



Volume 1: Non-Technical Summary (NTS)





Non-Technical Summary

Smulgedon Wind Farm



1. INTRODUCTION

- 1.1. This Non-Technical Summary (NTS) forms part of the Environmental Statement (ES) to accompany an amendment application for planning permission by Smulgedon Wind Farm Ltd (part of the Randolph Renewables Group) to reduce the overall tip height from 120.5m to 114.90m (5.6m) and hub height from 85m to 68.9m (16.1m) and to increase the rotor diameter from 71m to 92m (21m) for 7 turbines associated with a wind farm which was consented on 2nd October 2012 subject to compliance with 30 conditions. This larger rotor diameter will result in the harnessing of wind energy using more modern and efficient turbines that maximise the potential of the site, with only a minor alteration. However, the reduction in tip and hub height will make the turbines less prominent. There will also be minor increases to the crane pads to accommodate the turbines.
- 1.2. The Development was originally consented under a planning application that was made to the Northern Ireland Department of the Environment (DOE) Planning Service in February 2009 by Gaelectric Developments Limited to construct, operate and decommission a wind farm known as Smulgedon Wind Farm (**Application No. B/2009/0070/F**) on land at Smulgedon Hill, south of Legavallon Road, circa 9km to the northeast of Dungiven and 8km west of Garvagh, Co. Derry/Londonderry.
- 1.3. The proposed wind farm will comprise of 7 turbines and associated infrastructure and will have a total installed capacity of up to 16.45 megawatts (MW).
- 1.4. Owing to the scale and nature of the Development, an Environmental Statement (ES) was prepared in accordance with *The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999* ('*The EIA Regulations*') to identify and consider the likely environmental effects of the Development on the environment.
- 1.5. Neo Environmental Limited has compiled an amendment produced in an ES format as requested by Causeway Coast and Glens Borough Council.
- 1.6. The ES describes the environmental effects during each phase of the Development, including the:
 - Construction of the Development'
 - An anticipated 30 years of operation; and
 - Decommissioning of the Development.
- 1.7. This NTS presents a summary of the principle findings reported in the ES.

STRUCTURE OF THE ENVIRONMENTAL STATEMENT

- 1.8. The ES has been coordinated by Neo Environmental with specialist input from Jodie Kane of LIPS Ltd.

Volume 1:

- Non-Technical Summary

Volume 2:

- Environmental Statement Chapters
 - Chapter 1: Introduction;
 - Chapter 2: Planning and Policy Framework;
 - Chapter 3: Socio-economics, Recreation and Tourism;
 - Chapter 4: Landscape and Visual Impact Assessment;
 - Chapter 5: Ecology;
 - Chapter 6: Ornithology;
 - Chapter 7: Hydrology and Hydrogeology;
 - Chapter 8: Archaeological, Architectural and Cultural Heritage;
 - Chapter 9: Noise;
 - Chapter 10: Existing Infrastructure and Aviation;
 - Chapter 11: Traffic and Transport;
 - Chapter 12: Miscellaneous Issues
 - Chapter 13: Shadow Flicker Assessment

Volume 3:

- Figures: Contains the illustrations that accompany the report

Volume 4:

- **Technical Appendices:** Contains technical information relating to the environmental topics. Information includes detailed methodologies, baseline data information and data analysis.

2. RENEWABLE ENERGY

UK Overview

- 2.1. Global climate change is widely recognised as being one of the greatest environmental challenges facing the world today. One of its principal sources is the wide spread use of fossil fuels to generate electricity that releases greenhouse gases (such as CO₂) that has an impact on the world's climate. To help lessen the effects of climate change, greenhouse gases emissions must be reduced. One of the key strategies that can help tackle climate change crisis is by generating energy from clean sources of renewables such as wind.
- 2.2. The UK is party to the United Nations Framework Convention on Climate Change (UNFCCC). The Kyoto Protocol, adopted in December 1997 and put into force in February 2005, operationalises the UNFCCC by committing industrialised countries and economies in transition to limit and reduce greenhouse gas ("GHG") emissions in accordance with agreed individual targets. It only binds developed countries, and places a heavier burden on them, under the principle of "common but differentiated responsibility and respective capabilities", because it recognises that they are largely responsible for the current high levels of GHG emissions in the atmosphere.
- 2.3. The 2016 Paris Climate Agreement marked the latest step in the development of the UN regime with a central objective is to keep the increase in global average temperature to well below 2°C above pre-industrial levels and aims to limit the increase to 1.5°C. The UK formally ratified the agreement in December 2016, signalling major commitment to being part of a global effort to curb the effects of climate change.
- 2.4. The Climate Change Act 2008 established long term statutory targets for the UK to achieve an 80% reduction in greenhouse gases by 2050 against a 1990 baseline. However, following the Government's declaration of an 'Environment and Climate Emergency' in May 2019, they committed the UK to achieving net zero greenhouse gas emissions by 2050. The Committee on Climate Change (CCC) advised that to meet this new target, the UK will require substantial amounts of new, low carbon power sources to be built before 2050, up to four times that of today's levels.

Northern Ireland

- 2.5. In 2013, the Department for Enterprise, Trade and Investment (now replaced by the Department of the Economy) published a report outlining different scenarios for Northern Ireland's energy system up to 2050 and how early decisions can affect its development.
- 2.6. The main conclusions of the report are that an ambitious reduction in greenhouse gas emissions would require:
 - Renewable electricity as the main form of generation;

- A higher uptake of renewable heat;
- Improved energy efficiency; and
- Higher uptake of electric vehicles.

- 2.7. If these aims were to be achieved, this would reduce greenhouse gas emissions by 55% to 80%, while reducing fossil fuel imports from 96% of energy demand to 41% of energy demand in 2050.
- 2.8. The Strategic Planning Policy for Northern Ireland (SPPS) was published in September 2015 and contains Planning Policy Statements (PPS) which set out the policies of the Department of the Environment on particular aspects of land use planning and apply to the whole of Northern Ireland.
- 2.9. **PPS18: Renewable Energy** states *“greater use of renewable energy technologies will reduce our dependence on imported fossil fuels and will bring diversity and security of supply to our energy infrastructure. It will also help Northern Ireland achieve its targets for reducing carbon emissions”*.

3. PROPOSED DEVELOPMENT

SITE DESCRIPTION

- 3.1. The Application Site is located at Smulgedon, approximately 9km to the northeast of Dungiven and 8km west of the village of Garvagh in County Derry, Northern Ireland. Gortnamoyagh Forest surrounds the eastern and southern edge of the overall (consented) development boundary. This range of mountains and hills forms a long series of prominent ridges, uplands and valleys that stretch in a broad arc for approximately 35km between Magilligan in the north to the Sperrin Mountains in the south.
- 3.2. The area that encompasses the amendment application (the “Application Site”) lies at an elevation of approximately 210m – 290m AOD and covers a total area of c. 6.12 hectares. It is centred at approximate Grid Reference (NGR) E276110 N41474 on the small Smulgedon Hill, which is sandwiched between larger summits to the north and south. Smulgedon Hill is a small irregular-shaped hill rising to approximately 290m above sea level. It is overshadowed immediately to the north by Donald’s Hill, Rigged Hill and Boyd’s Mountain which together form a plateau, approximately 380m high.
- 3.3. Local topography is broadly defined by undulating hills, with the development area generally sloping from west to east. The current landuse within the land holdings is grazing, with heath, unmanaged grasslands and semi-improved grassland present. Fields within the land holdings are bound by post and wire fencing throughout the area. The Legavallon Road runs in a general east to west direction along the northeastern boundary of the land holdings before turning south through the very eastern part of the land holdings for circa 840m and exiting the site to the east. The Belraugh Road also runs east to west for circa 330m along the most eastern part of the northern boundary of the Original Application Area.

DEVELOPMENT DESCRIPTION

- 3.4. The proposed amendments to the Original Consent consist of a reduction in the overall tip height from 120.5m to 114.90m (5.6m) and hub height from 85m to 68.9m (16.1m), and to increase the rotor diameter from 71m to 92m (21m) for all 7 turbines. This larger rotor diameter will result in the harnessing of wind energy using more modern and efficient turbines that maximise the potential of the site, with only a minor alteration. However, the reduction in tip and hub height will make the turbines less prominent. There will also be minor increases to the crane pads and wind turbine foundations to accommodate the turbines. Furthermore, this application also incorporates the access and revised track layout consented under planning reference B/2013/0196/F. As these were previously assessed in detail and as

they were consented, no significant effects were outlined. Fieldwork was undertaken to validate the original assessments, with no additional effects identified

- 3.5. The Application Site only covers the wind turbines and their revised crane pads and their foundations as well as the additionally consented site entrance and access tracks (B/2013/0196/F). However, the Original Application Area will be assessed and referenced where relevant.
- 3.6. The overall development (original consent and amendment) comprise the following:
- Seven turbines and associated infrastructure including transformers and crane pads
 - Construction of site entrance
 - Construction of new access tracks
 - Construction of a new temporary site compound
 - Construction of a new on-site substation including the control building and underground power cables; and
 - Erection of one permanent meteorological mast to monitor wind speed.
- 3.7. **Table 1-1** below details the co-ordinates of the 7 consented turbines.

Table 1-1: Turbine Co-ordinates

Turbine	Easting	Northing
1	275636	414924
2	276109	415022
3	276465	414968
4	275399	414637
5	275694	414584
6	276069	414735
7	276275	414557

- 3.8. The Proposed Development will be connected to the local electricity grid via a new substation building on site. An application for the grid connection between the site substation and the national grid will be made separately.
- 3.9. The Proposed Development will have an operational life of approximately 30 years after commissioning. Following this period, the Proposed Development will be decommissioned in accordance with best practice. Alternatively, the life of the Proposed Development may be extended subject to further environmental studies and new consents.

- 3.10. To date, wind farms have made an important contribution to Northern Ireland's renewable targets and low carbon objectives, and the Applicant is seeking to secure and build on its contribution by proposing to construct and operate a wind farm on Smulgedon Hill, County Derry.

Construction

- 3.11. Construction is anticipated to take place over an 8-month period, after which the wind farm would then become operational and generate electricity for a 30 year period.
- 3.12. Each wind turbine would have a maximum height to blade tip of 114.90m above ground level. The turbines will be of the three bladed horizontal axis type, with a maximum hub height of 68.9m and a maximum rotor diameter of 92m. This will allow for turbines with individual generating capacities of 2.35MW and will give a combined installed capacity for the site of up to 16.45MW. This project will provide enough energy for over 9,660 homes and displace over 22,924 tonnes of CO₂ emissions during each year of operation.
- 3.13. The turbines would be of a variable speed type, so that the turbine rotor speed would vary according to the energy available in the wind. A typical turbine of this type would have a rotational speed of approximately 5 to 17 revolutions per minute generating power for all wind speeds between 3-4m/s and 25m/s (9-56mph or gale force 3 -9 on the Beaufort Scale). They attain their maximum output at between 9-10m/s.
- 3.14. The turbines will be computer controlled to ensure that at all times the turbine faces directly into the wind to ensure optimum efficiency. The rotors of all seven turbines would rotate in the same direction.
- 3.15. The blades would be manufactured from fibre-reinforced epoxy, the nacelle houses the gearbox and generator and is mounted on a cylindrical steel tower manufactured from rolled steel. Subject to agreement with the Planning Service the finish and colour of the turbines will be light grey with a semi-matt finish to reduce their contrast with the background sky and minimise reflections. The turbines will be uniform in colour and will not contain any company logos.
- 3.16. The Proposed Development will be connected to the local electricity grid via a new substation building on site. An application for the grid connection between the site substation and the national grid will be made separately.

Operation

- 3.17. Modern wind turbines have an expected operational availability of over 97%, including shutdowns due to routine maintenance. Each turbine has a computer controller that regulates every aspect of the turbine's performance.

- 3.18. In the event of any unexpected events on site, such as tripping of safety features, replacement of sensors or failure of a gearbox, appropriate maintenance works would be carried out by the local engineers.
- 3.19. The operations will be overseen by suitably qualified local contractors who would visit the site regularly to carry out maintenance. It is anticipated that routine servicing would take place twice per year with a main service at twelve monthly intervals and a minor service at six months. Ongoing track maintenance would generally be undertaken in the summer months when tracks are dry.
- 3.20. Safe access would be maintained all year round.

Decommissioning

- 3.21. At the end of the estimated 30-year lifetime period of the Smulgedon Wind Farm, it will either be removed, and the site reinstated or a new planning application may be submitted to retain or modify the wind farm.
- 3.22. The wind farm will be decommissioned in accordance with best practice and/or in compliance with any planning conditions. Current best practice includes the removal of all above ground structures; the removal of all underground structures to one metre below ground level; and reinstatement of disturbed areas. Landowners will be given the option to retain the access tracks for their own purposes.
- 3.23. It is estimated that decommissioning a wind farm of this size would take approximately 8 months.

4. PLANNING POLICY

- 4.1. Chapter 2 of the Environmental Statement sets out legislative planning and policy background to the application. This includes the local development plan, which is the Northern Area Plan (2016), and other material considerations, such as regional planning policy and guidance for Northern Ireland. These policies are relevant to the determination of the application by Council decision-makers.

MAJOR DEVELOPMENT

- 4.2. In accordance with The Planning (Development Management) Regulations (Northern Ireland) 2015, applications for energy infrastructure are considered to be 'Major Developments' where the subject development exceeds 5MWs, as is the case in this instance. However, the Schedule attached to these Regulations differentiates between energy generating stations that are considered to be 'Major Developments' that are prescribed for the purpose of Section 26 (1) of the Planning Act (NI) 2011 and those that are not, i.e. where its capacity exceeds 5MWs but does not extend to 30 MWs. In the case of the Proposed Development, Section 26 Notice is not required.
- 4.3. As a Major Development the Proposed Development necessitates the following:
- A Proposal of Application Notice (PAN)
 - A Pre-Application Community Consultation (PACC), and
 - A Design and Access Statement
- 4.4. A separate PACC report with appended PAN has been enclosed with the subject application. The PACC report has been prepared in accordance with the following:
- The Planning Act (NI) 2011¹;
 - The Planning (Development Management) (Temporary Modifications) (Coronavirus) Regulations (Northern Ireland) 2020²;
 - The Planning (Development Management) Regulations (Northern Ireland) 2015³; and

¹ <https://www.legislation.gov.uk/nia/2011/25/data.pdf>

² <https://www.legislation.gov.uk/nisr/2020/72/made/data.pdf>

³ <https://www.legislation.gov.uk/nisr/2015/71/made/data.pdf>

- The Planning (General Development Procedure) Order (Northern Ireland) 2015⁴;
- Covid-19 Emergency Planning Guidance: Pre-Application Community Consultation (PACC) – Temporary Removal of Public Event Requirement⁵;
- Development Management Practice Note 10: Pre-Application Community Consultation (and Pre-Application Discussions) (April 2015)⁶;

4.5. A separate Design and Access Statement (DAS), a copy of which has also been enclosed with the subject application, has been prepared in accordance with the following and:

- The Planning (General Development Procedure) Order (Northern Ireland) 2015, ‘Design and Access Statements’ Article 6⁷
- Development Management Practice Note 12: Design and Access Statements, 2015⁸, which provides guidance on the key requirements, procedures and good practice when producing a DAS. Particular regard should be paid to Section 8 of this document that is entitled ‘Summary’ and confirms that:

“The level of information and detail in the D&AS should be proportionate to the scale, complexity and nature of the application”

PLANNING HISTORY

4.6. The Council will be well aware of the background to this development and the planning history has already been touched upon in Chapter 1 and 2 of the Environmental Statement. However, the information below provides a more detailed account of the preceding planning submissions and consents that are relevant to this application.

Original Consents

Planning Reference B/2009/0070/F

4.7. The Original Consent for the Smulgedon Wind Farm was granted on 02 October 2012 under planning reference B/2009/0070/F. The development was originally being progressed by another development company and in doing so a number of additional planning applications were submitted and granted consent. These included the following:

⁴ <https://www.legislation.gov.uk/nisr/2015/72/made/data.pdf>

⁵ <https://www.planningni.gov.uk/index/advice/practice-notes/covid19-epg-pacc.pdf>

⁶ https://www.planningni.gov.uk/index/advice/practice-notes/dm_practice_note_10_pacc-2.pdf

⁷ <https://www.legislation.gov.uk/nisr/2015/72/made/data.pdf>

⁸ https://www.planningni.gov.uk/index/advice/practice-notes/dm_practice_note_12_das_complete-3.pdf

Planning reference B/2013/0196/F:

- 4.8. An application for an amendment to the previously consented application (B/2009/0070/F) to facilitate a new development site entrance, relocation of the combined substation and construction compound area and a revised access track route to service Turbine 1, Turbine 2, Turbine 5 and Turbine 6. Consent was granted on 18 August 2015.

Planning reference LA01/2015/1011/F:

- 4.9. An application to vary the wording of Condition No 3 attached to application Ref: B/2013/0196/F, relating to the provision of wheel washing facilities for the operational lifetime of the wind farm. Consent was granted on 05 February 2016.
- 4.10. All necessary pre-commencement planning conditions attached to the Original Consent have been discharged and initial development was then commenced on site. However, in 2019, the project and Smulgedon Wind Farm Limited was acquired by RG Developments Limited.

Subsequent Applications

- 4.11. The following further planning applications have since been submitted:

Planning reference LA01/2019/0239/F:

- 4.12. A Section 54 application for the variation of Conditions 7, 29 and 30 of Consent B/2009/0070/F to incorporate the following proposed wording:
- Condition 7 " All above ground structures shall be dismantled and removed from the site 30 years from the date when the wind farm is commissioned to the electricity grid"
 - Condition 29: " Prior to the commencement of any haulage and main stage construction traffic to site, the developer shall in association with Department for Infrastructure's Road Service Maintenance Section carry out a condition survey of all haul routes and, at the Developer's expense, shall carry out and provide to the Department a DVD detailing the condition of the existing public roads being considered as haul routes"
 - Condition 30: During condition works, the Developer shall carry out and record weekly inspections of all haul routes and submit this information to the Department on a monthly basis. However, should it be identified that an associated deterioration of the haulage routes is occurring, the full requirements of the original condition 30, which required daily inspections and weekly reporting, will be reverted to."

Planning reference LA01/2020/0462/F:

- 4.13. An application for an additional substation building measuring 13,800mm (w) x 5,900mm (d) x 5,759mm (h) with a 13,800mm (w) x 3,000mm concrete apron to be located at approximately 185m South East of consented turbine T2 and 180m North East of consented Turbine 6, as required to facilitate the electrical grid connection of the consented wind farm, (as consented under Ref: B/2009/0070/F). This application was pending at the time of writing of this report.

Local Development Plan

- 4.14. The current plan covering the Causeway Coast and Glens Borough Council (CCAGBC) area is the Northern Area Plan (NAP) 2016, which was adopted by the former Department of the Environment (DOE) on 22nd September 2015.
- 4.15. The Council is currently in the process of preparing their Local Development Plan 2035 (LDP). They are currently working towards Stage 4 of a 10 Stage plan with a view to being in a position for adoption towards the end of 2026. The Plan will set a clear vision for how the Borough should look in the future (up to 2030) by setting out a planning policy framework and details on what type and scale of development should be encouraged and where it should be located. The Plan, when adopted, will replace the NAP and the existing suite of Regional Planning Policy Statements (PPSs). It will also be the key document used when making decisions on planning applications throughout the Borough.
- 4.16. In this instance, there are no area specific renewable energy policies contained within the NAP document. Where development plans are not yet drafted, or if they are silent or contradict other guidance, precedence should be given to the most recent policy.

Regional Planning Policy

- 4.17. PPS18 advocates that development proposals demonstrate their environmental, economic and social benefits as well as how any environmental and social impacts have been minimised through careful consideration of location, scale, design and other measures as has been the case in this instance. It also confirms that renewable energy development should be supported unless unacceptable adverse impact is not outweighed by benefit.
- 4.18. In this submission, we have established that the principle of a wind farm development at the subject site has been accepted by way of the original Consent, as issued under B/2009/0070/F, and that the final design of the proposed amendments has taken into account all relevant planning, environmental and technical considerations. The proposal has ensured that minimal changes have been made to the Original Consent with the turbine locations and majority of ancillary infrastructure remaining unchanged. As with the proposal that formed the basis of the Original Consent, the Proposed Development is not considered to have any unacceptable adverse impact upon public safety or access, human health, amenity, and natural or heritage assets. One would also contend that the Proposed

Development will have significant positive benefits in a context of human health and air quality by ensuring the improved production and supply of renewable energy at this consented Wind Farm site, thus reducing society's reliance upon fossil fuels.

- 4.19. The Proposed Development will have an operational life of approximately 30 years after commissioning and, upon expiration of this, will either be decommissioned in accordance with best practice or, alternatively, the life of the Proposed Development may be extended subject to further environmental studies and new consents.

Summary

- 4.20. Whilst the Proposed Development will introduce a different set of infrastructural elements into the landscape, the information submitted as part of this Environmental Statement and associated documentation has once again confirmed that, with the specified mitigation and management measures in place, and when set in a context of the consented wind farm site, the proposed amendments will result in an insignificant impact upon amenity, landscape and all environmental considerations, a summary of these environmental effects can be found within Section 5 of this Non-Technical Summary.
- 4.21. The submitted information has clarified that the Proposed Development has been taken forward following an appropriate pre-application process and that a balancing of relevant environmental, planning and technical criteria has been achieved, especially when one considers the development in a context of the wider benefits associated with modern and efficient renewable energy schemes and in terms of displacement of CO2 emissions and contributions toward regional and national renewable energy targets.

5. SUMMARY OF ENVIRONMENTAL EFFECTS

- 5.1. The following section provides a summary of the findings of the environmental assessment process which has been undertaken. The full assessments are contained **within Chapters 3 to 13 (Volume 2)** and the accompanying Technical Appendices **(Volume 4)**.

SOCIOECONOMICS, RECREATION AND TOURISM

- 5.2. The Development Site is currently used for rough grazing and is classified as Grade 4 agricultural land; not best and most versatile. The long-term land take of the development is 3.97 hectares, with only 2.86 ha of this resulting permanent loss. The overall loss of agricultural land is not significant in the context of agricultural land available geographically. Existing agricultural practices will continue throughout the operational period, while adding value to the existing land.
- 5.3. Smulgedon Wind Farm Ltd will ensure that wherever possible, local contractors and employees are used in all aspects of wind farm development. The Development will result in significant contracts that would be approximately 25% of the total construction cost. It is estimated that the Development will generate up to 30 short-term construction jobs during the circa 8-month construction period and two full time equivalent jobs created throughout the operational period of 30 years. The Development may also create indirect beneficial effects through employment opportunities in the supply chain. The wind farm will also financially benefit the local authority and the three landowners who will receive payments for leasing their land.
- 5.4. Construction sites are inherently hazardous operations, and therefore are required to be managed such that risks are identified and appropriately addressed. Construction of Smulgedon Wind Farm will be subject to the Construction (Design and Management) Regulations 2015.
- 5.5. The Development site is not currently used for public recreation given its current use as agricultural land and will not be used for public recreation during any phase of the development. Wind turbines are designed to operate at a high standard of safety, however consideration is given to the fact that malfunctions or design faults could occur during the Developments 30 year life span. Smulgedon Wind Farm Ltd is an experienced wind farm operator and will adhere to the highest standards of operational safety. Plant, equipment and buildings will be designed to incorporate the best available technology so that in the event that unauthorised access occurs, the site would pose no more danger to the public than any other remote site.
- 5.6. Surveys of public attitudes to wind farms provide no clear evidence that the presence of wind farms in an area impacts negatively upon tourism.

- 5.7. Nearby recreational PROWs may be subject to indirect effects during the operational phase, including visual and audial changes, however the changes will be negligible to minor difference and hence, the overall change in recreational amenity is not significant. It is also proposed that once the wind farm is operational, school and other educational trips will be encouraged.

LANDSCAPE AND VISUAL IMPACT ASSESSMENT

- 5.8. A Landscape and Visual Impact Assessment (LVIA) has been produced to assess the potential direct and indirect effects of the Proposed Development upon the landscape resources, views and visual amenity within the existing landscape and visual baseline across a 35km study zone. The LVIA is found within **Volume 2: Chapter 4: Landscape and Visual** of the Environmental Statement (ES) produced by Neo Environmental.

Landscape

- 5.9. The Proposed Development will be sited at Smulgedon Hill (290m AOD) across approximately 6.12 hectares. The current land use within the land holdings is of grazing, with heath, unmanaged grasslands, and semi-improved grassland present within a small portion of the Binevenagh Landscape Character Area (LCA). Smulgedon Hill is a small irregular-shaped hill and is overshadowed immediately to the north by Donald's Hill, Rigged Hill and Boyd's Mountain which together form a plateau, approximately 380m high. Wind energy has been more prevalent across the landscape of the study zone since the original assessment. Several windfarm developments which were also in the planning system at the time of the Original Consent which are now operational within the landscape.
- 5.10. The site works required to build out the Proposed Development will be confined to within the limits of the Application Site which occupies a small portion of the Binevenagh LCA. The site works will result in a noticeable change from the current land use to one of a construction site lasting for a temporary period of 8 months. Overall, the medium sensitivity and medium-low magnitude of change will result in temporary **Moderate to Moderate/Minor adverse** lasting for the duration of the construction phase.
- 5.11. During the operational phase, the Proposed Development will further add a new wind energy development into the Binevenagh LCA, which already contains several windfarms including Dunmore and Dunbeg cluster, Rigged Hill and the nearby approved Craiggore Windfarm and Evishagaran Windfarm. On review there will be no notable difference to the potential indirect effects of the Proposed Development or Original Consent upon the other LCAs throughout the study zone. Overall, the medium sensitivity and medium magnitude of change will result in **Moderate adverse** within the immediate LCA while reducing to **Minor adverse** across the wider extents of the LCA. This will last for the operational phase's duration of 30 years.

- 5.12. At decommissioning phase, after the period of planning consent of 30 years has ceased, the turbines and associated infrastructure will be removed off site and the site restored, in accordance with an approved decommissioning plan. It is expected that all structures above ground will be removed and the lands reinstated to a suitable agricultural use. The access tracks may be retained if beneficial for the landowner.
- 5.13. Overall, the Proposed Development will have **Minor to Imperceptible adverse effects**. The Proposed Development does not fall within any designation nor will it have no significant effects on designated landscapes. Other larger windfarms within these designations are already impacted upon the more sensitive character of the LCA.

ECOLOGY

- 5.14. As part of this ES a desk-based assessment was undertaken to collate available ecological information for the site and the surrounding area. This included a search of Natura 2000 designated sites within 15km of the Application Site and all other statutory designated sites within a 5km radius or wherever hydrological influence extends, whichever is further. Information was also obtained on protected/notable species within a 2km radius.
- 5.15. The Proposed Development at Smulgedon does not lie within or directly adjacent to any statutory or non-statutory designated environmental sites. Within 15km of the Application Site boundary there are three Special Areas of Conservation (SACs) and no Special Protection Areas (SPAs). There are eight non-Natura statutory environmental designation sites within 5km of the Proposed Development.
- 5.16. Of the eleven environmental designated sites present within the relevant study areas, the Application Site has connectivity with one SAC and four ASSIs. As no pathway for impacts exist between the Application Site and the other environmental designated sites, no impacts will occur. Therefore, these designated sites have not been considered further within the impact assessment contained in Chapter 5: Ecology.
- 5.17. Due to the design measures incorporated in the Proposed Development, it is considered that the effects upon the qualifying features (otter, Atlantic salmon and priority habitats) of the River Roe and Tributaries SAC and ASSI will be **Low Spatial and Short-term Temporal**. Therefore, the effects on this SAC/ASSI are **not significant** in the terms of EIA Regulations.
- 5.18. Brockagh Quarry ASSI is designated for supporting a rare invertebrate species, scarce blue-tailed damselfly. No habitats with which the scarce blue-tailed damselfly is associated will be affected by the Original Consent or the Amendment Application. The only open water habitats within the ESA are drainage ditches, which are largely located away from the Application Site and heavily shaded with vegetation. It is therefore considered that the Proposed Development will have a **Negligible Spatial and Negligible Temporal** effect upon this ASSI.

- 5.19. Smulgedon ASSI has been designated for supporting species rich wet grassland. The Application Site is separated from the ASSI by the Legavallon Road and areas of heath and grassland, therefore there will be no direct habitat loss the development will cause no fragmentation of its habitat.
- 5.20. Two proposed turbine locations in the north of the site are within the Castle River catchment together with Smulgedon ASSI, forming a hydrological pathway for potential impacts upon the ASSI. However, drainage from the Application Site is impeded from running onto the ASSI by blocked and damaged culverting. While a potential connection therefore exists, this connection is not functional at the time of writing. Nonetheless, to account for potential clearance and repair of the culverting in future, the connection is considered to exist.
- 5.21. This being the case, it is considered that the Proposed Development will have a **Moderate Spatial and Short-term Temporal** effect upon this ASSI in the absence of mitigation. This will be **significant** in terms of the EIA Regulations.
- 5.22. The Castle River Valley ASSI has been designated for its lowland meadows. The northern portion of the site drains into the Castle River catchment, offering a hydrological pathway for potential impacts on the ASSI's interest features.
- 5.23. Given that a small amount of draining water associated with the Proposed Development could enter the ASSI via this route, some impact upon the designated habitats is possible. However, at this distance from the ASSI it is considered that this would lead to less than 10% habitat loss or damage. It is therefore considered that the Proposed Development will have a **Low Spatial and Short-term Temporal** effect upon this ASSI in the absence of mitigation.
- 5.24. Mitigation measures have been outlined within the ecology chapter. These specific measures, along with the use of best practice and embedded mitigation, will hydrologically disconnect the Smulgedon ASSI, Castle River Valley ASSI and River Roe and Tributaries SAC / ASSI from the potentially polluting processes of the Proposed Development.
- 5.25. An extended phase 1 habitat survey was undertaken and identified 13 habitat types. The main effects for habitats during the construction and decommissioning phases is the loss of habitat. The increase in area from turbine foundations and crane pads, relative to the Original Consent, are expected to be insignificant within the context of the overall scale of the consented wind farm development. The **small loss of habitat under the development footprint is considered to be negligible** to nature conservation within the local area.
- 5.26. With the implementation of best practice and mitigation measures there will be **no significant adverse effects** on habitats within the Application Site. The Original Consent included a Habitat Management Plan (HMP) for the long-term management of the Application Site and adjacent areas. The recommendations of this plan will be implemented.
- 5.27. Dusk transect surveys and associated remote monitoring were carried out for each season of the bat active period in 2020 to obtain a baseline activity dataset for the Proposed Development. The results from the baseline activity surveys, along with the findings from the habitat risk assessment indicate that there is **negligible to low** bat activity for species recorded

- at all locations. This indicates the Proposed Development would pose **low** risk to local bat populations.
- 5.28. **No significant effects** will occur upon protected and notable species within the Proposed Development, pre-construction surveys for badger have been recommended as a precautionary measure to assess the presence of badger within the Application Site prior to the construction phase.
- 5.29. **No significant residual impacts** are predicted for designated sites, habitats or protected and notable species during the construction, operational or decommissioning phases with the implementation of the recommended mitigation measures.
- 5.30. The increase in footprint of the development is considered to be **negligible** in terms of habitat loss and **no significant residual effects or cumulative effects** have been predicted for habitats or terrestrial species as a result of the proposed amendments.

ORNITHOLOGY

- 5.31. A desk-based assessment was undertaken to collate available ornithological information for the Application Site and the surrounding area. This included a search of ornithological designated sites within a 20km radius of the Application Site. Information was also obtained on protected/notable bird species within a 2km radius.
- 5.32. The Proposed Development at Smulgedon is not situated in or adjacent to any statutory or non-statutory sites designated for ornithological interest. Within 20km of the proposed windfarm development, there are three designated sites of ornithological interest.
- 5.33. Of the three ornithological designated sites present within the relevant study areas, the Application Site has connectivity to one Ramsar Site (Lough Foyle) and one Important Bird Area (IBA) (Lough Foyle and Rive Foyle). As no pathway for impacts exist between the Application Site and the other ornithological designated site (Ballnahone Bog, Ramsar Site), no impacts will occur. Therefore, this other designated site has not been considered further in the impact assessment contained in Chapter 6: Ornithology.
- 5.34. The Lough Foyle Ramsar Site is designated for its wetland habitat and for nationally or internationally important populations of 23 waterfowl and wader species. The Ramsar Site has a potential hydrological connection with the Application Site via drainage from the northern part of the Application Site, which may enter the Castle River. The Castle River forms a tributary to the River Roe to the northwest of the site, and this in turn flows into Lough Foyle further northwest.
- 5.35. Drainage from the Application Site is impeded from running into the Castle River by blocked and damaged culverting. While a potential connection therefore exists, this connection is not functional at the time of writing. Nonetheless, to account for potential clearance and repair of the culverting in future, the connection is considered to exist.

- 5.36. An important breeding lapwing population is one of the qualifying features of the Ramsar Site, and lapwing is also known to be present at the Application Site. However, the Lough Foyle Ramsar Site is not considered to be connected to the Application Site ornithologically. It is considered that, by preventing surface water pollution through its design, the Proposed Development will not significantly impact upon waders or waterfowl and habitats associated with this Ramsar Site. Therefore, the Proposed Development will **not significantly affect** these qualifying features of the designated site.
- 5.37. Due to the separation distance between the Application Site and the point of potential contamination (18km downstream), allowing for significant dilution of any contaminated run-off that does enter the aquatic environment, it is considered that the impacts from the Proposed Development to the aquatic environment and qualifying interests of the Ramsar Site will be **Low Spatial and Short-Term Temporal**. Therefore, effects in the absence of mitigation are **Minor Adverse** and **Not Significant**.
- 5.38. The Lough Foyle and River Foyle IBA is designated for its populations of seven waterfowl and wader species and its overall wintering waterfowl interest. As it overlaps with the Lough Foyle Ramsar Site, considerations surrounding its hydrological connectivity are the same as those noted above for Lough Foyle Ramsar Site. However, none of the wader or waterfowl species for which this IBA is designated were recorded during the bird surveys associated with the Proposed Development, and no wildfowl were observed on or close to the Application Site. The Lough Foyle and River Foyle IBA therefore lacks ornithological connectivity with the Application Site.
- 5.39. Due to the separation distance between the Application Site and the point of potential contamination, allowing for significant dilution of any contaminated run-off entering the aquatic environment, it is considered that the impacts from the Proposed Development to the aquatic environment and qualifying interests of the Lough Foyle and River Foyle IBA will be **Low Spatial and Short-Term Temporal**. Therefore, effects in the absence of mitigation are **Minor Adverse** and **Not Significant**.
- 5.40. Although **no significant effects** are predicted upon the designated sites linked hydrologically with the Proposed Development, mitigation measures have been outlined to remove hydrological pathways for impact upon these designated sites. These will hydrologically disconnect the Lough Foyle Ramsar Site and The Lough Foyle and River Foyle IBA from any potential effects associated with the Proposed Development.
- 5.41. Land-take directly under the Proposed Development footprint will result in permanent loss of habitats. Land directly under the Proposed Development footprint comprises of unimproved acid grassland, dry heath / acid grassland mosaic, wet heath / acid grassland mosaic, dry heath, semi-improved grassland, scattered scrub and drainage ditch. The areas to be lost form an extremely small fraction of these habitats in the local area, and the increase in area lost relative to the Original Consent is considered to be insignificant within the context of the overall scale of the consented wind farm development. As such, habitat loss is considered to be **negligible** and will not alter the conclusions made within the ornithology chapter submitted

for the Original Consent. In the absence of mitigation, a **Minor Adverse** effect upon all bird species during construction is considered appropriate in connection with loss of habitat. This is **Not Significant**.

- 5.42. Condition discharge related to the Original Consent also included a Habitat Management Plan (HMP) for the long-term management of the Application Site and adjacent areas. The recommendations of this plan will be implemented; as there has not been a significant change in the habitat composition, recommendations will still be relevant for the Proposed Development.
- 5.43. The results of the ornithology surveys completed in connection with the Proposed Development are broadly in keeping with those recorded for the Original Consent. Breeding bird surveys revealed reduced breeding bird use of the Application Site, though did include a single record of lapwing.
- 5.44. The only target species recorded during vantage point surveys was hen harrier, which was recorded on five instances as a single bird flying wholly below collision risk height. The low level of flight activity for all target bird species equates to a **low collision risk**.
- 5.45. Potential effects on bird species (including but not limited to hen harrier, kestrel, buzzard, snipe and lapwing) as a result of the Proposed Development have been assessed for the construction, operation and decommissioning phases. The effects are considered **Not Significant**. However, small numbers of breeding birds (and particularly ground-nesting species) will be impacted directly by habitat loss and indirectly by disturbance during the construction phase.
- 5.46. To ensure that eggs, young and active nests of protected bird species are not impacted, breeding bird protection will be implemented in line with the consented Construction Method Statement and Conditions 4 and 5 of the consented development. This includes pre-commencement bird surveys, weekly ornithological monitoring during the breeding season, strict supervision of any vegetation clearance potentially affecting nesting birds, and habitat enhancement of the existing habitats away from the turbine envelope. Owing to increased presence of hen harrier, kestrel and lapwing during the most recent surveys when compared with 2007, buffer distances have been specified as additional mitigation to protect these species.
- 5.47. With the implementation of the recommended mitigation measures, no significant residual impacts are predicted for ornithological designated sites or protected and notable bird species during the construction, operational or decommissioning phases.
- 5.48. The increase in footprint of the development is considered to be **negligible** in terms of bird habitat loss, and **no significant residual effects or cumulative effects** have been predicted for bird species as a result of the proposed amendments.

LAND, SOIL AND WATER

- 5.49. The aim of the Hydrology and Hydrogeology Chapter (Chapter 7) was to identify the geological, hydrogeological and hydrological conditions of the Application Site and surrounding area, to assess the potential impacts of the Development and to recommend mitigation measures where appropriate. The Application Site only covers the wind turbines and their revised crane pads and foundations; however, the Chapter mostly considers the consented development along with these changes.
- 5.50. Three study were considered which consisted of the Core Study Area (CSA), a 5km Study Area, and a 10km Study Area, which can be viewed on **Figure 7.1: Appendix 7A**. The Core Study Area is defined as the area where construction works will take place and therefore direct effects will occur. Where a feature is outside the Core Study Area boundary, there may still be hydrological connection and therefore the 5km and 10km Study Areas are considered appropriate depending on the feature.
- 5.51. A desk-based assessment of the Application Site was undertaken to identify the geological, hydrological and hydrogeological baseline environment, utilising publicly available information. This was supplemented by a walkover survey on the 27th and 28th January 2020, the aim of which was to assess geological, hydrogeological and hydrological features within the Application Site which had been identified from the desk-based assessment, whilst also identifying any additional previously unrecorded features.
- 5.52. Available data was utilised to identify and categorise potential impacts likely to affect the geological, hydrological and hydrogeological environment as a result of the Proposed Development. The magnitude of potential impacts has been defined in accordance with the criteria provided in the Chapter and is based on experience of conducting such impact assessments on similar projects.
- 5.53. A number of the potential geological, hydrological and hydrogeological impacts identified as a result of the Proposed Development are considered to be significant, and therefore mitigation measures will be required. This was mainly due to the sensitivity of the site which has areas of peat, is within the catchment of watercourses which support populations of salmon and is underlain by a locally important aquifer which is likely to provide a large proportion of resource to the local river system. These mitigation measures have been outlined within **Chapter 7**.
- 5.54. Due to the nature of the Proposed Development construction works which will be kept within the Application Site boundary, there is no potential for significant cumulative effects on lands, soils and water in combination with other local projects.
- 5.55. It is considered that due to the nature of the Proposed Development and the geology, hydrology and hydrogeology assets located within the Application Site and within close proximity, potential effects will be **slight to imperceptible**, once the mitigation measures included within the associated technical appendices to this chapter are taken into account.

CULTURAL HERITAGE

- 5.56. A Cultural Heritage Impact Assessment (CHIA) has been produced to assess the potential direct and indirect effects of the Proposed Development upon heritage and archaeological assets, including the archaeological potential of the Application Site. The following information represents a non-technical summary of this assessment.
- 5.57. The CHIA is found within **Volume 2: Chapter 8** of the Environmental Statement produced by Neo Environmental, including the following supporting figures and appendices:
- Appendix 8A: Figures
 - Figure 8.1 – Site Location Plan
 - Figure 8.2 – Designated Sites within 5km
 - Figure 8.3 – NISMR within 2km
 - Figure 8.4 – OSNI Historical First Edition Map (1832 – 1846)
 - Figure 8.5 – OSNI Historical Second Edition Map (1846 – 1862)
 - Figure 8.6 – OSNI Historical Third Edition Map (1900 – 1907)
 - Figure 8.7 – Aerial View
 - Appendix 8B: Table of Heritage Assets
- 5.58. While a previous desk-based assessment had been produced by Gahan and Long in 2009, the CHIA chapter approached the Proposed Development as a whole, rather than just the proposed turbine upgrades, in order to ensure that the baseline is up-to-date and effects assessed are comprehensive.
- 5.59. A search of high-grade heritage assets such as World Heritage Sites, Scheduled Monuments (SMs) and Parks, Gardens and Demesnes of Special Historic Interest (PGDSHIs) was carried out within a 5km study zone around the outer boundary of the Proposed Development, while architectural heritage assets such as Listed Buildings and Conservation Areas were identified within a 2km study zone, as well as non-designated sites such as those within the Northern Ireland Sites and Monuments Record (NISMR), Industrial Heritage Record (IHR), defence heritage and marine heritage. Where appropriate, sites of exceptional value or sensitivity outside the 5km and 2km study zones were also assessed. Direct and indirect effects were assessed for the assets identified. A Zone of Theoretical Visibility (ZTV) was calculated over the 5km study zone, which was used to identify areas where the Proposed Development could potentially be visible from.

Construction Phase Effects

Ground Disturbance and Direct Effects from Construction Methods

- 5.60. Different levels of intrusion and disturbance are anticipated for different construction elements. As such, the potential for impacting upon sub-surface remains is dependent on the type and scale of each construction element. Construction involving topsoil stripping has, in general, a lower potential for impacting upon sub-surface remains below the archaeological horizon but retains a similar potential for encountering archaeological remains as construction involving deeper excavation work.
- 5.61. The main effects during the construction phase would be direct impacts resulting from groundworks required by the proposal, including the excavation for turbine foundations, cable trenches and topsoil stripping required for on-site access tracks and compound areas.

Direct Effects on Known Archaeological and Heritage Assets

- 5.62. There are no recorded sites within or adjacent to the Application Site that could be physically impacted by the Proposed Development. In addition, no currently unrecorded features of archaeological significance were identified during the baseline analysis. The nearest assets identified are an unrecorded derelict cottage and sheep-pen identified during the map regression analysis and original 2009 site visit; these features will not be directly impacted from the Proposed Development. As such, **no direct effects upon known archaeological and heritage assets are anticipated.**

Archaeological Potential

- 5.63. Due to the absence of any recorded archaeological or architectural features within the Application Site, the site is considered to have limited potential for features of archaeological significance. The nearest assets identified were the unrecorded derelict cottage and sheep-pen identified during the map regression analysis and site walkover survey. Associated sub-surface remains are considered to be unlikely within the Application Site and any such remains would be expected to be of low significance. No other specific archaeological potential is present within the Application Site. However, the absence of development and cultivation within the Application Site indicates that the land is not likely to have been subjected to significant ground disturbance. Any sub-surface remains present within the site therefore have a potential for good preservation.
- 5.64. Based on the ground disturbance expected and the predominately low archaeological potential of the Application Site, the potential for the Proposed Development to directly affect hitherto unknown sub-surface archaeology across the site is anticipated to be **Low**, with the highest potential for impacting upon archaeology occurring during groundworks for the access tracks and turbine foundations. However, as the presence of sub-surface remains within the Application Site is currently unknown, specific direct impacts upon the

archaeological resource in the absence of any mitigation measures cannot be accurately ascertained but would be expected to be **permanent and irreversible**.

Indirect Effects

- 5.65. Indirect effects during the construction phase are anticipated to be limited to visual and noise disturbances resulting from the operations of machinery and various construction activities. Impacts arising from this are considered to be **temporary**, lasting only for the duration of the construction schedule, and will occur primarily within the specified daily working hours. Indirect effects upon heritage assets during this phase are therefore not considered to be a concern.

Operational Phase Effects

Direct Effects

- 5.66. As no additional construction or ground disturbance activities are anticipated during the operational phase of the development, **no direct effects** are expected to occur.

Indirect Effects

- 5.67. The ZTV was overlain onto the heritage assets map in order to identify those which have a greater potential to be visually impacted by the Proposed Development. The ZTV does not account for intervening hedgerows, trees or built structures, which will limit the intervisibility between the building/monument and the Proposed Development.
- 5.68. Within their respective study zones, a total of nine SMs, eight Listed Buildings (including one B+, three B1, two B2 and two 'record only'), 12 NISMR sites and four IHR sites are located within the ZTV. Operational impacts upon the surrounding heritage assets have been assessed as overall **Slight Adverse** or below. Due to the nature of the Proposed Development, **indirect effects assessed upon heritage assets are considered to be adverse/neutral, short-term and reversible**.

Mitigation Measures

Mitigation prior to and during Construction

- 5.69. As **no direct effects upon known archaeological and heritage assets** are anticipated, no mitigation measures are considered to be necessary in relation to this.
- 5.70. Due to the absence of any recorded archaeological or architectural features within the Application Site, the potential for the Proposed Development to directly affect hitherto unknown sub-surface archaeology across the site is anticipated to be **Low**, with the highest potential for impacting upon archaeology occurring during groundworks for the access tracks and turbine foundations. However, as the presence of sub-surface remains within the

Application Site is currently unknown, specific direct impacts upon the archaeological resource in the absence of any mitigation measures cannot be accurately ascertained but would be expected to be **permanent and irreversible**.

- 5.71. The implementation of an archaeological programme of works will ensure that any hitherto unknown sub-surface remains are sufficiently recorded and, if necessary, protected in-situ. Such an archaeological programme of works could include the monitoring of topsoil stripping required for access tracks and excavations required for the turbine foundations, as these are the construction elements with the highest potential for ground disturbance. Any archaeological work required will be at the discretion of Causeway Coast and Glens Borough Council and the Department for Communities: Historic Environment Division (DfC: HED).

Mitigation by Design

- 5.72. Operational impacts upon the surrounding heritage assets have been assessed as overall **Slight Adverse** or below. Due to the nature of the proposed development it is not possible to mitigate all potential visual impacts but the design has endeavoured to choose a location that avoids known archaeological remains and reduce visual impacts.
- 5.73. Although visibility of the surrounding landscape is relatively restricted, some mitigation measures by design has been proposed within the Landscape and Visual Impact Assessment (see **Volume 2: Chapter 4 – LVIA**). This includes the replacement of any hedgerow, trees or scrub planting that may be lost to accommodate the required site works, as well as the maintenance and rotational cutting of new planting in order to help thicken them out and retain their height at a minimum of 3m. These measures will ensure that the potential for the proposed development to impact upon surrounding heritage assets is kept minimal.

Residual Effects

Construction Phase

- 5.74. No direct effects upon known archaeological and heritage assets are anticipated as a result of the Proposed Development and so residual direct impacts upon known assets will also be **None**.
- 5.75. Following the implementation of an appropriate archaeological programme of works, including monitoring of topsoil stripping required for access tracks and excavations required for the turbine foundations, measures will be in place for the full recording or preservation of any sub-surface remains of significance that are identified within the Application Site. This would ensure that residual direct impacts upon hitherto-unknown sub-surface archaeology would be **Not Significant or Imperceptible**.

Operational Phase

- 5.76. During the operational lifetime of the proposed development it is anticipated that maintaining the hedgerow screening effects present at the Application Site will ensure indirect effects upon the settings and views of the surrounding heritage assets remain at Slight Adverse. This requires the maintenance of the existing vegetative screening, as well as replacing any hedgerow that is removed as part of the required site works. A landscape plan has also been developed in order to reduce the overall potential visual impact.

Decommissioning Phase

- 5.77. The potential decommissioning effects that may have an effect upon heritage assets within the study zone include vehicle movements, soil and overburden storage and landscaping. However, as there are no recorded heritage assets identified within the site and no additional groundworks on previously-undisturbed land is expected during this stage, it is anticipated that decommissioning effects will be **Imperceptible** upon the heritage resource.

NOISE & VIBRATION

- 5.78. A Noise and Vibration assessment was completed to identify and describe any likely significant noise and vibration effects on key receptors during the operational, construction, and decommissioning phases of the Development.
- 5.79. The nature of works and distances involved in the construction of a wind farm are such that the risk of significant effects relating to ground borne vibration are very low. Occasional vibration effects relating to the construction period and heavy vehicles manoeuvring at short distances to receptors can arise, but again this is not sufficient to constitute a risk of significant effects in this instance and should be considered as negligible.
- 5.80. A desk-based assessment has been conducted to identify Noise Sensitive Receptors (NSRs) where it is considered there is potential for increased noise effects due to the Proposed Development. The receptors were taken from the Residential Receptor Map, submitted as part of the Further Environmental Information (FEI) documents as part of the original application. This map has been updated taking into account all new receptors which have been build or submitted to planning since the original application. A map showing all the receptors assessed can be viewed on **Figure 9.1: Appendix 9A** and in total, 50 NSRs were assessed.
- 5.81. A site visit was undertaken on the 27th January 2020 to help the identification process for the receptors. A number of the receptors weren't visible form the public roads, however most of them were confirmed during this site visit.
- 5.82. Baseline noise levels from the original submission have been used in the assessment, as agreed with the council in the pre application meeting. However, they have been updated to

take into account the difference in wind shear from the turbines being located on smaller towers. The guidance in the Good Practice guide has been followed, with the mean wind shear being determined from three years of wind speed data measured at multiple heights by a mast with the wind farm site area.

- 5.83. Construction/decommissioning noise was assessed using British Standard BS5228 'Noise and Vibration Control on Construction and Open Sites'. This standard contains multiple methodologies for predicting construction noise levels using tabulated noise output data for a range of different construction activities. It concluded that the impacts would be Temporary and **Low** and therefore effects are not **Significant**. This will remain the same as for the Consented Development which is already underway.
- 5.84. Operational noise was assessed in accordance with the methodology set out in ETSU-R-97 and the recently released Good Practice Guide. Applying the ETSU derived noise limits at the assessment locations it has been demonstrated that for both the quiet day time and night time periods the noise criterion can be satisfied at the required wind speeds. However, when the cumulative impacts were considered the impact was deemed as **high** impact at four receptors within the study area and a **low** to **negligible** impact at all others. The four receptors with a **High** impact will therefore experience a **significant effect**, prior to mitigation. Mitigation has been proposed in the form of switching turbine operating modes at specific wind speeds and directions, although the Applicant reserves the right to change mitigation option in agreement with the council, as long as the conditioned limits can be achieved. The residual impacts of the Proposed Development are **low** to **negligible** at all receptors and therefore effects are not **Significant**.
- 5.85. This assessment has been based on the use of the manufacturers specified sound power data, which is typical of the size and type of turbine which will be considered for this project, and assuming worst case downwind propagation scenarios.

EXISTING INFRASTRUCTURE AND AVIATION

- 5.86. The initial assessment included a desk-based assessment of installations that may be impacted by the Proposed Development, as well as consultation with the various stakeholders responsible for aviation and communications installations.
- 5.87. Consultations for the original consented development were undertaken with organisations and system operators that could be affected by the proposed scheme. The consultee responses remain relevant for the Proposed Development and further consultations were undertaken with Belfast International Airport (BIA), Belfast City Airport (BCA), City of Derry Airport (CoDA) and The Joint Radio Company Limited (JRC). No objections were raised as a result of the consultations.

Mitigation

- 5.88. It is expected that the Proposed Development will have **No Significant effects** on the civil airport and airfields and therefore no mitigation is required.
- 5.89. No mitigation is required for military airfields as there are **No Significant effects anticipated** for these assets.
- 5.90. Technical solutions can resolve any adverse impacts with regard to television reception interference.

Residual Effects

- 5.91. Upon implementation of the above mitigation measures (where required) which were deemed acceptable for the Original Consented Development and conditioned (**Condition 22, of planning Ref B/2009/0070/F – previously discharged**), the Proposed Development will result in **Negligible residual effects**. The conditions applied to the Original Consented Development (**Planning Reference B/2009/0070/F**) should be included in any decision for the Proposed Development.

Summary

- 5.92. As there is a reduction in the overall height of the turbines by 5.6m, it is concluded that the amendments to the Proposed Development is unlikely to result in any additional aviation or telecommunication issues. Therefore, effects upon aviation and telecommunication assets are considered **Negligible**.

TRAFFIC & TRANSPORT

- 5.93. The aim of the Traffic and Transportation chapter was to provide an assessment of the potential effects of increased road traffic expected as a result of the construction, operation and decommissioning of the Development. A Construction Traffic Management Plan (CTMP), including an abnormal load route assessment, (**Volume 4, Technical Appendix 11.1**) has also been produced to support the application.
- 5.94. It should be noted that the traffic generated and loads will not differ substantially from the Original Consented Development (**Ref: B/2009/0070/F, as amended**) The only changes to the original consent include slightly higher load numbers due to the larger crane pads and foundations. The abnormal load haul route has been changed to come from Belfast, rather than from the north. This is the same route which numerous other wind farms in the area have used / proposed to use and it is thought it is more suitable for the larger loads associated with the revised development.
- 5.95. Baseline traffic flow conditions were established on key routes within the vicinity of the Application Site to enable comparison with the Development traffic. Partial information was

- acquired from the Department for Infrastructure (DfI) public traffic counts. Automatic traffic counts (ATCs) were undertaken in late February/early March 2020 at a further two locations on the surrounding road network, these counts recorded vehicle types, numbers and speeds.
- 5.96. Baseline road conditions were established using information gathered during a route drive over survey and subsequent desk study.
- 5.97. The potential effects of the traffic generated by the Proposed Development have been assessed with reference to the 'Guidelines for the Environmental Assessment of Road Traffic' (EART, 1992) published by the Institute of Environmental Management and Assessment (IEMA).
- 5.98. The proposed access route for Abnormal Load Vehicles (ALV) will be from Belfast before taking the M2. From the M2 the vehicles will take the A26 to Ballymoney and then Coleraine before turning left onto the A29 towards Garvagh. They will then turn right onto the Craigmare Road before turning left at Ringsend onto the Boleran road. The delivery will then turn right onto the Belraugh road and then left onto Legavallon Road, where the site entrance points are located. The proposed return route is the same as the delivery route. Once the turbine components have been delivered the vehicles will be shortened so they are no longer than a typical articulated HGV. **Figure 11.1.1: Appendix 11.1A, in Technical Appendix 11.1 (CTMP) of Vol 4**, shows the route.
- 5.99. The abnormal load haul route has been changed to come from Belfast, rather than from the north as in the consented development. This is the same route which numerous other wind farms in the area have used or have consent to use and it is thought it is more suitable for the larger loads associated with the revised development.
- 5.100. Normal HGV load delivery routes (including stone and concrete) would be finalised post consent. Circular routes are proposed to help ease of congestion on the local road network. The potential circular routes have been illustrated in **Figure 11.1.17: Appendix 11.1A of the CTMP in Technical Appendix 11.1 (CTMP) in Vol 4**.
- 5.101. The ALV route assessment identified that minor road improvements would be required in order to accommodate access. These modifications would be limited to minor widening works at the site accesses. The site access points have been designed in accordance with DCAN15 and achieved the required visibility splays along Legavallon Road (see **Figure 11.1.18 and 11.1.19: Appendix 11.1A: CTMP (Vol 4)**). Road signs would be erected to direct construction traffic to this access.
- 5.102. Following the application of a CTMP to mitigate effects on the Local Road Network, the Proposed Development has been assessed as having **No Significant residual effects** on the identified receptors.
- 5.103. The potential impacts relating to traffic, severance, accidents and road safety, driver delay and pedestrian amenity, fear and intimidation have been assessed and where the effect has been identified as **Slight Adverse**, mitigation measures have been considered and identified.

- 5.104. The residual impacts relating to the Proposed Development generated traffic have been reviewed and summarised. This assessment shows that the development effects are mainly insignificant and have been classified as **Not Significant** when related to both the staff and HGV movements.

MISCELLANEOUS

- 5.105. Dust generated during the construction/decommissioning of wind farms is typically coarse and only remains airborne for short periods. It is only expected to represent a potential nuisance to exposed human receptors at distances of <250m of the construction activities. The nearest residential property is located approximately 675m from proposed construction activities, and therefore effects associated with dust creation are negligible and insignificant.
- 5.106. The Development will generate electricity from a renewable source of energy, therefore offsetting the need for power generation from the combustion of fossil fuels and consequently represents carbon savings. 22,924 tonnes of CO₂ are anticipated to be prevented annually because of the Development. All electricity generation technologies emit CO₂ at some point during their lifecycle, however when comparing the lifecycle CO₂ emissions of different electricity generation systems currently used in the UK, onshore wind power ranks with one of the lowest carbon footprints.
- 5.107. Professionally designed and maintained wind turbines are an inherently safe technology. In line with best practice, any health and safety risks will be addressed through mitigation measures and normal construction and operational procedures. The implementation of current best practice and technology will be used at all times to minimise any health and safety risks. The implementation of the construction design and management principles will result in a high-quality wind farm development; built, operated and maintained to the highest standards of safety.
- 5.108. It will not be possible for the public to access the site during any stage of the Development, unless under the supervision of authorised persons, however as with any development, there is potential for intentional damage and vandalism. The wind farm will be designed to incorporate the best available technology so that if unauthorised access occurs, the site will pose no more danger to the public than any other remote site.
- 5.109. Wind turbines are designed to withstand extreme weather conditions. The turbines will be equipped with lightning protection equipment as well as sensors that, in instances of unexpected extreme winds which exceed safe operating limits, the rotor blades will be braked and parked in a safe position.
- 5.110. Due to the temperate climate of the UK, it is considered that weather conditions which encourage ice throw / ice fall occur for less than seven days of the year within the area of Northern Ireland that the Development is situated. Despite the low risk, turbines will also be

fitted with vibration sensors which detect any imbalance which might be caused by icing, in which case the affected turbines would be shut down.

SHADOW FLICKER

- 5.111. A shadow flicker assessment was undertaken based upon a 920m study area, within which 18 receptors were identified. The possible occurrence of shadow flicker was assessed by modelling the Proposed Development using the Resoft WindFarm Release 4 software package and assessing the likelihood of shadow flicker impacting on the receptors identified within the study area.
- 5.112. As with all tall structures, wind turbines can cast long shadows on the neighbouring area when the sun is low in the sky. During sunny conditions under certain combinations of geographical position and the time of day, the sun may pass behind the moving rotor blades and cause a shadow to flicker on and off on neighbouring properties. This is known as shadow flicker. The shadow flicker effect lasts only for a short period and happens only in certain specific combined circumstances such as when:
- The sun is shining and is at a low angle in the sky (after dawn and before sunset);
 - The turbine is located directly between the sun and the affected property; and
 - The wind speed is high enough to move the turbine blades and the turbine is operational.
- 5.113. Northern Irish, UK and other international guidelines on shadow flicker have been consulted where wind energy is well established. Most guidelines state that shadow flicker impact is not an issue at receptors which are greater than 10 rotor diameters from a turbine. Guidance also indicates that shadow flicker should not exceed 30 hours per year and 30 minutes per day limits stated within the Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy'.
- 5.114. The theoretical predicted maximum shadow flicker durations were calculated for the receptors within the study area. When accounting for expected sun hours, no receptors within the 920m study area are expected to experience greater than 30 hours of shadow flicker per year or mean daily shadow flicker effects of more than 30 minutes per day. However, without mitigation five of the residential properties (Receptors 8, 9, 10, 11 and 12) within the 920m study area may experience greater than 30 minutes of maximum shadow flicker effects during a single day.
- 5.115. The proposed turbines will incorporate a shut-off system using a calendrical system with the worst-case data from this assessment to determine specific shut-off times. Fine-tuning of these times is possible at any time for each of the turbines. Further detail on the wind turbine shadow flicker prevention software can be found within the Enercon Shutdown System information in Appendix 13C.

5.116. In consideration of the above, shadow flicker effects will be **within acceptable limits**.

6. CONCLUSION

- 6.1. This Non-Technical Summary (NTS) forms part of the Environmental Statement (ES) to accompany an amendment application for planning permission by Smulgedon Wind Farm Ltd (part of the Randolph Renewables Group) to reduce the overall tip height from 120.5m to 114.90m (5.6m) and hub height from 85m to 68.9m (16.1m) and to increase the rotor diameter from 71m to 92m (21m) for 7 turbines associated with a wind farm which was consented on 2nd October 2012 subject to compliance with 30 conditions. This larger rotor diameter will result in the harnessing of wind energy using more modern and efficient turbines that maximise the potential of the site, with only a minor alteration. However, the reduction in tip and hub height will make the turbines less prominent. There will also be minor increases to the crane pads to accommodate the turbines.
- 6.2. Whilst the Proposed Development will introduce a different set of infrastructural elements into the landscape, the information submitted as part of this Environmental Statement and associated documentation has once again confirmed that, with the specified mitigation and management measures in place, and when set in a context of the consented wind farm site, the proposed amendments will result in an insignificant impact upon amenity, landscape and all environmental considerations.
- 6.3. The submitted information has also clarified that the proposal has been taken forward following an appropriate pre-application process and that a balancing of relevant environmental, planning and technical criteria has been achieved, especially when one considers the development in a context of the wider benefits associated with modern and efficient renewable energy schemes and in terms of displacement of CO2 emissions and contributions toward regional and national renewable energy targets.
- 6.4. On this basis we would respectfully ask that planning permission be granted.



HEAD OFFICE - GLASGOW

Wright Business Centre, 1 Lonmay Road, Glasgow G33 4EL | T: 0141 773 6262 | W: www.neo-environmental.co.uk

N. IRELAND OFFICE

Unit 3, The Courtyard Business Park
Gargorm Castle, Ballymena,
Northern Ireland
BT42 1HL
T: 0282 565 04 13
E: info@neo-environmental.co.uk

IRELAND OFFICE

Johnstown Business Centre
Johnstown House, Naas
Co. Kildare
T: 00 353 (0)45 844250
E: info@neo-environmental.ie
W: neo-environmental.ie

RUGBY OFFICE

Valiant Office Suites
Lumonics House, Valley Drive,
Swift Valley, Rugby,
Warwickshire, CV21 1TQ
T: 01788 297012
E: info@neo-environmental.co.uk

WARRINGTON OFFICE

Cinnamon House, Cinnamon Park
Crab Lane, Fearnhead
Warrington
Cheshire
T: 01925 661 716
E: info@neo-environmental.co.uk