appraisal, EIA and European Protected Species licensing requirements will also require agreement in advance of submission of the application.	
MD-LOT	Table 13.2 of the Scoping Report summarises the potential impacts to shipping and navigation for each phase of the Proposed Development which the Developer proposes to scope into and out of the EIA Report. The Scottish Ministers broadly agreed with the impacts scoped in and out	Cumulative and transboundary impacts are included within Sections 9.8 and 9.10, respectively of Volumes 2, 3 and 4, Chapter 9: Shipping and Navigation.

Consultee	Comment	Response
	however, advise that cumulative and transboundary effects must also be scoped into the EIA Report. This is in line with the UK Chamber of Shipping, Maritime and Coastguard Agency and Royal Yachting Association representations.	
Maritime and Coastguard Agency	The likely cumulative and in combination effects on shipping routes should also be considered, the impact on navigable sea room and include an appropriate assessment of the distances between wind farm boundaries and shipping routes as per Marine Guidance Note 654 (Maritime and Coastguard Agency, 2021[6]).	
United Kingdom (UK) Chamber of Shipping	The Chamber does not agree that cumulative impacts and transboundary impacts (hazards and associated risks) for Shipping and Navigation may be scoped out of the Offshore EIA and from what it has read of the Scoping Report, does not understand the rationale for its potential scoping out. Clarification accordingly would be welcomed.	
MD-LOT	With regards to the cumulative impacts, the Scottish Ministers draw the Developers attention to the NatureScot and Highland Council representations. NatureScot considers that the most likely significant effects are to be derived from the cumulative design relationship between the existing and/or under construction OWFs in the Moray Firth and the Proposed Development. The Scottish Ministers agree with NatureScot and encourage that, as part of design iteration, consideration is given to	Operational and under-construction onshore and offshore wind farms within the Seascape, Landscape and Visual Impact Assessment (SLVIA) study area are considered as part of the baseline in Section 12.7 of Volumes 2, 3 and 4, Chapter 12: Seascape, Landscape and Visual Impact Assessment. These, as well as consented wind farms, are considered

Consultee	Comment	Response
	alternative heights and locations within the Array Area to mitigate potential significant effects from poor cumulative composition and higher turbines on sensitive coastal receptors, in particular on the closest east Sutherland coast. The Developer should assess the cumulative seascape, landscape and visual impacts in the EIA Report in line with the NatureScot representation. Additionally, the Developer should review the wind energy map provided by the Highland Council and also note the requirements for images for presentation within the Panoramic Digital Viewer.	within the CIA presented in Section 12.8.
NatureScot	We consider that the most likely significant effects are to be derived from the cumulative design relationship between the existing/under construction OWFs in the Moray Firth and the proposed development. Particularly in the context that the turbines of Beatrice are 182 metre (m) blade tip height and the proposed development is at a maximum blade tip height of 350m, with a more open and wider spaced composition. As part of design iteration, we encourage the consideration of alternative heights and locations within the Caledonia array area to mitigate potential significant effects from poor cumulative composition and higher turbines on sensitive coastal receptors, in particular on the closest east Sutherland coast.	
NatureScot	The assessment of the proposed development with the baseline 'landscape' assessment (above) and	

Consultee	Comment	Response
	consented development (terrestrial and marine), represents a cumulative scenario for change and it is appropriate to assess this under the cumulative assessment section. From the EIA Regulations 2017, a cumulative assessment is no longer required to assess the cumulative effects of 'application' developments.	
The Highland Council	The development will further extend the number of proposals of this type in the surrounding area, necessitating appropriate cumulative impact. It is considered that cumulative impact will be a significant material consideration in the final determination of any future application. We encourage you to review the wind energy map on our website which will provide an indication of other projects in the area which may require consideration (The Highalnd Council, 2024[7]).	Visual representations have been prepared as per the NatureScot (2017[8]) and The Highland Council (2016[9]) guidance. Selected viewpoints have been provided for presentation within The Highland Council Panoramic Digital Viewer.
MD-LOT	The Scottish Ministers further highlight the NatureScot representation which identifies that the use of both fixed and floating Wind Turbine Generator technologies could potentially avoid or reduce the appearance of illogical gaps or breaks in the layout and that the use of different turbine heights within the Array Area could reduce significant cumulative effects arising from the substantial difference in turbine heights proposed against those of existing OWFs (in particular Beatrice and Moray East). As part of design iteration, the Developer must aim to produce a cohesive composition with the existing Moray OWFs in line with the NatureScot representation.	Volume 1, Chapter 3: Proposed Development Description (Offshore) sets out the design issues pertinent to the Proposed Development (Offshore). The assessment is set out in Section 12.7 of Volumes 2, 3 and 4, Chapter 12: Seascape, Landscape and Visual Impact Assessment.

Consultee	Comment	Response
Marine Scotland Marine Analytical Unit	Regarding socio-economic impact, provided general best guidance tips, including: Include consideration of the cumulative impact of multiple offshore developments.	Cumulative impacts are included within Section 2.8 of Volume 6, Chapter 2: Socio-Economics, Tourism and Recreation.
Scottish Fishermen's Federation (SFF)	In Chapter 4, the SFF is particularly keen to see the project adopt a much more comprehensive approach to the Cumulative Impact Assessment. It can be seen by the use of studies on the 3 existing windfarms that there is significant infrastructure already in the Moray Firth, and more developments will increase the spatial squeeze on fishing. It is no longer feasible to simply analyse the International Council for the Exploration of the Sea (ICES) square, it needs to take into account the impact on a whole national fishery.	The approach to CIA is set out in Section 8.8 of Volumes 2, 3 and 4, Chapter 8: Commercial Fisheries. The cumulative effects study area for commercial fisheries extends beyond the local study area (and surrounding ICES rectangles). The assessment also takes into the account the presence and effects of the Beatrice, Moray East and Moray West OWFs.

1.3.1.2 Further consultation has been undertaken throughout the pre-application stage. Table 1–2 summarises the consultation activities carried out relevant to the CIA.

Table 1–2: Stakeholder Engagement Activities

Date	Consultee and Type of Consultation	Summary
25/05/2023	NatureScot: Post Scoping Engagement	NatureScot – raised that the Project will need to look at Berwick Bank OWF for in-combination effects and may want to plan for cumulative/in-combination effects to be prepared with and without the Berwick Bank OWF proposal. Naturescot advised that Berwick Bank OWF is an example of what developers are expected to do when an application is not yet determined.
01/11/2023	Aberdeenshire Council: Post-scoping engagement	A technical note was prepared to identify the approach to be undertaken within the CIA for the Proposed Development (Onshore), the relevant plans, projects and activities to be considered and the cut-off date to be used for data to be incorporated into the CIA.
13/11/2023	NatureScot: Post Scoping Engagement	The Ornithology team queried when the CEF tool might be available for use as it is understood it had been sent over to NatureScot and RSPB to trial. NatureScot suggested asking for updates from Marine Directorate on when it is likely to come out. NatureScot was advising developers to consider doing an assessment with and without the Berwick Bank application. NatureScot was not sure if aspiration timeline for Berwick Bank application of 9 months still applies. NatureScot had been asking for updates, but did not know yet. Will share if/when more is known
13/11/2023	NatureScot: Post Scoping Engagement	The Ornithology team noted that if the situation arises where the CEF tool is not available in time to take forward as part of the Caledonia OWF application, the project team would seek to agree a common starting point for cumulative/in-combination assessment, either with North East Ornithology Group (NEOG) or North East & East Ornithology Group (NEEOG). NatureScot recognised this given the uncertainty around the tool availability.
14/12/2023	NatureScot: Post Scoping Engagement	NatureScot noted updates on the status of the CEF tools and methods to be used should be sought from Marine Directorate. If the CEF is unavailable, then the assessment should be carried out following their guidance and using the currently available tools. NatureScot noted in the absence of the CEF for the cumulative assessment, NatureScot agree

Date	Consultee and Type of Consultation	Summary
		that the applicant can undertake an assessment as per previous applications without the CEF. The specific projects for inclusion should be agreed by Marine Directorate. Additional complexity will be introduced if the developer intends to put in their application prior to a decision being reached regarding Berwick Bank. If this is the case then NatureScot will request two parallel cumulative assessments – one including Berwick Bank impacts and one excluding them.
14/06/2024	NatureScot: Post-scoping engagement	Marine mammals-specific CIA consultation with regards to potential population-level impacts.
11/07/2024	MD-LOT: Post-scoping engagement	A summary of relevant plans, projects and activities to be included within the CIA was provided, and agreed, with Marine Directorate, and thus the cut-off date to be used for data to be incorporated into the CIA.
30/09/2024	MD-LOT and NatureScot: Post-scoping engagement	Provision of further advice relating to the CIA.

1.4 The CIA Process

1.4.1.1 The method adopted for the CIA follows four distinct stages:

- Stage 1 – Identification of Long List;
- Stage 2 – Identification of Short List;
- Stage 3 – Data gathering; and
- Stage 4 – Assessment.

1.4.1.2 The staged approach undertaken to identify relevant developments, plans and activities for consideration within the CIA is summarised in the following sections.

1.5 Stage 1: Establishing the long list of 'other existing development and/or approved development'

1.5.1.1 To undertake the CIA, it is necessary to identify the main impacts from the Proposed Development that have the potential to contribute to cumulative effects with impacts from other existing development and/or approved development.

1.5.1.2 To do this, the Proposed Development's Zone of Influence (ZoI) is required to be identified. The ZoI takes into consideration the areas / receptors likely to be affected by:

- The Proposed Development activities and facilities that are directly owned, operated, or managed (including by contractors) and that are a component of the Proposed Development;
- Effects from unplanned but predictable potential effects caused by the Proposed Development that may occur later or at a different location; and
- Indirect effects (if appropriate).

1.5.1.3 For the Proposed Development (Onshore), the search area for the long list of other existing development and/or approved development was set at 10km, this takes into account the varying ZoIs for the onshore assessment and presents a proportionate approach to the varying works proposed across the Onshore Transmission Infrastructure (OnTI).

1.5.1.4 To identify other existing development and/or approved development within the search area, the following search criteria was applied:

- Local authority planning applications submitted within the past five years that represent 'major developments', the definitions and thresholds for which are set out in Planning Circular 5/2009: hierarchy of developments (Scottish Government, 2009[10]);
- local authority planning applications submitted within the past five years that require an EIA under the EIA Regulations;
- local authority planning applications submitted within the past five years that represent National Developments as set out in the NPF4 (Scottish Government, 2023[3]);
- Section 36 and Section 37 Electricity Act and Transport and Works Act planning applications submitted within the past five years; and
- Allocations identified in the adopted Aberdeenshire development plan.

1.5.1.5 Aberdeenshire Council provided their records of existing development and/or approved development within the search area identified.

1.5.1.6 In addition to the data provided by Aberdeenshire Council, the Applicant was also made aware by developers and Aberdeenshire Council of two additional schemes within proximity to the OnTI Red Line Boundary (RLB) which have the potential for cumulative effects with the Proposed Development(Onshore) which should be considered within the CIA. These are the proposed SSEN Substation, Greens, and the onshore transmission infrastructure of the Stromar Offshore Wind Farm. These developments were therefore also included within the long list of reasonably foreseeable projects or developments considered.

1.5.1.7 For the Proposed Development (Offshore), the long list was generated based on publicly available data for a range of industries, such as OWFs and other marine renewables, ports and harbours (including marine disposal sites), aggregate production, oil and gas licence blocks, subsea cables and pipelines, among others. This process largely focused on developments, projects and activities in close proximity to the Caledonia Site; however, it also captured a large spatial extent given the potential impact ranges for various receptors; e.g., ornithological BDMPS spatial areas (extending greater than 1,000 kilometre (km) from the Caledonia OWF for certain bird species across the North Sea Waters and Channel).

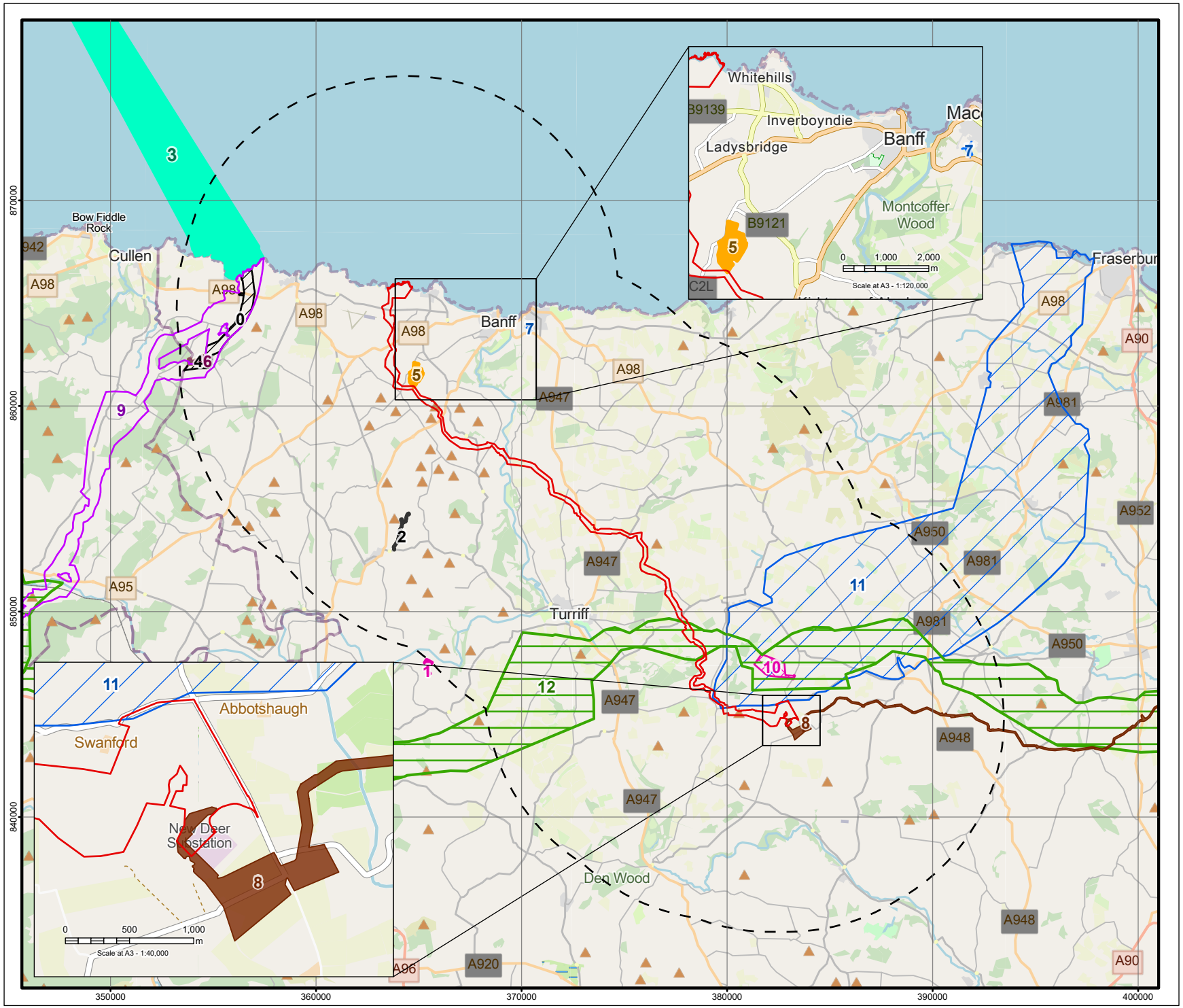
1.5.1.8 The distances of the closest aspect of the Proposed Development (Offshore) were recorded. For OWF developments that are in early planning or operational, this the closest aspect of either the OWF or Offshore Export Cable Corridor (OECC). For projects under construction (e.g., Moray West OWF), the OECC is considered as having impacts separate to the OWF and has been considered as a subsea cable development.

1.5.1.9 During the completion of the EIAR, the long list of other existing development and/or approved development continued to be updated with additional developments or information that emerged (up until a cut-off date of three months prior to final preparation of the assessment).

1.5.1.10 The search was limited to the five years preceding the cut-off date for inclusion of baseline data within the EIA, since planning permissions typically expire after a period of three to five years (unless an application for extension is permitted). As a result, any permissions from an earlier date will be presumed to have elapsed or have been implemented and therefore form part of the baseline considered within the EIAR.

1.5.1.11 The CIA longlist for the Proposed Development (Onshore) and the Proposed Development (Offshore) is presented in Volume 7A, Appendix 7-1 Annex 1: CIA longlist for the Proposed Development (Onshore) and the Proposed Development (Offshore).

1.5.1.12 Figure 1-1 identifies those developments within the Proposed Development (Onshore) long list.



Onshore Transmission Infrastructure Red Line Boundary

10km Buffer of Red Line Boundary

Planning Application

- 0,APP/2021/2117
- 1,APP/2023/2024
- 2,APP/2019/0017
- 3,APP/2021/1662
- 4,APP/2023/1952
- 5,APP/2023/2040
- 6,APP/2021/2116
- 7,APP/2023/0130
- 8,APP/2023/1454
- 9,APP/2023/1950
- 10, Greens Substation
- 11, Stromar Onshore Scoping Area
- 12, Proposed 400kv Connection Corridor (Beauly to Peterhead)

0 2 4 6 8 km

REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
04	30/08/2024	Approved	CW	AC	GS
03	20/08/2024	For Review	CW	AC	GS
02	05/03/2024	For Review	CW	AC	GS
01	06/03/2024	For Review	CW	BW	GS

CALEDONIA Offshore Wind Farm

ARUP

CONTRACTOR DRAWING NO: UKCAL1_ARP_WNF_ENV_MAP_00461	CONTRACTOR REV: 04
GEODETIC PARAMETERS: OSGB36 / British National Grid (EPSG:27700)	

DRAWING TITLE

Figure 1-1:
Proposed Development (Onshore)
Long List of All Other
Relevant Plans, Projects, & Activities

STATUS: Approved	SCALE: 1:250,000	
DRAWING NUMBER: N/A	SHEET NO: 01 of 01	REV: N/A

1.6 Proposed Development (Onshore)

1.6.1.1 A data review has been undertaken of the long list. This includes the details of each reasonably foreseeable project or development, as well as distance to the OnTI RLB, whether a scheme sits within a topic ZoI and which tier of development the scheme is considered to be.

1.6.1.2 The ZoI considered for each topic are identified within Table 1–3.

Table 1–3: Proposed Development (Onshore) Topic ZoIs

Topic	Zone of Influence
Land Use	100m from the OnTI RLB.
Hydrology and Hydrogeology	1km from the OnTIi RLB
Geology Soils and Contaminated Land	100m from the OnTI RLB
Noise and Vibration	Construction Vibration: 100m from the OnTI RLB
	Construction Noise: 300m from the OnTI RLB
	Operational Noise: 1km area around the Onshore Substation Site and associated permanent surface infrastructure.
	Traffic-related noise: 50m width from the kerb of traffic routes and routes subject to significant changes in traffic flows (and/or percentage of Heavy Goods Vehicle (HGV)) associated with the construction of the Proposed Development.
Terrestrial Ecology	Construction and Operation: 10 kilometre (km) from the OnTI RLB for international nature conservation designations.
	Construction and Operation: 10km from the OnTI RLB for national nature conservation designations.
	Construction and Operation: 2km from the OnTI RLB for all other terrestrial ecology effects.
Landscape and Visual	Construction: 1km from the Onshore Export Cable Corridor and Landfall Site.

Topic	Zone of Influence
	Construction and Operation: 3km from the Onshore Substation Site.
Archaeology and Cultural Heritage	Construction and Operation (designated assets): 5km from the Onshore Substation Site and 500m from the Onshore Export Cable Corridor and Landfall Site.
	Construction and Operation (archaeological resource): 500m from the OnTI RLB.
Socio-economics, Tourism and Recreation	Socio-economic impacts construction and operation: within Aberdeenshire, Scotland and the UK.
	Tourism and recreation impacts construction and operation: within the local administrative areas that contain the OnTi.
Traffic and Transport	Construction: 10km from the OnTI RLB. Operation: The baseline traffic against which the effects of operational traffic will be assessed includes any traffic that would be generated by other existing development and/or approved development. The assessment of operational traffic effects is therefore inherently cumulative.
Climate and Carbon	The greenhouse gas (GHG) ZoI includes all GHG emissions from within the OnTI RLB arising during all stages of the construction and operation of the Proposed Development (Onshore). It also includes emissions arising from offsite activities which are directly related to the onsite activities, such as transport, and treatment of materials and waste disposal.

1.7 Proposed Development (Offshore)

1.7.1.1 A desk-based data review has been undertaken of the initial cumulative long list in order to define the final cumulative short list carried forward to the EIA. The list include the details of each reasonably foreseeable project or development, as well as distance to the Caledonia OWF, whether a scheme sits within a topic ZoI and which tier of development the scheme is considered to be.

1.7.1.2 The ZoI considered for each topic are identified within Table 1–4. Depending on the receptor, the ZoI can be measures in km or nm. For example nm is used to describe vessel activity. To reflect this, Table 2-2 presents measurements for both where applicable.

Table 1–4: Proposed Development (Offshore) Topic ZoIs

Topic	Zone of Influence
Marine and Coastal Processes	10km from the Proposed Development (Offshore).
Benthic, Subtidal and Intertidal Ecology	10km from the Proposed Development (Offshore).
Marine Water and Sediment Quality	10km from the Proposed Development (Offshore).
Fish and Shellfish Ecology	100km from the Proposed Development (Offshore)
Offshore Ornithology	Breeding season – 510km (mean maximum foraging range) Non-breeding season – The North Sea Waters and Channel BDMPS spatial area
Marine Mammals	The ZoI for marine mammals consists developments located in Scottish waters, as advised by NatureScot (see Table 1–2).
Commercial Fisheries	The ZoI for Commercial Fisheries consists of developments located in the North Sea. For scallop dredging fleets, the ZoI is defined as at a UK level (including developments located in the North Sea, West of Scotland waters, Irish Sea and English Channel).
Shipping and Navigation	50 nautical miles (nm) (92.5km) from the Proposed Development (Offshore).
Marine Archaeology and Cultural Heritage	10km from the Proposed Development (Offshore).
Military and Civil Aviation	100km from the Proposed Development (Offshore).

Topic	Zone of Influence
SLVIA	60km from the Proposed Development (Offshore).
Socio-Economics, Tourism and Recreation	Includes other ScotWind and Innovation and Targeted Oil and Gas (INTOG) projects, in addition to English North Sea projects.
Other Human Activities	10nm (18.5km) from the Proposed Development (Offshore).

1.7.1.3 In addition to consideration of the ZoI, consideration of the potential for connectivity or overlap of particular environmental topics with different types of plans, projects and activities has been considered. Table 2-3 sets out where a specific type of plan, project or activity will be of relevance to a particular environmental topic. This has been used to aid with defining the short list.

Table 1–3: Proposed Development (Offshore) Topic Relevance

Project / Plan Type	Relevant EIA Environmental Topic												
	Marine and Coastal Processes	Marine Water and Sediment Quality	Benthic Subtidal and Intertidal Ecology	Fish and Shellfish Ecology	Offshore Ornithology	Marine Mammals	Commercial Fisheries	Shipping and Navigation	Marine Archaeology and Cultural Heritage	Military and Civil Aviation	Socio-economics, Tourism and Recreation	SLVIA	Other Human Activities
Offshore Wind Farms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Subsea Cables	✓	✓	✓	✓				✓					✓
Offshore Wind Farm Cables and Export Cable Corridors	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓

Project / Plan Type	Relevant EIA Environmental Topic												
	Marine and Coastal Processes	Marine Water and Sediment Quality	Benthic Subtidal and Intertidal Ecology	Fish and Shellfish Ecology	Offshore Ornithology	Marine Mammals	Commercial Fisheries	Shipping and Navigation	Marine Archaeology and Cultural Heritage	Military and Civil Aviation	Socio-economics, Tourism and Recreation	SLVIA	Other Human Activities
Other Energy			✓	✓		✓	✓						✓
Other Activities (Network of UK MPAs)							✓						
Carbon Capture and Storage	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Aggregates and Disposal	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Oil and Gas Surface	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Oil and Gas Pipelines	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Oil and Gas Subsurface	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Oil and Gas Subsea Linears	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
Ports	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment.												
PEXA	Where appropriate, these are already included in existing baseline conditions as fully operational at time of assessment												

1.8 Development Certainty

1.8.1 Proposed Development (Onshore)

1.8.1.1 It should be noted that the CIA can only consider the publicly available project information, which may require certain assumptions, or qualitative assessments, to be made where information is not publicly available. In addition, some projects, predominantly those proposed or not yet determined, may not actually be taken forward.

1.8.1.2 In undertaking the CIA, therefore, there has been a need to build in a level of confidence with respect to the likely cumulative envelope that may result in cumulative effects, the approach to this is detailed in the following section.

1.8.1.3 The tiers of development considered are detailed within Table 1–5.

Table 1–5: Tiers of development (Onshore)

Tier	Description
Tier 1	▪ Under construction; ▪ Permitted application(s); and ▪ Submitted application(s) but not yet determined.
Tier 2	▪ Projects where a scoping report has been submitted and there is sufficient detail within the scoping report to support CIA.
Tier 3	▪ Projects where a scoping report has not been submitted or scoping report is not sufficiently detailed to support CIA. ▪ Projects identified in the relevant Local Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited information available on the relevant proposals. ▪ Projects identified in other plans and programmes (as appropriate) which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.

1.8.1.4 It was then determined whether the reasonably foreseeable project or development within the Long List should be included within the Short-List and progressed through assessment based on whether or not the scheme has a ZoI interaction, and sits at an appropriate Tier to undertake assessment from, i.e. typically Tier 1 and Tier 2. Tier 3 projects were generally considered to be too early in the process to be able to undertake any meaningful assessment upon, however in some instances a scheme may have been included within the short list where a particular key stakeholders such as Aberdeenshire Council has requested its inclusion.

1.8.2 Proposed Development (Offshore)

1.8.2.1 Similar to the onshore approach to development certainty outlined in Section 1.8.1, a tiered approach has been utilised for the Proposed Development (Offshore) in order to build in a level of data confidence with respect to the likely cumulative envelope that may result in cumulative effects.

1.8.2.2 The tiers of data confidence have been included in Table 1–6.

Table 1–6: Tiers of Development (Offshore)

Tier	Description
Tier 1	▪ Under construction, or will become operational following baseline characterisation; ▪ Permitted application(s), but not yet implemented; ▪ Submitted application(s), but not yet determined and (Note, for these plans, projects or activities detailed information is available in the public domain).
Tier 2	▪ Projects where a scoping report has been submitted and there is sufficient detail within the scoping report to support CIA; ▪ Designated sites where there are specific spatial restrictions established for commercial fisheries activities; and (Note, for these plans, projects or activities some detailed or high level information is available in the public domain).
Tier 3	▪ Projects where a scoping report has not been submitted; ▪ Projects identified in the relevant Development Plan (and emerging Development Plans – with appropriate weight being given as they move closer to adoption) recognising that there will be limited or only high level information available on the relevant proposals; and ▪ Projects identified in other plans and programmes (as appropriate) such as other ScotWind developments, which set the framework for future development consents/approvals, where such development is reasonably likely to come forward.
Tier 4	▪ Projects identified in other plans and programmes where such development is proposed but assessment cannot be progressed as there is limited or no information available in the public domain.

1.8.2.3 The tiers used in the offshore approach differed slightly to those used in the onshore approach due to the inclusion of an additional tier. Projects and developments included in tiers 1, 2 and 3 are considered to have sufficient confidence in their future proposals to be included within the cumulative assessment. For tier 3, however, it is not possible to conduct a meaningful assessment of potential CIA for projects or plans where sufficient detail is not available on construction proposals or programme/ timelines. Where insufficient information is available regarding programme

(particularly construction), these projects or plans will not be considered within the CIA. Projects and developments in tier 4 were also scoped out of the assessment as they were considered to be too early in their development and the lack of information meant no meaningful assessment could take place.

1.8.3 Proposed Development (Onshore) Consideration of Phasing within CIA

1.8.3.1 The following section details how the Proposed Development (Onshore) has screened each reasonably foreseeable project or development to understand whether the project or development has the potential to be cumulative with Proposed Development (Onshore) activities.

Construction

1.8.3.2 If the reasonably foreseeable project or development is assumed to be fully built and in use by the time the Proposed Development (Onshore) construction starts from Q3 2027, it is included in the future baseline for the construction of the Proposed Development (Onshore).

1.8.3.3 If it is assumed that the reasonably foreseeable project or development will be constructed at the same time as the Proposed Development (Onshore) it is considered as having the potential to give rise to cumulative effects with the construction of the Proposed Development (Onshore).

Operation

1.8.3.4 If the reasonably foreseeable project or development is assumed to be fully built and in use by the time the Proposed Development (Onshore) is operational (approximately 2030/2033), it is included in the future baseline for the operation of the Proposed Development (Onshore).

1.8.3.5 If there is potential for the reasonably foreseeable project or development to come into operation at the same time as the Proposed Development (Onshore), these are considered as having the potential for cumulative effects with the operation of the Proposed Development (Onshore).

1.8.4 Proposed Development (Offshore) Consideration of Phasing within CIA

1.8.4.1 The following section details how the Proposed Development (Offshore) has screened each reasonably foreseeable project, plan or activity to understand whether the project, plan or activity has the potential to be cumulative with Proposed Development (Offshore) activities.

1.8.4.2 It should be noted that the consideration of phasing for the Proposed Development (Offshore) varies to the approach taken for the Proposed Development (Onshore).

Construction and Operation

1.8.4.3 If the reasonably foreseeable project development is assumed to be under construction or operational by the time the Proposed Development (Offshore) construction starts from Q1 2028, it is still considered as having the potential to give rise to cumulative effects with the Proposed Development (Offshore), as it may be possible for the construction and commissioning of other developments to be delayed and therefore still result in potential cumulative effects.

1.8.5 Variations in the Proposed Development (Offshore) CIA methodology

1.8.5.1 The CIA methodology varies slightly in the Offshore Ornithology, Shipping and Navigation and SLVIA chapters. With regards to Shipping and Navigation, the CIA methodology has been altered so that it is suitable for the relevant receptors.

1.8.5.2 Projects were screened into the Shipping and Navigation CIA longlist according to their level of interaction with baseline traffic relevant to the Proposed Development (Offshore) in addition to their level of concern raised during consultation. This method was agreed during Scoping. The tiers used for the CIA in the Shipping and Navigation chapters differ from the tiering system described above, in that a bespoke tiering system is applied for the purposes of the assessment of worst-case vessel routeing. The full CIA methodology for Shipping and Navigation is presented in Volume 7B, Appendix 9-1: Navigational Risk Assessment.

1.8.5.3 During consultation, NatureScot requested that tidal energy developments should be scoped into the impact assessment for Ornithology. This has been considered within Volumes 2, 3 and 4, Chapter 6: Offshore Ornithology. The status of projects screened into the Offshore Ornithology CIA differs from the standard CIA Methodology, in that it has included operational developments, as presented in Volumes 2, 3 and 4, Chapter 6: Offshore Ornithology.

1.8.5.4 The status of projects screened into the SLVIA CIA differs from the standard CIA methodology, in that it has included operational developments as agreed at scoping (presented in Table 1–1) and through further consultation. The full CIA methodology for SLVIA is presented in Volume 7B, Appendix 12-5: Seascape Landscape and Visual Impact Assessment Methodology.

1.9 Stage 2 – Identification of Short List

1.9.1.1 The CIA short list for the Proposed Development (Onshore) and the Proposed Development (Offshore) is presented in Annex 2 of this document.

1.9.1.2 Figure 1-2 identifies those developments taken forward for consideration within the onshore assessment.

1.9.1.3 Figure 1-3, Figure 1-4, and Figure 1-5 identify those short listed developments taken forward for consideration within the offshore assessment. These developments are presented on three different figures due to the spatial differences that certain environmental topics will need to address in the CIA.

1.9.1.4 Figure 1-3 illustrates the developments from the short list that are within a more localised area to the Proposed Development (Offshore) as reflected by more concentrated receptors. This includes the maximum ZoIs used in the following assessments:

- Marine and Coastal Processes (10km);
- Marine Water and Sediment Quality (10km);
- Benthic, Subtidal and Intertidal Ecology (10km);
- Marine Archaeology and Cultural Heritage (10km);
- Other Human Activities (10nm [18.5km]);
- Shipping and Navigation (50nm [92.6km]); and
- Fish and Shellfish Ecology (100km).

1.9.1.5 Figure 1-4 illustrates the developments from the short list that are within a slightly larger regional area, reflected by less concentrated receptors with a more widespread ZoI. This includes the maximum ZoIs used in the following assessment:

- Commercial Fisheries (Regional study area consisting of the ICES rectangles listed in Table 1–4 [excluding the scallop fishery ZoI]).

1.9.1.6 Figure 1-5 illustrates the developments from the short list that are within a wider international scale, reflected by mobile, wide-ranging receptors. This includes the maximum ZoIs used in the following assessments:

- Offshore Ornithology (UK North Sea Waters and Channel BDMPS spatial area);
- Marine mammals (Celtic and Greater North Sea MMU); and
- Commercial Fisheries (scallop fishery ZoI).

1.9.1.7 With regards to marine mammals, the ZoI consists of developments located in relevant areas of marine mammal management units within Scottish waters only, as advised by NatureScot during consultation.

1.9.1.8 Within each topic chapter, the short-list of developments relevant only to the receptors considered within that chapter are presented and assessed.

- Onshore Transmission Infrastructure Red Line Boundary
- 10km Buffer of Red Line Boundary

Planning Application

- 8, APP/2023/1454
- 10, Greens Substation
- 11, Stromar Onshore Scoping Area
- 12, Proposed 400kv Connection Corridor (Beauly to Peterhead)

REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
04	30/08/2024	Approver	CW	AC	GS
03	20/08/2024	For Review	CW	AC	GS
02	05/03/2024	For Review	CW	AC	GS
01	06/03/2024	For Review	CW	BW	GS

CALEDONIA Offshore Wind Farm

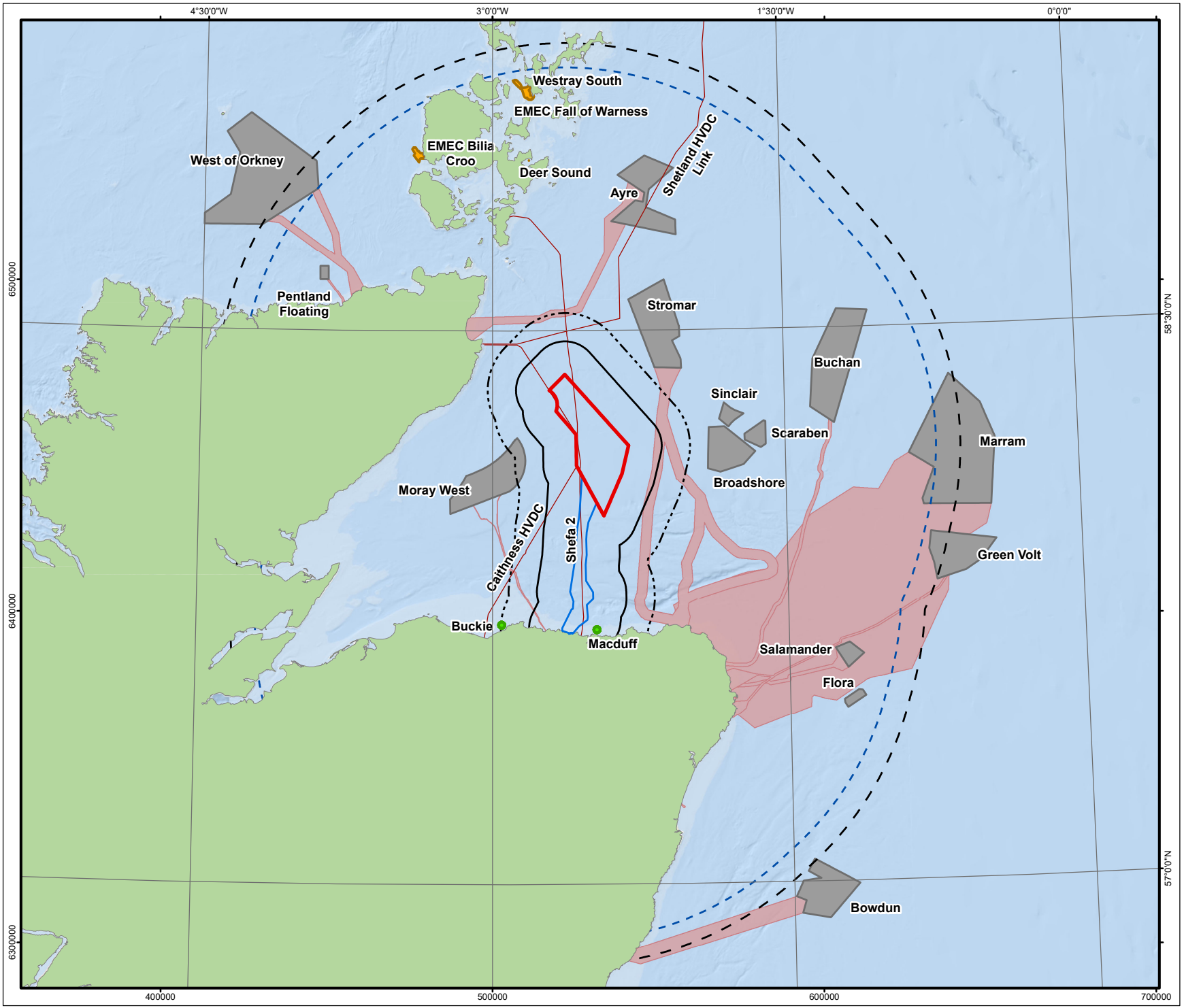
ARUP

CONTRACTOR DRAWING NO: UKCAL1_ARP_WNF_ENV_MAP_00462	CONTRACTOR REV: 04
GEODETIC PARAMETERS: OSGB36 / British National Grid (EPSG:27700)	

DRAWING TITLE

Figure 1-2: Proposed Development (Onshore) Short List of Other Relevant Plans

STATUS: Approved	SCALE: 1:250,000	
DRAWING NUMBER: N/A	SHEET NO: 01 of 01	REV: N/A



- Caledonia OWF
- Offshore Export Cable Corridor
- 10km Zone of Influence
- 10nm Zone of Influence
- 50nm Zone of Influence
- 100km Zone of Influence
- Offshore Wind Developments
- Wave and Tidal Offshore Developments
- Export Cable Corridors
- Telecommunications and Power Cables
- Disposal Sites

0 10 20 30 40 km

REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
01	09/09/2024	Approved	EV	BB	DH

CALEDONIA Offshore Wind Farm

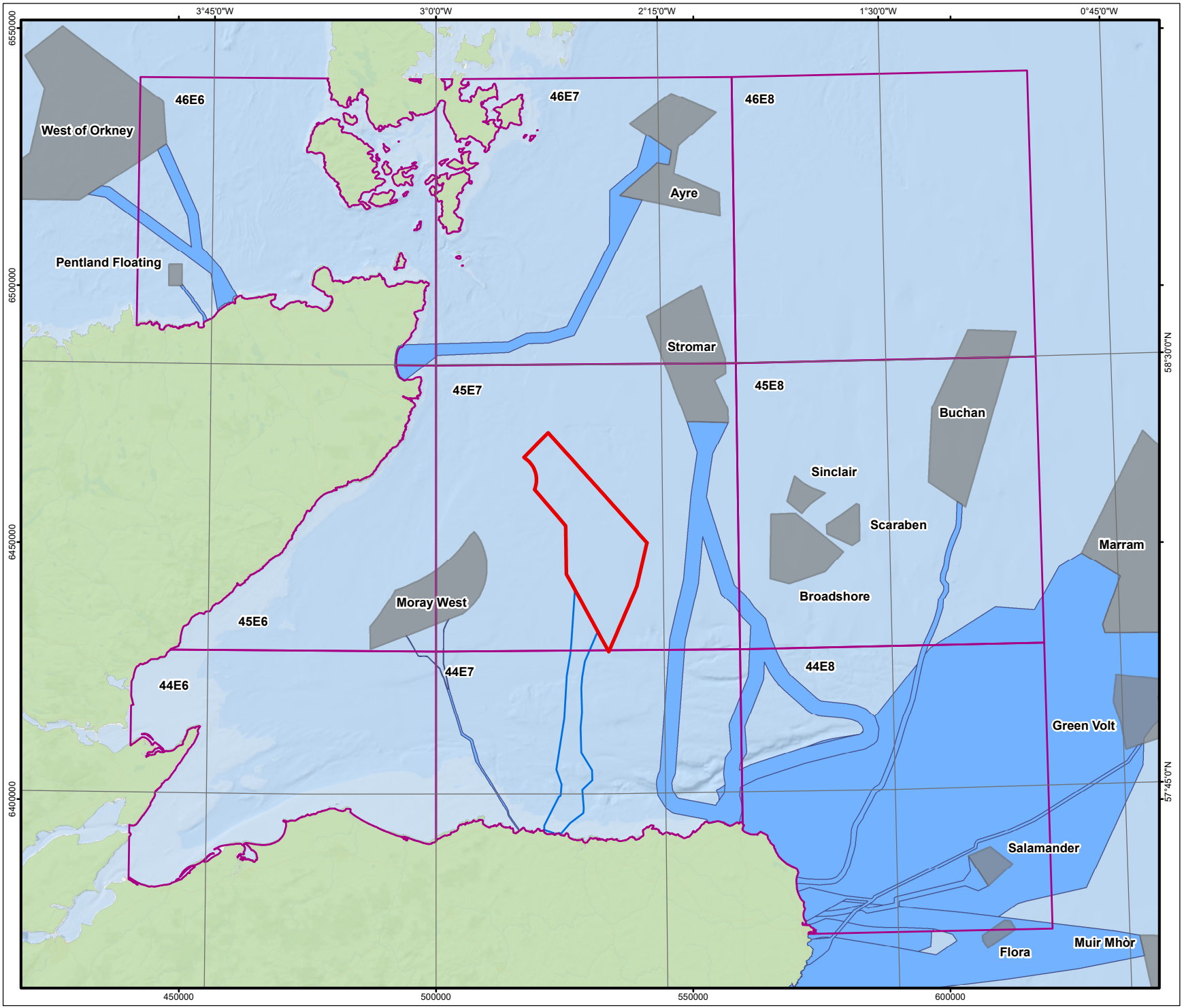
GoBe APEM Group

CONTRACTOR DRAWING NO: UKCAL1_GO_WNF_IOU_MAP_00451	CONTRACTOR REV: 01
GEODETIC PARAMETERS: WGS 84 / UTM zone 30N (EPSG: 32630)	

DRAWING TITLE

Figure 1-3: Short-Listed Developments on a Local Scale Within the Vicinity of the Proposed Development (Offshore)

STATUS: Approved	SCALE: 1:1,550,000	
DRAWING NUMBER: N/A	SHEET NO: 01 of 01	REV: N/A



Caledonia OWF
Offshore Export Cable Corridor
Regional Zone of influence
Offshore Wind Developments
Export Cable Corridors

0 10 20 30 40 km

REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
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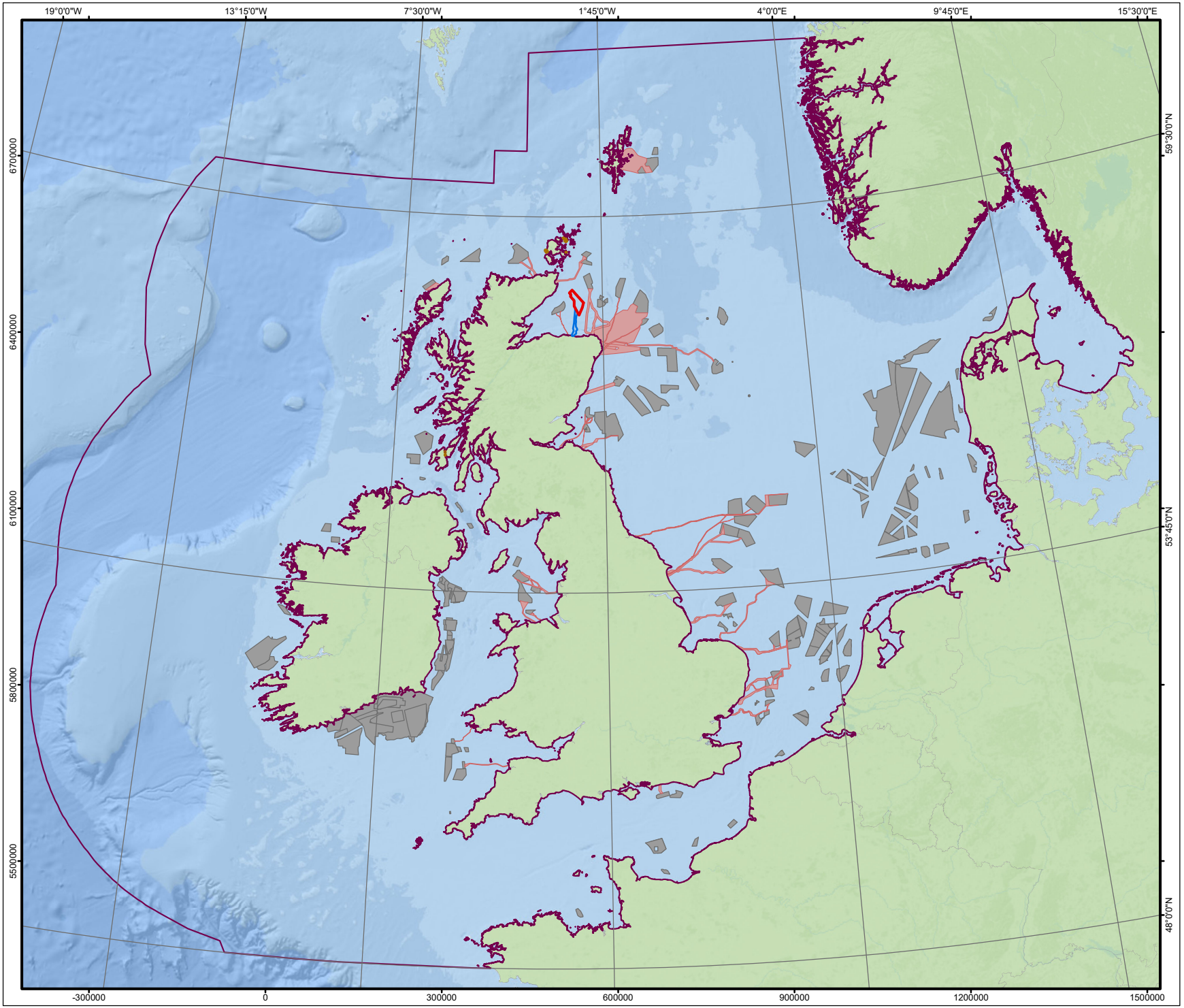
CALEDONIA Offshore Wind Farm
GoBe APEM Group

CONTRACTOR DRAWING NO: UKCAL1_GO_WNF_IOU_MAP_00452
CONTRACTOR REV: 01
GEODETIC PARAMETERS: WGS 84 / UTM zone 30N (EPSG: 32630)
DRAWING TITLE:

Figure 1-4: Short-Listed Developments on a Regional Scale Within the Vicinity of the Proposed Development (Offshore)

STATUS: Approved
SCALE: 1:1,000,000
DRAWING NUMBER: N/A
SHEET NO: 01 of 01
REV: N/A



- Caledonia OWF
- Offshore Export Cable Corridor
- International Zone of Influence
- Offshore Wind Developments
- Wave and Tidal Offshore Developments
- Export Cable Corridors

0 50 100 150 200 250 km

REV	DATE	DOC STATUS	ORIGIN	REVIEW	APP
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CALEDONIA Offshore Wind Farm

GoBe APEM Group

CONTRACTOR DRAWING NO: UKCAL1_GO_WNF_IOU_MAP_00453	CONTRACTOR REV: 01
GEODETIC PARAMETERS: WGS 84 / UTM zone 30N (EPSG: 32630)	

DRAWING TITLE

Figure 1-5: Short-Listed Developments on an International Scale Within the Vicinity of the Proposed Development (Offshore)

STATUS: Approved	SCALE: 1:8,750,000	
DRAWING NUMBER: N/A	SHEET NO: 01 of 01	REV: N/A

1.10 Stage 3 – Data gathering

1.10.1.1 Stage 3 of the CIA included gathering information on the projects, plans and activities screened in so that a meaningful assessment can be undertaken. Such information included public sources such as EIARs and associated planning application documents, project websites and, where such information was not readily accessible, industry consultation with the developers and operators of the schemes, as well as regulators and local authorities in order to gather the most accurate and up to date project information. Information gathered on the projects, plans and activities screened in have been collated and input into Stage 4 of the CIA, which has been carried out on a topic-by topic basis within the CIA section of the relevant EIAR chapter.

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