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1 Background

1.1 Introduction

- 1.1.1 This document is the Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) which accompanies an application made by Renewable Energy Systems (RES) Ltd (hereinafter referred to as ‘the Applicant’).
- 1.1.2 The Applicant is applying for Section 36 (S36) consent and deemed planning consent, under the terms of the Electricity Act 1989, to construct and operate the proposed Hill of Fare Wind Farm (hereinafter referred to as the ‘Proposed Development’), located approximately 6 km north of Banchory, Aberdeenshire, at site centre British National Grid (BNG) NJ 70063 02717 (Refer to **Figure 1**).
- 1.1.3 Renewable energy is a key factor in helping Scotland reach its target of Net Zero by 2045. The Proposed Development would make a meaningful contribution to those national targets for the generation of renewable energy and reduction in greenhouse gas emissions and contribute towards sustainable economic growth in Aberdeenshire and Scotland as a whole.

1.2 The Applicant

- 1.2.1 The Applicant, ‘RES’, is the world’s largest independent renewable energy company. At the forefront of the industry for over 40 years, RES has delivered more than 23 GW of renewable energy projects across the globe and supports an operational asset portfolio exceeding 12 GW worldwide for a large client base. RES employs more than 2,500 people and is active in 14 countries working across onshore and offshore wind, solar, energy storage and transmission and distribution.
- 1.2.2 Drawing on decades of experience in the renewable energy and construction industries, RES has the expertise to develop, construct and operate projects which contribute to a low carbon future by providing a secure supply of sustainable, low cost, clean green energy.
- 1.2.3 RES is committed to finding effective and appropriate ways of engaging with all its stakeholders, including local residents and businesses, and believes that the opinions of local people are an integral part of the development process.
- 1.2.4 RES is also committed to developing long-term relationships with the communities around its projects, proactively seeking ways in which it can

support and encourage community involvement in social and environmental projects near its developments.

1.3 Site and Proposed Development Description

Site Description

1.3.1 The Proposed Development is located north of the A980 and approximately 6 km north of Banchory in Aberdeenshire. The site is within the administrative boundary of Aberdeenshire Council (AC).



Figure 1: Site Location

1.3.2 The site is centred on BNG NJ 70063 02717 and covers an area of approximately 1,380 ha. The site is predominantly moorland with small areas of commercial forestry. The elevation on site ranges from approximately 110 m above sea level in the eastern part of the site, In the western part of the Site are the distinct hill tops of Hill of Fare (470 m above sea level), Hill of Corfiedly (431 m), Craigrath (436m), Tornamean

(458 m) and Blackyduds (433 m). Elevation reduces in the eastern part of the Site with the hilltops of Greymore (393 m) and Meikle Tap (359 m).

- 1.3.3 The headwaters of two watercourses originate on site namely, the Burn of Lythenbauds and Burn of Corrichie.
- 1.3.4 The majority of the site is unforested. However, there is a portion of forested land in the east of the site near the site entrance and central southern section at the Howe of Corrichie. The forestry in the east of the site forms part of the Midmar Forest and is designated as Ancient Woodland.
- 1.3.5 There are no residential properties located within the site boundary. However, there are numerous residential properties surrounding the Proposed Development. The nearest settlements are Torphins, located approximately 3.4 km to the west, Midmar located 3.6 km to the north, Echt located approximately 4 km to the north-east and Banchory located approximately 6 km to the south of the site.

Overview of Proposed Development

- 1.3.6 The Proposed Development will comprise sixteen three bladed horizontal axis turbines of approximately 6.6 MW generating capacity with varying heights to blade tip as follows:
 - Eleven turbines up to 180 m in height to blade tip; and
 - Five turbines up to 200 m in height to blade tip.
- 1.3.7 Turbine model and manufacturer will be selected post consent.
- 1.3.8 The total generating capacity of the Proposed Development is anticipated to be up to approximately 105.6 MW, supported by an additional battery energy storage system (BESS) provision of approximately 100 MW. The associated infrastructure will include: site access, access tracks, crane hardstandings, underground cabling, on-site substation and maintenance building, energy storage facility, external transformers, temporary construction compounds, buried cabling, laydown area and potential excavations/borrow workings.
- 1.3.9 Based on the Proposed Development's location and estimated capacity factor, the annual indicative total electricity output for the site would be an estimated 357 Gigawatt hours (GWh), per annum¹. The Proposed Development would generate enough electricity to power approximately

¹ Calculated from 108 MW x 8760 (number of hours per year) x 0.293 (expected onshore wind load factor).

101,000 average Scottish households². The Proposed Development would contribute towards international and national targets for the generation of renewable energy and reduction in greenhouse gas emissions. The proposed layout is illustrated on **Figure 2**.

- 1.3.10 The electricity produced will be exported to the electricity network. The point of connection to the wider electricity network is expected to be at Fetteresso to the south east.

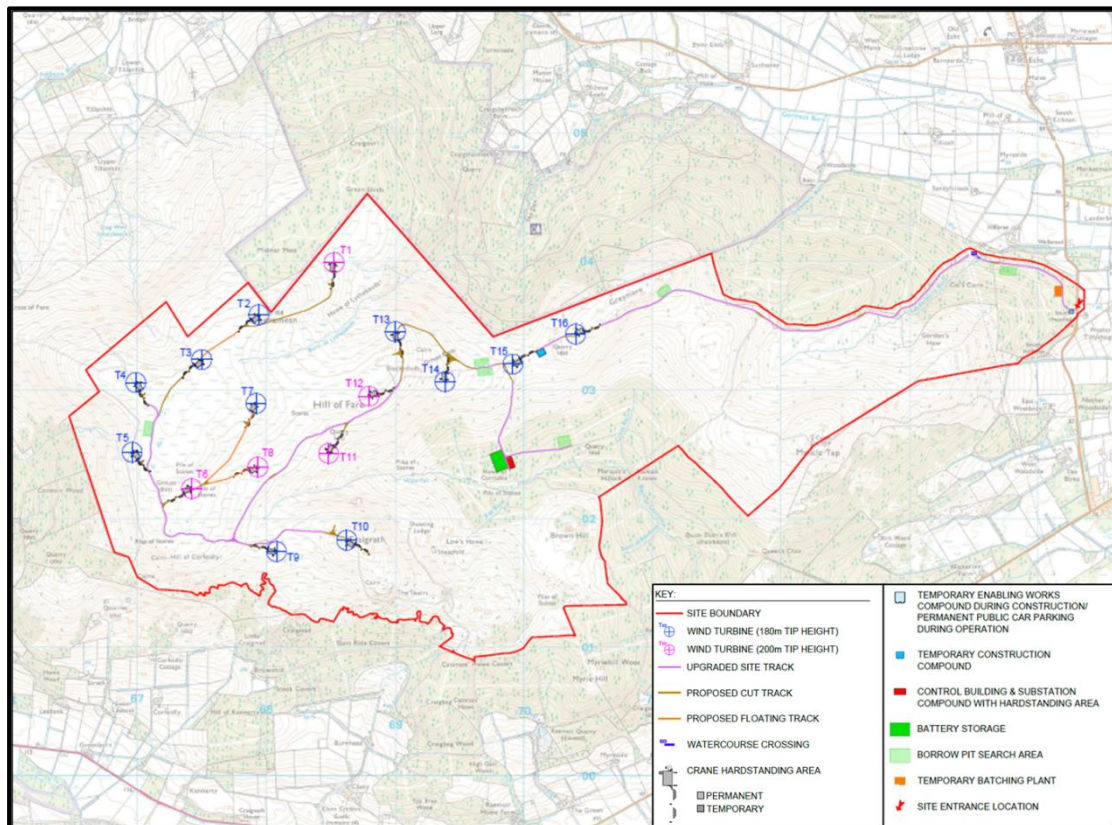


Figure 2: Site Location Plan

1.4 Purpose of the EIAR

- 1.4.1 ITP Energised was appointed by the Applicant to undertake an Environmental Impact Assessment (EIA) of the Proposed Development in accordance with The Electricity Works (Environmental Impact Assessment) (Scotland) Regulations 2017 (the EIA Regulations).
- 1.4.2 EIA is the systematic process of identifying, predicting, and evaluating the environmental impacts of a Proposed Development. Where appropriate, it also sets out mitigation measures designed to prevent, reduce and, if

² Based on average annual electricity consumption per household of 3,520 from BEIS Subnational Electricity and Gas Consumption Statistics, Regional and Local Authority, Great Britain, 2021 (UK Government, December 2022).

appropriate, offset potential significant adverse environmental effects. An assessment of residual effects, those expected to remain following implementation of mitigation measures, is also presented.

- 1.4.3 The main findings and conclusions of an EIAR are summarised in a Non-Technical Summary (NTS), as required by the EIA Regulations. The NTS, provided as a standalone document, summarises the key findings of the EIA in easily accessible, non-technical language, ensuring everybody with an interest in the project can understand and access information about its predicted environmental effects.
- 1.4.4 The EIAR and this NTS accompany the application for S36 consent for the Proposed Development, being submitted to the Scottish Ministers.

2 Site Location and Design Process

2.1 Site Selection

- 2.1.1 The Applicant utilises a sophisticated Geographic Information System (GIS) model for site selection which seeks to mirror planning, environmental, technical and commercial constraints. The GIS model is updated regularly when new data becomes available or when other factors change. Where available and appropriate, the GIS model incorporates published advice from statutory consultees. The Applicant's use of the GIS model enables objective and consistent treatment of the whole country to assist with site selection.
- 2.1.2 The GIS model is based upon a combination of generalised and graded suitability layers covering environmental, economic and technical aspects, known as 'key layers'. All key layers are assessed using a 0% - 100% suitability scale, represented by a 0 - 1 score, where 0 represents unsuitable and 1 represents 100% suitability.
- 2.1.3 The key layers included in the GIS model are as follows:
 - wind speed;
 - proximity to housing;
 - natural and built heritage constraints; and
 - slope constraint.
- 2.1.4 In addition, for each site, a visual sweep of the following 'informative layers' is carried out:
 - national and local planning policy / development plans / spatial frameworks;

- Ministry of Defence (MOD) tactical training areas;
- International, national and local designated sites;
- Desk based data for watercourses and peat;
- electromagnetic links and utilities;
- proximity to other wind farm sites (pre-planning, consented and operational); and
- other information gleaned from maps or knowledge of the area such as masts, undesignated parks, tourist attractions, etc.).

2.1.5 These informative layers are included in the GIS model to identify if there is potential for a wind farm.

2.2 Design Evolution

2.2.1 Once the site was identified, key issues and constraints for consideration in the design process were established through a combination of desk-based research, extensive field survey and consultation (through the EIA Scoping process).

2.2.2 The identification of key issues and constraints during the iterative process has allowed for issues to be addressed and the careful placement of infrastructure for the Proposed Development within the site. The EIA team has been able to identify effective mitigation, with potentially significant adverse effects avoided or minimised as far as reasonably practicable through the design process.

2.2.3 A total of 8 layouts were developed through the design process and can be summarised as:

- **Layout 1 - Assessment of Site Potential:** this is the layout that was produced as an outcome of the GIS modelling and took into account high level constraints such as watercourses, slopes, houses forestry etc. This layout comprised 32 turbines with a turbine tip height of 200 m.
- **Layout 2 - Wind Turbine Developable Area:** This layout presented a wind turbine development area following a feasibility study which included landscape and visual appraisal and planning inputs. This turbine development area was used to focus the phase 1 peat survey, which informed the layout to avoid areas of deep peat. Other constraints that were identified and suitably buffered within this layout were a buried underground cable and micropath/microwave link through the site. The layout comprised 16 turbines with a tip height of 200 m.

- **Layout 3 - Scoping Layout:** the layout which included was in the EIA Scoping Report in August 2022. This layout took into account the removal of the buffer for the buried cable within the site as there is potential for the cable to be removed if required. In addition, a technical review identified that the minimum spacing between turbines could be decreased to 3.5 rotor diameters, thus freeing space for a 17th turbine. Therefore, this layout comprised 17 turbines with a tip height of 250 m, there were several projects across Scotland (at the time of Scoping submission) at various stages of planning and development proposing a similar maximum turbine height.
- **Layout 4 - Design Workshop:** The layout was further refined to comprise 16 turbines with a tip height of 242.5 m as a result of the following:
 - Ground Water Dependent Terrestrial Ecosystems (GWDTE) were identified and more sensitive areas avoided.
 - Larger buffers were applied to properties and settlements which pushed turbines inward away from the southern, western and northern edges of the site.
 - The requirement for a watercourse crossing and traversing peat was identified, which led to the deletion of T1 from Layout 3. This also mitigated potential adverse setting effects upon cultural heritage assets outwith the site to the north including Barmekin Hill Fort.
 - The identification by a third-party of an estimated area for the potential designation of a Battlefield. An application to register a battlefield relating to the Battle of Corrichie was under consideration by Historic Environment Scotland (HES). As a precaution, while the application was considered, turbines were set back from the glen leading from Hill of Fare to the Howe of Corrichie.
 - The site boundary was adjusted to include an area of commercial forestry in the southern portion of the site to accommodate the Battery Energy Storage System (BESS), Control Building and Substation to reduce potential landscape and visual impacts on the Hill of Fare.
- **Layout 5 - Turbine Layout Chill:** feedback on the layout during the first round of public consultations and separate consultation with aviation stakeholders, meant that the tip heights of the 15 turbines

were reduced and a 16th turbine was added. This height reduction mitigated potential adverse effects upon aviation infrastructure, and further lessened potential impacts upon the settings of cultural heritage assets and on residential amenity. This layout comprised 16 turbines, 11 turbines with a tip height of 180 m and five with a tip height of 200 m.

- ***Layout 6 - Preliminary Infrastructure Layout:*** with the 16 turbine layout developed, the proposed infrastructure including locations for the BESS, control building, substation, temporary enabling works compound, temporary construction compound, borrow pit search areas, crane hardstandings, turning heads and access track was developed. It was proposed to upgrade the existing site entrance to the east and use as many existing access tracks as possible in the design. Borrow pit search areas were identified to reduce reliance upon imported stone, avoiding impacts to the road network from construction traffic.
- ***Layout 7 - Infrastructure Layout Chill:*** whilst developing this layout HES determined that the Battlefield would not be designated and would therefore not be a significant cultural heritage constraint to the design. This layout included the addition of a temporary concrete batching plant, in case concrete cannot be sourced close enough to the site, and an additional borrow pit search area which would provide more potential for sourcing site-won stone for track upgrades and compounds. Whilst suppliers may be needed, inclusion of such infrastructure has potential to reduce the impact on road network through reduced construction traffic importing concrete and aggregate. The access track network was revised to ease transit of turbine delivery loads and sections of floating track were identified, reducing the overall track length and impact upon peat. Background sound surveys were completed and fed into modelling which confirmed the layout can meet appropriate sound limits at residential properties. This layout was presented at the final round of public exhibitions in June 2023 and was used to inform the phase 2 peat surveys, and the final hydrological and cultural heritage walkovers.
- ***Layout 8 - Design Freeze Layout:*** following the results of the phase 2 peat surveys, the following infrastructure was micro-sited to avoid deep pockets of peat:

- BESS area rotated 90 degrees to avoid a pocket of deep peat discovered in the south west corner;
- Turbines 3, 7 and 11 were micro-sited away from deep peat; and
- Extent of borrow pit search area near the BESS was reduced in size to avoid deep peat.

Passing places were added to spine access track and it was confirmed that the Temporary Enabling Works Compound, that would be used during construction, could also be used during operation as public car parking.

2.2.4 The final layout of the Proposed Development was the result of extensive iterative design work, to sensitively locate the turbines and the infrastructure required to facilitate construction and operation of the turbines.

2.2.5 In summary, the final layout of the Proposed Development presented achieves the following:

- reduces the setting impact on designated heritage assets within the vicinity of the site;
- sensitively locates infrastructure incorporating appropriate buffer distances from residential, environmental and archaeological receptors to avoid or minimise effects;
- maximises the use of existing access tracks;
- optimises the alignment of new access tracks and hardstands to minimise cut and fill, minimise the impact on sensitive peatland habitats and reduce landscape and visual effects;
- adopts floating access tracks to further minimise disturbance of peatland;
- minimises watercourse crossings and protects watercourses from the potential impacts of constructing the Proposed Development;
- includes borrow pit search areas to minimise the volume of the stone required to be imported to the site;
- adopts of the latest turbine technology;
- maximises the potential for electricity generation through the adoption of turbines and energy storage technologies; and
- can be constructed and operated safely.

2.2.6 In order to address any localised environmental sensitivities, unexpected ground conditions or technical issues that are found during detailed intrusive site investigations and construction, it is proposed that a 100 m micrositing allowance around the turbine locations and all other

infrastructure is allowed. The technical assessments, presented in **Chapters 6 to 14**, have considered the potential for micrositing. During construction, the need for any micrositing would be assessed and agreed with the on-site Ecological Clerk of Works.

2.3 Alternative Sites

- 2.3.1 The Applicant uses a range of criteria to select sites for the development of renewable energy projects. As part of the growth plans for the development of renewable energy projects, the Applicant is continually assessing potential sites. The pipeline of potential sites is commercially sensitive and the sites are not considered to be alternatives to the Proposed Development's site. Alternative sites are therefore not considered further in the EIAR.

3 Description of Development

3.1 Development

- 3.1.1 The Proposed Development will comprise sixteen turbines. Each of the turbines will comprise the following components: three blades; tower; nacelle; hub; and transformer and switchgear. The turbines will be of a typical modern, three-blade, horizontal axis design in semi-matt off-white or light grey with no external advertising or lettering except for statutory notices. The specific turbine manufacturer and model has not yet been selected as this will be subject to a tendering exercise and will be confirmed post consent.
- 3.1.2 The specific turbine model will be procured post-consent in two sizes; 180 m and 200 m blade tip height above ground level. Since all turbines in the Proposed Development exceed 150 m above ground level they must be fitted with medium intensity steady red lights on the highest practicable point in accordance with Article 222 of the Air Navigation Order.
- 3.1.3 A reduced lighting scheme proposed for the turbines was agreed with the Civil Aviation Authority, whereby only 7 of the 16 turbines require lighting with no intermediate lighting on the towers.
- 3.1.4 Foundations will be required to support the turbines. These are typically steel reinforced concrete structures constructed in the ground to which the turbines are bolted. Final design of each foundation is dependent upon site-specific ground conditions at the turbine locations and the type of

turbine chosen and will take place once detailed ground investigations are carried out.

- 3.1.5 Regardless of the sub-structure, the above ground finish will consist of approximately a 4.5 m - 5.5 m diameter foundation plinth protruding from the ground to support the turbine. An approximately 5 m wide maintenance path will connect the plinth to either the adjacent access track or crane hardstand.
- 3.1.6 To enable the construction of the turbines, a crane hardstanding area at each turbine location will be required to accommodate assembly cranes and construction vehicles. This will comprise a crushed stone hardstanding area measuring approximately 35 m x 55 m but subject to the specifications required by the selected turbine manufacturer and crane operator and following detailed ground investigations prior to construction. They will remain in place during the lifetime of the Proposed Development to facilitate maintenance works.
- 3.1.7 The Proposed Development will be accessed directly from the B977 via an upgraded site entrance to the east of the site. The site entrance will be designed to accommodate deliveries for turbine components.
- 3.1.8 The Proposed Development will include approximately 7.3 km of new access tracks and 10.3 km of upgraded tracks. The access track layout has been designed in order to maximise the use and upgrade of existing tracks as far as reasonably practicable. Access track running width shall be approximately 4.5 m and will be constructed of compacted crushed stone. Access track widths may also be wider for short sections such as at passing places, at sharp bends or turning heads and junctions.
- 3.1.9 The majority of access tracks will be excavated whereby overlying soil or peat material would be removed to a suitable formation stratum upon which the access track would be built in compacted stone. Where peat depths are greater than 1 m deep, it is generally more efficient to “float” the access track over peat using geogrid.
- 3.1.10 A Transport Assessment has been undertaken in support of the Application for the Proposed Development and provides detail on access routes to the site for construction vehicles and provides an estimate of trip generation during construction. The Transport Assessment includes a review of the proposed route, construction traffic impacts, and an abnormal load route review.

- 3.1.11 Only one new watercourse crossing is required as part of the Proposed Development. This will require the construction of a new bridge over the Landerberry Burn. An application will be made to SEPA post consent under The Water Environment (Controlled Activities) (Scotland) Regulations 2011 (CAR) for authorisation for this watercourse crossing.
- 3.1.12 Six borrow pit search areas have been identified as borrow pits may be used to provide the stone for construction of access tracks, compounds and hardstanding. These borrow pit search areas are shown as the maximum potential area of borrow pit extraction, but it is not anticipated that these areas would be fully exploited. Final borrow pit locations within the borrow pit search areas would be subject to detailed ground investigations to confirm suitability of material.
- 3.1.13 There are local contractors near the site from which concrete could potentially be sourced. However, if an on-site batching plant is required, a location for a temporary batching plant has been identified on the site layout.
- 3.1.14 A secure construction and material storage compound will be required during the construction period. The temporary enabling works compound will comprise an area approximately 50 m x 60 m will be approximately 30 m x 30 m. The temporary enabling works compound will be located at the entrance of the site. This compound will be made permanent for public car parking during operation of the Proposed Development.
- 3.1.15 The electrical power produced by the individual turbines will be fed to an onsite substation and energy storage facility via underground cables, for onward connection to the national energy electricity network. The substation compound will have an area approximately 45 m x 90 m, to incorporate a substation and control room building and energy storage facility. The substation and control building will accommodate all the equipment necessary for automatic remote control and monitoring of the Proposed Development, in addition to the electrical switchgear, fault protection and metering equipment required to connect the Proposed Development to the electricity network.
- 3.1.16 A separate energy storage facility with battery capacity, with an output of around 100 MW. This facility will comprise a total area of approximately 15,000 m². Within the BESS compound permanent containers, mounted on small concrete foundations, would house an energy storage device, inverters and other ancillary equipment. For each container there would be a transformer located on the hardstand.

- 3.1.17 The proposed point of connection for the Proposed Development into the electricity grid system is at the substation compound. The Proposed Development would most likely be connected at Fetteresso Substation, approximately 32 km southeast of the site.
- 3.1.18 The grid connection does not form part of the application for the Proposed Development. Any required consent for the grid connection would typically be sought by SSEN Transmission, the Transmission Owner (TO) of the local distribution/transmission network. The TO would be responsible for the consenting, construction and operation and maintenance of the grid connection.
- 3.1.19 The telecommunications mast is expected to be up to 10 m tall, set within the control building and substation compound area.

3.2 Construction

- 3.2.1 The on-site construction period for the Proposed Development is expected to be approximately 18-24 months as shown in Table 1.

Table 1: Indicative Construction Programme

| Month | Mobilisation | Site Entrance & Access Tracks | Crane Hardstand | Turbine Foundations | Substation & BESS | Cable Installation | Turbine Deliveries | Turbine Erection | Demobilisation & Operational Take Over |
|-------|--------------|-------------------------------|-----------------|---------------------|-------------------|--------------------|--------------------|------------------|--|
| 1 | ■ | ■ | | | | | | | |
| 2 | ■ | ■ | ■ | | | | | | |
| 3 | | ■ | ■ | | | | | | |
| 4 | | ■ | ■ | | | | | | |
| 5 | | ■ | ■ | ■ | | | | | |
| 6 | | ■ | ■ | ■ | ■ | | | | |
| 7 | | ■ | ■ | ■ | ■ | | | | |
| 8 | | | ■ | ■ | ■ | | | | |
| 9 | | | | ■ | ■ | | | | |
| 10 | | | | ■ | ■ | | | | |
| 11 | | | | | ■ | ■ | | | |
| 12 | | | | | ■ | ■ | | | |
| 13 | | | | | | ■ | | | |
| 14 | | | | | | ■ | ■ | | |
| 15 | | | | | | | ■ | | |
| 16 | | | | | | | ■ | ■ | |
| 17 | | | | | | | | ■ | |
| 18 | | | | | | | | ■ | |
| 19 | | | | | | | | | ■ |

| Month | Mobilisation | Site Entrance & Access Tracks | Crane Hardstand | Turbine Foundations | Substation & BESS | Cable Installation | Turbine Deliveries | Turbine Erection | Demobilisation & Operational Take Over |
|-------|--------------|-------------------------------|-----------------|---------------------|-------------------|--------------------|--------------------|------------------|--|
| 20 | | | | | | | | | |
| 21 | | | | | | | | | |
| 22 | | | | | | | | | |
| 23 | | | | | | | | | |
| 24 | | | | | | | | | |

3.2.2 In general, working hours for construction will be from 07:00 to 19:00 Monday to Saturday. No working is proposed on Sundays or public holidays except for the following exceptions. These times have been chosen to minimise disturbance to local residents.

3.2.3 Exceptions to the proposed working hours will be made for foundation pours and turbine erection. Concrete pouring for an individual wind turbine foundation must take place continuously and so activity will only cease when the pour has been completed. Turbine erection can only occur during periods of low wind speeds and so to minimise the construction programme, lifting operations may need to be scheduled outwith the above hours. In addition, it may be necessary to complete a particular lifting operation to ensure the structure is left safe.

3.3 Operation and Maintenance

3.3.1 The operational lifespan of the Proposed Development is proposed to be 50 years, after which it would be appropriately decommissioned. It is expected that decommissioning would take approximately 12 months. If, after the operational lifespan of the Proposed Development has expired there is potential for re-powering the development, this would be subject to a new and separate application.

3.3.2 Once operational, the Proposed Development is unlikely to be permanently staffed, and it is envisaged that the amount of traffic associated with the Proposed Development will be minimal. Traffic generated will comprise routine maintenance and service team visits, together with the occasional need for more extensive maintenance or repair. Turbine operations will be overseen by suitably qualified contractors.

- 3.3.3 Routine maintenance and servicing will take place two to four times per year. Servicing will include the performance of tasks such as adjustment of blades, inspection of blade tip brakes and inspection of welds in the tower. Other visits to the site will take place more frequently to ensure that the turbines are operating at their maximum efficiency. In the event of any unexpected events on-site appropriate repair works will be carried out.
- 3.3.4 The vehicle used for the majority of these visits is likely to be a small four-wheel drive vehicle, although there may be an occasional need for an HGV or crane to access the site for heavier maintenance and repairs.
- 3.3.5 Ongoing access track maintenance will generally be undertaken in the summer months when access tracks are dry. Safe access will be maintained all year round.
- 3.3.6 The Proposed Development would have a sophisticated overall Supervisory Control and Data Acquisition system (SCADA) that would continually interrogate each of the wind turbines and the high voltage (HV) connection. If a fault were to develop which required an operator to intervene then the SCADA system would make contact with duty staff via a mobile messaging system. The SCADA system can be interrogated remotely. The SCADA system would have a feature to allow a remote operator to shut down one, some or all of the turbines.
- 3.3.7 An operator will be employed to monitor the wind turbines, largely through remote routine interrogation of the SCADA system. The operator will also look after the day-to-day logistical supervision of the Proposed Development and would be on-site intermittently.
- 3.3.8 If a fault should occur, the operator would diagnose the cause. If the repair warranted the Proposed Development being disconnected from the grid network then the operator would make contact with the TO. However, this is a highly unlikely occurrence as most faults can be rectified without reference to the grid network. If the fault was in the electrical system then the faulty part or the entirety of the Proposed Development would be automatically disconnected.
- 3.3.9 Signage will be placed on the Proposed Development giving details of emergency contacts. This information would also be made available to the local police station and the TO.

3.4 Decommissioning

- 3.4.1 In the event of decommissioning, or replacement of the turbines, it is anticipated that, in general, the environmental effects would be similar to, or less than, that expected during construction.
- 3.4.2 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 (DEMP).
- 3.4.3 It is anticipated that certain components of the turbines will be dismantled and removed from site for disposal and/or recycling as appropriate and in accordance with regulations in place at the time. It is proposed to leave the buried portion of the foundations of the turbines in situ on decommissioning. This is considered to have less impact on the hydrological system which will have established itself during the lifetime of the Proposed Development, than complete removal of the foundations.

4 Public Consultation

4.1 Statutory Consultation

- 4.1.1 A formal EIA Scoping Opinion was requested from the Energy Consents Unit (ECU) in August 2022 through the submission of an EIA Scoping Report. The EIA Scoping Report contained details of the site baseline, the Proposed Development, proposed environmental impacts to be assessed in the EIA, and the assessment methodologies that would be used. The ECU consulted with a variety of statutory and non-statutory consultees before providing an EIA Scoping Opinion in October 2022. A summary of how the Scoping responses would be addressed in the EIAR was presented in an EIA Gatecheck Report submitted to the ECU in April 2023.
- 4.1.2 Beyond the formal engagement platforms, the Applicant continued to liaise directly with key stakeholders in order to refine the approach to the EIAR and develop a design solution for the site which reflects the feedback received. Direct consultation has also been undertaken with specific statutory consultees, to confirm and agree the detailed approach to the technical surveys and assessments on a topic by topic basis.
- 4.1.3 Further information on the consultation process is given in **Chapter 4** of the EIAR.

4.2 Public Consultation

- 4.2.1 A stand-alone Pre-Application Consultation (PAC) Report has been prepared which gives details of the correspondence, online public consultation, in person drop-in sessions and other discussions which have taken place with the communities closest to the site.
- 4.2.2 The PAC report also details findings of that work and illustrates the ways in which community engagement has helped to identify potential issues arising from the emerging development proposal, and where appropriate, shape the final proposal which is now the subject of this application.
- 4.2.3 The Applicant is grateful to residents and local representatives for their input into the pre-application community engagement and for their participation in the discussions and consultation events.

5 Environmental Impact Assessment

5.1 Overview

- 5.1.1 The EIA considers the potential effects of the Proposed Development during construction, operation and decommissioning phases. Where appropriate, mitigation measures are proposed. The following topics and associated effects are assessed in the EIA:
- Landscape and visual (assessing character of the landscape and views from agreed locations through consultation);
 - Cultural heritage (the integrity and setting of historic sites and/or features);
 - Ecology (protected habitats, flora and fauna, excluding birds);
 - Ornithology (birds and protected bird habitats);
 - Geology, hydrology and hydrogeology (rocks, surface water, groundwater);
 - Access, Traffic and transport (effects from traffic travelling to, and from, the Proposed Development on local roads and receptors);
 - Acoustics (effects on local properties from sounds arising from the Proposed Development);
 - Socio-economics (local and national economy); and
 - Aviation and other issues (Telecommunications, Shadow Flicker, Unexploded Ordnance, Forestry and Carbon Balance).
- 5.1.2 **Chapter 4** of the EIAR describes the EIA process in more detail.

- 5.1.3 For each topic, the existing conditions (the baseline) were identified and the effects of the Proposed Development on these conditions assessed (the potential effects). Potential effects are assessed on a scale of negligible, minor, moderate and major, with effects of moderate or major typically deemed to be significant in the terms of EIA. Mitigation measures have then been proposed to minimise significant 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 mitigation (the residual effects).
- 5.1.4 In addition to the above, the cumulative effects of the Proposed Development, i.e. effects considered in conjunction with other developments in the local area, primarily other wind farms, were assessed.
- 5.1.5 A summary of the baseline conditions, the proposed mitigation, the resulting residual effects and the cumulative effects for each topic is provided below. Full details of the assessment for each of the topics are provided in **Chapters 6 to 14** of the EIAR.

5.2 Landscape and Visual

- 5.2.1 The full potential effects on the landscape and visual receptors that would arise as a result of the Proposed Development are provided in **Chapter 6** of the EIAR.
- 5.2.2 The Landscape and Visual Impact Assessment (LVIA) identifies the likely significant adverse effects arising from the Proposed Development on landscape character and visual amenity. It has been informed by desk studies and field visits carried out on separate occasions at different times of the year and through consultation undertaken with consultees including AC and NatureScot.
- 5.2.3 There are no national landscape designations covering the site. However, the Cairngorms National Park is situated approximately 16.8 km to the south-west of the nearest turbine. The Deeside and Lochnagar National Scenic Area is located 32.8 km west of the site.
- 5.2.4 There are five Special Landscape Areas within 35 km of the site:
- Upper Don Valley Special Landscape Area located approximately 17.2 km north-east of the site;
 - The Hill of Cromar Special Landscape Area located approximately 12.6 km west of the site;

- The Dee Valley Special Landscape Area located approximately 2.15 km south of the site;
- Clachnaben and Forest of Birse Special Landscape Area located approximately 11 km south west of the site; and
- Braes of Mearns Special Landscape Area located approximately 19.5 km south of the site.

- 5.2.5 The proposed turbines and majority of the access tracks and associated infrastructure are located within the Landscape Character Type Moorland Plateau, specifically Gampian Outliers. A short section of access track, one borrow pit search area and the temporary enabling works compound are located within the western fringe of the Landscape Character Type Central Wooded Estates.
- 5.2.6 Appropriate offsets from all properties have been maintained to ensure that no property would experience an overbearing visual impact. Mitigation has been designed into the proposed aviation lighting by agreeing with the Civil Aviation Authority to only fit lighting on the hubs of 7 of the 16 turbines and reducing the intensity of vertical downwards lighting in order to reduce the visual impact experienced by receptors below the lights.
- 5.2.7 As with almost any onshore wind farm development it is recognised that the Proposed Development would give rise to some localised significant effects on landscape character and visual amenity.
- 5.2.8 The Proposed Development would result in direct and significant effects on the part of the landscape character type within which the Proposed Development is located. Indirect and significant effects would extend to approximately 7 km within Landscape Character Type Central Wooded Estates to the north and east, Landscape Character Type Deeside to the south and Landscape Character Type The Cromar Uplands to the north-west and within approximately 10 km in Landscape Character Type The Mounth to the south.
- 5.2.9 The Proposed Development would be visible from various nearby properties, settlements as well as parts of the surrounding road, footpath and cycle networks.
- 5.2.10 It has been assessed that there would be significant visual effects experienced at 16 of the 22 representative viewpoints assessed within the EIA, during daylight hours and at 11 viewpoints during the hours of darkness.

- 5.2.11 In terms of the effects on residential properties within 2 km of the site, twelve of the 28 properties would experience a significant visual effect from either a part of their house, garden or principal access route.
- 5.2.12 However, it is concluded that when the experience from each property is considered in the round, none of the residents of any of the properties would experience such an overbearing or overwhelming effect on their visual amenity that their properties would become unattractive places in which to live.
- 5.2.13 In relation to settlements, the assessment found that all of the settlements within 5 km (Torphins, Midmar, Echt, Inchmarlo and Banchory) would experience significant visual effects during daylight and dark sky hours and settlements within 5 to 10 km would also experience significant visual effects during daylight and dark sky hours.
- 5.2.14 The assessment of routes found that receptors would experience significant effects from parts of Torphins Wood Circular path; Torphins Cemetery Walk; Myriewell Circular and Echt to North Kirkton Woods; Sauchen Farm to A944; Scolty Hill Path and Aberdeenshire Cycle Route - Midmar - Dunecht.
- 5.2.15 The assessment of roads found that receptors would experience significant effects from parts of the A980; the B993; the B9119; and the B977.
- 5.2.16 In terms of effects on the Dee Valley Special Landscape Area, the assessment found that indirect significant effects on views north from the Special Landscape Area would extend to approximately 7 km but the addition of the Proposed Development would not undermine the understanding or appreciation of the underlying landscape of the Special Landscape Area or its special qualities.
- 5.2.17 Regarding cumulative effects, it is acknowledged that wherever more than one wind farm is visible at any given location in the landscape, there will be a greater overall or cumulative effect on landscape character than if just one wind farm was visible in the landscape. Likewise, it is acknowledged that the more wind turbines that are constructed in any given landscape, the greater the magnitude of overall (or combined) change to the landscape character.
- 5.2.18 In the first cumulative scenario considered (where other consented wind farms are also considered to be operational), there would be two additional schemes Fetteresso and Craigneill. It is not considered that the inclusion of these schemes within the baseline would result in any

cumulative landscape or visual effects that would lead to a change to the effects in relation to the Proposed Development which are already set out in the main assessment.

- 5.2.19 With regard to the totality of the combined effects of all schemes, the existing Mid Hill and Meikle Carewe schemes are also both situated over 15 km from the site. Several other smaller scale schemes are already located in the landscape closer to the site and provide some existing views of wind energy in the landscape, albeit none of the schemes are of a scale such as the Proposed Development. Collectively, therefore, the overall effects of all the schemes together would be no more than a minor degree greater than those identified in relation to the Proposed Development which are already set out in the main assessment.
- 5.2.20 Localised significant effects on landscape character and visual amenity are inevitable as a result of commercial wind energy developments. Whilst the LVIA identified significant landscape and visual effects, it is considered that the landscape has the capacity to accommodate the effects identified, including when the consented, but as yet unbuilt, wind farms are taken into account.
- 5.2.21 Considering the effects of the Proposed Development, a precautionary approach has been adopted and it is therefore assumed that the effects identified will be adverse in nature even though it is recognised that for some people the impacts could be perceived to be beneficial.

5.3 Cultural Heritage Assessment

- 5.3.1 The full assessment of the potential effects on cultural heritage is provided in **Chapter 7** of the EIAR.
- 5.3.2 This assessment within the EIAR has considered data from a diverse range of sources in order to determine the presence of heritage assets which may be affected by the Proposed Development. The potential direct and indirect effects of the Proposed Development on the identified assets, mitigation measures for protecting known assets during construction or recording of currently unknown features which could be lost due to groundworks during construction, and the residual effects of the proposed development have also been assessed.
- 5.3.3 While a Moderate significance of effect has been identified in relation to the Barmekin of Echt (ref: SM57) and Sunhoney (ref:SM44) scheduled monuments, efforts have been taken to ensure that they have been considered during the design process and have assisted in ensuring the

overall effect of the Proposed Development would not exceed a Moderate Adverse impact.

- 5.3.4 The Applicant has proposed a number of enhancement measures specifically for Barmekin of Echt (ref: SM57), Sunhoney Stone Circle (SM44) and Upper Broomhill (SM12190). These include information boards, improved public car parking and developing a cultural heritage trail connecting Barmekin of Echt (ref: SM57), Sunhoney Stone Circle (SM44) and the Hill of Fare.
- 5.3.5 These impacts are not considered to be of such significance that they would reduce the ability to understand or appreciate those assets, and the integrity of their settings would therefore not be adversely affected and the integrity of both assets settings would be preserved.

5.4 Ecology

- 5.4.1 The full assessment of potential effects on flora and fauna at the site is provided in **Chapter 8** of the EIAR.
- 5.4.2 The Proposed Development area was surveyed to establish an ecological baseline in 2022. The baseline surveys included: extended NVC survey, protected mammal survey, bat survey and fish survey. The baseline data were further complemented by a thorough desk study for historical and noteworthy records of priority species within a defined search area beyond the site boundary.
- 5.4.3 Habitats indicative of potential groundwater dependence were determined following the National Vegetation Classification 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).
- 5.4.4 Two habitats required assessment: dry heath and blanket bog.
- 5.4.5 Dry heath was assessed in terms of direct habitat loss since small areas would be lost to the Proposed Development footprint. Considering the design mitigation, good practice mitigation and enhancement measures proposed as part of an outline Biodiversity Enhancement and Management Plan, the residual impact was deemed to be moderate beneficial, which is deemed a significant beneficial effect to dry heath.
- 5.4.6 Blanket bog habitat required both likely direct and indirect habitat loss effects to be considered due to its 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. However, the use of floating roads and piled turbine foundations is likely to maintain much of the hydrological flow throughout much of the upper peat layer and would maintain much of the existing condition of the habitats underlying the Proposed Development footprint. Moderate beneficial effects, which are deemed significant, are anticipated on the areas of blanket bog. Considering the design mitigation, good practice mitigation and enhancement measures proposed as part of an outline Biodiversity Enhancement and Management Plan, which aims to halt and restore areas of blanket bog showing signs of considerable erosion and degradation as a result of historical management, an overall improvement is predicted in the quality, continuity and integrity of this habitat during the operational phase. Ultimately this will assist with making the blanket bog found within the site more resilient.

- 5.4.7 A protected mammals survey found signs of pine marten and otter activity, although these were all within the Site 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.
- 5.4.8 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 site.
- 5.4.9 Static detector surveys were completed across three survey 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 results of the static detector surveys identified the presence of at least four species; common pipistrelle, soprano pipistrelle, brown long-eared bat and Myotis species.
- 5.4.10 Pipistrelle species are assessed to be at high risk from wind turbines, primarily due to their use of open habitats and their fast flight speed. However, due to the very low levels of activity within the site, it is assessed that the site supports low to moderate activity for the region, with the majority of detector locations supporting low activity.
- 5.4.11 Fish surveys were completed along all watercourses flowing from within the site. At the wider level, all three SEPA classified watercourses are considered to have 'High' access for fish migration. However, within the site, the Burn of Corrichie and the unclassified Landerberry Burn are both

adversely affected by barriers from woody debris. Despite the potential to support salmon, particularly within the wider environment, the watercourses within the site were found to be of limited suitability for fish fauna. There was very limited freshwater pearl mussel habitat within the site, therefore no further freshwater pearl mussel surveys were conducted. The outline Biodiversity Enhancement and Management Plan specifies ways to increase riparian tree cover for the benefit of water quality, nutrient levels, protection against erosion/contamination of the wider catchment as well as to help keep water temperatures low during times of climate change. This will improve the water quality and habitat for fish within the site.

- 5.4.12 Cumulative impacts are considered against all key ecological features carried forwards through the impact assessment and no significant cumulative impacts are predicted.
- 5.4.13 Residual effects on all key ecological features are considered to be at worst, low adverse and not significant, and following the measures proposed in the outline Biodiversity Enhancement Management Plan blanket bog habitats are anticipated to experience an overall moderate beneficial and significant impact.

5.5 Ornithology

- 5.5.1 The full assessment of potential effects on birds is provided in **Chapter 9** of the EIA Report.
- 5.5.2 The assessment considered the potential effects on ornithology associated with the construction and operation of the Proposed Development including on designated sites, statutory and non-statutory conservation designations, bird habitats and protected bird species.
- 5.5.3 The ornithological assessment is based upon comprehensive baseline data, comprising targeted ornithological field surveys of important and legally protected ornithological features identified by desk study and consultation feedback. A full suite of ornithological surveys was adopted for the purposes of assessing the avian baseline conditions for the Proposed Development. The surveys included: vantage point surveys, breeding bird surveys, wider area breeding bird surveys and walkover surveys, all undertaken between October 2020 and August 2022.
- 5.5.4 There are no statutory designations with ornithological features within the site, however, there are three Special Areas of Conservation, three Sites of Special Scientific Interest and one Ramsar site within 20 km of the site.

- 5.5.5 Collision risk modelling was undertaken for the most frequently recorded species at risk height. A minor adverse, and therefore not significant, effect was identified for red kite and appropriate mitigation to avoid encouraging red kite into the wind farm area has been proposed.
- 5.5.6 Following the collision risk modelling, all wader and raptor species were scoped out of further assessment, with exception of red kite.
- 5.5.7 An assessment of ornithology effects arising from the construction and operation of the Proposed Development was undertaken. The main potential impacts of construction activities are the habitat loss, displacement of breeding, foraging or roosting birds, namely red kite. The assessment deemed the potential effect on the Aberdeenshire red kite population to be minor adverse and such not deemed significant.
- 5.5.8 In addition to the collision risk on red kite, the operational effects of displacement and turbine lighting were assessed. It was determined that both displacement and turbine lighting will have minor and negligible adverse effects on the red kite population, respectively. They were therefore not deemed significant.
- 5.5.9 During the construction period a number of embedded mitigation measures have been proposed including the appointment of an Ecological Clerk of Works to advise the Applicant and the Principal Contractor on all ornithological matters and the development and implementation of a Bird Disturbance Management Plan.
- 5.5.10 The Applicant is proposing to undertake a number of measures to enhance biodiversity on site, including restoration of bog areas on identified deeper peat areas, targeted riparian planting, bracken management and conifer tree self-regeneration management, and reduced heathland management practices in areas to allow areas of heathland to regenerate and provide cover for ground nesting bird species and invertebrate prey. As part of this, a deer management plan is being proposed which will include provision for the removal of deer carrion and the entrails of a deer (grallochs) from within 200 m of operational turbines to help reduce the attractiveness of these areas, and therefore reduce collision risk for red kite.

5.6 Hydrology, Geology and Hydrogeology

- 5.6.1 The full assessment of the potential effects on important geological, hydrological and hydrogeological features associated with the site is provided in **Chapter 10** of the EIAR.

- 5.6.2 The Proposed Development is located within the catchment of the River Dee, with the river located approximately 2.3 km southwest of the site at its closest point. The River Dee Special Area of Conservation is designated for Freshwater Pearl Mussels, Otter and Atlantic Salmon.
- 5.6.3 No other designated sites related to the water environment are located within 3 km of the site.
- 5.6.4 The headwaters of two watercourses originate in the site which drain in an easterly direction, namely the Burn of Lythenbauds in the north-east of the site and the Burn of Corrichie which originates in the south-east of the site. To the north-west of the site the headwaters of an unnamed burn drain northwards towards Upper Tillenhill which confluences with the Auchorie Burn. To the east of the site the proposed access route runs adjacent to the Landerberry Burn.
- 5.6.5 Watercourses within the site drain to the River Dee, with the exception of the Auchorie Burn which drains north to the River Don.
- 5.6.6 SEPA Indicative Flood Maps do not indicate any risk of river (fluvial) flooding within the site, with the exception of the Burn of Corrichie. However, mapped flood risk is constrained to the immediate watercourse channel within the Burn of Corrichie. Isolated patches of surface water flood risk are shown within the site, considered to correspond with small topographical depressions.
- 5.6.7 However, the SEPA flood mapping does show a High risk of fluvial and surface water flooding immediately outwith the site corresponding to the channel and adjacent floodplains of watercourses draining from the site. the watercourses flow within relatively steep channels through well-defined, steep sided valleys, which combined with their small contributing catchment areas will limit flooding extents during high flows to the immediate watercourse corridor. Therefore, no significant risk of surface water or fluvial flooding is anticipated at the site.
- 5.6.8 British Geological Survey mapping shows that peat deposits are present across the majority of the centre and west of the site. The peat surveys highlighted that where peat is present, the deepest pocket is up to 5 m deep in the vicinity of the Burn of Lythenbauds and southeast of the summit of the Hill of Fare. The peat survey results informed the production of a Peat Landslide Risk Assessment which concluded that the areas of highest risk are close to the Burn of Corrichie and the Burn of Lythenbauds.

- 5.6.9 The assessment process informed the design evolution of the development, with the recommendation that where possible infrastructure avoid areas of peat >1 m in depth.
- 5.6.10 Information on Private Water Supplies (PWS) was collected from Aberdeenshire Council, Dunecht Estate and through open consultation with members of the public in the surrounding area. Only Private Water Supply sources up to 2 km from the site have been assessed within the EIAR.
- 5.6.11 With the implementation of appropriate mitigation, no significant residual effects are anticipated in respect of geology, hydrology and hydrogeological issues including PWS. The residual effects are all assessed to be not significant and, as they will occur during the construction phase only, they are temporary and reversible.
- 5.6.12 A programme of water monitoring will be required prior to any construction activity and during construction of the Proposed Development. The monitoring programme will be agreed with AC in consultation with relevant parties and it is expected to include monitoring of the watercourses which drain from the site.
- 5.6.13 It is proposed a geotechnical risk register is maintained during the construction and post-construction phase of the Proposed Development. It is expected that this would be maintained by the developer and secured by an appropriately worded planning condition.
- 5.6.14 During and following construction, the drainage measures deployed at the site (temporary and permanent) would be subject to routine inspection by the dedicated Ecological Clerk of Works on behalf of the Developer. This would be specified in a site-specific Construction Environmental Management Plan and would be secured by an appropriately worded planning condition.
- 5.6.15 Overall, the effects of the Proposed Development on geology, hydrology and hydrogeology receptors are not significant under the terms of the EIA Regulations.

5.7 Access, Traffic and Transport Assessment

- 5.7.1 The full assessment of the potential effects on traffic and transport is provided in **Chapter 11** of the EIAR.
- 5.7.2 The Traffic and Transport assessment has shown that the Proposed Development will generate modest levels of traffic on the local road network during the construction phase. The effects of this traffic have

been assessed across the adjacent road network to identify any areas where mitigation may be required. Mitigation measures have also been considered to assist with the movement of abnormal loads associated with the delivery of turbine components.

- 5.7.3 With regards to driver delay the Proposed Development will result in a maximum of 92 additional vehicle trips on the road network over the course of a 12-hour operational day. On average this results in a little over one additional vehicle every 10 minutes which is unlikely to result in other road users experiencing any notable increase in delays due to operational issues at junctions or on the road network in general.
- 5.7.4 A further potential cause of driver delay is during the delivery of abnormal loads, which will be travelling at slower speeds and may require the use of the full carriageway width when negotiating junctions and constrained sections along the delivery route. The resultant significance of effect is Minor, and would be temporary during the delivery of abnormal loads.
- 5.7.5 Overall, following implementation of a range of mitigation measures, the residual environmental effects of the construction and operational phases of the Proposed Development are assessed to be ‘not significant’ in the context of the EIA Regulations.
- 5.7.6 Furthermore, it has been concluded that no cumulative effects are likely, as a result of other identified wind farm developments.

5.8 Acoustic Assessment

- 5.8.1 The full assessment of the potential sound effects from the construction and operation of the Proposed Development on local receptors is provided in **Chapter 10** of the EIAR.
- 5.8.2 The acoustic impact of the operation of the Proposed Development on nearby residential properties has been assessed in accordance with the appropriate guidance on wind farm noise.
- 5.8.3 To establish baseline conditions, background sound surveys were carried out at nearby properties and the measured background noise levels used to determine appropriate noise limits.
- 5.8.4 Operational noise levels were predicted using the recommended noise propagation model. The predicted noise levels for the Proposed Development are within the derived noise limits at all considered wind speeds. The Proposed Development therefore complies with the relevant

guidance on wind farm noise and the impact on the amenity of all nearby residential properties would be regarded as acceptable.

- 5.8.5 The construction noise assessment found that construction noise levels are predicted to temporarily exceed construction noise criteria at a limited number of nearby properties although with the implementation of appropriate mitigation measures, the impact on the residential properties is not deemed to be significant.
- 5.8.6 Vibration and air overpressure due to blasting are not expected to have a significant impact on nearby residents following the implementation of appropriate mitigation measures.

5.9 Socio Economic Assessment

- 5.9.1 The full assessment of the potential effects on socio is provided in **Chapter 13** of the EIAR.
- 5.9.2 It is estimated that the construction phase of the Proposed Development could generate:
- 237 construction jobs and £15.4 million in Gross Value Added in Aberdeenshire; and
 - 1,087 construction jobs and £61.7 million in Gross Value Added in Scotland.
- 5.9.3 It is estimated that the operational phase of the Proposed Development could generate:
- 25 operation and maintenance jobs and of £1.7 million in Gross Value Added in Aberdeenshire; and
 - 63 operation and maintenance jobs and £2.9 million in Gross Value Added in Scotland.
- 5.9.4 Surveys of the public's attitudes to wind farms provide no clear evidence that the presence of wind farms in an area has a negative impact on local tourism. Tourists using the local core paths and local tourist attractions may have a particular sensitivity to visual effects; however, access to tourist facilities will be unaffected. Hence, even where significant visual effects are predicted, negative effects of the operational phase of the Proposed Development are predicted not to have a significant effect on tourism receptors in accordance with the EIA Regulations

5.10 Aviation and Other Issues (Telecommunications, Forestry, Shadow Flicker)

5.10.1 The full assessments of the potential effects on aviation and radar infrastructure, television and telecommunications, effects on commercial forestry operations, the potential effects of shadow flicker and carbon balance as a result of the Proposed Development are provided in **Chapter 14** of the EIAR.

Aviation

5.10.2 The Proposed Development is located within 50 km of Aberdeen Airport and 25 km from Perwinnes radar and 61.8 km from Allanshill radar.

5.10.3 There are five military radars within 100 km of the site, the closest being Air Defence Buchan radar approximately 56 km to the north east. The Proposed Development is located within an area designated as a ‘low priority military low flying area’.

5.10.4 The Proposed Development will potentially impact the radar at Perwinnes. It has been agreed with the relevant authorities that the impact can be mitigated with a suitable mitigation scheme and this could be secured through an appropriately worded planning condition.

5.10.5 Infrared lighting will be agreed in line with the Ministry of Defence low flying requirements. A visible lighting scheme has been agreed with the with the Civil Aviation Authority.

5.10.6 Whilst a working solution for Aberdeen Airport’s flight procedures is outstanding, consultation is ongoing and subject to agreement, a mitigation scheme could be secured through an appropriately worded planning condition.

Telecommunications

5.10.7 Television and telecommunications had been scoped out of detailed assessment because digital television is less likely to be affected by the atmospheric conditions that rendered analogue television unwatchable and does not suffer from reflection effects or ghosted image generation.

5.10.8 The Ofcom Spectrum Information was used to identify microwave links crossing or adjacent to the Site. Fixed microwave links are direct line-of-sight communication links between transmitting and receiving dishes placed on masts generally located on hilltops that vary in length from a few kilometres to over 70 km.

- 5.10.9 Telecommunications and broadcasting network operators were consulted during the design phase of the project. These included Arqiva, BT, The Joint Radio Company (JRC) Limited and Atkins. The only issue raised was a microwave link belonging to Arqiva, which crosses the site. In order to mitigate the impact it was agreed that no part of any turbine will be within 100 m of the link. As such, no further impact is expected.
- 5.10.10 The Proposed Development is expected to have no impact on any telecommunication systems, such as telephone, television or radio signals.

Shadow Flicker

- 5.10.11 Shadow flicker is a phenomenon caused during certain weather conditions whereby the low sun behind the rotating blades creates a flickering effect upon the shadow created at small openings in line of sight such as windows and doors of a property.
- 5.10.12 Five occupied properties within 1,650 m of turbines may theoretically experience some limited periods of shadow flicker from the Proposed Development. The modelling does not account for obstacles such as trees and assumes line of sight with turbines which are always spinning in conditions that are always sunny.
- 5.10.13 Nevertheless, in the event that any property actually experiences significant shadow flicker effects once the Proposed Development is operational, the Applicant will investigate. Mitigation measures may include curtailment of the operation of relevant individual wind turbines at times when shadow flicker could impact nearby properties, via the use of a shadow flicker shut down module in the turbines.

Forestry

- 5.10.14 The proposed turbines are sited on the Hill of Fare, an open heather moorland with sporadic self-seeded trees. The majority of the site is unforested, with the eastern section of the site, by the site entrance and central southern section at the Howe of Corrichie, being the only forestry areas within the site boundary.
- 5.10.15 The eastern section of forestry forms part of Midmar Forest and carries with it a designation of Ancient Woodland, although it has been managed for commercial forestry. Significant portions of forestry were blown down in Aberdeenshire due to Storm Arwen in November 2021, including much of this eastern area within the site designated as Ancient Woodland.
- 5.10.16 As depicted in the Proposed Layout (**Figure 2**), the temporary enabling works compound, temporary batching plant, two borrow pit search areas,

control building and substation compound with hardstanding area and the battery storage area are proposed in the forested areas of the site. This amounts to an area of approximately 27.02 ha.

- 5.10.17 Due to the damage caused by Storm Arwen, only 12.56 ha of the 27.02 ha requires felling.
- 5.10.18 The Applicant is committed to providing appropriate compensatory replanting and is proposing 15.79 ha of riparian planting (i.e. planting along the banks of burns and rivers) and up to 27.02 ha additional compensatory planting on Brown Hill. The total area of replanting / new planting of forestry within the Site is proposed to be up to 42.81 ha.
- 5.10.19 The extent, location and composition of such planting will be agreed with Dunecht Estates and Scottish Forestry and enforced through a planning condition prior to the commencement of operation of the Proposed Development.

5.11 Unexploded Ordnance

- 5.11.1 A risk assessment was commissioned by the Applicant in March 2022 to understand the potential risk of unexploded ordnance (UXO) on site.
- 5.11.2 An UXO Survey is the process of scanning or probing the ground to assess if there are potentially unexploded bombs and such like. It is relevant to the health and safety of personnel on site and gives context to the historical land use at the site.
- 5.11.3 The risk assessment concluded that the likelihood of German unexploded bombs falling within the site during World War II is considered to be minimal given the very low bomb density across the region, with no positive evidence found to suggest that the site or its surrounding area sustained any incidents of bombing. As such, the site has been assessed as of Low Risk from German aerial delivered UXO.
- 5.11.4 However, the entire site was designated a World War II armaments training area. Owing to the historical discovery of ordnance in the area, the risk of UXO contamination within the site is considered to be elevated. With the limited historical information available, at a desktop study stage, it has not proven possible to identify areas of higher and lower risk within the site even though the overall area is large. The site has therefore been assessed at a precautionary Medium Risk from Allied UXO contamination, and it is considered prudent to recommend that intrusive works within the

bounds of the historic range have UXO support. There has been no significant post-war redevelopment within the site.

- 5.11.5 As a result of the desk study, the Applicant has ensured that ground investigation work has included UXO support on the ground and that will continue through construction.
- 5.11.6 The desk study also demonstrates the additional human influences upon this site, including moorland management, commercial forestry, underground and overground cabling and telecoms.

5.12 Carbon Balance

- 5.12.1 Using SEPA's carbon calculator, the expected carbon payback time of the Proposed Development is 1.2 years based on it displacing generation from fossil-fuelled power stations. This is the amount of time that the Proposed Development will be operational for before it has repaid its carbon footprint, i.e. it will operate carbon free for 48.8 years based on a 50 year operational period.
- 5.12.2 As recommended in current guidance, estimated savings presented above are for replacement of fossil fuel electricity generation but, while this could be the case in the short term, it is not the most probable scenario in the longer-term. The grid-mix of electricity generation represents the overall carbon emissions from the grid per unit of electricity and includes nuclear and renewables as well as fossil fuels. Based on the grid-mix results, the Proposed Development is expected to result in a saving of approximately 69,033 tonnes of CO₂ per year with an expected **carbon payback time of 2.8 years**.

6 Conclusion

- 6.1.1 This Non-Technical Summary of the EIAR provides an overview of the Proposed Development. Within **Chapter 15** of the EIAR a schedule of environmental commitments can be found which details the environmental mitigation measures which the Applicant has committed to implement.
- 6.1.2 **Chapter 15** of the EIAR also summaries the potential effects, mitigation to be implemented and the resulting residual effects.
- 6.1.3 The final layout has been informed by a robust EIA and lengthy design iteration process, considering potential environmental impacts and their effects, physical constraints, and health and safety considerations. The information used to inform the design iteration process included

consultation responses, baseline data and the impact assessment undertaken.

- 6.1.4 Consideration has been given to a range of design issues as well as various environmental, ecological and technical requirements. Predicted environmental effects arising from the Proposed Development have been mitigated as far as possible, if not eliminated during the iterative design process.
- 6.1.5 Overall, the Proposed Development has been designed and located to accord with local and national planning policy. The Proposed Development has been designed to maximise renewable energy generation from the site whilst minimising the potential environmental effects. The Proposed Development will provide a valuable contribution towards the ambitious national targets for electricity generation from renewable sources and reduction of carbon emissions.

7 Availability of the EIAR

- 7.1.1 In accordance with Section 18 of the EIA Regulations, copies of the EIA Report are available for inspection by the public, notice of which is published on the Applicant’s website, in the Edinburgh Gazette, Scotsman and the Deeside Piper.
- 7.1.2 In consultation with AC and community councils, hard copies of the EIAR are available to view during the opening hours at the following locations:

| | |
|------------------|-------------------------|
| Banchory Library | Alford Library |
| Bridge Street | Alford Community Campus |
| Banchory | Greystone Road |
| AB31 5SU | Alford |
| | AB33 8TY |
- 7.1.3 Electronic copies of the EIAR, including all figures, appendices and accompanying documents are available to view on the project website www.hilloffare-windfarm.co.uk and can be accessed at www.energyconsents.scot.
- 7.1.4 Hard copies of this NTS are available free of charge. Hard copies of the EIAR are available for £1,500 per set. The price of the hard copy reflects the costs of producing the Landscape and Visual visualisations in particular.
- 7.1.5 Hard copies of the EIA Report can be requested for purchase from:

Hill of Fare Wind Farm Project Team
RES Ltd,
Third Floor STV,
120 Govan Road,
Glasgow,
G51 1PQ.

Email: carey.green@res-group.com Website: www.hilloffare-windfarm.co.uk

7.1.6 Alternatively, a USB memory stick containing PDF files of the EIAR are available for £15 each. These PDF files can also be downloaded for free from the Hill of Fare Wind Farm project website page at www.hilloffare-windfarm.co.uk.

7.2 Representations to the Application

7.2.1 Any representations to the application should be made directly to the Scottish Government at:

Energy Consents Unit
5 Atlantic Quay
150 Broomielaw
Glasgow
G2 8LU

Email: representations@gov.scot

Online: <http://www.energyconsents.scot/>