NORTHCONNECT
CONNECTING RENEWABLES

NorthConnect Interconnector Converter Station and High Voltage Alternating Current Cable Route

Environmental Statement
Volume 1
Non-Technical Summary
April 2015

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Contents

1 Introduction

NorthConnect is a commercial Joint Venture (JV) established to develop, build, own and operate a 1400 megawatt (MW) High Voltage Direct Current (HVDC) 'interconnector'. The interconnector will provide an electricity transmission link between Scotland and Norway. The interconnector will allow electricity to be transmitted in either direction across the North Sea.

This document is the Environmental Statement (ES) for the Interconnector Converter Station and High Voltage Alternating Current (HVAC) underground cable route, connection of the NorthConnect electricity transmission project to the national grid substation in the UK.

The purpose of this ES is to support the planning application by describing the proposed project, documenting the assessment of its likely significant effects on the environment, and detailing the mitigation measures proposed to minimise adverse significant effects.

The Environmental Statement is split into four volumes as follows:

1. Non-Technical Summary;
2. Main Text;
3. Appendices; and
4. Drawings.

This Non-Technical Summaries section numbers are align to Volume 2: Main Text's chapter numbers, to allow the reader to easily find the more detailed topic information in Volume 2. Reference is made to a number of drawings within this Non-Technical Summary, these can be found in Volume 4: Drawings, the Drawings are provided in numerical order.

Hard copies of the ES can be viewed in the Peterhead Council Office, Arbuthnot House Broad Street, Peterhead, Aberdeenshire, AB42 1DA; and Library, St Peter Street, Peterhead, AB42 1QD; and in the Boddam Library, 26 Queens Road, Boddam, Peterhead, AB42 3AX. Electronic copies can be downloaded from www.NorthConnect.no or a DVD can be requested from fiona.henderson@northconnect.no. Hard copies can be provided however a charge of £75 to cover printing costs will be levied.

1.1 NorthConnect

NorthConnect is a Joint Venture (JV) company established in order to develop, build, own and operate an 'interconnector' between Norway and Scotland. The interconnector will allow trading of renewable power in either direction between the Norwegian and UK grids. The interconnector will allow Norway, through its hydro capacity, to act as a form of reserve generation capacity for Scottish wind power, while also allowing export of excess Scottish energy to Norway, which could then be exported onwards to neighbouring European countries.

The partners of the JV comprise four owner companies: Vattenfall, Agder Energi, E-CO and Lyse, as illustrated in Figure 1.1.

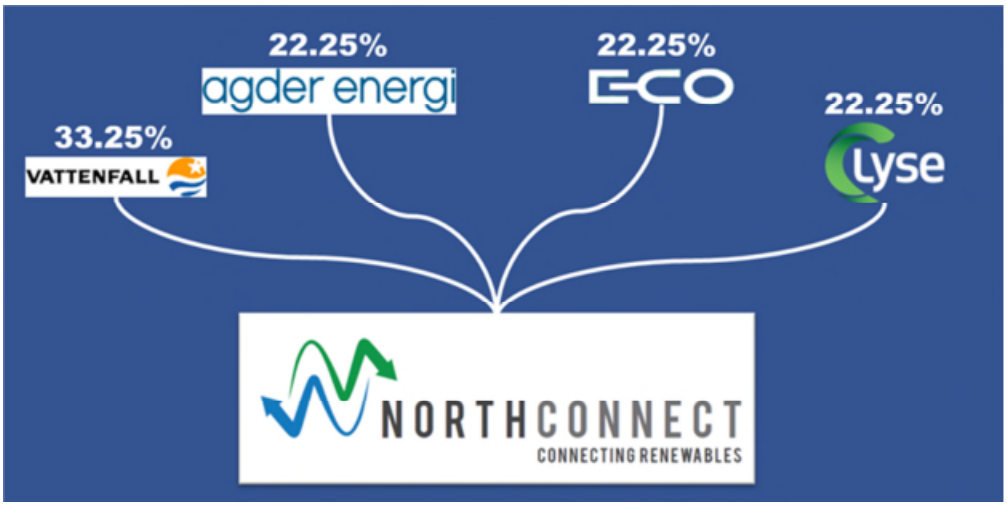

Figure 1.1: NorthConnect Joint Venture Partners

The aim of the NorthConnect project is to install the HVDC cable connection between Norway and Scotland by 2022.

In the UK, electricity is normally generated, transmitted, distributed and consumed as AC. However, DC technology allows electricity to be transmitted from point to point in much larger volumes, over greater distances with fewer transmission losses in buried cables compared to an equivalent AC system. DC systems are therefore often used for high capacity interconnector projects such as NorthConnect.

The interconnector will have a capacity of 1400MW, it will be 650km in length and is intended to facilitate the trading of energy with Norway and continental Europe. The interconnector will be routed from Simadalen in Norway, across the North Sea and will make Scottish landfall at Longhaven, Peterhead.

The key components of the project are:

- Onshore HVAC buried cabling from substations to converter stations;
- Onshore interconnector converter stations located near Peterhead, Aberdeenshire and Simadalen, Norway along with associated infrastructure;
- Onshore HVDC buried cabling from landfall to converter stations; and
- Subsea HVDC interconnector between the UK and Norway.

These components are shown Figure 1.2.

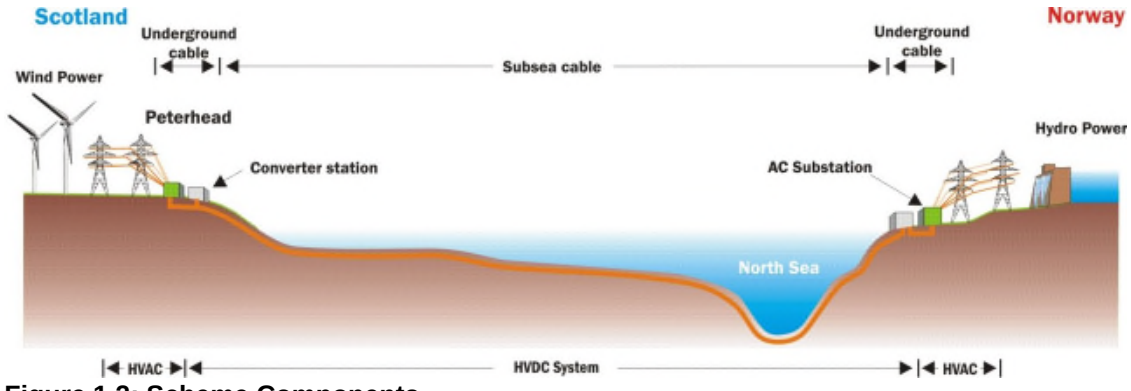

Figure 1.2: Scheme Components

By utilising differences in the Norwegian and UK electricity markets' prices and importing / exporting energy to follow these differences, sufficient revenue can be raised for the construction and operation of the interconnector.

This ES covers the following parts of the project:

- A High Voltage Direct Current (HVDC) Interconnector Converter Station including services, auxiliary buildings and parking, to be situated at Fourfields south of Peterhead, Aberdeenshire;
- Onshore buried AC cables from the Converter Station to the boundary of Scottish Hydro Electric Transmission Ltd's (SHETL) land where the substation connection will be made;
- The access road to the converter station;
- Some temporary construction requirements; and
- Associated landscaping.

In order for the project to be constructed and operated, there are various consenting and licencing requirements that need to be in place. In the case of this particular project the interconnector converter station, HVAC cabling and auxiliary buildings and services will require consent from Aberdeenshire Council for Planning Permission. Due to the scale of the project the planning application needs to be supported by an ES.

The HVDC cable will require Planning Permission from Aberdeenshire Council and a Marine Licence from Marine Scotland. These cannot be applied for until subsea surveys have been completed. A programme constraint for the project connected with the Norwegian Energy Act is preventing the project from undertaking subsea surveys at the present time. Hence, the HVDC Cable consenting process for the project will not commence until later this year. A separate ES will be produced for this and as such the HVDC cable is not considered here. This phased approach has been discussed and agreed with Aberdeenshire Council, Marine Scotland and the Scottish Government.

1.2 Project Need

In May 2014, as part of its work on European energy security, the European Commission proposed an interconnection target of 15% for 2030.

The European Union (EU) has set a target for 20% of Europe's energy requirements to be met by renewable sources by 2020. The Scottish Government aims to exceed this target and is looking to achieve 100% of the demand within Scotland (gross consumption) for electricity being met from renewable sources by 2020. Scotland continues to be a net exporter of Electricity, exporting a record 28% of generation in 2013 (Scottish Government, 2014).

As a result of these targets, the electricity generation portfolio will move from the traditionally predictable energy generation provided by coal / gas fired power stations and hydro, towards an increasing proportion from renewable sources (primarily wind in the UK). As a consequence, the predictability in generation capacity will reduce. Investment in greater renewable capacity will therefore lead to a rise in demand for

reserve generation capacity to supply the grid, during periods when the wind farms cannot meet demand.

Moving to an increased dependency on renewable electricity sources presents Scotland with a number of challenges. Wind farm productivity is dependent on when the wind blows and the wind speed, while demand for electricity varies with time of day and the time of year. In order to secure supply, especially during peak demand, the electricity transmission grid needs to be able to access power sources quickly. Thermal power generation sources (fossil fuels), mostly gas and diesel, have traditionally been used because of their ability to respond to these changes in demand quickly. The renewable option to meet future security of supply requirements may be, to increase access to hydro generation, because it has the same fast response time to meet peaks in electricity demand.

Scotland and Norway are two fundamentally different power systems. Power generation in Scotland comprises a mix of thermal, nuclear and hydro generation with an increasing proportion of wind power. Norway is dominated by hydro generation which accounts for more than 90% of electricity production.

The NorthConnect project proposes to provide a link between the electricity grids of Scotland and Norway. By linking wind and hydro generation resources between the two countries, NorthConnect will strengthen the security of power supply for consumers in both Scotland and Norway, and will support the achievement of Scottish, Scandinavian and European renewable energy targets.

There are four key drivers associated with the NorthConnect project:

- **Security of Supply*:*** Linking the Scottish and Norwegian networks will support energy security in both regions, by compensating for fluctuations associated with wind energy and for low Norwegian precipitation and low hydro storage levels;
- **Green Battery*:*** About half of Europe's reservoir capacity lies in Norway which also has good potential for energy storage, to provide on demand renewable electricity and the long term realisation of a low carbon electricity supply for Europe;
- **Reduced Price Fluctuations*:*** The project will stabilise electricity prices in the UK and Norwegian markets by leading to increased power exchange and competition in European energy markets; and
- **Risks not Borne by Consumers*:*** NorthConnect is an international joint venture with strong owners who have the financial capacity to realise the project. If power is not traded via the interconnector, consumers do not pay and the owners will lose on their investment.

2 Project Description

2.1 The Location

A grid connection agreement is already in place with National Grid to connect to the planned new Peterhead substation, located north of the existing substation, on the southside of Peterhead to the west of the power station and A90. Hence the landing point and converter station ideally need to be as close to this substation as is feasible.

A site selection optioneering study (Henderson, 2014) has been completed taking account of a range of technical, social and environmental factors, and considering a number of potential sites. It has identified an area which has been named 'Fourfields' as the preferred site for the Converter Station, and for the preferred HVAC cable routings to follow field boundaries to the sub-station.

2.1.1 Converter Station – Fourfields

The Fourfields site is approximately 2.6km south of the outskirts of Peterhead, 4.5km south of Peterhead town centre; and 1km southwest of the village of Boddam (Drawing 3019). The Fourfields site is located to the south of Lendrum Terrace and Highfield, east of the Den of Boddam, Sandfordhill and Denhead and west of Stirling Hill and the Quarry. The Fourfields site was so named as it is made up of four fields.

The proposal is to position the converter station primarily within the north east field, although it will extend partway into the other three fields. The remainder of the site will be appropriately landscaped, to minimise the landscape and visual impact of the building (Drawing 3022).

2.1.2 HVAC Cable Route

The proposed route for the HVAC cables is along the northern edge of the Fourfields site, past Highfield, into the fields on the west side of the Highfield access track. The cables would then run due north, parallel to the access track, and then along the west side of the unnamed road past Denend, with the cable then passing under the road somewhere between Denend and Hjaltland. It would finally continue to follow northward, on the east side of the unnamed road, before cutting east, to connect into a proposed 400kV extension to the Peterhead Substation (Drawing 3011). Note that the proposed substation extension is planned by another party (SHETL), and is not included within this Environmental Statement, or the NorthConnect project.

2.1.3 Access Road

The access to the site will be via the existing quarry access road to the east of the site, which is owned by Breedon Aggregates. There is a need to resurface the road, including widening the junction with the A90 (Drawing 3009).

2.1.4 Temporary Construction and Laydown Area

Temporary construction and laydown facilities will be required. This will be located within the Fourfields site (Drawing 3012).

2.2 Project Components

2.2.1 Converter Station

The converter station site will cover an area of 3.4 hectares (Ha) and will be surrounded by a security fence. The actual footprint of the development works is much bigger, as the area around the site will be landscaped to help blend the converter station into the surrounding countryside. The total area affect will be 11.2 Ha. The layout is shown in Drawings 3022 and 3030.

The converter station will be surrounded by a 3.0m high palisade fence with an electric pulse system on the internal face which extends a further 1.0m above the palisade. The security fence will be located inside and lower than the landscaping mounds at all sides of the site. No overnight security lighting is required.

The converter station building which will house the two Converter Valve Halls and the Inductor Hall is 190m long, 58m wide, the roof is curved, but at its highest point is 26.6m high. The building is a metal framed building for electrical safety reasons. The curved roof will be planted using a sedum matt. This green roof helps manage rainwater and contributes to biodiversity in addition to it aesthetic qualities. The walls will be clad in a combination of red granite and transparent cladding. The cover of this document and the photomontages included in Volume 4 provide a good depiction of what the building will look like.

In addition to the Converter Station Building, there are control and auxiliary buildings, both of which are connected to the main building and have been incorporated for aesthetic reasons into the main building, by extending the façade in the north east corner.

The Gas Insulated Switch Gear will be in a standalone building also clad in red granite and with a sedum roof. It is 35m long by 15m wide by 16m high. The 4 Super Grid Transformers will be incorporated into a similarly designed building 22.5m long, by 19m wide by 8 m high.

The coolers will be outside the converter station building, but under the sedum roof, and to reduce noise levels they will be surrounded by red granite clad walls on three sides.

The external components include the six Air Handling Units on the west side of the Converter Station Building and the two filter areas to the east. Figures 2.1 and 2.2 provide photos of typical air handling units and filter area's respectively.

Figure 2.1 Air Handling Unit

Figure 2.2: Filter Area

Other items on the converter station site include: access roads, parking, two auxillary transformers, water tanks and pump house for firefighting purposes.

2.2.2 HVAC Cable

Two HVAC cable circuits comprising of six underground cables (3 cables per circuit) will connect the Interconnector Converter Station to the planned new Peterhead substation west of the A90 and north of the existing substation. The HVAC cables will be buried in two separate trenches, three cables in each, with each trench measuring 1.5m deep and 1.5m wide.

During construction, the cable corridor will comprise a haul road between the two cable trenches, a safety area, soil storage area, topsoil storage area, drainage ditch and boundary fencing. The total construction corridor width required will be approximately 45m wide, although this can be narrowed over short lengths where constraints may be encountered. The cable corridor will be reinstated once construction is complete, to allow activities such as farming to continue as before.

2.2.3 Services

The Converter Station will be connected to the local power, water and telephone services. It will not connect into the local sewerage systems, instead there will be onsite sewage treatment. Surface and treated waters will be discharged to the drainage ditch located in the northeast corner of the Fourfields site. This will be carried out under licence from the Scottish Environment Protection Agency.

2.2.4 Access Road

The existing quarry access road from the A90 towards the Fourfields site will be utilised. The connection to the A90 will be widened to allow for the largest components. The road will be resurfaced to make it smoother. The existing culvert at the entrance to Fourfields will be replaced with a stronger and longer culvert, to make the access road into the field strong enough and wide enough to take the planned loads. A safe crossing point will be established for pedestrians, using the Stirling Hill Access Network.

2.2.5 Fourfields

As shown in Drawing 3022, the intent is to landscape a large area of Fourfields. The landscaping will include tree planting on the north and east boundaries. The existing stone walls which need to be moved to make way for the converter station will be rebuilt around the site. New paths will be created which are 1.5m wide and suitable for wheel chair access, with interpretation boards and a shelter also provided. Figure 2.3 shows a shelter of the type proposed.

Figure 2.3: Example of Shelter Design Type

The southern Fourfields ownership will eventually revert to Boddam Estates who will once again use them for agricultural purposes.

2.3 Construction

Construction will last approximately 30 months, and incorporate 4 phases. The majority of works will be carried out during the day to minimise noise impacts to local residents, however from time to time there maybe requirements to work on evenings, weekends and at night. These activities will be strictly controlled to minimise nuisance impacts on local residents.

2.3.1 Phase 1: Preliminary Works

Preliminary works will start in the later months of 2019, these will include:

- Carrying out pre-construction surveys for ecology and archaeology;
- Moving the drystone walls
- Creating some of the paths and closing of the existing path that transects the site;
- Upgrading the quarry access road including junction improvements; and
- Installing services to the site.

2.3.2 Phase 2: Site Preparation and Stage 1 Landscaping

Vegetation will be cleared and temporary facilities will be established for the construction works, including site offices, welfare facilities and car parking. Construction site security fencing will be installed.

Once the site is established the earthworks will get underway. Soil and loose rock will be removed, then to the southwest of the Converter Station platform blasting will be undertaken, to remove material down to the required level for construction. The material removed will be processed and reused within the site construction. In the

first instance this will be to construct the landscaping mounds to the north and east of the site. They will be planted at the earliest opportunity.

2.3.3 Phase 3: Converter Build & HVAC Cable Installation

In this phase of works the main converter station will be built, the electrical instrumentation installed and the cables installed.

2.3.4 Phase 4: Stage 2 Landscaping and Reinstatement

Once the main building is suitably advance the landscape mounds to the south and west of the site will be installed and planted. The construction site compound will be demobilised and the site reinstated for use by Boddam Estates and the Public.

2.4 Commissioning & Operations

Once constructed there will be a period of commissioning and testing prior to full operations. Operations should start by the end of 2022 and continue for a minimum 60 years design life.

2.5 Decommissioning

As the anticipated life of this project is at least 60 years, the final use of the Converter Station site cannot be defined at this stage. However, it is likely that the site will either be reused for other purposes by the transmission owner with renovation / adaptation undertaken to facilitate ongoing use (the site platform and possibly some of the buildings retained) and the site developed for an alternative industrial / commercial use or, alternatively, the site may be decommissioned and restored.

In this final option, the Converter Station will be decommissioned, stripped of machinery and equipment, the building dismantled and foundations removed. The site would then be reinstated back to agricultural or other non-industrial uses.

The HVAC cabling is likely to be cut off and sealed at appropriate points and left in the ground. Should, at the time of decommissioning, removal and recycling of the cable be economically viable, then the construction operation would effectively be reversed. A working corridor would be established, a trench dug above the cable and the cable removed and the trench backfilled and restored to its former use.

3 Methodology

Environmental Impact Assessment (EIA) is the process undertaken to produce an ES. One of the main purposes of the EIA process is to influence and improve design through iteration. Environmental impacts have been considered throughout the project, from the site selection stage and through the initial design stages of the project. Where possible, environmental considerations have been incorporated within the design. The building design and landscaping have been heavily influenced by the landscape, visual and potential noise issues associated with the development.

An environmental specialist has been involved throughout the process and, where necessary, appropriate topic experts have been brought in to inform the design process. The project design therefore has avoided and minimised impacts wherever possible and, as such, there are embedded 'primary mitigation measures' to avoid or reduce negative effects. These have been incorporated within the assessment of effects.

A methodical and robust assessment of environmental impacts has been used across all chapters of the Environmental Statement, with topic specific variations incorporated as required. The methodology takes account of receptor's (the person or environmental component being impacted) value or sensitivity and the magnitude of the impact to determine the effect significance. If the effect is above a threshold then it is deemed to be significant in EIA terms

If an effect is significant in EIA terms then additional mitigation is identified to try to reduce the effect. The impacts are then reassessed to identify the residual effect and whether or not it is still significant in EIA terms.

4 Consultation

Due to the scale of the project NorthConnect were required to carry out Pre-Application Consultation, full details of which are included within the Pre-Application Community Consultation (PACC) Report (NorthConnect, 2015).

The community consultation included: a questionnaire on aesthetic and land use preferences; an Aesthetics Workshop; and a Community Information Day. Input received has helped to shape the building design. The selection of the sedum roof, curves and the inclusion of red granite in the buildings came from the aesthetics workshop. The landscaping was altered after the Community Information Day to take account of feedback received.

In addition to the public consultation processes, NorthConnect submitted a scoping report to Aberdeenshire Council. The scoping report provided initial project information and outlined the proposal with regard to what topics should be included within the ES. Aberdeenshire Council circulated this amongst the statutory consultees: Historic Scotland; Scottish Environment Protection Agency; and Scottish Natural Heritage. Joint feedback was provided to NorthConnect with regard to the scope of what should be incorporated into the ES. This has been taken account of through the ES process.

5 Planning Policy

5.1 Scottish Planning

The development vision for Scotland to 2030 is set out in Scotland's Third National Planning Framework (NPF3) (Scottish Ministers, 2014a). The Scottish Planning Policy (SPP) (Scottish Ministers 2014b) sits alongside the NPF3 and sets out the priorities for operation of the planning system, with regard to nationally important land uses.

NPF3 includes a section entitled - A Low Carbon Place, the themes and drivers including: maintaining security of supply; addressing fuel poverty; and reducing greenhouse gas emissions, align to those of NorthConnect's.

The NPF3 spatial strategy shows where there will be opportunities for investment in the low carbon economy and highlights Peterhead as one of the hubs. It specifically mentions international interconnectors in relation to Peterhead:

'....The area may also be the landfall for an international North Sea interconnector and could be a focus for onshore connections to support offshore renewable energy. These can support wider aspirations for growth, including the Energetica corridor where energy-driven opportunities are being used to focus investment and promote a place-based approach to development.'

A number of key National Developments are identified in NPF3 as needed to help deliver the Scottish Government spatial strategy. 'An Enhanced High Voltage Energy Transmission Network' is needed to facilitate renewable electricity development and its export.

Peterhead has been identified by NPF3 as the right place to develop a subsea interconnector landfall. Furthermore, the design and rationale of the project aligns well to all relevant principals of the SPP. As such, the guidance within the SPP suggests that the NorthConnect project will provide significant socio-economic benefits, to both the local area and Scotland as a whole.

The Electricity Generation Policy Statement (EGPS) (Scottish Government 2013) examines the way in which Scotland generates electricity, and considers the changes which will be necessary to meet Scottish Government renewable energy targets. In particular, it looks at the sources from which electricity is produced, the amount of electricity required to meet Scotland's needs, and the technological and infrastructural advances which Scotland will require over the coming decade and beyond. The EGPS states that Scotland's will be:

'Seeking increased interconnection and transmission upgrades capable of supporting projected growth in renewable capacity'

This confirms the importance of interconnectors:

'Our vision is to connect, transport and export Scotland's full energy potential. Scotland can and must play its part in developing onshore and offshore grid connections to the rest of the UK and to European partners – to put in place the key building blocks to export energy from Scotland to national electricity grids in the UK and Europe.'

5.2 Local Planning

The Aberdeenshire Local Development Plan (LDP) (Aberdeenshire Council, 2012a) and associated supplementary planning guidance (Aberdeenshire Council, 2012b) was adopted in June 2012, setting out an ambitious framework and a clear vision for the future development of the North East over the next 20 years.

The LDP is founded on the principle of supporting and encouraging sustainable development. In addition to policies relating to economic growth, sustainable communities, designated sites and housing, the plan seeks to take on the challenges of sustainable development and climate change. The LDP has introduced policies and proposals to:

- Reduce greenhouse gases from development in the area;
- Reduce the need to, and encourage active, travel;
- Protect and improve natural, built and cultural heritage;
- Avoid risks associated with flooding and other major risks; and
- Encourage the sensitive development of renewable energy resources.

The Fourfields site is within the regeneration priority area on the Buchan proposal map, and it is on the western edge of the area safeguarded for mineral extraction. It is noted, however, that the proposal maps indicate general locations for proposals to expand the Quarry are to the east of the existing quarry, and not west into the Fourfields site. Hence, no conflict with regard to the safeguarding mineral extraction area is predicted.

The Energetica Placemaking Supplementary Planning Guidance (SPG) was published in 2011 by Aberdeen City and Shire Economic Future, a public/private partnership led by Aberdeen City Council, Aberdeenshire Council and Scottish Enterprise (Aberdeen City Council, 2012). The proposed NorthConnect project is located within the Energetica Framework Area. The SPG states:

'Within this framework area, as defined on the attached map, development must make a contribution to the quality of life, environmental performance and economic development targets'.

6 Noise and Vibration

Noise associated with construction works and operations of the site have both been considered. Vibration effects associated with blasting of rock during construction works have also been assessed. There are no activities that would cause vibration impacts during operations.

Noise measurements were taken in the vicinity of local receptors to understand the existing or background noise levels. Predictions of what types and numbers of plant required during construction were made, and these were used to model the noise levels associated with the works at various points, taking account of the terrain.

For operational noise, the typical noise levels associated with the various pieces of equipment that will be present on site were used to model the noise levels. The modelling took account of the proposed landscape screening mounds.

During construction there will be a requirement for large plant and equipment to work on the Fourfields site. The work will mainly be during the daytime, when people are less likely to be disturbed by noise. The assessment has identified that noise levels at the closest residential property, Highfield, are significant. Noise levels at other residential properties such as those on Lendrum Terrace were predicted to be not significant.

The installation of the HVAC cables will require works to be undertaken near the property of Hjaltland including the road crossing, and noise levels at this residence are predicted to be significant while the nearby work is being undertaken. Works in this area should last no more than 8 weeks (although they may not be consecutive weeks) and will be carried out during the day only. Other than Highfield, no other properties are significantly affected by noise associated with the cable installation works.

Local residents will be kept informed of planned activities throughout the project lifetime. Good construction practice will be implemented to mitigate against noise impacts. With mitigation, the residual effects at Highfield and Hjaltland are still predicted to be significant. NorthConnect are dedicated to working with the two properties residents to minimise the actual inconvenience caused by the works.

The initial vibration assessment predicted significant effects on a limited number of properties. The mitigation of restricting the amount of explosives to be used in each blast was identified. The residual effects with the limits put in place are not significant at any receptor.

The Converter Station will operate 24 hours a day. Operational noise levels have been reduced from initial predictions by enclosing a number of noisier pieces of equipment. Noise will be considered through the detail design process and, if need be, additional mitigation will be implemented to ensure that the operational noise levels at all receptors are not significant at any time of day.

During construction and initial operations, noise monitoring will be carried out to ensure the noise levels at receptors are acceptable.

7 Ecology

Ecological surveys were undertaken to understand the local habitats, and to identify whether or not any protected species were present within or close to the development site.

The HVAC cable route passes primarily through improved grassland. The Fourfields site is cultivated/disturbed land – arable. Areas of neutral grassland – semi-improved dominate the surrounding areas. The HVAC cable route installation will lead to a temporary loss of habitat and the Converter Station will give rise to a permanent loss of habitat. Due to the relatively small area and low habitat value afforded by the arable land, the overall effect is not significant.

The landscape plans for the Fourfields site include the creation of:

- 1.8Ha of native mixed woodland planted on the landscaping mounds of the Converter Station with a species mix of 34 native woodland species;
- 7.2Ha of native coastal meadow with a locally relevant mix of approximately 20 native flowering herbs and five grass species;
- 1.2Ha of 'green roof' using sedum matting (Converter Station Building, Control Building and GIS Building); and
- 420m of new native hedgerow along the south and eastern boundaries consisting of hawthorn, blackthorn-*Prunus spinosa* and dog rose-*Rosa canina*.

In the context of the Site, the addition of these habitats will provide a net gain in biodiversity, increasing the floral and structural diversity which in turn will provide habitat for birds, mammals and invertebrates.

There is a potential for bats to be present in disused properties along the cable route and they may forage in parts of the survey area, however, the Fourfields site offers limited resources for bats.

Although signs of badgers were detected, no setts were identified within the survey boundaries. Pre-construction surveys will be carried out to ensure that this is still the case at the point of construction.

The drystone walls on the Fourfields site could potentially be utilised by amphibians and reptiles. Sections of the walls need to be moved to make way for the converter station and the stone will be reused to repair the existing walls and create new walls around the perimeter of Fourfields, hence the habitat will not be lost. The work will be undertaken, outwith the hibernation period (October to March – weather dependent) to prevent harming amphibians or reptiles. Any found will be translocated by an appropriately licenced contractor.

Otters and water voles have been identified as utilising one of the watercourses in the survey area. Pre-construction surveys will identify if any are using the areas closer to the time of construction. The HVAC cable route will be adjusted (micro sited) to avoid damage to holts or burrows. If disturbance is not avoidable then the appropriate licences will be sought from Scottish Natural Heritage and appropriate precautions to minimise effects incorporated. No significate effects on ecology were identified.

8 Ornithology

Bird surveys were carried out during the summer to identify breeding birds utilising the Fourfield site, cable route and the surrounding area. Surveys of the same area were carried out in the winter to identify wintering birds.

The Fourfields site is within 550m from the Buchan Ness to Collieston Coast Special Protection Area (SPA), and the Bullers of Buchan Coast Site of Special Scientific Interest (SSSI) within the SPA. The SPA is designated for its breeding seabird assemblage including: Fulmar; Guillemot; Herring Gull; and Kittiwake. The SSSI is also designated for breeding birds including: seabirds; Guillemot; Kittiwake; and Shag. In addition, it is designated for its Geomorphology. Scottish Natural Heritage confirmed that they didn't expect the proposed Converter Station or HVAC cable route to have any effect on the SSSI or SPA.

Fifty species of breeding birds were noted over three visits, 32 of which are potentially breeding within the survey area. Linnet, Meadow Pipit, Wren and Yellowhammer were present in the highest numbers.

Wintering birds; Skylark; Tree Sparrow; Twite; Yellow Hammer and Corn Bunting, were found to utilise the Fourfields site when it was in stubble, but once it was ploughed the range and number of birds using the site was much reduced.

The HVAC Cable route wintering bird survey found that it was dominated by passerines, including: Skylark; Starling; Tree Sparrow; Linnet; and Yellow Hammer all of which are on the 'red list' of the Birds of Conservation Concern. Numbers of these species varied between visits, which would reflect winter flocks breaking up and birds beginning to return to breeding areas, but also the displacement of birds from areas where stubbles had been ploughed in.

There will be permeant loss of habitat associated with the converter station, but the area affected is relatively small in habitat terms. In addition there will be temporary loss of habitat associated with the installation of the HVAC cable route.

During construction there will be disturbance effects but these will be temporary and will not have any lasting effects. The landscape planting discussed in Section 7 will have beneficial effects on birds.

All wild birds are protected under UK law and may not be taken, injured or killed without a licence at any time (with exceptions). Additionally, nests are also protected from damage or destruction while in use and eggs may not be taken or destroyed without a licence. Without mitigation there is a chance that nests could be destroyed by activities such as topsoil stripping, giving rise to a significant effect. This can be simply mitigated by carrying out preconstruction surveys and regular site walkovers to identify nests and instigate an exclusion zone until the chicks have fledged.

Barn Owls are afforded increased protection by legislation, there is a potential for them to nest in unoccupied buildings on the cable route. Pre-construction surveys will check for owls and if present appropriate mitigation put in place to ensure no significant effects occur.

9 Archaeology and Cultural Heritage

A review of archaeology and cultural heritage assets within 500m of Fourfields and the HVAC cable route has been carried out. In addition, Nationally Significant Heritage Sites within 5km were identified and, if the converter could have been seen from them, they would have been taken forward for assessment. No such sites were identified.

23 archeological sites were identified within the 500m buffer, 19 of the sites are associated with agricultural activity in the form of farmsteads. Two are associated with the nineteenth century 2.5 mile long railway, built to convey convicts from Peterhead prison to the quarries. One is the quarry where the convicts were taken to work.

The most notable Cultural Heritage and Archaeological site within the surrounding landscape is the Den of Boddam Flint mining complex which is a Scheduled Monument and of national importance. It is located in a valley to the west of Fourfields, and is the remains of a chalk flint deposit, the major source of flint in Scotland. The flint, yellow in colour, occurs in the form of gravel, pebbles, nodules and boulders. Over 300 'flint pits' (the largest measuring about 7m across by 2m deep) are plainly visible lying in an irregular line near the top of both edges of a ravine about three-quarters of a mile long. The site has been dated back to the late Neolithic period ~3000BC. North Connect will have no direct impacts on the site but will have minor indirect impacts on the setting.

Within the boundaries of Fourfields there is the site of the former Sandford Hill Farmstead, which was present on maps in 1872 and 1901. The proposed development will not have any direct impacts on the site, as this area will not be disturbed during the construction process.

The assessment identified only indirect impacts on known archaeological assets and these were associated with visual impacts affecting their setting, however, none were deemed significant.

Due to the history of the area, there is a potential for archaeological artefacts to be present on the Fourfields site, which could be destroyed during construction earthworks. This could have a significant effect without mitigation.

Prior to construction an intrusive evaluation of the converter station sites including sample trenches will be carried out. In addition, monitoring of all ground-breaking works will be implemented. If any previously unrecorded archaeological features or artefacts are found, then a formally excavated recovery and recording process will be employed. The residual impact on archaeology and cultural heritage is therefore found to be not significant.

10 Landscape and Visual

Changes to rural landscapes that involve the construction of man-made objects of a large-scale generally have a negative effect on the landscape character. This effect can be mitigated by the contribution to the landscape that a development may make in its own right, usually by virtue of good design, even if it is in contrast to the existing character.

Changes to views and visual amenity can be more subjective, in that people may like or dislike what they see, or may be used to seeing similar developments and therefore more ambivalent about them. Whether the visual effect is perceived as positive or negative depends upon individual preferences, the context in which a person experiences the view and their attitude towards development in general. Although some people may be more neutral or ambivalent in their opinions about the proposed changes in views, this assessment adopts a precautionary approach and assumes that all visual effects are negative.

Landscape and Visual was one of the key drivers in selecting the Fourfields site, as it is screened in many directions by the surrounding topography.

The design of the building and surrounding landscape has been an iterative process taking account of public opinion. A survey sent to local residents identified the preference for a natural looking building that would blend into the landscape. The Aesthetics Workshop identified the preference for curves, red granite and a planted sedum roof. An architect and landscape architect were heavily involved in the design process.

The landscape architect worked with the ecologist to identify a planting plan for the Fourfields site, including new hedges, a meadow and woodland as shown in Drawing 3022.

Zones of theoretical visibility (ZTV) maps were produced (Drawings 3106-8) to identify where the converter station could be viewed from. This allowed the landscape architect to agree with Aberdeenshire Council eight viewpoints to carry out assessments from. Photomontages were produced for each viewpoint. Drawings 3109-3132 show the existing view from each viewpoint, the predicted view with the building and landscape mounds, and the predicted view with 10 years of tree growth.

A full assessment of landscape and visual effects has been completed. During construction the landscape elements and features on the site are significant for a short to medium term. Visual impacts are significant on dwellings within 1km and the Stirling Hill Access network for a short to medium term.

Once operational, the visual impacts on dwellings within 1km and the Stirling Hill Access Network are significant. The growth of woodland planting will provide some additional mitigation over time, however, it is not enough to reduce the residual effect significance.

11 Water Quality

The water courses in the vicinity of the Converter Station and HVAC cable route are all of low or negligible sensitivity, due to their low water flows and ecological value.

The culvert upgrade on the access road and the two ditch crossings will require water to be diverted around the works for the duration, after which the streams will be reinstated. Appropriate precautions will prevent pollution or silt laden water entering the watercourse during the works. Potential pollution incidents associated with the HVAC cable installation have been identified as being significant. Mitigation measures including a Spill Response Plan and spill kits being in place to manage any spillages or silt issues during work on the water-courses, will reduce the residual effects to a not significant level.

In wet weather, water running over the stockpiles of soil will collect silt and become silt laden, hence the drainage of the stored materials will need to be appropriately considered. If silt laden water were to reach one of the water courses on the cable route then it would reduce the water quality. Silt can discolour water courses and can impact the photosynthesis of flora present, increase suspended solid loadings and solids can 'drop out' of suspension covering the stream beds. A Sustainable Urban Drainage System (SUDS) will be installed early in Phase 2, which will treat silt laden water prior to discharge, however, up until that point temporary drainage measures will be required including the collection and settling of silt laden water

Fuels, oils and chemicals will be stored on site during construction amdappropriate storage and refuelling methods will be employed to minimise pollution risks. The Spill Response Plan and spill kits will be in place to manage leaks should they occur.

During the operational phase of the project, surface water will be collected and discharged through the SUDS to the drainage ditch position on the north of the Fourfields site. The SUDS include a flow control devise to limit the discharges to 'Greenfield Run-Off' rates. Hence the project will not increase the flood risks in the area.

Foul discharges will be limited due to the low numbers of staff working on the site, and they will be treated onsite prior to discharge.

During operations there will be fuels, oils and chemicals used and stored on the site. Bunding will be in place to contain liquids in event of a leak. In addition the operational area drainage system will include oil detection and oil/water separation capabilities, to minimise pollution risks.

If the site were reinstated at the point of decommissioning, similar effects associated with silt laden water and potential pollution incidents to those identified for construction could be expected.

Appropriate licences will be sought from the Scottish Environment Protection Agency for all works affecting water-courses and for discharges to the water environment.

12 Air Quality

There are no existing air quality issues within the vicinity of the proposed converter station site or HVAC cable route.

Due to the large amount of earthworks required during construction there is a risk of dust arising during periods of dry weather. The potential effect is significant without mitigation. Fortunately dust effects can be mitigated by implementing basic good housekeeping, minimising material storage, using dampening techniques, and road sweeping. Sufficient mitigation measures have been identified to reduce dust effects to levels which are not significant.

Dust monitoring will be employed to detect whether or not the mitigation measures are effective. If not, then additional mitigation will be employed, to control impacts.

Similar significant dust effects could be expected if the site were to be reinstated at the point of decommissioning and these could be mitigated in similar ways to levels which are not significant.

Carbon Dioxide (CO_2) is the primary greenhouse gas emitted through human activities. Global climate change is the most obvious consequence of the increasing levels of CO_2, and some of the effects associated with this phenomenon are rising sea levels and structural changes to ecosystems amongst others.

The fabrication of cement, steel, and other materials used on site and their transportation will have an associated carbon cost. In addition, the transport of construction worker, and the use of site machinery, will give rise to carbon emissions. The carbon cost for the construction, operation and decommissioning of the project has been calculated in terms of carbon dioxide equivalent (CO_2e). The carbon cost of the project is calculated to be 11,925 Tonnes of Co_2e

However, the NorthConnect project has the potential to contribute towards a reduction in CO_2 emissions, during its operation by allowing more renewable energy to come online to replace CO_2 emitting electricity sources, thereby off-set the construction effects. European Network of Transmission System Operators for Electricity (ENTSO-E) have estimated that NorthConnect will give rise to a saving of between 11.4Million and 120Million Tonnes of CO_2e. The wide range takes account of the variations in the overall energy market in the future. Even assuming the lower end of the range is achieved, the carbon saving is substantially more than the carbon cost of the project. NorthConnect has a significant positive effect with regard to CO_2 savings.

13 Land Quality

Desk based studies and ground investigations have been carried out on the Fourfields site and the cable route in the form of trial pits and boreholes to provide an understanding of the local geology and hydrogeology (groundwater).

The Fourfields site and majority of the HVAC cable route sits within the Skelmuir Hill, Stirling Hill and Dudwick Local Nature Conservation Site (LNCS), which has been designated by Aberdeenshire Council. The main interest of the site is the pre-glacial Buchan Gravels Formation which is deemed unique in nature in a Scottish Context. The land is classed in agricultural terms as up to and including class 3.2: Land Capable of Supporting mixed Agriculture.

The topsoil on the Fourfields site is relatively shallow at 0.35m in depth. Bedrock of Red Peterhead Pluton Granite can be found between 1.25m and 3.1m below the surface. Between the topsoil and the granite bedrock is the Hatton Till Formation, a type of Glacial Till, which is a mainly clay matrix containing varying amounts of sands, gravels and cobbles.

Groundwater was found close to the rock head in the low lying northeast corner of the site. Due to the topography and water / groundwater levels, groundwater from Fourfields cannot have any feasible flow-paths to the neighbouring Braeside Trout Fishery pond, nor any of the private water supplies in the area. The drainage ditch to the north and east of the site, however, is likey to be connected hydraulically with the groundwater on the Fourfields site.

Samples were taken and analysed for a whole range of contaminants. Only one out of the six sample locations studied had trace Polycyclic-Aromatic Hydrocarbons present, but at levels well below those deemed hazardous to human, animal or plant health. This particular sample was taken from the topsoil close to the north east field access gate. The source of this is most likely to have been the agricultural vehicles using the entrance. No other contaminants were detected above normal background levels, and hence the land is deemed un-contaminated.

During construction a large volume of soil, till and rock will be removed, however, the majority of it will be reused on the site. An area of 3.6 Ha will be permanently lost from agricultural production, but considering class 3.2 land makes up 20% of Scottish land with a total area of 1,541,100 Ha, then the loss is not significant in EIA terms.

Excavation in the south east of the site could change the groundwater flow direction across a localised portion of the corner of the Fourfields platform area, as the drainage ditch is higher than the base of the excavation at this location. As a result, water may seep into the excavation. Without mitigation this could be a significant effect. The proposal is to manage the seepage by installing a toe-drain to collect the water and divert it via site drainage, through the attenuation tank and back into the drainage ditch 200m downstream. The resultant effect is not significant.

Appropriate materials storage and spill management plans will be in place throughout construction and operations to minimise the chance of a pollution incident giving rise to land or groundwater contamination.

14 Resources

Due to the scale of the converter station buildings and associated landscaping, the resource requirements during construction have the potential to be significant. This has been taken into account during the design process.

The layout and landscaping of Fourfields has been an iterative process to find the balance between numerous environmental constraints, technical constraints and optimisation factors. From the outset, one of the factors was to balance the volume of material to be removed ('cut') with the volume of material to be used ('fill') as part of the overall earthworks and landscape design. To reach the 63m level for the base of the converter station, there is a need to excavate in the region of 331,000m3 of material, all of which will be re-used on site. This reduces both material and transport impacts of the construction works.

Concrete, steel, tarmac and aggregates will all be utilised in the construction of the buildings and foundations. They are all finite resources and have an associated carbon cost. Hence, where possible, their use will be minimised and this will be taken into account during the detailed design process. Where practicable, recycled material will be used for construction purposes. Steel is commonly recycled and at least a proportion of the steel will be recycled.

The building itself will be steel framed, clad in red granite and translucent cladding. Also as finite resource, their use will be minimised through the detailed design process. Red granite is local and, as such, has a low associated transport distance.

The sedum roof is a sustainable material. It was selected to aid in making the building blend into the existing natural environment but it has the additional benefits of contributing to the local ecology and using or at least attenuating rainwater, thereby reducing the drainage requirements for the site.

The electrical equipment will include a range of materials selected for their electrical and thermal properties. Many of these will be finite resources and the design process will optimise the component requirements.

Fuels oils and chemicals will be utilised during both construction and operations. These will be appropriately stored and used in line with the Water Environment (Oil Storage) (Scotland) Regulations (Scottish Ministers, 2006) and best practice, to prevent pollution incidents arising.

During construction and to a lesser extent operations, there will be waste arisings from the site. Wastes will be segregated to maximise the potential for recycling. A Site Waste Management Plan (SWMP) will be used to ensure the waste hierarchy is implemented to the fullest extent, in order to minimise waste effects.

No significant effects have been identified, however, resource effects will continue to be considered through the detailed design process and procurement strategy. Materials will be minimised at source and, where possible, sustainable materials will be sourced. If finite resources are essential, the potential for recycling at the point of decommissioning will be considered. The waste hierarchy will be employed throughout the project.

15 Traffic and Transport

General construction materials are proposed to be transported to the converter station site using standard HGV's via the A90 which runs to the east of the site. Existing data with regard to traffic volumes has been reviewed along with traffic accident information, to build an understanding of traffic in the area.

NorthConnect have agreed with Breedon Aggregates the use of their quarry access road from the A90 to the east side of Fourfields. The existing culvert on the middle of the eastern boundary of Fourfields will be upgraded to an appropriate road width and strength to provide access onto the main construction site. The main entrance/exit of the quarry is from the A90 southeast of the quarry and Converter Station location. The driving distance is approximately 550m between the entrance at the A90 and the converter station site (Drawing 3019).

The Institute of Environmental Management and Assessment (IEMA) publication Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993), suggest that changes in predicted traffic flows of less than 30%, or less than 10% if a receptor is sensitive, have a negligible impact magnitude. The A90 is not classed as a sensitive receptor. Even if it were, the impacts would still be negligible as, at the peak of construction, there could be a 9.83% increase in HGV's and a total vehicle increase of 3.14%. Hence, traffic impacts associated with construction traffic on the A90 are deemed not significant.

NorthConnect will, however, aim to reduce traffic and transport issues further by minimising resource usage, sourcing materials locally and encouraging construction workers to car share.

Larger sections of electrical equipment will be shipped into Peterhead Harbour and then transported directly to the construction site. This includes four transformers, each requiring a separate abnormal load transport. It can be assumed that the four deliveries required will be spread over a number of weeks and carried out during quiet hours (probably night time at weekends). The transport activities will be planned and agreed with Aberdeenshire Council, Transport Scotland and the Police, and road users appropriately notified in advance.

During HVAC cable laying the construction movements will be within the 45m construction corridor. The HVAC cable route has to cross the unnamed road to connect into the substation. The road will be shut for a maximum of 2 weeks. The excavated road surface will be reinstated to at least its former quality at the end of the works. Access from the A90 to all properties will be maintained throughout the works, although there will be no through route during the road closure. As the route runs along the boundary of agricultural land next to the lane, arrangements will be made with the landowners to allow farm vehicle access across the cable working route at certain locations. Pedestrians or walkers will also be able to use the same crossing points. These areas will have appropriate barriers, signage and plant management arrangements in place to ensure no hazardous interaction between pedestrian and construction plant movements can take place.

The traffic volumes on the quarry access route will increase considerably during construction periods, however, this is a private access road and, as such, there will

be no impacts on general road users. The access to Fourfields will, however, cross a footpath and hence temporary impacts on pedestrians during construction were considered to be significant and require mitigation. A number of mitigation measures including the installation of a safe crossing point where pedestrians have priority, enforced speed limits and road sweeping, will reduce the residual effect to non-significant levels.

All construction workers and delivery drivers will be briefed with regard to following road and site traffic rules. Specific hazard points, including junctions where small roads join the A90 or where accidents have occurred in recent years, will be pointed out in briefings.

During operations there will only be a handful of cars accessing the site each day and hence no significant effects.

Decommissioning traffic will be determined by the site configuration at the end of its life and the overall effect will be determined by the traffic volumes at that point. This cannot be predicted and, as such, it is not appropriate to assess the effects at this point.

16 Electric and Magnetic Fields

Electric fields are easily screened by trees and buildings. The metal clad building structures will act as a Faraday cage, i.e. an earthed metal box, and hence an effective screen for electric fields generated. This also prevents radio interference from the converters escaping to interfere with public systems. Buried cables are covered by earth and therefore emit no electric field. All parts of the electrical systems will be appropriately earthed to contain the electric fields and hence protect against effects occurring.

Magnetic Fields are produced by electric current flow. Magnetic Fields are not easily screened and can pass through building and cable screens.

AC currents produce alternating magnetic fields and DC currents produce static magnetic fields. HVAC systems use three conductors (cables) with a displacement of 120 degrees between the cables. If someone is at an equal distance from the three conductors the resulting magnetic field is zero.

The Earth provides a background static magnetic field which in the Peterhead area is approximately 50,000nanotesla (nT).

The HVAC connection to the SHE Transmission substation runs through the switchgear within the Converter Station from the converter transformers. As the loading of the three phase AC circuit will be balanced, net magnetic field at a remote location will be zero. Closer to the equipment, the degree of cancellation will depend on the location of the person. At the boundary fence of the Converter Station and at ground level above the HVAC cables the net magnetic field will be similar or less than 18,000nT, i.e. less than half of the magnetic field of the earth. At 1.5m above the ground this will be reduced to approximately 12,000nT, i.e. less than one third of the magnetic field of the earth.

Magnetic fields have to be above 400,000nT before they start to have effects on human health, hence the public exposure to magnetic fields associated with NorthConnect is an order of magnitude lower than those that may have an effect on human health.

NorthConnect has no significant effects associated with EMF.

17 Local Community and Economics

It is currently anticipated that the requirement for workers on the site will vary through the construction phases between 40 and 200 people. This number will reach its peak in Phase 3 when Civils, Structural, Mechanical & Electrical Installation, and HVAC cable laying works are all ongoing (see Chapter 2: Project Description). This will be direct labour employed by the main contractors and their 1st or 2nd tier sub-contractors for the construction works.

There will also be a requirement for non-construction personnel including cleaners, security guards and administrative staff. It is NorthConnect's intention to source the workforce locally where possible, however, given the technical and specialist nature of some elements of the work and the high employment levels in the area, some imported labour may be required.

In addition to creating direct jobs during construction there will be indirect effects on the local economy. Visiting workers will require accommodation, food and drink and other services, therefore local hotels, restaurants and entertainment venues are likely to benefit from the influx of people and additional revenue generated.

It is currently estimated that a team of approximately five people would be employed at the Converter Station once operational. Additionally, short-term, one-off or specialist contractual opportunities may also arise for services at the site, for example, cleaning, grass-cutting, landscaping, building maintenance, etc. The effect on the local economy associated with direct and indirect employment is positive but not significant.

Interconnection helps to ensure that across Europe, despite fluctuations in supply and demand (and hence price) associated with increased renewable power generation, any one consumer can be connected to the cheapest source of power at any one time, and this is where the economic benefit of interconnection derives from.

Many studies have been carried out in this field, they are all based on economic models looking into the future, they all differ slightly in their methodologies and assumptions and often quote their findings in ranges of values, or across a spread of different stated scenarios. ENTSO-E have predicted the socio-economic welfare value of NorthConnect to be £75-295 million per year. NorthConnects own study aligns with this range, predicting £140 millon per year. This is a significant positive effect.

The Converter Station and HVAC Cable route will have other non-financial impacts on the local community. Sections 6: Noise and Vibration and 10: Landscape and Visual discuss some of the specific impacts and hence are not repeated here. It is acknowledged, however, that the project as a whole, especially during construction could affect local residents. A communications plan will be developed by NorthConnect and the main construction contractors to ensure that local residents are kept informed about the project. Contact details will be provided to allow any concerns residents may have to be raised and dealt with in a timely manner.

The Converter Station and associated landscaping mounds are proposed on the eastern two thirds of the existing Boddam Community Association path which bisects Fourfields. A new path network is proposed as shown in Drawing 3022, to connect the east and west sides of the site. The path network will incorporate interpretation boards covering topic areas such as archaeology, ecology and the NorthConnect project, and also a shelter will be provided for walkers. However, full access will not be available until the later phases of the construction works.

The HVAC cable route crosses the right of way and, as such, appropriate diversions will be put in place during the short period of this work. There is no intention to restrict access to the core paths around the Fourfields during construction, unless there is a specific health and safety reason to do so (e.g. for rock blasting).

The communications plan will address liaison with recreational users of the area around the proposed development. This will ensure that prior warning to any changes in path routes are provided, or if there is a need for a short-term closure of any areas for safety reasons. Contact details will be provided on signage around the site to allow recreational users to raise concerns or issues.

Throughout the operational life of the interconnector, NorthConnect will endeavor to positively impact the local community. The paths and landscaping will be maintained throughout the converter station's life for the benefit of recreational users. A communication protocol will be incorporated into the Environmental Management System to ensure that members of the public, local residents and recreational users alike can easily contact NorthConnect and that issues will be addressed promptly.

During construction there is a potential for non-significant short-term direct and indirect positive impacts on the local economy. However, there may be negative effects on recreational users due to short-term impacts on the local path network, but these will not be significant.

Once operational, the NorthConnect Interconnector project will have significant positive Socio-Economic benefits at an international level.

18 Cumulative Effects

A review of all 166 developments currently in the planning system for the Boddam & District Community Council area were reviewed to identify projects that could have cumulative or in combination effects. As shown in Table 18.1, the majority of the planning applications are associated with residential planning.

Table 18.1: Summary of Planning Applications

Application Type or Status	Number
Refused	10
Withdrawn	12
Residential <3 house development, garage, shed or alteration/modification to house.	74
Residential 3 house development or larger.	5
Small to medium non-residential applications including: change of use, signage, and warehouses.	57
Medium to large non-residential.	7 Plus NorthConnect

The projects that could potentially have cumulative effects with NorthConnect are the large industrial projects, namely:

- The New 400kV Peterhead Electricity Substation;
- The Energetica Industry Park;
- The Extension to Stirlinghill Quarry; or
- The NorthConnect Interconnector HVDC Cable.

In addition, the Post-Combustion Carbon Capture Facility was considered from a landscape perspective only.

Cumulative effects were assessed for topics where both projects have the potential to cause an effect and, as such, the effect of both projects in combination could be significant.

No significant adverse cumulative effects were identified.

It was however recognised that the NorthConnect HVDC Cable and the 400kV substation will both be required for the Converter Station and HVAC cable route to link to Norwegian and Scottish power networks. The positive socio-economic effects of NorthConnect and its contribution to lower CO_2 emissions are a result of all three projects in combination.

Note that the new planned 400kV substation is not being developed by NorthConnect, and also that NorthConnect are not the only project that will be connecting into the substation.

19 Schedule of Mitigation

A schedule detailing all the mitigation measures identified through the EIA process has been collated. This will be taken forward through the design process to ensure that, where practicable impacts are avoided or mitigated at source.

A Construction Environmental Management Document will be developed, detailing how mitigation and monitoring measures will be employed during the construction process. This will cover everything from pedestrian safety to water quality management. All works carried out on site will be in line with a Risk Assessed Method Statement (RAMS), environmental risks are considered as part of these. The CEMD will be handled as part of a suite of Health, Safety, Environment & Quality documents which form part of the site management arrangements.

An Environmental Clerk of Works (ECoW) will be employed to ensure that the CEMD is being appropriately implemented, RAMS followed and to provide advices on site if issues arise.

Everyone working on the site will have to go through an induction training, which will include an environmental section. In addition task specific training will be provided to personnel who have specific responsibilities or are carrying out tasks which could have environmental impacts, for example, refueling of plant and machinery.

Tool box talks will be delivered regularly covering a range of topics including environmental issues pertinent to the stage of works being undertaken.

Once the project moves into the operational phase the CEMD will be replaced by an Environmental Management System to ensure that environmental aspects of NorthConnect continue to be appropriately managed.

20 Conclusion

NorthConnect propose to provide a HVDC Interconnector between Peterhead in Scotland and Simadalen in Norway. The linking of the two electricity markets has the potential to contribute significantly to the reduction in CO_2 emissions and help in the fight against climate change. The project would also bring socio-economic benefits to both Scotland and Norway.

An EIA process has been completed for the Interconnector Converter Station and the HVAC Cable route, to understand the associated environmental impacts and identify appropriate mitigations to reduce the effect significance wherever possible. The EIA and initial design stage have been completed together, to allow environmental impacts to be avoided, designed out, or mitigated through the design process. This has resulted in a unique building design including a sedum roof, curves and walls of local red granite and translucent panels. Landscaping and planting regimes have integrated the building into the landscape and incorporated elements which take account of local recreational users.

19 significant effects were identified without mitigation. With mitigation, the number of negative significant effects reduces from 19 to 7, only two of which remain after the construction period.

The with mitigation noise effects deemed significant in EIA terms affect one property for the majority of the construction works, and a second property for a short period (8 weeks) of HVAC cable laying. NorthConnect are dedicated to working with the two properties' residents to minimise the actual inconvenience caused by the works.

All other significant negative effects are associated with landscape and visual impacts. The significant effects have been limited by careful site selection and through the design process. Unfortunately, due to the scale of the equipment required, it has not been possible to prevent or mitigate them further.

No significant cumulative effects were identified.

A schedule of mitigation has been produced to ensure that mitigation identified during the course of the EIA development is taken forward with the project and will form the basis of the CEMD. NorthConnect will continue to address and integrate environmental considerations through the procurement and design process, to ensure that the design is optimised from an environmental perspective. During the construction works, an ECoW will be on site to ensure that works are carried out in line with the CEMD, and that any issues arising are dealt with promptly.

Through the EIA process NorthConnect have engaged with the local community and the importance and benefit of this communication is acknowledged. As such, a communication plan will be put in place for all stages of the project lifecycle, to allow the public's views to be taken account of throughout the detailed design, construction and operation, and the eventual decommissioning of the Converter Station.

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