



Chapter 6: Cumulative Effects



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6 Cumulative Effects

6.1 Introduction

Cumulative effects are described as the combined effect of the development and of other projects, taken together (SNH, 2013). In Scotland's National Marine Plan (Scottish Government, 2015) they note that a:

“Cumulative impact on a resource and ecosystem service may occur because of a series of developments or activities of the same type or from the combined effects of a mix of different types of activities”.

This chapter identifies other planned developments that require consideration within this Environmental Impact Assessment Report (EIA). Developments already built are considered as part of the existing baseline conditions and, as such, are not discussed. As discussed in Chapter 1, the High Voltage Direct Current (HVDC) cable infrastructure is not the only part of the NorthConnect project. The HVDC cables cross the whole North Sea to Norway. From a Scottish and UK perspective, the whole project also includes the Interconnector Converter Station at the Fourfields site, and the high voltage alternating current (HVAC) onshore cable route from the converter station to the substation, which have already been granted planning permission. Some aspects of these previously consented elements of the NorthConnect project will support the onshore HVDC cable installation, specifically access tracks and laydown areas to the northwest of the A90.

As part of the Converter Station and HVAC cable infrastructure EIA process, the cumulative effects were identified and considered, however, the details of the HVDC cable infrastructure were not fully developed at that point (NorthConnect, 2015). These will be revisited in this EIA where necessary, to take account of the more specific information now available with regard to the HVDC infrastructure and installation methods.

The assessment of the various 'inter-project' cumulative effects or 'interaction' effects for each specific environmental topic has been undertaken within each of the individual EIA chapters.

6.2 Methodology

6.2.1 Identifying Onshore Projects

In early 2016 during the scoping process, Aberdeenshire Council's eplanning website was reviewed to identify projects in the planning process at that stage. There were 48 planning applications listed for Boddam & District Community Council. The eplanning website was again reviewed in September 2017 to identify if there were any additional projects that should be added to the cumulative assessment process during the EIA production. Applications with the potential for in-combination or cumulative effects were identified.

Prior to submission, a review of applications up to July 2018 was carried out to check if there were any new projects that could have a cumulative impact.

6.2.2 Identifying Marine Projects

In order to identify marine projects with the potential for cumulative effects, Marine Scotland's Marine Licensing website was reviewed during the scoping process and considered four project types: Offshore wind; Wave and Tidal; Construction and National Renewables Infrastructure Projects (NRIP); and Cables.

Those projects which were on the north or east coasts of Scotland were considered for further investigation. Expert advice was sought on a number of topics including: Fish and Shellfish; Benthic Ecology; Commercial Fisheries; EMF; and Navigation and Shipping, which aided understanding of whether or not any cumulative effects would be likely to occur.

The Marine Licensing website was again accessed in September 2017 to identify any additional projects which may have needed assessment. Multiple projects in pre-application, application and post-determination stages were identified. Discussions were then held with Marine Scotland to agree the list of projects for cumulative consideration.

Prior to submission, the Marine Scotland websites were revisited to identify any new projects that could have a cumulative impact.

6.3 Identified Projects

6.3.1 Onshore Projects

The planning applications lodged within the last three years (from September 2014 to September 2017) on the ePlanning website (Aberdeenshire Council, 2017) for Boddam & District Community Council are summarised in Table 6.1. A total of 53 planning applications and enquiries were recorded.

Table 6.1 Summary of Planning Applications for Boddam & District Community Council.

Application Type or Status	Number
Application to address non-compliance of previously consented planning permission.	1
Enquiries superseded by full applications.	3
Residential <3 house development, garage, shed or alteration/modification to house.	19
Residential 3 house development or larger.	2
Small to medium non-residential applications including: change of use, demolition, signage, carparks and warehouses.	18
Medium to large non-residential.	10

The two large (3 house development or larger) residential projects and the 10 medium to large non-residential projects are considered within Table 6.2, to identify whether they should be considered within the EIAR with regard to cumulative effects. One of the two large residential projects comprised 5 plots put in separately for planning application but, as they are within the same development, they are considered as a whole.

One project was identified for consideration with regard to cumulative effects and agreed through the scoping process was the 1.4GW Interconnector Converter Station and HVAC cable connection to Peterhead Power Station. This is part of the overall NorthConnect project and, as such, was already going to be considered.

The review of developments proposed between October 2017 and July 2018 identified no major residential developments and three medium to large non-residential developments:

- APP/2018/1392: Installation and Operation of 31 High-Speed Diesel Generators up to 18MW at Peterhead Power Station;
- APP/2018/0042: Erection of Petrol Filling Station, Drive Thru Café at the Buchan Gateway, Invernettie; and

- APP/2018/0042: Erection of 2 Class 6 Sheds and Formation of Hardstanding at Upperton.

The closest of the three medium to large developments is the installation and operation of diesel generators by Scottish and Southern Enterprise at the power station, which is approximately 1.5km from Fourfields and further from the rest of the cable routes. None of the developments are likely to have cumulative effects with the NorthConnect HVDC Cables and infrastructure.

Table 6.2 Consideration of onshore projects for inclusion in the Cumulative Assessment.

Reference / Status	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
APP/2017/1801 APP/2016/3193 APP/2016/3194 APP/2016/3195 APP/2016/3196	Approved	Erection of 5 Dwelling houses at Lendrum Terrace, Boddam, AB42 3BB.	600m	Out	<ul style="list-style-type: none"> • Planning consent was granted in November 2016 for plots 2-5 and July 2017 for plot 1. • Would not be using joint roads for access. • No cumulative effects would arise once the houses are built.
APP/2015/0081	Approved	Erection of 3 Dwelling houses at Buchan Braes Boddam, AB42 3AR.	1.6km	Out	<ul style="list-style-type: none"> • The development is more than 1km away and was approved in January 2015, hence it will likely be constructed before HVDC installation is started. As such, it is unlikely there will be any cumulative construction effects. • No cumulative effects would arise once the houses are built.
APP/2016/3059	Approved	Erection of Poultry Building at Springhill, Boddam, AB42 3AF.	1.8km	Out	<ul style="list-style-type: none"> • The building will be erected approximately 2km from the consenting corridor. As such, there is unlikely to be any cumulative effects • No cumulative effects would arise once the poultry building is built.
APP/2016/2867	Approved	Erection of Restaurant and Hotel Lodge, and associated infrastructure.	3.2km	Out	<ul style="list-style-type: none"> • The development is over 3km from the closest part of the HVDC consenting corridor; hence it is unlikely that there will be cumulative construction effects, even if they were to be constructed concurrently. • If this development is in place prior to the NorthConnect construction phase there is a potential for the construction staff to utilise the proposed facilities which would be a benefit to both projects.
APP/2015/0739	Approved	Erection of Retail Shops, Restaurants, Hotel, Petrol Filling Station , Associated Access, and Landscaping.	3.2km	Out	<ul style="list-style-type: none"> • The development is over 3km from the closest part of the consenting corridor; hence it is unlikely that there will be cumulative construction effects even if they were to be constructed at the same time. • If this development is in place prior to the NorthConnect construction phase there is a potential for the construction staff to utilise the proposed facilities which would be a benefit to both projects.
APP/2014/3263	Approved	Erection of Outdoor Car Sales Area & Sales Office, Invernettie Roundabout	3.2km	Out	<ul style="list-style-type: none"> • The development is over 3km from the closest part of the consenting corridor; hence it is unlikely that there will be cumulative construction effects even if they were to be constructed at the same time.

Reference / Status	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
APP/2016/2389 APP/2015/1978 ENQ/2014/2928	Approved	Extension to Quarry, Stirlinghill Quarry Boddam Peterhead,	300m	Out	<ul style="list-style-type: none"> • Development immediately to the east of Fourfields. • Projects will utilise the same access road. • Cumulative effects are primarily associated with the Converter Station, access to cable route North of A90, and laydown, this has already been considered within the Converter Station and HVAC cable route EIA (NorthConnect, 2015).
APP/2015/1121 ENQ/2014/2818	Approved	1.4GW Interconnector Converter Station and HVAC Cable Connection to Peterhead Power Station	Adjacent To	In	<ul style="list-style-type: none"> • This is part of the overall NorthConnect Project, the cumulative effects will be considered.
APP/2015/0903 ENQ/2014/2784	Approved	Construction and Operation of a Carbon Capture, Compression and Conditioning Plant including infrastructure, Peterhead Power Station, Boddam	2.5km	Out	<ul style="list-style-type: none"> • Construction period was expected to be 2017 to 2020, and hence likely that large construction works will coincide with the NorthConnect installation works. However, the UK government have withdrawn funding for the project, hence its future is uncertain. • The onshore components of the project are unlikely to have any cumulative effects with the HVDC cable installation.
APP/2014/1437	Approved	Formation of new 400kV electricity substation and associated infrastructure. Newton of Sandford, Boddam	1.7km	Out	<ul style="list-style-type: none"> • NorthConnect are likely to connect into this substation, as such the projects are inter-related. • Cumulative effects associated with the Converter Station and HVAC cable construction and operation have already been considered (NorthConnect, 2015). • It is unlikely that the HVDC cable installation will have any additional in combination effects.

6.3.2 Marine Projects

Current marine renewable energy, construction, cable and National Renewable Infrastructure Plan projects are listed on Marine Scotland’s Marine Licensing website (Scottish Government, 2017a, 2017b). Each project type has been considered in turn in Table 6.4 and projects which could have in-combination or cumulative effects are identified.

Table 6.3 Summary of offshore project proposals by type.

Project Type	Number
Offshore wind pre-applications	6
Offshore wind post-determination	14
Wave projects: pre-application	3
Wave projects: post-determination	2
Tidal projects: pre-application	4
Tidal projects: in application phase	2
Tidal projects: post-determination	6
Construction, cable and NRIP projects: pre-applications	10
Construction, cable and NRIP projects: in application phase	4
Construction, cable and NRIP projects: post-determination	14

Projects identified which were completed by the final search date were not considered for scoping in or out. Four offshore windfarm projects in pre-application were for alternative designs for a project already in post-determination. In this instance, the amended design in pre-application is what was considered as part of the cumulative assessment scoping.

In addition to the identified projects, the NorthConnect HVDC cabling from the UK EEZ to the Norwegian fjord is considered during the cumulative assessments.

The following projects were narrowed down for further consideration in the cumulative assessment:

- Moray East/West Offshore Windfarm Development;
- Inch Cape Offshore Windfarm;
- Neart na Gaoithe Offshore Windfarm;
- Seagreen Phase 1 Windfarm;
- Beatrice Offshore windfarm;
- European Offshore Wind Development Centre EOWDC, Aberdeen Bay;
- Hywind Scotland Pilot Park Offshore Windfarm;
- Kincardine Offshore Windfarm;
- Aberdeen Harbour Dredge and Harbour Extension Project;
- Peterhead Port Authority Harbour Masterplan;
- East Coast HVDC Link Interconnector; and
- North Sea Network Link Interconnector Cable.

These projects were narrowed using the following criteria:

- Whether the timing of construction is likely to overlap with the NorthConnect project;
- Whether the project was within 150km of the consenting corridor; and
- Whether any operational effects of the project were likely to have a cumulative effect with the installation phase of the NorthConnect HVDC cable infrastructure:

- Particularly related to shipping and navigation, and commercial fisheries.

The July 2018 review of the Marine Scotland website identified no new offshore wind projects, although 2 had moved from pre- application to the application and determination stage. Similarly, there were no new tidal projects, but one had been determined and hence moved into the post determination phase.

There has been one new wave project, submitted and determined during 2018, which is for a small scale 26.2KW device to be deployed in Shetland by Scottish Sea Farms. No cumulative effects would be expected with the HVDC Cables due to distance and the small scale of the works.

One new hybrid energy project has entered the pre-application stage. The proposed wind and wave development is immediately west of the Dounreay Tri Floating Wind Demonstration. The current plan is to install Phase 1 during 2019-2020, with a second Phase in 2022-23. Hence, there is a potential to have overlapping construction/installation activities. However, due to the location and distance from the HVDC Cable installation, no cumulative effects are predicted.

There are currently 6 projects in construction and in the application and determination stage and 15 in the pre-application stage, this is a significant increase on September 2017. However, they all relate to projects on the west coast and/or with regard to harbours. Harbour projects have very localised effects and, as there are no new developments in the immediate vicinity of the cable route, no cumulative effects are predicted from these.

From a cables perspective there are two projects in pre-application and one in the application determination phases which have not previously been considered.:

- West Orkney to Caithness AC Link;
- SSE- Western Isles Connector; and
- Shefa – East of Ayre of Cara, Orkney.

The West Orkney to Caithness AC link project is due to start construction in 2020, however, it is more than 150km away from the NorthConnect project and, as such, cumulative effects are unlikely.

Due to location, the Western Isles cable is unlikely to have any cumulative effects with the NorthConnect project, even if construction periods overlapped.

Shefa is a fibre optic cable more than 150km from the NorthConnect cable route, hence, no cumulative effects are expected.

Table 6.4 Consideration of offshore projects for inclusion in the Cumulative Assessment.

Project Type	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
OFFSHORE WIND	pre-application	Forthwind Offshore Windfarm (Demonstration Array) Methil: 2 6MW turbines	175km	Out	Linked to the post-determined 2B Energy Methil Wind turbine demonstration, and the post-determined Fife energy park offshore demonstration wind turbines. Due to distance from the closest part of the HVDC cable corridor, the inshore nature of this development, and no overlap in construction periods between this and NorthConnect means it is excluded from further assessment.
OFFSHORE WIND	Post-determination	Fife energy park offshore demonstration wind turbines: 1 7MW turbine	175km	Out	Linked to the Forthwind Methil Windfarm and the 2B energy Methil wind turbine demonstration. Excluded from cumulative assessment as construction period will not overlap with NorthConnect project.
OFFSHORE WIND	Post-determination	2B Energy Methil Wind turbine demonstration project: 2 6MW turbines	175km	Out	Linked to the Forthwind Methil Windfarm and Fife energy park offshore demonstration, see above. Excluded from cumulative assessment as construction period will not overlap with NorthConnect project.
OFFSHORE WIND	Pre-application	Moray East/West Offshore Windfarm Development 100 9.5MW turbines/90 8-15MW turbines	100km	In	Moray Offshore Windfarm (East) Limited had consent granted for a previous design in 2014 and in September 2017 was been awarded a Contract for Difference. The Moray West windfarm is still under consultation. It is likely the construction period may overlap with the NorthConnect project and therefore will be considered as part of cumulative effects. However, it is highly unlikely that both these developments will be constructed at the same time and therefore we consider the Moray East/West windfarm developments as one project.
OFFSHORE WIND	Alternative design is pre-application	Inch cape offshore windfarm: 72 turbines	110km	In	Construction would begin in 2020 and would therefore overlap with NorthConnect, as such, it should be considered as part of the cumulative assessment.
OFFSHORE WIND	Alternative design is pre-application	Neart na Gaoithe offshore Windfarm: 56 8MW turbines	130km	In	Funding has been secured and the first phase is set to be in 2018 and is planned as a four year construction period. Therefore, overlap in construction period is likely with NorthConnect and as such it will be considered for cumulative effects.

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Project Type	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
OFFSHORE WIND	Current Design in Pre-Application	Seagreen Phase 1 Windfarm	110km	In	Seagreen Alpha and Bravo windfarm projects were in the post-determined stage. However, an amended design has been proposed as Seagreen Phase 1 windfarm. Consent has not yet been given for this new proposal, and funding has not yet been secured to build the windfarm, so it is difficult to assess whether or not this will go ahead. However, as a conservative approach it is scoped in, assuming that it will go ahead, and the construction periods would overlap with NorthConnect.
OFFSHORE WIND	Post-Determination	Beatrice Offshore Windfarm: 84 turbines	100km	In	Due to be operational by 2019, so the construction phases may overlap slightly. Due to the distance between the projects, direct cumulative effects are unlikely. However, there may be operational effects related to boat movements, and the presence of the turbines, and as such the project is scoped in.
OFFSHORE WIND	Post-Determination	Dounreay Tri Floating Wind Demonstration	210km	Out	This project has now halted, though the consents are still valid. Due to the large distance between it and NorthConnect, it will not be considered further for any cumulative effects.
OFFSHORE WIND	Post-Determination	European Offshore Wind Development Centre (EOWDC), Aberdeen Bay	40km	In	This project is currently in the construction phase, and is due to be completed by 2018-2019. Whilst the construction phases are unlikely to overlap, there may be operational cumulative effect due to its proximity to the consenting corridor. Therefore, it is included in the assessment.
OFFSHORE WIND	Post-Determination	Hywind Scotland Pilot Park Offshore Windfarm	20km	In	This windfarm is currently completed and operational. However, due to the proximity of the project to the NorthConnect consenting corridor, there is the potential for cumulative effects during the operational phase. Therefore, it will be considered as part of the cumulative assessments.
OFFSHORE WIND	Post-Determination	Kincardine Offshore Windfarm, 8 6MW Floating Turbines	50km	In	The construction of the turbines is due to be completed before the start of the NorthConnect project, however the project's EIA found significant effects on Commercial fisheries during both operation and construction phase. This, combined with the relatively close distance to the consenting corridor resulted in it being conservatively included in the cumulative assessment.
TIDAL	Pre-Application	Ness of Duncansby Tidal Array, 30 Tidal Devices	150km	Out	Construction is anticipated to take place during 2021-22. Due to the distance from the consenting corridor, and the fact there should not be an overlap in construction periods, it is excluded from cumulative assessment.

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Project Type	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
TIDAL	Post-Determination	GSK Montrose Tidal Array, 15 Tidal Devices, <1MW	90km	Out	Refused consent by MS-LOT and so not considered further.
CONSTRUCTION	Application and Determination	Cromarty Firth Port Authority Invergordon Phase 4	160km	Out	The construction phase is due to finish by June 2020 and therefore there would only be a short overlap in construction phases with NorthConnect. There are no significant operational effects on any receptors relevant to the NorthConnect project (i.e. marine mammals), and therefore does not need to be considered as a cumulative effect. This is also combined with the fact that the development is over 150km from the consenting corridor.
CONSTRUCTION	Post-Determination	Aberdeen Harbour Dredge and Harbour Extension Project	40km	In	Dredging is due to be finished by 2018, construction is due to end 2020. This should mean that there is only limited overlap between the Aberdeen harbour extension and the NorthConnect project construction phases. In addition, due to the proximity of this project and the potential for increased shipping traffic in the area, it will be considered for potential cumulative effects during its operation.
CONSTRUCTION	Post-Determination	Peterhead Port Authority Harbour Masterplan	3km	In	This is close to the NorthConnect offshore cabling. However, it is due to be completed prior to NorthConnect starting installation, therefore cumulative construction effects are not considered. However, due to the proximity of this project and the potential for increased shipping traffic in the area, it will be considered for potential cumulative effects during its operation.
CONSTRUCTION	Pre-Application	Rosyth International Container Terminal	210km	Out	Funding is still being sought for the development. If it goes ahead, the construction period for the development may overlap with the NorthConnect project. However, due to the large distance between the works and the consenting corridor it will not be considered further.
NRIP	Pre-Application	Port of Dundee: Expansion and Marine Aggregate Extraction	150km	Out	It is expected that the construction works will be completed by the time NorthConnect begins construction. The project is also 150km from the consenting corridor so is not included in the cumulative assessment.

Project Type	Status	Proposal	Approximate distance from Consenting Corridor	In/Out	Reason
NRIP	Pre-Application	Port of Leith: 21st Century Gateway Port.	200km	Out	No funding has been secured for this project and no consent has been given. There is limited information available on the timescales that would be involved in this project. Due to the distance between the projects, even if the construction phases overlap, it would not need to be considered as part of the cumulative assessment, hence is scoped out.
NRIP	Post-Determination	Port of Ardersier Ltd: Offshore Renewables Masterplan.	175km	Out	This project had received full consent from the Scottish government in 2014, however the project has since been suspended, as such this will not be considered as part of the cumulative effects. Further to this, the distance between this site and the NorthConnect project is more than 150km with no predicted effects on relevant receptors.
CABLES	Pre-Application	East Coast HVDC Link Interconnector	<1km	OUT	Indications from SHET is that 2025 is the likely construction period for this project, which would mean there is unlikely to be an overlap with the NorthConnect HVDC project during the construction period. Following advice from MS-LOT, this project can be excluded from cumulative assessment.
CABLES	Post-Determination	Caithness to Moray HVDC Link.	100km	Out	This project is currently in construction and is on schedule to be completed by 2018. As the construction time periods with NorthConnect will not overlap. Further to this, due to the distances involved between the project it is highly unlikely for there to be any combined operational effects between the cables, as cable operational effects are more localised in manner. Hence this is not included in the cumulative assessment.
CABLES	Post-Determination	North Sea Network Link Interconnector cable (NE England – Norway)	130km	In	The construction timeline has the subsea cable installation starting in 2018 and finishing in 2022, as such there could be an overlap between when the NorthConnect cable installation would begin. Therefore, it will be considered in the cumulative assessment.
CABLES	Consented	Havfrue Fibre Optic Cable	~150km	Out	This project will run a cable from Kristiansand, Norway, to the United States of America. The cable will cross the NorthConnect consenting corridor in Norwegian waters, and due to be constructed in 2019. Due to the fact there a very limited overlap in construction periods, and the cable crossing will be in Norwegian waters, this project does not require further consideration within any cumulative assessment.

6.4 Assessment of Cumulative Effects

The assessment of cumulative effects resulting from the projects identified in Section 6.3 is detailed in the relevant topic specific chapters. The assessments are in line with the methodology laid out in Chapter 3 and topic specific methodology provided in each chapter. Many of the potential cumulative effects will only occur if the construction periods of the various other projects overlap with the installation of the NorthConnect HVDC Cable Infrastructure. Where it is uncertain whether a construction overlap will occur, the assessments use a precautionary approach and assume that they will overlap.

6.5 References

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