KINTRADWELL WIND FARM

Environmental Impact Assessment Report

Non-Technical Summary



powering change

Contents

Abbreviations

AOD	Above Ordnance Datum
ATC	Air Traffic Control
CEMP	Construction Environmental Management Plan
CO2	Carbon Dioxide
DIO	Defence Infrastructure Organisation
EIA	Environmental Impact Assessment
GHG	Greenhouse Gas
GIS	Geographical Information System
GWDTE	Ground Water Dependent Terrestrial Ecosystem
ha	Hectare
HGV	Heavy Goods Vehicle
HIAL	Highlands and Islands Airports Ltd
HMP	Habitat Management Plan
IEF	Important Ecological Feature
IEMA	Institute of Environmental Management and Assessment
IOF	Important Ornithological Feature
km	Kilometre
LCT	Landscape Character Type
LGV	Light Goods Vehicle
LVIA	Landscape and Visual Impact Assessment
MOD	Ministry of Defence
mSPA	Marine Special Protection Area
NATS	National Air Traffic Services
NVC	National Vegetation Classification
OEMP	Operational Environmental Management Plan
PLHRA	Peat Landslide Hazard Risk Assessment
PMP	Peat Management Plan
RAF	Royal Air Force
RMS	Radar Mitigation Plan
SAC	Special Area of Conservation
SEPA	Scottish Environmental Protection Agency
SLA	Special Landscape Area
SPA	Special Protection Area
SPP	Scottish Planning Policy
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage System
THC	The Highlands Council
UK	United Kingdom
WLA	Wild Land Area

1 Background

1.1 This document is a Non-Technical Summary of Kintradwell Wind Farm Environmental Impact Assessment (EIA) Report which supports the application by Renewable Energy Systems Ltd (RES) (the Applicant) for the development of a wind farm (the Proposed Development) located on Kintradwell Estate, near Brora, Highlands.

The Applicant

1.2 The Applicant is the world's largest independent renewable energy company active in onshore and offshore wind, solar, energy storage and transmission and distribution. At the forefront of the industry for over 39 years, the Applicant has delivered more than 18GW of renewable energy projects across the globe and supports an operational asset portfolio exceeding 6GW worldwide for a large client base. Understanding the unique needs of corporate clients, the Applicant has secured 1.5GW of power purchase agreements (PPAs) enabling access to energy at the lowest cost. The Applicant employs more than 3,000 people and is active in 10 countries.

1.3 From its Glasgow office the Applicant has been developing, constructing and operating wind farms in Scotland since 1993. The Applicant has developed and/or built sixteen wind farms in Scotland with a total generation capacity of 417MW. The Applicant is currently constructing Blary Hill Wind Farm in Argyll and Bute and has recently finished constructing Solwaybank Wind Farm in Dumfries and Galloway.

Need for Development

1.4 The science behind climate change is well established and points strongly towards a need to reduce our reliance on fossil fuels in order to avoid negative economic, environmental and social effects. International and European commitments to reducing CO_2 and tackling climate change have been made by all major economies. In response to these issues the UK and Scottish Government has made significant, legally binding commitments to increase the use of renewable energy. The Climate Change (Emissions Reduction Targets) (Scotland) Act (2019) set a target date of 2045 for reaching net-zero emissions (Scottish Government, 2019) and The Highland Council (THC) have declared a climate and ecological emergency (THC, 2019). The Proposed Development relates directly to both the need and those commitments.

Site Selection

1.5 From the experience gained through designing wind farms throughout Scotland and globally, the Applicant identified that Kintradwell has many of the attributes that make an excellent wind farm site, including:

- high wind speeds;
- a remote location from residential receptors; and
- relative ease of delivery of turbine components.

1.6 The Applicant utilises a Geographical Information System (GIS), to aid identification of potential wind farm sites. In the case of Kintradwell Wind Farm, the GIS model was used to identify potential constraints that could restrict development or would need to be addressed in the design process.

1.7 The Applicant undertook a constraints and opportunities review to determine the most appropriate location for a large-scale wind farm development. This review included consideration of:

- Scottish Planning Policy (SPP) (Scottish Government, 2014);
- The Highland Council's adopted planning policies and relevant supplementary guidance;

- international, national and local designated sites;
- transport facilities;
- operating airports;
- residential receptors; and
- other operational and consented but not built wind farm developments or proposed wind farm developments where a planning application has been submitted but not determined.

1.8 It was considered that the Proposed Development in this location, and its relationship with Gordonbush Wind Farm in the locality, would provide an opportunity to concentrate wind farms in a landscape that had already accommodated wind turbines and had the capacity to accommodate further development.

1.9 At the beginning of the development process, an initial site feasibility layout was produced to show the maximum potential extent of development within the space available and in accordance with the design principles.

1.10 This initial site feasibility layout included 37 turbines and was based only on the general design principles and was not informed by the significant amounts of survey derived baseline environmental information. This initial layout was seen as the maximum potential development, to be refined as the EIA process progressed.

1.11 The final iteration of the Proposed Development comprises 15 turbines of up to a maximum 149.9m height from the ground to blade tip when vertical. The overall capacity of the Proposed Development will be approximately 63 Mega Watts (MW).

1.12 The final layout has been informed by a robust EIA and design iteration process, taking into account physical constraints, potential environmental, landscape and visual impacts and their effects. The information used to inform the design iteration process included consultation responses received, baseline data and the impact assessment undertaken.

1.13 The Proposed Development layout is considered to represent the most appropriate design, taking into account potential environmental impacts and physical constraints, while maximising the renewable energy generating capability of the site.

2 Purpose of the Proposed Development EIA Report

2.1 ITPEnergised (ITPE) was appointed by the Applicant to undertake an Environmental Impact Assessment (EIA) of the Proposed Development in accordance with Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (as amended) ('the EIA Regulations'). The EIA process is the systematic process of identifying, predicting and evaluating the environmental impacts of a proposed development.

2.2 The EIA process is reported in Chapter 4 (Volume 2) of the EIA Report, which identifies the methodologies used to assess the environmental effects predicted to result from the construction and operation of the Proposed Development. Where appropriate, it also sets out mitigation measures designed to prevent, reduce and, if at all possible, offset likely significant adverse environmental impacts. An assessment of residual effects, those expected to remain following implementation of mitigation measures, is also presented.

3 Availability of the Proposed Development EIA Report

3.1 In line with the Town and Country Planning (Miscellaneous Temporary Modifications) (Coronavirus) (Scotland) Regulations 2020 that came into place on the 24th April 2020, hard copies may not be available for inspection at public locations. Electronic copies will however be available online. In

addition, all documents are available (as a PDF for screen viewing only) on a USB for £15.00 or as a hard copy for £1,500.00 (including printing and distribution).

4 Representations to the Application

4.1 Any representations to the application should be made directly to representations@gov.scot

5 Site Location and Description

5.1 The site is located on rough moorland in the east of Sutherland in the Highland area of Scotland. The nearest turbine is approximately 7.7km to the north of Brora, 11.5km to the west of Helmsdale and 12km to the north-east of Golspie. The central grid reference for the site is Easting 291546, Northing 911173 and it occupies an area of approximately 2,680 hectares (ha) (Figure 1).

5.2 The site rises steeply from sea-level at 20m in the south to 545m Above Ordnance Datum (AOD) at Càrn Garbh in the north.

5.3 The southernmost section of the site abuts the A9 road corridor, the Highland Railway, power lines and scattered dwellings and farm buildings. There are no private residential properties within 3.5km of the proposed turbine locations.

5.4 The site comprises a range of upland habitats, including shrub heath, semi-improved grassland, blanket bog and watercourses. A plantation woodland also occurs alongside the proposed site access from Kintradwell on the A9.

5.5 The wider area beyond the boundary of the site comprises similar peatland, semi-natural grassland and rough moorland habitat. The Proposed Development is immediately south-east of the Gordonbush Wind Farm at a distance of 1.7km.

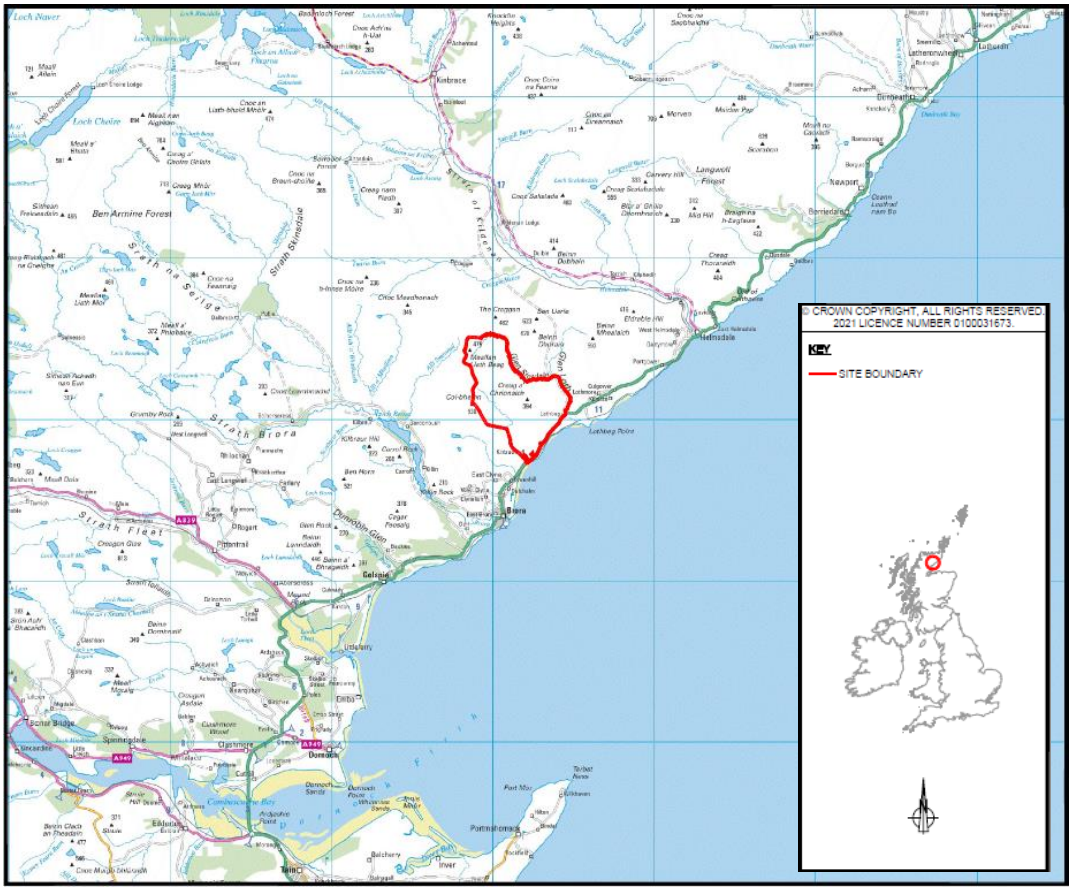

Figure 1. Site Location

6 Design Process

6.1 The design of the Proposed Development has undergone several iterations of turbine and access track layout. It has taken into consideration factors including comments received from consultees, environmental constraints, visual effects and landscape character. The following principles were adopted during the design iterations to ensure that the final design was the most suitable for the site:

- maximising wind yield and maintaining adequate spacing between turbines;
- avoidance of areas of deeper peats (i.e. areas of >1m depth), habitats of significant conservation value and consideration of areas with the potential to support protected species, as far as practicable;
- a minimum buffer of 1km being maintained around residential dwellings in the surrounding area and the proposed turbines;
- a minimum buffer of 50m being maintained around watercourses, except where watercourse crossings are required;
- sensitive siting to avoid or reduce effects on cultural heritage and preserve and protect military crash sites;
- maintain appropriate buffers to ornithological interests;
- ensuring that the Proposed Development is compatible with other planned and consented wind farms in Sutherland and further afield; and

- avoiding inconsistent turbine spacing, such as relatively large gaps, outliers or excessive overlapping turbines to minimise visual confusion and ensure a balance / compact array from key views.

6.2 The Proposed Development layout put forward in the EIA Report is considered to represent the most appropriate viable design while maximising the renewable electricity generation from the site. The process of design iteration is explained fully in Chapter 3 (Volume 2) of the EIA Report.

7 Description of the Development

The Proposed Development

7.1 The Proposed Development comprises of 15 wind turbines of up to a maximum 149.9m height from ground to blade tip when vertical. The indicative capacity of the Proposed Development is 63MW.

7.2 The proposed locations of the 15 turbines, together with their access tracks, and temporary construction compounds and other on-site infrastructure are shown on Figure 2 (The full extent of the layout is shown in Figure 1.2 (Chapter 1, Volume 2) of the EIA)**.** A micro-siting allowance of up to 50m in all directions is being sought in respect of each turbine and its associated infrastructure in order to address any potential difficulties which may arise in the event that preconstruction surveys identify unsuitable ground conditions or environmental constraints that could be avoided. It is proposed that the micro-siting of all infrastructure will be subject to an appropriately worded planning condition.

7.3 A number of ancillary elements are also proposed, including a temporary construction compound, crane pads, temporary laydown areas adjacent to the turbines, access tracks, watercourse crossings, underground cables between turbines, an electric switching station, an on-site substation and control building, a battery storage infrastructure, a gatehouse compound, a telecoms mast, concrete batching plant and potential excavations/borrow workings. A full description of the Proposed Development can be found in Chapter 2 (Volume 2) of the EIA Report.

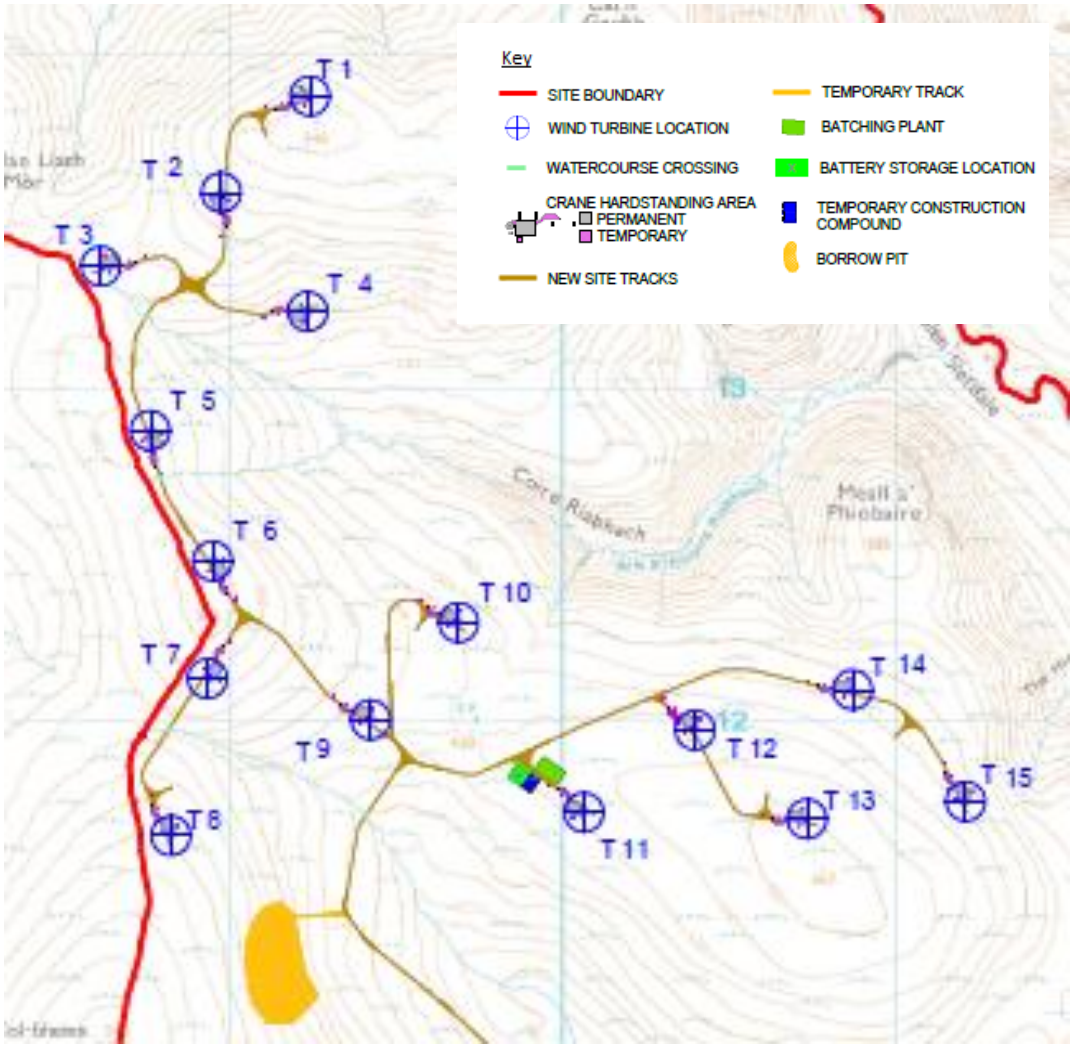

Figure 2 – Proposed Development Site Layout

Construction

7.4 The estimated on-site construction period for the Proposed Development is expected to take approximately 15 months and includes a programme to reinstate all temporary working areas. Normal construction hours will be between 07:00 to 19:00 Monday to Saturday. There will be no working on Sundays or public holidays. If required, additional working hours will be agreed in consultation with THC's Environmental Health Officer. These times have been chosen to minimise disturbance to local residents and if required to be restricted this will be agreed with THC by an appropriately worded condition.

7.5 The construction programme will consist of the following principal operations. The Proposed Development will be phased so that certain activities will take place concurrently:

- construction of the temporary site compounds and establishment of a storage area for wind farm components and temporary site facilities;
- construction of access tracks, including construction of watercourse crossings, and excavation of cable trenches;
- construction of wind turbine foundations, crane pad hardstanding areas and substation;

- underground cabling;
- concrete batching plant;
- erection of wind turbines;
- connection of on-site electrical power and signal cables;
- commissioning of site equipment; and
- site reinstatement and restoration of temporary works area.

7.6 The Applicant will ensure that all construction traffic will be routed as agreed with THC and Transport Scotland to minimise disruption and disturbance to local residents (refer to Chapter 11 (Volume 2) of EIA Report for further details).

7.7 Prior to commencement of construction activities, the mitigation measures to be implemented will be provided within a Construction Environmental Management Plan (CEMP) to THC (refer to Appendix 2.1 (Volume 6) of EIA Report for further details).

Operation and Maintenance

7.8 During operation, only site maintenance vehicles and local utility company vehicles will normally be required on the site. Daily visits to the control building by maintenance personnel in four-wheel drive or conventional passenger vehicles will occur following the commissioning phase.

7.9 In the unlikely event that a major turbine component requires replacement, vehicles delivering the components will use the new access tracks and crane pads, utilising the same route as delivery of components during construction.

7.10 The Applicant will implement an Operation Environmental Management Plan (OEMP). Similar to the CEMP, the OEMP will set out how the Applicant will manage and monitor environmental effects throughout operation. The OEMP will be developed in consultation with NatureScot, SEPA and THC.

Decommissioning

7.11 The Applicant is seeking in-perpetuity consent for the Proposed Development. In the event of decommissioning, or replacement of turbines, it is anticipated that the levels of effect would be similar but of a lesser level than those during construction. Decommissioning would be undertaken in line with best practice processes and methods at that time and will be managed through an agreed Decommissioning Environmental Management Plan.

8 Consultation

8.1 Consultation remains a critical component of the EIA process. In order to inform the EIA, there has been on-going consultation with statutory consultees, engagement through the formal EIA Scoping process and subsequent discussions, correspondence and meetings as required. Full details of these are provided within each technical chapter of the EIA Report.

Public/Community Consultation

8.2 The Applicant has consulted with the general public/local community on the Proposed Development. Full details of all the public consultation that has been undertaken can be found within the Pre-Application Consultation Report.

9 Environmental Impact Assessment (EIA)

9.1 The EIA considers the likely significant effects of the Proposed Development during construction, operation and decommissioning on the following topics:

- landscape and visual amenity (the character of the landscape and views from agreed locations);
- cultural heritage (direct and setting effects on archaeological features and heritage assets);
- ecology (protected habitats and flora and fauna (excluding birds));
- ornithology (birds and protected bird habitats);
- hydrology, hydrogeology and geology (surface water, ground water, rocks and soils);
- traffic and transport (traffic travelling to, and from, the Proposed Development);
- noise (local properties);
- aviation (civil and military aviation facilities and air space);
- socio-economics, tourism and recreation (effects to the local and national economy, local tourism businesses, recreation facilities, and the change in use of the land at the site of the Proposed Development); and
- climate change (calculation of carbon balance).

9.2 Chapter 4 (Volume 2) of the EIA Report describes the EIA process in more detail.

9.3 For each topic, the existing conditions (the baseline) were identified, the effects of the Proposed Development on these conditions assessed (the likely effects) and the standard best practice mitigation for those receptors identified. Likely effects are assessed to determine which are significant and on what scale. Mitigation measures have then been proposed to minimise or avoid adverse effects where required. Following this an assessment was undertaken of the effects of the Proposed Development on the existing conditions taking into consideration the proposed mitigations (the residual effects) to identify significant and non-significant effects. An assessment of the cumulative effects of Proposed Development in combination with other existing and proposed developments in the local area, primarily wind farms, was also undertaken.

9.4 A summary of the baseline conditions, the proposed mitigation and the resulting residual effects for each topic is provided below. Full details of the EIA for each of the topics are provided in Chapters 6 to 15 of the EIA Report.

Landscape and Visual

9.5 The full assessment of landscape and visual receptors is found in Chapter 6 (Volume 2) of the EIA Report. The assessment of landscape and visual effects has been carried out to identify the significant effects that are likely to arise as a result of the Proposed Development. It has considered the effects on landscape and visual receptors, as well as the cumulative effect of the Proposed Development in addition to other wind farm developments.

9.6 Wind farms give rise to a wide spectrum of opinions, ranging from strongly adverse to strongly positive, with a wide range of opinions lying somewhere between these two positions. Some people view wind turbines as incongruous or industrial structures whilst others view them as aesthetically pleasing, elegant structures and a positive response to climate change.

9.7 In considering the effects of the Proposed Development, a precautionary approach to the assessment has been adopted in assuming that the effects of the proposal would be adverse in nature. However, the identified effects on landscape character and visual amenity should be

balanced against the wider benefits of the proposed wind farm, and it should be acknowledged that, for some people, the impacts of the wind farm would be positive.

9.8 The Landscape and Visual Impact Assessment (LVIA) considers the likely effects of the Proposed Development upon:

- individual landscape features and elements;
- landscape character;
- specific views; and
- people who view the landscape.

9.9 The site lies within 135: Rounded Hills – Caithness & Sutherland Landscape Character Type (LCT). Due to the prominence of the proposed turbines within the LCT, the Proposed Development would give rise to significant effects upon landscape character up to a distance of 4km from the proposed turbines. Beyond 4km and within other parts of the LCT within the study area, whilst the Proposed Development would have some influence upon landscape character, the overall effects would be not significant.

9.10 The proposed turbines are located 3km from 144: Coastal Crofts & Small Farms LCT where theoretical visibility gradually intensifies surrounding the settlement of Brora, giving rise to significant effects upon landscape character, however, these effects would be limited to areas within and immediately surrounding Brora, with the LCT unaffected to the east and north-east of the site.

9.11 There would be no significant effect upon 140: Sandy Beaches and Dunes LCT within 5km of the proposed turbines, however, to the south beyond 5km, theoretical visibility would begin to intensify on the approach to Brora, giving rise to significant effects upon landscape character. Beyond 8km, these adverse effects would cease to be significant. All other predicted effects upon LCTs within the study area, would be not significant.

9.12 It has been assessed that there would be significant visual effects experienced at three of the 15 representative viewpoints assessed in the LVIA.

9.13 There would be no significant visual effects upon properties within 5km of the site, however, significant effects would occur for select residents at the settlements of Brora and Doll (Figure 3). Visual effects upon all other residents within settlements within the study area would be not significant.

Figure 3: A photomontage showing the Proposed Development in operation from Doll

9.14 There would be significant effects upon the Brora Village Trail within Brora, Core Paths to the north and an approximate 2km length of the John O'Groats Trail whilst passing through Brora. Effects upon other recreational routes are deemed to be not significant.

9.15 There would be no significant effects upon the road network in vicinity to the site, including the A9 and minor roads to the east and west of the site. Significant visual effects would occur to the Brora Golf Club and Brora beach, however, views towards the Proposed Development would be limited in part by built form within Brora.

9.16 Whilst it is acknowledged there will be some direct and indirect significant effects upon landscape character and visual amenity experienced from parts of the Loch Fleet, Loch Brora and Glen Loth Special Landscape Area (SLA), these will not affect the ability to appreciate the underlying landscape. The landscape as a whole would remain attractive and legible, within much of the SLA.

9.17 It was determined that the Proposed Development would have some limited influence upon the qualities of the Ben Klibreck – Armine Forest Wild Land Area (WLA), however, due to the influence of other intervening visual detractors, effects upon the WLA would be limited in nature and deemed to be not significant.

9.18 It is considered that there would be no change to the previous assessment of the effects on landscape character or visual amenity which the Proposed Development would bring about, when each of the other consented (Gordonbush Extension) or proposed (South Kilbraur) wind farms are added into the assessment such that they are considered to already form part of the baseline.

9.19 In terms of totality, when the impact of the Proposed Development, the Consented Development and all other operational, consented and proposed turbines are considered, additional significant effects would arise in both LCT135 – 'Rounded Hills – Caithness & Sutherland' and LCT134 – 'Sweeping Moorland and Flows', as well as upon certain visual receptors. However, the majority of these effects would already be brought about by the Gordonbush, Gordonbush Extension, Kilbraur

and Kilbraur Extension schemes, with the Proposed Development only serving to reinforce the existing impact that would already arise.

9.20 In conclusion, locally significant effects on landscape character and visual amenity are inevitable as a result of commercial wind energy development anywhere in the UK. Whilst some significant landscape and visual effects are acknowledged, it is considered that overall the landscape has the capacity to accommodate the effects identified.

Cultural Heritage

9.21 The full assessment of effects on cultural heritage and archaeology is provided in Chapter 7 (Volume 2) of the EIA Report.

9.22 The cultural heritage assessment identified the archaeological and cultural heritage value of the site and assessed the potential for direct and indirect effects on archaeological features and heritage assets resulting from the construction and operation of the Proposed Development.

9.23 Forty heritage assets were identified within the Inner Study Area, full details of which are included in Technical Appendix 7.1 (Volume 6) of the EIA Report. Three of these are burial cairns of prehistoric date assessed as being of medium sensitivity. Twelve are Bronze Age settlement assessed as being of medium sensitivity, and four are Iron Age settlement sites including two brochs, a possible souterrain and a homestead, all assessed as being of medium sensitivity. There is a chapel and cemetery, of medieval date and of medium sensitivity. Ten of the heritage assets are post medieval abandoned settlements and townships assessed as being of medium sensitivity. There are three WWII aircraft crash sites (recorded within the site. As military aircraft crash sites, these assets are afforded legislative protection (Protection of Military Remains Act (1986)) and are accordingly assessed as being of high sensitivity. The remaining seven assets including two bridges, two sheilings, a grouse feeding pit, a cave and a memorial stone are assessed as being of low or negligible sensitivity.

9.24 An assessment of the identified cultural heritage resource, and consideration of the current and past land-use, within and in the immediate vicinity of the Inner Study Area, indicates that there is a moderate to high probability of hitherto unidentified archaeological remains of prehistoric or medieval/post-medieval date being present within the site, mostly restricted to the south-east facing slopes between Kintradwell Farm and Lothbeg.

9.25 The layout of the Proposed Development has been designed as far as possible to avoid direct effects on the identified heritage assets within the site and all bar two assets of medium sensitivity have been avoided.

9.26 Two assets of medium sensitivity would be directly affected by the Proposed Development and a programme of mitigation including preservation in situ, and watching briefs, is set out to address likely direct impacts on these and on any as yet undiscovered buried archaeological remains.

9.27 If new, archaeologically significant discoveries are made during any watching briefs carried out, and it is not possible to preserve the discovered remains in situ, provision would be made for the excavation where necessary, of any archaeological deposits encountered. The provision would include the consequent production of written reports, on the findings, with post-excavation analysis and publication of the results of the works, where appropriate.

9.28 Twelve Scheduled Monuments (of high sensitivity) have been identified within the Outer Study Area from which there is some degree of theoretical visibility of the Proposed Development. There are also 14 Category B Listed Buildings (medium sensitivity) and 11 Category C Listed Building (low sensitivity) from which there is predicted theoretical visibility of the Proposed Development. There is one Inventory Designed Landscapes (high sensitivity) with predicted visibility of the Proposed Development. These, together with other assets considered in the assessment of effects on their

settings, are listed in Technical Appendices 7.2 and 7.3 (Volume 6) of the EIA Report, which include tabulated assessments of the effect of the Proposed Development on their settings.

9.29 No significant adverse effects have been identified as affecting the settings of any designated heritage assets within the Outer Study Area.

9.30 No significant cumulative effects have been identified.

Ecology

9.31 The full assessment of effects on ecology is provided in Chapter 8 (Volume 2) of the EIA Report.

9.32 This section considers the likely effects on ecology from the construction and operation of the Proposed Development, with a particular focus on Important Ecological Features (IEFs).

9.33 The Proposed Development does not overlap any nature conservation designation, although it is located adjacent to the Moray Firth Special Area of Conservation (SAC). The Moray Firth is designated for supporting subtidal sandbank habitats and its population of bottlenose dolphin. One other designated site (the Caithness and Sutherland Peatlands) and a further four Sites of Special Scientific Interest (SSSI) lie within 5km of the site boundary. Due to the nature of the designated features or lack of potential connectivity, only impacts on the Moray Firth SAC are considered in the EIA Report chapter. Impacts on the Moray Firth SAC are not likely to result in significant effects due to the separation distance between the designation and the Proposed Development as well as the implementation of proposed mitigation and best practice during construction.

9.34 The Proposed Development area was surveyed to establish an ecological baseline in 2019. The baseline surveys included: extended National Vegetation Classification (NVC) survey (back-worked to Phase 1 descriptions, also), protected mammal survey, bat survey and fish survey. The baseline data were further complimented by a thorough desk study for historical and noteworthy records of priority species within a defined search area beyond the site boundary.

9.35 Habitats indicative of potential groundwater dependence were determined following the NVC survey, although the water catchment is considered likely to be predominantly surface water or rain fed partly due to the wider network of blanket mire habitats (which, by definition, source water via the atmosphere rather than groundwater).

9.36 Three habitats were carried forwards to be assessed in terms of impacts and includes dry heath, wet heath and blanket bog. Dry heath was assessed in terms of direct habitat loss and, due to the small areas lost to the Proposed Development footprint, the residual impact was deemed to be low and not significant. Wet heath and blanket bog habitats both required likely direct and indirect habitat loss effects to be considered due to their reliance on water connectivity within the substrate. Indirect habitat losses as a result of drying peat are anticipated when drains are first installed during the construction phase although the use of floating roads is considered likely to maintain much of the hydrological flow throughout much of the upper acrotelmic peat layer and maintain much of the existing condition of the habitats underlying the Proposed Development footprint. As low (not significant) impacts are anticipated on the areas of wet heath and blanket bog, enhancement measures are proposed as part of an outline Habitat Management Plan (HMP) which aims to halt and restore areas of blanket bog showing signs of considerable erosion and degradation as a result of historical management and deer grazing and poaching pressures. As such, an overall improvement is predicted in the quality, continuity and integrity of this habitat during the operational phase and ultimately assist with making the blanket bog found within the study area more resilient.

9.37 A protected mammals survey found signs of otter activity, although these were all within the riparian habitats along the lowest reaches of the Kintradwell Burn and the Loth Burn and located considerable distance from proposed infrastructure. Although no impacts are anticipated on

protected mammals, appropriate mitigation and best practice construction methods are proposed in order to ensure no impacts are experienced by these species.

9.38 Bat surveys included site reconnaissance and habitat assessment, to determine site suitability for bats and potential for roosting. The habitat assessments identified no significant roost features within the Turbine Envelope. The suitability of the habitats within the access track corridor was comparatively high, particularly within the lowland sections of the site close to the coast although the access route bypasses these areas through adjacent open ground to the north.

9.39 Static detector surveys were completed across three seasonal deployments. The activity measured within the site was all very low with no significant differences identified across the site over the three survey seasons. The Turbine Envelope supported comparatively very low activity rates, and bat activity was dominated by common pipistrelle, although soprano pipistrelle, *Myotis* sp. and brown long-eared bat were also recorded. A limited number of passes were also recorded for Nathusius' pipistrelle although these were entirely along the existing track and developed riparian habitats near the estate buildings, south of the proposed access track route.

9.40 Fish surveys were completed along both the Kintradwell Burn and the Loth Burn and contributing watercourses flowing from within the site. Although the lower stretches of the Kintradwell Burn (i.e. below the Kintradwell hydro scheme) are thought to support sea trout and much of the burn provides good quality habitat for spawning, the waters were assessed as being less suitable for other salmonids. European eel were also recorded. The Kintradwell burn was assessed as being good quality for supporting fish in the lower reaches but poor at upper levels. Despite the potential to support salmon, particularly within the lower reaches, the watercourses within the site were found to only support non-salmonid fish. Measures to be outlined within the CEMP, species protection plans, best practice, as well as pollution protection guidelines, will ensure water quality is maintained and that no impacts will occur on the fish populations present. The fish community of Loth Burn comprises Atlantic salmon, brown trout and European eels. Salmon and eels were found to be restricted by the waterfall (Figure 4) located approximately 0.5km upstream of A9 road and marks the natural upstream limit for migratory salmonids and likely also for eels. This site was assessed as likely being upstream of the limit of trout distribution in the Loth Burn.

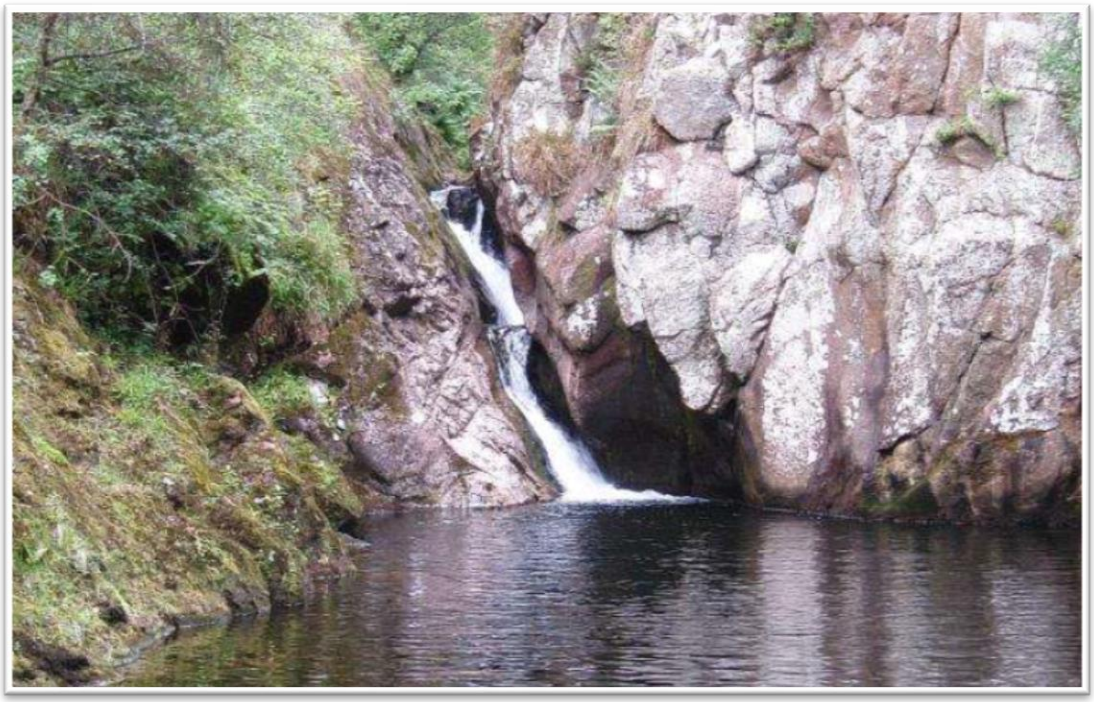

Figure 4: Loth Burn catchment waterfall

9.41 Cumulative impacts are considered against all IEFs carried forwards through the impact assessment and no significant cumulative impacts are predicted.

9.42 Residual effects on all IEFs are considered to be at worst, low adverse and not significant, and following the measures proposed in the outline HMP blanket bog habitats are anticipated to experience an overall low beneficial impact.

Ornithology

9.43 The full assessment of effects on ornithology (bird life) is provided in Chapter 9 (Volume 2) of the EIA Report.

9.44 The baseline ornithological conditions were recorded within and around the Proposed Development and the likely significant effects on populations of identified target species were assessed.

9.45 Important Ornithological Features (IOFs) identified which are considered to have the potential to experience significant effects as a result of the Proposed Development and that were taken forward into the assessment are: golden eagle, golden plover and merlin. Following a review of statutory designations within 20km of the Proposed Development and taking into consideration the consultation response from NatureScot, there was considered to be no connectivity between the species assemblage recorded at the Proposed Development and the Moray Firth Marine Special Protection Area (mSPA), Caithness and Sutherland Peatlands Special Protection Area (SPA), Lairg and Strath Brora Lochs SPA, East Caithness Cliffs SPA, Dornoch Firth and Loch Fleet SPA or Strath Carnaig and Strath Fleet Moors SPA.

9.46 Consequently, no likely significant effects on any of the SPAs was predicted and a Habitats Regulations Appraisal to inform an appropriate assessment was therefore not required – the three IOFs scoped in to the assessment were all assessed in the context of their relevant wider-countryside populations.

9.47 Effects related to direct and indirect habitat loss, construction disturbance and displacement, operational displacement, collision risk and cumulative effects were all considered. The residual effects are considered to be not significant within the context of the EIA Regulations.

9.48 Cumulative effects in relation to golden eagle, golden plover and merlin were considered to be minor adverse and therefore not significant within the context of the EIA Regulations.

Geology, Hydrology and Hydrogeology

9.49 The full assessment of effects on geology (including soils), hydrology (surface water bodies, drainage and flooding) and hydrogeology (groundwater) is provided in Chapter 10 (Volume 2) of the EIA Report.

9.50 Information on the study area was compiled using baseline information from a desk study and verified by an extensive programme of field work. The assessment was undertaken considering the sensitivity of receptors identified during the baseline study and considering any mitigation measures incorporated as part of the site design.

9.51 A detailed programme of peat depth probing has been completed and the results have been used to inform the site design. A Peat Landslide and Hazard Risk Assessment (PLHRA) and Peat Management Plan (PMP) have been prepared which show that areas of deep peat can be avoided, and peat resources safeguarded.

9.52 The site lies outside of any floodplains and no drinking water protected areas have been identified within 1km of the site. No designated sites, that are dependent on water have been recorded within 1km of or in hydraulic continuity with the site. It has been shown that there are no sites, protected for their geology, that would be impacted by the Proposed Development.

9.53 Site investigation has been undertaken to confirm the location of private water supply sources within 1km of the site and an assessment of the potential for the Proposed Development to impair these has been completed. An assessment of the potential effects on Groundwater Dependent Terrestrial Ecosystems (GWDTE) has also been completed and a schedule of proposed watercourse crossings is given.

9.54 Sustainable Drainage Systems (SuDS) have been proposed to ensure that the rate of run-off from the site during construction and post development is no greater than that prior to development so as not to increase flood risk. The proposed SuDS measures allow the quality of water to be managed at source prior to any discharge being made. Further, the proposed outline habitat management proposals include a programme of ditch blocking and culvert improvements which would reduce both the rate and volume of peak water flows, providing a flood risk benefit when compared to existing conditions.

9.54.1 It has been shown, as a consequence of the site design and embedded mitigation, that the Proposed Development would not result in any significant impacts on geology (including soils), hydrology and hydrogeology including private water supplies and GWDTE habitat. To confirm this, a programme of baseline and construction water monitoring has been proposed.

9.54.2 No cumulative effects are anticipated as each site has assessed potential effects on soils, peat or geology and measures have or will be incorporated at each site, as required by best practice and regulatory guidance, to safeguard soils, peat and geology.

Traffic and Transport

9.55 The full assessment of effects on traffic and transport is provided in Chapter 11 (Volume 2) of the EIA Report.

9.56 The assessment considers the impacts during the construction phase of the Proposed Development, when volumes of traffic generation are anticipated to be at their greatest due to the delivery of

equipment and construction materials. In line with IEMA guidelines, severance, driver delay, pedestrian delay, pedestrian amenity, fear and intimidation as well as accidents and safety have been evaluated in isolation for the Proposed Development. Additionally, these receptors were evaluated cumulatively considering other committed and in-planning wind farms to produce a worst-case scenario. The operational phase of the Proposed Development is not anticipated to have any significant impacts on the public road network as a result of the low levels of traffic that are forecast.

9.57 It is proposed that all abnormal turbine loads, and crane trips will originate from Invergordon Port, and access the site via the A9 and the site access road.

9.58 The maximum traffic movements associated with construction of the Proposed Development are predicted to occur in month 9 of the programme, when concrete and aggregate deliveries are predicted to coincide. During this month, an average of 93 heavy goods vehicle (HGV) movements are predicted per day and it is estimated that there would be a further 39 car and minibus / light goods vehicle (LGV) movements per day to transport construction workers to and from the site.

9.59 Traffic volumes as a result of construction activities are likely to increase on the public roads approaching the site including the A9. However, neither total nor HGV traffic flows are predicted to increase by more than 30% at any location on the A9. Users of the A9 are considered receptors of low sensitivity, with settlements of Brora and Golspie considered receptors of medium sensitivity.

9.60 Before the introduction of mitigation, it is not considered that any significant effects would arise resulting from construction traffic movements related to the Proposed Development.

9.61 Consideration was given to the cumulative impact of the Proposed Development with other wind farm developments that are the subject of valid planning applications or approved and which would impact on the study area due to the potential for proposed construction activities to coincide with the construction period of the Proposed Development. It was considered that only South Kilbraur Wind Farm should be included in the assessment. Gordonbush Wind Farm Extension began construction in March 2020 and is due for completion by 2023 and has therefore not been included within the cumulative assessment.

9.62 It is highly unlikely that the construction programmes for the Proposed Development and South Kilbraur Wind Farm would coincide, and it is not certain that all will be granted permission. However, for the purposes of this assessment it was assumed that all proposals will be granted permission and the peak periods of the respective construction programmes would overlap. As such, the cumulative assessment has considered the worst-case scenario.

9.63 The results indicate that when considering the cumulative construction phases, total traffic increases on all routes within the study area. Total traffic flows would not increase by more than 30% at any location of the A9. However, HGV flows are anticipated to increase by over 30% on the A9 south of Brora

9.64 Identified as having a higher level of sensitivity, the settlements of Brora and Golspie have been taken forward to an assessment of effect significance as opposed to the A9 south of Brora.

9.65 Before the introduction of mitigation, it is not considered that any significant effects would arise for users of Brora and Golspie resulting from the cumulative impact of construction traffic movements from the Proposed Development and the other specified developments. Any effects would be short lived during the construction phase, with the A9 throughout the towns not observed to be close to capacity.

Noise

9.66 The full assessment of noise effects is provided in Chapter 12 (Volume 2) of the EIA Report.

9.67 This assessment considered the potential noise effects associated with construction and operation phases of the Proposed Development taking into account the identified nearest residential properties.

9.68 A construction noise assessment, incorporating the impact due to increased traffic noise, indicates that predicted noise levels likely to be experienced at the nearest residential properties exceed construction noise criteria for a short period of time, however appropriate mitigation measures have been identified.

9.69 The operational noise impact was assessed according to the guidance described in the 'The Assessment and Rating of Noise from Wind Farms', referred to as 'ETSU-R-97', as recommended for use in relevant planning policy and agreed with THC Environmental Health Department. The methodology described in this document was developed by a working group comprised of a cross section of interested persons including environmental health officers, wind farm operators and independent acoustic experts. It provides a robust basis for assessing the noise impact of a wind farm and has been applied at the vast majority of wind farms currently operating in the UK.

9.70 ETSU-R-97 makes clear that any noise restrictions placed on a wind farm must balance the environmental impact of the wind farm against the national and global benefits that would arise through the development of renewable energy sources. The assessment also adopts the latest recommendations of the Institute of Acoustics 'Good Practice Guide to the Application of ETSU R 97 for the Assessment and Rating of Wind Turbine Noise'.

9.71 A sound propagation model was used to predict the noise levels due to the Proposed Development at nearby residential properties over a range of wind speeds, taking into account the position of the proposed wind turbines, the nearest residential properties, and the candidate wind turbine type. The model employed (which considered downwind conditions at all times) took account of attenuation due to geometric spreading, atmospheric absorption, ground effects and barriers. It has been shown by measurement-based verification studies that this model tends to slightly overestimate noise levels at nearby residential properties.

9.72 The relevant noise limits were then determined according to the criteria specified by the ETSU R 97 guidelines.

9.73 The predicted operational noise levels are within noise limits at nearby residential properties at all considered wind speeds when the Proposed Development is considered in isolation and cumulatively with nearby schemes. The Proposed Development therefore complies with the relevant guidance on wind farm noise and the impact on the amenity of all nearby properties would be regarded as acceptable. The residual noise effects from the operation of the Proposed Development are therefore not significant.

9.74 An acoustic assessment of the proposed energy storage facility shows that the noise levels would meet relevant criteria.

Aviation

9.75 The full assessment of effects on aviation is provided in Chapter 13 (Volume 2) of the EIA Report.

9.76 It assesses potential impacts upon civil aviation assets including both Wick Airport to the north and Inverness Airport to the south.

9.77 The chapter outlines the potential impacts upon military aviation and radar. In particular, potential impacts on the Primary Surveillance Radar at RAF Lossiemouth and potential mitigation measures identified to address these.

9.78 Following the implementation of mitigation, it is concluded that the Proposed Development would not have any residual effects on aviation.

Socio-economic, Recreation and Tourism

9.79 The full assessment of socio-economic effects, and effects on recreation and tourism is provided in Chapter 14 (Volume 2) of the EIA Report.

9.80 Overall, the populations in North Highlands and Highland are older than in the rest of Scotland, and the population of the North Highlands is expected to decline. The labour market in Highland is performing relatively better than in the rest of Scotland, unemployment is lower and participation in the labour market larger. The tourism assets, accommodation providers and recreational trails are concentrated around the coastal villages of Brora, Helmsdale and Golspie.

9.81 It is estimated that during the development and construction phase, the Proposed Development would generate up to:

- £3.7 million Gross Value Added (GVA) and 51 job years in the North Highlands;
- £8.9 million GVA and 121 job years in Highland; and
- £26.7 million GVA and 385 job years in Scotland.

And during each year of the operational phase, the Proposed Development would generate up to:

- £0.3 million GVA and 4 jobs in the North Highlands;
- £0.6 million GVA and 8 jobs in Highland; and
- £1.2 million GVA and 19 jobs in Scotland.

9.82 There would also be community benefits associated with the Proposed Development. Discussions are ongoing with the community about the best package of measures, but this may include an energy discount scheme, improvements to local infrastructure and habitat restoration. The most substantial local benefit is expected to be associated with employment at local suppliers during the construction and operation, and it is expected that one of the primary contractors will be based in the local area.

9.83 There would also be benefits to the public sector from payment of non-domestic rates estimated to be worth £0.6million each year.

9.84 A review of the latest research evidence suggests that there is no evidence of wind farm developments adversely affecting the tourism economy of Scotland. However, an assessment of the likely effect of the Proposed Development on local tourism, accommodation providers and tourism/recreation routes was undertaken and found that there are not expected to be any significant adverse effects.

9.85 Overall, there were no significant adverse effects identified.

9.86 Whilst the beneficial socio-economic effects are not significant in EIA terms, they are important to the local regional and national economy since they will contribute to economic recovery and to overall economic growth.

Climate Change

9.87 The full assessment of carbon calculations is provided in Chapter 15 (Volume 2) of the EIA Report.

9.88 The Proposed Development is expected to take around 13 months (1.1 years) to repay the carbon exchange to the atmosphere (the CO_2 debt) through construction of the windfarm. There are no current guidelines about what payback time constitutes a significant impact, however, this is a relatively small percentage (2.75%) of the 40 year lifespan of the Proposed Development (based on the lifespan used in the carbon calculator). Compared to fossil fuel electricity generation projects, which also produce embodied emissions during the construction phase and significant emissions during operation due to combustion of fossil fuels, the Proposed Development has a very low carbon

footprint and after 1.1 years, the electricity generated is estimated to be carbon neutral and will displace grid electricity generated from fossil fuel sources. The site would in effect be in a net gain situation following this time period and will then be contributing to national objectives of reducing greenhouse gas emissions and meeting the 'net zero' carbon targets by 2045, therefore the Proposed Development is evaluated to have an overall **beneficial** effect on climate change mitigation.

10 Conclusion

10.1 This Non-Technical Summary of the EIA Report provides an overview of the EIA undertaken for the Proposed Development on Kintradwell Estate, near Brora, Highlands.

10.2 Within Chapter 16 (Schedule of Environmental Commitments) of the EIA Report a schedule of commitments can be found which details the environmental mitigation measures which the Applicant has committed to implement, while Chapter 17 (Summary of Residual Effects) of the EIA Report summarises the likely environmental effects, the mitigation to be implemented and the resulting residual effects.