Technical Appendix 6.3: Scoping Responses

The scoping report issued to the Development Applications Unit (DAU) within the Department of Culture, Heritage and the Gaeltacht and the National Parks and Wildlife Service (NPWS) response (25 July 2019) is appended below. In addition, specific questions in relation to this development issued to DAU are under consideration at present. (Awaiting response from NPWS regarding specific consultation submitted on 10 September 2019).

In addition consultation responses from Statutory Authorities and / or other Stakeholders, specifically relevant to Biodiversity Chapter 6 are appended below also.

An Roinn Cultúir,
Oidhreachta agus Gaeltachta
Department of Culture,
Heritage and the Gaeltacht

Your Ref: 5952/503/021/BC
Our Ref: **G Pre00191/2019**
(Please quote in all related correspondence)

25 July 2019

Ms Breena Coyle,
Jennings O'Donovan & Partners Limited,
Consulting Engineers,
Finisklin Business Park,
Sligo

Via email: bcoyle@jodireland.com

Re: Request for Scoping Opinion on information to be included in the preparation of an Environmental Impact Assessment [EIA] for Barnesmore Windfarm Repowering Project, Keadew Upper, Barnesmore, County Donegal.

A chara

On behalf of the Department of Culture, Heritage and the Gaeltacht, I refer to correspondence received in connection with the above.

Outlined below are heritage-related observations/recommendations of the Department under the stated heading.

Nature Conservation

Please find below general scoping comments for Environmental Impact Assessment Report (EIAR), Appropriate Assessment screening and licensing requirements.

These observations are intended to assist you in meeting the obligations that may arise in relation to European sites, other nature conservation sites, and biodiversity and environmental protection in general in the context of the current application. The observations are not exhaustive, and are made without prejudice to any recommendation that may be made by this Department in the future. Data collected and surveys carried out in connection with this proposed development may raise other issues that have not been considered here.

The National Parks and Wildlife Service (NPWS) website has recently been updated and should be consulted with regard to the impact of planning and development on nature conservation. The following link gives extensive details on the standards and content the Department requires from applications. https://www.npws.ie/development%20consultations.

Aonad na nIarratas ar Fhorbairt, Bóthar an Bhaile Nua, Loch Garman, Y35 AP90
Development Applications Unit, Newtown Road, Wexford, Y35 AP90
manager.dau@chg.gov.ie
www.chg.gov.ie

EIAR: Ecological survey

With regard to scoping for an EIAR for a proposed development, in order to assess impacts on biodiversity, fauna, flora and habitats an ecological survey should be carried out of the proposed development site including the route of any access roads, pipelines or cables etc. to survey the habitats and species present. Any improvement or reinforcement works required for access and transport anywhere along any proposed haul route(s) should be included in the EIAR and subjected to ecological impact assessment with the inclusion of mitigation measures, as appropriate. Where bridges require strengthening this may involve grouting of crevices which may function as bat roosts. Where ex-situ impacts are possible survey work may be required outside of the development sites. Such surveys should be carried out by suitably qualified persons at an appropriate time of the year depending on the species being surveyed for. The EIAR should include the results of the surveys and detail the survey methodology and timing of such surveys. It is expected by this Department that best practice will be adhered to with regard to survey methodology and if necessary non Irish methodology adapted for the Irish situation. The EIAR should cover the whole project, including construction, operation and, if applicable, restoration or decommissioning phases. Alternatives examined should also be included in the EIAR. Inland Fisheries Ireland (IFI) should be consulted with regard to fish species if applicable. For information on Geological and Geomorphological sites the Geological Survey of Ireland should be consulted.

Specific reference should be made to the National Biodiversity Plan and any relevant County Biodiversity Plan. Any losses of biodiversity habitat associated with this proposed development (including access roads and cabling etc.) such as woodland, scrub, hedgerows and other habitats should be mitigated for.

In order to assess impacts it may be necessary to obtain hydrological and/or geological data. Any impact on water table levels or groundwater flows may impact on wetland sites some distance away. The EIAR should assess cumulative impacts with other plans or projects if applicable. Where negative impacts are identified suitable mitigation measures should be detailed as appropriate.

EIAR: Hedgerows and related species

Hedgerows should be maintained where possible as they form wildlife corridors and provide areas for birds to nest in; hedgerow trees may provide roosting places for bats. Badger setts may be present. Hedgerows also provide a habitat for woodland flora. The EIAR should provide an estimate of the length of any hedgerow that will be lost. Where it is proposed that trees or hedgerows will be removed there should be suitable planting of native species in mitigation incorporated into the EIAR. Where possible, hedgerows and trees should not be removed during the nesting season (i.e. March 1st to August 31st). Birds' nests can only be intentionally destroyed under licence issued under the Wildlife Acts of 1976 to 2012.

EIAR: Watercourses and wetlands

Wetlands are important areas for biodiversity and ground and surface water quality should be protected during construction and operation of the proposed development. Any watercourse or wetland impacted on should be surveyed for the presence of protected species and species listed on Annexes II and IV of the Habitats Directive. These species could include otters (*Lutra lutra*). which are protected under the Wildlife Acts and listed on Annexes II and IV of the Habitats Directive, salmon (*Salmo salar*) and Lamprey species listed on Annex II of the Habitats Directive, Freshwater Pearl Mussels (Margaritifera species) and White-clawed Crayfish (*Austropotamobius pallipes*) which are protected under the Wildlife Acts and listed on Annex II of the Habitats Directive, Frogs (*Rana temporaria*) and Newts (*Trituris vulgaris*) protected under the Wildlife Acts and Kingfishers (*Alcedo atthis*) protected under the Wildlife Acts and listed on Annex I of the Birds Directive (Council Directive 79/409 EEC).

One of the main threats identified in the threat response plan for otter is habitat destruction (see https://www.npws.ie/sites/default/files/publications/pdf/2009_Otter_TRP.pdf). A 10m riparian buffer on both banks of a waterway is considered to comprise part of the otter habitat. Therefore any proposed development should be located at least 10m away from a waterway.

EIAR: Bats

Bat roosts may be present in trees, buildings and bridges. Bat roosts can only be destroyed under licence under the Wildlife Acts and derogation under the Birds and Natural Habitats Regulations and such a licence would only be given if suitable mitigation measures were implemented. Any proposed migratory bat friendly lighting should be proven to be effective.

EIAR: Alien invasive species

The EIAR should also address the issue of invasive alien plant and animal species such as Japanese Knotweed, and detail the methods required to ensure they are not accidentally introduced or spread during survey and/or construction. Information on alien Invasive species In Ireland can be found at http://www.biodiversityireland.ie/projects/invasive-species/ and at http://invasivespeciesireland.com/.

EIAR: Bird surveys

Survey methodologies should follow best practice and if necessary be modified to reflect the Irish situation. Two full years of bird surveys is normally considered to be necessary. When survey results are being presented In an EIAR it is important that best practice is followed and that the full survey methodology, including dates and times are detailed. Furthermore, it is expected that bird survey data should be presented in context and records should be supported by basic environmental data such as hourly estimates of visibility, glare arcs, cloud cover and precipitation during Vantage Point (VP) survey and walk over survey periods. Consideration should be given to the use of Viewshed or similar software. Results for species need to be referenced back to the overall populations and their dynamics as, in some cases even a small risk to a population of a species could be

considered significant. It is important that seasonal bird migration routes are considered as well as routes of birds travelling on a daily basis between roosting and feeding areas.

EIAR: Impact assessment

The impact of the proposed development on the flora/fauna and habitats present should be assessed with particular regard to Natura 2000 sites, i.e. Special Areas of Conservation (SAC) designated under the EC Habitats Directive (Council Directive 92/43/EEC) and Special Protection Areas (SPAs) designated under the EC Birds Directive (Directive 2009/147 EC), other designated sites, or sites proposed for designation, such as Natural Heritage Areas and proposed Natural Heritage Areas, Nature Reserves and Refuges for Fauna or Flora designated under the Wildlife Acts 1976 to 2012, species protected under the Wildlife Acts including protected flora, 'Protected species and natural habitats', as defined in the Environmental Liability Directive (2004/35/EC) and European Communities (Environmental Liability) Regulations, 2008 including Birds Directive - Annex I species and other regularly occurring migratory species, and their habitats (wherever they occur) and Habitats Directive-Annex I habitats, Annex II species and their habitats, and Annex IV species and their breeding sites and resting places (wherever they occur), important bird areas such as those identified by Birdlife International, features of the landscape which are of major importance for wild flora and fauna, such as those with a "stepping stone" and ecological corridors function, as referenced in Article 10 of the Habitats Directive, other habitats of ecological value in a national to local context (such as those identified as locally important biodiversity areas within Local Biodiversity Action Plans and County Development Plans), Red data book species, and biodiversity in general.

Complete project details including Construction Management Plans (CMPs) need to be provided in order to allow an adequate EIAR and appropriate assessment to be undertaken. Applicants need to be able to demonstrate that CMPs and other such plans are adequate and effective mitigation supported by scientific information and analysis and that they are feasible within the physical constraints of the site. The positions, locations and sizes of construction infrastructure and mitigation such as settlement ponds, disposal sites and construction compounds may significantly affect European and other designated sites, habitats and species in their own right and could have an effect for example on drainage, water quality, habitat loss, and disturbance. If these are undetermined at time of the assessment all potential effects of the development on the site are not being considered.

EIAR: Construction Management Plans

Construction Management Plans should contain sufficient detail to avoid any post construction doubt with regard to the implementation of mitigation measures, timings and roles and responsibilities for same. There can be no doubts or lacunae regarding what is required for mitigation, pre-commencement surveys and or licensing requirements.

Construction work should not be allowed to impact on water quality and measures should be detailed in the EIAR to prevent sediment and/or fuel runoff from getting into

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watercourses which could adversely impact on aquatic species. See EIAR: Flood Plains for details with regard to flooding risk.

Inland Fisheries Ireland (IFI) should be consulted with regard to impacts on fish species and the applicant may find it useful to consult their publication entitled "Planning for watercourses in the urban environment" which can be downloaded from their website.

If applicants are not in a position to state the exact location and details of cable routes at the time of application, then they need to consider the range of options that may be used within their assessment. Should the exact height and rotor diameter of the turbines not be known at EIAR stage then the assessment of impacts must be applicable to a variety of turbine heights and rotor diameters which could be used. This should be made clear in the EIAR.

It is important to note that unless post decision consultation with NPWS is specifically stated as a condition of planning, NPWS has no post consent role. However, regional staff are available for liaison regarding any associated licensing requirements and/or new information arising for specific species of concern.

EIAR: Cumulative and ex situ impacts

A rule of thumb often used is to include all European sites within a distance of 15km. It should be noted however that this will not always be appropriate. In some instances where there are hydrological connections a whole river catchment or a groundwater aquifer may need to be included. Similarly where bird flight paths are involved the impact may be on an SPA more than 15 km away.

Other relevant Local Authorities should be consulted to determine if there are any projects or plans which, in combination with this proposed development, could impact on any European sites.

Appropriate Assessment

In order to carry out the Appropriate Assessment (AA) screening, and/or prepare a Natura Impact Statement (NIS), information about the relevant European sites including their conservation objectives will need to be collected. Details of designated sites and species and conservation objectives can be found on http://www.npws.ie/. Site-specific, as opposed to generic, conservation objectives are now available for many sites. Each conservation objective for a qualifying interest (QI) is defined by a list of attributes and targets and is often supported by further documentation. Where these are not available for a site, an examination of the attributes that are used to define site-specific conservation objectives for the same QIs in other sites can be usefully used to ensure the full ecological implications of a proposal for a site's conservation objective and its integrity are analysed and assessed. It is advised, as per the notes and guidelines in the site-specific conservation objectives that any reports quoting conservation objectives should give the version number and date, so

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that it can be ensured and established that the most up-to-date versions are used in the preparation of Natura Impact Statements and in undertaking appropriate assessments.

The Departmental guidance document on Appropriate Assessment is available on the NPWS website at https://www.npws.ie/development-consultations and in the EU Commission guidance entitled "Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC' which can be downloaded from;
http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/natura_2000_assess_en.pdf.

CJEU and Irish case law has clarified some issues and should also be consulted

Post construction monitoring
This Department recognises the importance of pre and post construction monitoring, such as recommended in Drewitt et al. (2006), and Bat Conservation Ireland (2012). The applicant should not use any proposed post construction monitoring as mitigation to supplement inadequate information in the assessment. Please refer to Circular Letter PD 2/07 and NPWS 1/07 on this issue. This can be downloaded from the Department's website at https://www.npws.ie/sites/default/files/general/circular-pd-02-07.pdf.

The EIAR process should identify any pre and post construction monitoring which should be carried out. The post construction motoring should include bird and bat strikes/fatalities including the impact on any such results of the removal of carcasses by scavengers. Monitoring results should be made available to the competent Authority and copied to this Department. A plan of action needs to be agreed at planning stage with the Planning Authority if the results in future show a significant mortality of birds and/or bat species. It is important to note again that unless post decision consultation with NPWS is specifically stated as a condition of planning, NPWS has no post consent role. However, regional staff are available for liaison regarding any associated licensing requirements and/or new information arising for specific species of concern.

Note: any significant change to mitigation may require amendment and where a licence has expired; there will be a need for new licence applications for protected species.

Licences
Where there are impacts on protected species and their habitats, resting or breeding places, licences may be required under the Wildlife Acts or derogations under the Habitats Regulations. In particular bats and otters are strictly protected under annex IV of the Habitats Directive. A copy of Circular Letter NPWS 2/07 entitled “Guidance on Compliance with Regulation 23 of the Habitats Regulations 1997 – strict protection of certain species/applications for derogation licences” can be found on the Departmental website at https://www.npws.ie/sites/default/files/general/circular-npws-02-07.pdf.

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It should be noted however that the Regulations of 1997 have since been revoked and that Part 6 of the European Communities (Birds and Natural Habitats) Regulations 2011-2015 is now the relevant part dealing with the protection of flora and fauna. In particular reference to Regulation 23 in the circular letter should be taken to mean Regulation 51 in the current Regulations.

In addition the planning authority will be required to take account of species protected under sections 21, 22 and 23 of the Wildlife Acts if there are any impacts on other protected species or their resting or breeding places, such as on protected plants, badger setts or birds' nests. They will also need to be cognisant of article 5 (d) of the Birds Directive. For that reason vegetation, including hedges and trees, should not be removed during the nesting season (i.e. March 1st to August 31st).

In order to apply for any such licences or derogations as mentioned above the results of a survey should be submitted to the National Parks and Wildlife Service section of this Department. Such surveys are to be carried out by appropriately qualified person/s at an appropriate time of the year. Details of survey methodology should also be provided. Should this survey work take place well before construction commences, it is recommended that an additional ecological survey of the development site should take place immediately prior to construction to ensure no significant change in the findings of the baseline ecological survey has occurred. If there has been any significant change mitigation may require amendment and where a licence has expired, there will be a need for new licence applications for protected species.

Baseline data

Other sources of habitat and species information beyond those already identified and the standard NPWS data request include (but are not be limited to) the National Biodiversity Data Centre (www.biodiversityireland.ie). Inland Fisheries Ireland (www.fisheriesireland.ie). BirdWatch Ireland (www.birdwatchireland.ie), Irish Raptor Study Group, Golden Eagle Trust and Bat Conservation Ireland (https://www.batconservationireland.org/). Data may also exist at a County level within the Planning Authority.

General guidance and useful references;

1. EU Guidance on Wind Energy Developments and Natura 2000
2. The Departmental Wind Energy Planning Guidelines
3. Windfarms on Peatland (2008-2010) Mires and Peat volume 4.
4. Best Practice guidance for Habitat Survey and Mapping by George F Smith, Paul O'Donoghue, Katie O'Hora and Eamon Delaney, 2011. The Heritage Council.
5. Pearce-Higgins, James W., Stephen, Leigh, Langston, Rowena H. W., Bainbridge, Ian P. and Bullman. Rhys (2009). "The distribution of breeding birds around upland wind farms". Journal of Applied Ecology, 46, 1323-1331.
6. Johnson, Gregory D. and Arnett Edward 8. "A Bibliography of Bat Fatality Activity and Interactions with Wind Turbines" (June 2004 updated February 2010) Bat Conservation International.

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7. Pearce-Higgins, James W., Stephen, Leigh, Douse, Andy, and Langston, Rowena H. W. (2012). "Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multisite and multi-species analysis". Journal of Applied Ecology. 49.386-394.
8. Rodrigues, Let ai, (2014). "Guidelines for consideration of bats in wind farm projects". Eurobats Publication Series No.6 UNEP and Eurobats.
9. The Departmental guidance document on Appropriate Assessment which is available on the NPWS website at https://www.npws.ie/protected-sites/guidance-appropriate-assessment-planning-authorities
10. The EU Commission guidance entitled "Assessment of plans and projects significantly affecting Natura 2000 sites, Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC" which can be downloaded from http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm
11. Bat Conservation Ireland (2012) Wind Turbine/Wind Farm Development Bat Survey Guidelines. Version 2.8, December 2012.
12. Drewitt, Allan Land Longston Rowena H. W. (2006) "Assessing the impacts of wind farms on birds". Ibis 148. 29-42.

The above observations/recommendations are based on the papers submitted to this Department on a pre-planning basis and are made without prejudice to any observations that the Minister may make in the context of any consultation arising on foot of any development application referred to the Minister, by the planning authority, in her role as statutory consultee under the Planning and Development Act, 2000, as amended.

You are requested to send further communications to this Department's Development Applications Unit (DAU) at **manager.dau@chg.gov.ie** (team monitored); if this is not possible, correspondence may alternatively be sent to:

The Manager
Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road
Wexford
Y35 AP90

Is mise, le meas

Sinéad O' Brien

Sinéad O' Brien
Development Applications Unit

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Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

Planning Response Team
Klondyke Building
Gasworks Business Park
Cromac Avenue
Malone Lower
Belfast
BT7 2JA
Tel: 028 9056 9604

Date:30 September 2019

Email: planningresponse.team@daera-ni.gov.uk

Dear Sir/Madam

Planning Application Ref.:	LA11/2019/0683/DETEIA
Location:	Barnsmore Windfarm Keadow Upper Barnesmore Co Donegal
Proposal:	Replace the exiting 25 wind turbines with 13 turbines

Thank you for your consultation on the above which was received by DAERA on 15/08/2019

We have reviewed the information provided and our environmental records in the vicinity of the proposed development.

Our comments are summarised below. Where provided, please also refer to additional details attached.

Land, Soil and Air
The foundations of wind turbines have the potential to impact on the groundwater environment. An assessment of the development's potential risk to impact on the groundwater environment is required. This typically consists of a Water Features Survey as part of a Hydrogeological Assessment. Further information is provided within "Environmental information required" and "Baseline environmental information". This information is required either through an EIA or in support of a full planning application.

Natural Heritage and Conservation Areas
Based on the information submitted, NIEA Natural Environment Division considers that the proposal is likely to have significant environmental effects with regard to the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015.

If you wish to discuss anything raised in our response, please do not hesitate to contact Planning Response Team (details above).

Kind regards

Planning Response Team

On behalf of DAERA

Land, Soil & Air

Planning Reference: LA11/2019/0683/DETEIA

Section Reference: AE1/19/62861

Considerations

The foundations of wind turbines have the potential to impact on the groundwater environment. An assessment of the development's potential risk to impact on the groundwater environment is required. This typically consists of a Water Features Survey as part of a Hydrogeological Assessment. Further information is provided within "Environmental information required" and "Baseline environmental information". This information is required either through an EIA or in support of a full planning application.

Explanatory note

The foundations of wind turbines have the potential to impact on the groundwater environment for example groundwater flow paths, groundwater receptors (aquifers) or secondary receptors (including private water supplies). Groundwater receptors should be identified and the risks of potential impact assessed and, where required, mitigation measures should be identified. These steps should be assessed through a Water Feature Survey.

For this type of development the Land and Groundwater Team, within the Regulation Unit, usually considers the potential impact of turbine foundations on groundwater flow paths and private water supplies, initially within a 1 km radius of the turbine foundations. The proposed location of some of the turbines, and corresponding 1 km radius, extend into Northern Ireland and therefore a risk assessment is recommended by the Land and Groundwater Team, Regulation Unit, NIEA.

Please see our guidance available on the DAERA website on 'Water feature surveys' and 'Wind farms and groundwater impacts' available at: https://www.daera-ni.gov.uk/publications/best-practice-guidance-documents

It is recommended that the applicant seeks the professional advice of a hydrogeologist. Hydrogeologists (not hydrologists) can be identified through internet search, Yellow Pages or the Ends Directory (www.endsdirectory.com)

In addition to the guidance listed above the Land and Groundwater Team, within the Regulation Unit would direct the attention of the applicant/ agent to the planning advice which is available on the DAERA website under the Topic: **Environmental Advice for Planning** with particular reference to the following pages:

https://www.daera-ni.gov.uk/articles/development-may-have-effect-water-environment-including-groundwater-and-fisheries

https://www.daera-ni.gov.uk/articles/wind-energy-installations

Land, Soil & Air

Baseline environmental information

Groundwater baseline information which will feed into a water feature survey can be obtained from our online River Basin Map Viewer at https://appsd.daera-ni.gov.uk/RiverBasinViewer/ and our WMU Water Information Request Viewer at https://appsd.daera-ni.gov.uk/WaterInformationRequest/

Information on private water supplies sourced from groundwater might be obtained from:

- Northern Ireland Environment Agency groundwater monitoring sites: Information on the sites can be obtained by either the WMU Water Information Request Viewer or by contacting waterinfo@daera-ni.gov.uk
- Abstraction & Impoundment Licensing: Information on the licensed sites can be obtained by either the WMU Water Information Request Viewer or by contacting waterinfo@daera-ni.gov.uk
- Drinking Water Inspectorate: Information on private water supplies can be obtained by contacting dwi@daera-ni.gov.uk
- Environmental Health section of the local council

Some layers displayed on the map viewers are also available as a digital dataset, which can be downloaded and used within your own project. Follow the guidance on the web page at https://www.daera-ni.gov.uk/articles/wmu-digital-dataset-downloads

Planning Reference No.: LA11/2019/0683/DETEIA

Section Reference: CB28059

Baseline environmental information
Date of NED data check: 30/09/19

- Within or directly adjacent to Killeter Forest and Bogs and Lakes Area of Special Scientific Interest (ASSI)
- Within Killeter Forest Blanket bog which is likely to be part of a larger unit of blanket bog.
- Within a Hen Harrier consultation zone (Annex 1, Northern Ireland Priority Species, Red list species)
- Near to Glendergan River which provides a hydrological connection to River Foyle and Tributaries Area of Special Scientific Interest (ASSI) and Special Area of Conservation (SAC).
- Area likely to support numerous protected and priority species including birds, bats, badgers and otters.

NIEA, Natural Environment Division (NED) can provide the following information to aid the Planning Authority in making their EIA determination.

Please note that this proposal is subject to the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) (known as the Habitats Regulations).

The application site is in close proximity to Killeter Forest and Bogs and Lakes Area of Special Scientific Interest (ASSI) which is of national importance and is protected by the Environment (Northern Ireland) Order 2002.

The application site may contain species protected by Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) and the Wildlife (Northern Ireland) Order 1985 (as amended) as well as priority species, priority habitats and other natural heritage features worthy of protection.

Likely significant environmental effects

This site is hydrologically connected to the above designated sites and there are possible pollution impacts from development and operation of the site.

NED notes that consideration should be given to the river corridor and there should be a buffer to the river to protect the integrity of the watercourse.

The site is within Killeter Forest Blanket bog which may be part of a larger unit of blanket bog. Peat has significant value as a carbon store as well as being important for other ecosystem

services such as water storage and filtration. The proposed development site is likely to contain blanket bog and upland heathland (wet heath). Blanket bog and wet heath are Annex I habitats, as listed on the European Habitats Directive (92/43/EEC) and defined by the Interpretation Manual of European Habitats. In addition, active blanket bog is a European priority habitat. Northern Ireland has a legal duty under the Habitats Directive to maintain the favourable conservation status of these habitats.

Blanket bog and upland heathland are also Northern Ireland priority habitats of high biodiversity value. The Northern Ireland Habitat Action Plan (HAP) for blanket bog defines this habitat as "all areas of blanket bog supporting semi-natural blanket bog vegetation, including intact surfaces, drained and cutover bog and whether or not it may be defined as 'active' (actively laying down peat)". The blanket bog on this site may therefore be considered to be the Northern Ireland priority habitat of blanket bog.

The Northern Ireland Habitat Action Plan (HAP) for upland heathland includes wet heaths, which are dominated by a mixture of Heather, Cross-leaved Heath, Deergrass and Purple Moor-grass over an understory of mosses, often including several of the bog moss *Sphagnum* species.

Based on the information submitted, NIEA Natural Environment Division (NED) considers that the proposal is likely to have significant environmental effects with regard to the Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2015.

Please note that NIEA have developed a range of standing advice and a biodiversity checklist that would assist with the consideration of potential impacts of planning proposals on natural heritage interests:

http://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/ni_biodiversity_checklist.pdf

http://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice.htm .

In relation to this type of application standing advice that is often referred to would include those associated with:

Pollution Prevention
https://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice_4_pollution_prevention.pdf

Bats

https://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice_15._bats_final_2017.pdf

Badgers

https://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice_8_badgers_final_2017.pdf

Otters

https://www.planningni.gov.uk/index/advice/northern_ireland_environment_agency_guidance/standing_advice_14_otters_final_2017.pdf

We would also refer to the: BS 10175:2011 Code of practice for planning and biodiversity (British Standard Institute publication).

Environmental information required

Designated Sites

The application site is in close proximity to Killeter Forest and Bogs and Lakes Area of Special Scientific Interest (ASSI) and near to Glendergan River which provides a hydrological connection to River Foyle and Tributaries Area of Special Scientific Interest (ASSI) and Special Area of Conservation (SAC).

NED would therefore require adequate consideration of potential impacts to the integrity and features of these designated sites together with proposed mitigation or compensation.
An outline Construction Environmental Management Plan will be required from the applicant/approved contractor. Such measures should be incorporated in method statements which should identify the perceived risks to the aquatic environment, identify potential pollution pathways, and the mitigation measures to be employed which will negate the risk to any aquatic environment. For example;

- A suitable buffer between location of refuelling, storage of oil/fuel, concrete mixing and washing areas and any watercourses or surface drain present on site or adjacent to site.
- Regular inspections of machinery onsite.
- Emergency spill procedures in place.
- A suitable buffer between location for storage of excavated spoil and construction materials and any watercourses or surface drain present on site or adjacent to site.

This list is not exhaustive but should merely be used as a starting point for considerations to be made.

Other Natural Heritage Interests

Please note that this is a desk based response

The proposal location is within Killeter Forest Blanket bog which is likely to be part of a larger hydrological unit of blanket bog. NED will require a vegetation survey to NVC level. Depending on the results of the survey, NED may require the submission of an Outline Habitat management Plan.

The proposal area is likely to support numerous protected and priority species including birds, bats, badgers, newts and otters therefore appropriate protected and priority species surveys will be required and depending on the results of these surveys NED may require the submission of a Protected Species Management Plan and/or an Ornithological Management and Monitoring Plan to adequately consider impacts to these features and include mitigations.

Please note that should natural heritage issues set out in Schedule 3 of the Planning (General Development Procedure Order) Northern Ireland 2015 (GDPO)) be identified, NIEA advises that information to assess potential impacts on the natural heritage can be submitted either via suitable environmental reports as part of a standard consultation process, or as part of an environmental statement.

Further guidance

NED have a range of survey guidance which can be viewed here:

https://www.daera-ni.gov.uk/articles/site-surveys#toc-1

Ann Kilmartin

From: Brendan Maguire
Sent: Monday, July 8, 2019 9:42 AM
To: akilmartin@jodireland.com
Subject: Barnesmore windfarm project
Attachments: Windfarm template.docx

Ann

Attached would be our general comments in relation to such developments.
This of course can be changed to suit the peculiarities of any application which may be made to the planning authority and is not exhaustive by any means.

Kind Regards

Brendan

Brendan Maguire
Senior Fisheries Environmental Officer
Inland Fisheries Ireland – Ballyshannon

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Web www.fisheriesireland.ie

Station Road, Ballyshannon, Co. Donegal, IRELAND F94 WV76

If it is intended that oil or fuel be stored in or adjacent to the construction site, it must be kept in a bunded area (providing 110% capacity of the largest storage unit), 100m from any watercourse which appears on a 6" O.S. map of the site. Vehicle maintenance should not occur within 100m of any watercourse and all machinery must be in good working order, free from any leakage of fuel, oil or hydraulic fluid.

Roadside drains should not intercept large volumes of water from ground above. Any watercourse, however small that is intercepted by the access routes should preferably be bridged or culverted at that point. The use of fords must be avoided. Culverts should be of a size sufficient to avoid overloading, blocking or washout. The profile of any stream that is crossed must remain the same and any fish movement remain unhindered. Shooting velocities must be avoided. Floating roads must be considered where any peat encountered is one metre or more in depth. Piling may be considered for turbine bases at deep peat locations and these bases should be a minimum 50 metres from watercourses. This separation distance must be increased where fisheries sensitive waters occur.

Erosion of roadside embankments and cuttings should be avoided by using intercepting trenches or terracing. Embankments and cuttings should be kept at no greater slope than the normal angle of repose to encourage re-vegetation, otherwise added stabilisation may be required. It is essential that silt traps and settlement ponds are utilised and are capable of settling out materials prior to discharge off site. These ponds must take into account high precipitation events and designed accordingly, incorporating other treatment measures where necessary. The traps and ponds must be regularly inspected and maintained as required.

Existing drainage channels should remain untouched. During the construction period cement and wet concrete must be kept out of all watercourses and drains. Concrete trucks must not wash out on site. These materials are extremely toxic to aquatic life and the construction team must be made fully aware of this. This will be especially important during the construction of the turbine bases.

Track ruttings by machinery movement must be kept to a minimum and no discharge or run off containing high sediment loads must occur from the site. In this regard a contingency plan should be established and strictly adhered to. Any stockpiling of peat or other site materials will require careful management to ensure that slippage or collapse to any adjacent watercourses will not occur. A construction methodology is recommended prior to any works commencing with a view to, among others, minimising the volumes of excavation that will be required. Site preparation and construction must adhere to best practice and conform to the publication 'Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites.'

The monitoring of all surface flows during construction is essential and remote sensing equipment should be considered as a normal precaution and extended into the post construction phase.

Consideration should be afforded to the likely increase in surface water flow from the site which has the potential to alter the downstream prevailing hydrological regime and impact on the fisheries resource. In this regard attenuation measures should be identified and implemented in the surface water drainage arrangements.

It would be recommended that a suitably qualified person be on site for the duration of works to ensure:

(a) All mitigation measures identified are implemented prior to and during the construction phase, as appropriate.
(b) Continual assessment to ensure the mitigation measures are effective including assessment of adjacent peats for cracking/instability.
(c) Cessation of works should slippage indicators develop and/or settlement arrangements are inadequate for suspended solid removal in surface waters.
(d) Peat reinstatement is completed according to a detailed restoration plan.
(e) Arrangements are established in relation to a contact protocol for the relevant statutory bodies on progress of works.

IRISH PEATLAND CONSERVATION COUNCIL

COMHAIRLE CHAOMHNAITHE PHORTAIGH NA hÉIREANN

Lullymore, Rathangan, Co. Kildare, Ireland R51 V293 Tel/*Teil*: +353-(0)45-860133
Liolach Mór, Rath Iomgáin, Co. Chill Dara, Éire, R51 V293 e-mail/*ríomhphost*: bogs@ipcc.ie web/*idirlíon*: www.ipcc.ie

Breena Coyle **30th August 2019**
Jennings O'Donovan & Partners Limited
Consulting Engineers
Finisklin Business Park
Sligo
bcoyle@jodireland.com

Re: Proposed Barnsmore Windfarm Upgrade - County Donegal

Dear Ms Coyle,

Thank you for consulting the Irish Peatland Conservation Council regarding the proposed Croagh Wind Farm. The Irish Peatland Conservation Council (IPCC) was established in 1982 and has 35 years of experience in peatland conservation. Our aim is to conserve a representative sample of intact peatlands. While it has been estimated that only 17% of Ireland's original extent of blanket bogs remain, only 28% of this remains in a conservation worthy state. This is due to a number of factors including domestic/industrial peat extraction and habitat fragmentation (*Ireland's Peatland Conservation Action Plan 2020*, Malone & O'Connell, 2009).

Our work is guided by our 6th Action Plan, *Ireland's Peatland Conservation Action Plan 2020*, which was published in 2009. A copy of this document is available for download on our website at www.ipcc.ie. Many of the actions in our plan have been included within the National Peatlands Strategy which has been adopted by every Government Department and Local Authority. The National Peatlands Strategy can be downloaded from www.npws.ie.

Legal Obligations to Protect Peatlands - County Donegal
We are legally bound by National and European legislation (The Wildlife Acts, E.U. Habitats and Bird's Directives) and international conventions (Ramsar, Bern Convention, Convention on Biological Diversity) to do our utmost to protect peatlands now and for future generations. In County Donegal specifically, only 19.6% of the original extent of blanket bogs remain intact (Bogs & Fens of Ireland Conservation Plan 2005, Foss, O'Connell, Crushell, 2001). Peatland habitats have been severely diminished in the country and this destruction is an issue in other legislation and conventions such as the UN Convention on Climate Change, Bonn Convention, World Heritage Convention, Water Framework Directive, Environment Liability Directive, Planning and Development Acts, National Monuments Acts, Environmental Directive, EIA and SEA. All of these legislative instruments have been adopted by Ireland and the IPCC ask that you assess your development with regard to these legal obligations.

Footprint
As is stated within the Ecology and Ornithology Scoping Report the number of turbines is to be reduced. The IPCC would like to see that no new hardstands are created (we understand that you will be utilising the old hardstands) and that the length of road which has caused scarring through the blanket bog habitat be reduced as much as possible. The peatland lost through this habitat fragmentation (road infrastructure) should be reinstated/restored and added to the NHA to increase the amount of ANNEX I habitat protected (please liase with NPWS to see if this is feasable). The latest Article 17 Reports to the E.U. describe rare Blanket Bog habitat in the Republic as "BAD" in condition and deteriating. One of the pressures and impacts/threats on Blanket Bog habitat is renewable energy and this project has the opportunity to reduce this, but only if there is no more fragmentation. IPCC would not be able to support any further loss of this habitat and feel that mitigating against loss of rare ANNEX I habitat within an NHA is not possible as it would be also affecting many rare, breeding bird species such as the Curlew and Hen Harrier.

There is also an opportunity here to monitor and report on any restoration works undertaken within the blanket bog. This would allow other third parties to learn from any restoration activities. The NPWS have published a Raised Bog Restoration Best Practice Guide and the work which may be undertaken on the blanket bog may in

the future feed into a Blanket Bog Restoration Guide.

Please let IPCC know when this project goes to plannning and please keep us informed with any updates

Thank you for giving IPCC the opportunity to comment on this project.

Tristram Whyte B.Sc (hons) Freshwater Biology
Conservation Policy & Fundraising Officer - IPCC

Ann Kilmartin

From: Ian Lumley
Sent: Friday, June 14, 2019 9:18 AM
To: akilmartin@jodireland.com
Subject: Scoping Opinion for Barnesmore Windfarm Repowering Project

To Ann Kilmartin,

Particular consideration is required on flight paths of migratory birds, foraging and breeding areas for raptors, peat displacement, and cumulative impact with other existing and proposed wind farms

Ian Lumley

Loughs Agency
Gníomhaireacht na Lochanna
Factrie fur Loughs

Derry City & Strabane District Council
98 Strand Road
Derry
BT48 7NN

25th November 2019

Dear Sir/Madam

Re: Planning Application *LA11/2019/0683/DETEIA* – Barnsmore Windfarm, Keadow Upper Barnesmore Co Donegal, Replace the existing 25 wind turbines with 13 turbines

Thank you for your recent correspondence dated 21st August 2019 in relation to the above-mentioned proposed development. The Loughs Agency is the statutory body charged with the conservation, protection and development of inland fisheries within the Foyle and Carlingford systems, the promotion of development of Loughs Foyle and Carlingford, and catchments for commercial and recreational purposes in respect of marine, fishery and aquaculture issues and the development of marine tourism.

The Loughs Agency has considered the information provided and we would like to take this opportunity to advise you on the potential impact that wind farm developments can have on water courses, water quality and migratory and other fish species. Such impacts could include:

- Obstruction to upstream and downstream migration both during and after construction
- Disturbance of spawning beds during construction – timing of works is critical

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- Increases in silt and sediment loads resulting from construction works (including tracks and turbine foundations).
- Point source pollution incidents during construction.
- Drainage issues

The Agency would recommend inclusion of the following specific conditions and informatives in any future planning approval issued by the Planning Department:

CONDITIONS

- All storm water from the development site should not be discharged to nearby watercourses unless first passed through pollution interception and flow attenuation measures. Storm water can carry pollutants into watercourses and high volume discharges can alter the prevailing hydrological regime, both of which can impact on fisheries interests. **REASON = to prevent pollution of surface waters.**

INFORMATIVES

- The applicant should demonstrate best environmental practice when working close to watercourses. The potential for deleterious matter to enter a watercourse is of primary concern. Impacts on the aquatic environment such as a decrease in water quality can cause a significant impact upon various life history stages of fish species.
- Consideration should be given to the inclusion of Sustainable Urban Drainage Systems (SuDs) in the proposed development.

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- Should for any reason, oil or fuel be stored in the area, it must be kept in a bunded area (providing 110% capacity of the largest stored unit), 100m from any watercourse that appears on a 1:10 000 O.S. map of the site.
- It is essential that silt traps and settlement ponds are utilised and are capable of settling out materials prior to discharge off site. The traps and ponds must be regularly inspected and maintained accordingly.
- Existing drainage channels should remain untouched. During the construction period, cement and wet concrete must be kept out of all watercourses and drains.
- Track ruttings by machinery movement must be kept to a minimum and no discharge or runoff containing high sediment loads must occur from the site.
- A contingency plan must be established and strictly adhered to in the event of any contamination of watercourses.
- Any stockpiling of peat or other site materials will require careful management to ensure that slippage or collapse to any adjacent watercourses will not occur.
- Runoff due to precipitation will require adequate and monitored treatment.
- The applicant will need consent under Section 47 of the Foyle Fisheries Act 1952 (as amended) to culvert any watercourse or drain.
- The applicant should also be aware that it is an offence under section 171(1) of the Fisheries (Consolidation) Act 1959, as extended by Section 10 of the Foyle Fisheries (Amendment) Act, 1961 and as amended, to cause pollution which is detrimental to fisheries interests.

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I hope that you will find this information useful and please do not hesitate to contact me should you need further assistance.

Yours sincerely

Declan Lawlor

Dr Declan Lawlor CEnv
Environmental Officer (Loughs Agency)

Barnesmore Windfarm Repowering

Ecology & Ornithology Scoping Report

June 2019

SCOTTISHPOWER RENEWABLES

www.scottishpowerrenewables.com

Table of contents

Barnesmore Windfarm Repowering

Ecology & Ornithology Scoping Report

1 Introduction

1.1 Purpose of Consulting with National Parks & Wildlife Service (NPWS)

ScottishPower Renewables (SPR) is seeking to Repower Barnesmore Windfarm in Co. Donegal. This will likely involve removing the existing 25 turbines and constructing a fewer number of larger modern turbines in their place. This shall have the benefit of enlarging the installed capacity and significantly increasing the volume of renewable energy produced annually from the site.

The purpose of this document is to provide information on the baseline information of the site; which is an operational windfarm; to outline the proposed survey and assessment approach to ecology and ornithology to relevant consultees; and, to describe SPR's intentions and proposed approach to the redevelopment, while taking into consideration the nature of the site and the known environmental constraints existing here, at this stage. Consultee views on the proposed scope of the Environmental Impact Assessment Report (EIAR), in terms of the ecological and ornithological aspects, are requested here as part of the scoping process.

It is hoped that agreeing on the EIA scope of works shall allow a common understanding of the pertinent matters involved, and will inform the design and assessment of the repowered site. It will also provide consultees with the opportunity to advise on how the redevelopment is progressed, to ensure that environmental standards and safeguards are maintained, and that the EIA scope proposed is sufficient to inform the progression of this project. Relevant consultees are being contacted, in addition to the Local Authority, so that a range of expert opinion is obtained and can be incorporated into the EIAR.

An EIAR is defined in the EIA regulations as: 'A statement of the effects, if any, which proposed development, if carried out, would have on the environment.'

SPR understand that the EIA Directive, and compilation of an EIAR, is designed to "strengthen the quality of the environmental impact assessment procedure" and it highlights that environmental issues, including natural resources, sustainability, biodiversity and climate change are now at the forefront of policy making and subsequently must be at the forefront of environmental assessment and the decision-making process for plans and projects.

2 Barnesmore Site Background

2.1 About ScottishPower Renewables

SPR is part of the Iberdrola Group, one of the world's largest integrated utility companies, and a world leader in wind energy. ScottishPower now only produce 100% green electricity - our focus is on wind energy, smart grids and driving the change to a cleaner, electric future and we're investing over £4m every working day to make this happen. We are committed to speeding up the transition to cleaner electric transport, improving air quality and over time, driving down bills. To deliver a better future, quicker for everyone. SPR is responsible for progressing onshore renewable projects in the UK and Ireland, and offshore windfarms throughout the world, with responsibility for managing project development, construction and operation.

We are at the forefront of the renewables industry, through pioneering ideas, forward thinking, and outstanding innovation which in turn drives economic success. Through the operation of Barnesmore Windfarm, SPR has been present in Ireland for over 20 years.

As part of SPR's commitment to being a responsible developer, SPR has committed to the restoration of over 8500 hectares of peatland habitat. SPR have undertaken over 10 years' worth of research to investigate the functionality of peatland and have developed innovative techniques for restoring damaged habitats on both deforested and unplanted peatlands.

SPR are lead author of a technical report on forest to bog restoration commissioned by the International Union for the Conservation of Nature (IUCN) Peatland Commission. The majority of data used to evidence this report comes from the innovative work carried out by SPR at our windfarm sites which were devised in response to a lack of proven methods. The success of SPR's methods has been recognised by key organisations such as RSPB, SNH and Forestry and Land Scotland who have now adopted the peatland restoration techniques developed by SPR for our projects.

2.2 Barnesmore Windfarm

Barnesmore Windfarm is located approximately 10 km Northwest of Donegal town, the site commenced operations in 1997 and currently there are 25 x 600 kW wind turbines with a 61 m tip height operating on the site. The planning permission for the existing site runs in perpetuity so SPR have the right to continue to run the site indefinitely.

The existing turbines are sited on elevated moorland above Barnesmore Gap between the N15 and the Irish national border, the site boundary is wholly contained within the Republic of Ireland.

Planning permission was granted by Donegal County Council on the 10/08/1996 under planning reference 95/914 for the erection of up to 26 no. 40m hub height wind turbine masts, transformer compound with associated single storey switch room building and service roads at Keadew Upper, Barnesmore, Co. Donegal. The windfarm currently operates 25 x 600 kW Vestas V42 Wind Turbine Generators (WTG) with a 61m tip height.

3 Proposed Development

3.1 Development Outline Description

Repowering is the replacement of the less efficient existing wind turbines with more modern and efficient wind turbines. In the case of the proposed repowering of Barnesmore Windfarm, this will mean the replacement of the existing 25, 600 kW, turbines with up to 13, 4-5 megawatt (MW), turbines. The benefit of this process is an increased overall generating capacity and output from 15 MW to over 50 MW as well as a reduction to almost half the total number of turbines within the site. The principle of development has already been established on this site with the grant of planning permission for a windfarm which is currently operational. One of the main aims of this project is to re-develop the site as much as possible within the existing infrastructure footprint. The process of repowering will involve the following:

- Removal of 25 existing 600 kW turbines;
- Erection of up to 13 new 4-5 MW turbines with a higher hub height and larger rotor diameter;
- Construction of new crane hardstand areas (using as much of existing hardstands as possible);
- Construction of new turbine foundations;
- Construction of a new 110 kV substation to connect to the national grid via existing 110kV transmission line;
- Upgrade of existing site tracks;
- Erection of new meteorological masts for monitoring wind speeds;
- Construction of a new battery energy storage facility;
- Reinstatement of areas of existing infrastructure which is not being used for the new windfarm; and,
- Construction of a new temporary site compound for use during construction.

3.2 Summary of Nearby Designated Sites and Sensitive Areas

A full and detailed Appropriate Assessment screening, and if required, subsequent Natura Impact Statement (NIS) will be carried out to inform the repowering of this site. However, the section below outlines some of the key Designated areas that are known to be, or are likely to be within the Zone of Influence of the project. A detailed list of the sites which will be considered during assessment stage, including trans-boundary considerations is provided at Appendix D.

Barnesmore Bog - Natural Heritage Area (NHA) [Site Code: 002375]

The land around the operational Barnesmore Windfarm, which is wholly owned by SPR, was designated as an NHA in 2005 owing to the intact peatland habitats which include blanket bog, montane heath, wet heath and flushes etc. Apart from localised areas, the vast majority of the bog is in very good condition showing little signs of drainage, peatland extraction or overgrazing (Barnesmore Bog NHA 002375). The NHA designation of this area was implemented subsequent to the construction of the existing windfarm.

During the boundary mapping exercise for this designated site, it appears that it was the intention to exclude the existing windfarm infrastructure from the NHA boundary, however, the mapping within the NHA site synopsis is inaccurate. The NHA Site Synopsis confirms that exclusion of the windfarm was the intention when the boundaries were drawn "*A wind power installation and associated access roads, which occupies part of Croaghakeadew Mountain (398 m) on the west and extends eastwards to Loughnaweelagh, northwards to Lough Namaddy, and southwards to just north of Lough Naleaghany, has been excluded from the site.*[1]*".*

Vertebrate features cited at the NHA include Irish hare *Lepus timidus hibernicus*, badger *Meles meles*, red grouse *Lagopus lagopus*, golden plover *Pluvialis apricaria*, peregrine falcon *Falco peregrinus* and common frog *Rana temporaria*.

Lough Eske and Ardnamona Wood Special Area of Conservation [Site Code: 000163] Freshwater Pearl Mussel

Detailed consideration is being given to this site, in particular the potential for effects upon the River Eske (Freshwater Pearl Mussel) Catchment. Several of the existing turbines in the western portion of the existing windfarm are located within the River Eske catchment for which 'Lough Eske and Ardnamona Wood SAC' is a designated Special Area of Conservation, with *Margaritifera margaritifera* (Freshwater Pearl Mussel) [1029] being listed as one of the qualifying interest species for this SAC. Other qualifying interests include: Oligotrophic waters containing very few minerals of sandy plains *(Littorelletalia uniflorae)* [3110]; Petrifying springs with tufa formation *(Cratoneurion)* [7220]; Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles [91A0]; *Salmo salar* (Atlantic salmon) [1106]; and, *Trichomanes speciosum* (Killarney Fern) [1421].

River Foyle and Tributaries Special Area of Conservation [UK Site Code: UK0030320]

The majority of the windfarm is located within the transboundary Foyle catchment and includes the River Foyle and Tributaries SAC (with the closest and most direct connection to the SAC at the north-eastern part of the existing Windfarm). Qualifying Interests include: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation [3260];*Salmo salar* (Atlantic salmon) [1106] (with the largest population of this species in all of Northern Ireland, supporting *c.*15% of the estimated spawning numbers); and, *Lutra lutra* (otter) [1355].

Killeeter Forest and Bogs and Lakes [Site Code: UK ASSI357]

This Northern Ireland Area of Special Scientific Interest (ASSI) is comprised of broad ridges with rounded summits and wide, relatively shallow valleys, homogeneous, large-scale mosaic of open moorland and conifer plantations on upland summits; finely grained mosaic of scrubby woodland, rough pasture and peaty marsh within valleys. Irregular patchwork of pastures subdivided by angular stone walls on lower slopes; transition to marginal pastures, with broken stone walls and regenerating scrub on the fringes of the moor, No buildings on upper ridges; a few scattered farms and cottages on the lower slopes bordering the valley pastures, with small conifer shelterbelts beside isolated farmsteads, derelict buildings and some evidence of peat cuttings. Ornithology features listed at this site includes hen harrier *Circus cyaneus*, red grouse and Greenland white-fronted geese *Anser albifrons*.

[1] *NPWS (2004) Barnesmore Bog NHA (Site Code: 002375) – Site Synopsis*

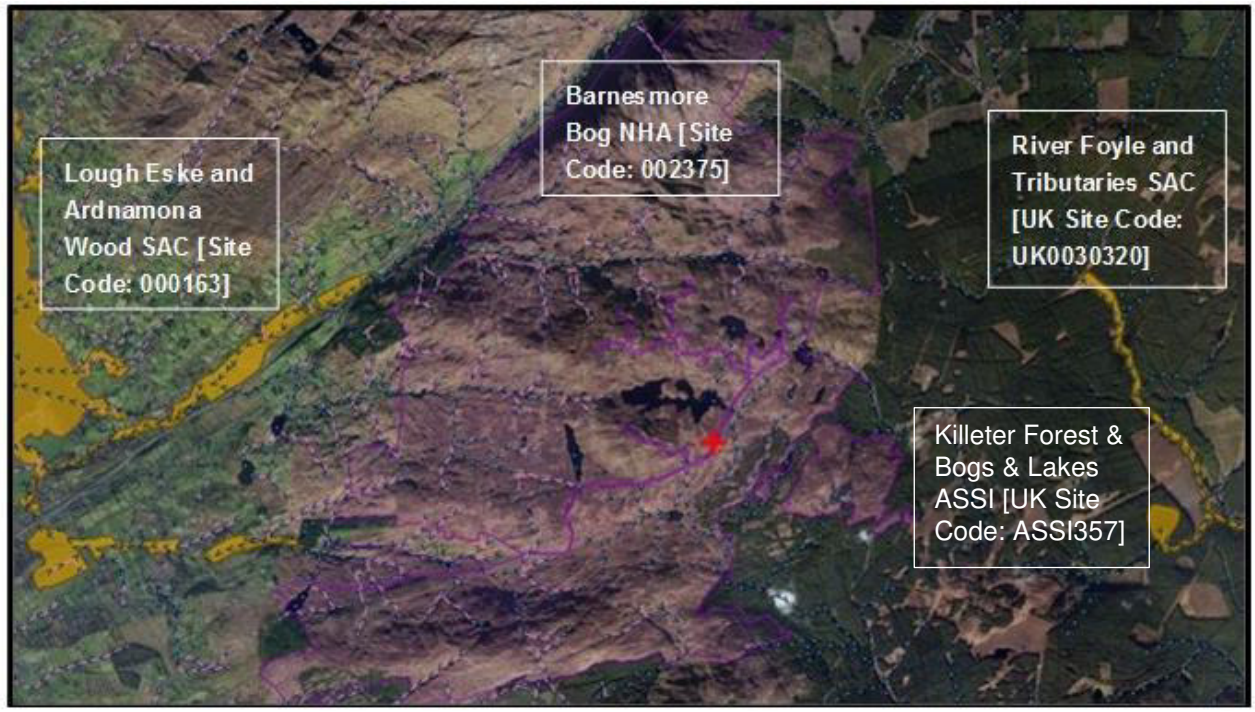


Figure 1 – Designated Sites in closest proximity to Barnesmore Windfarm
This map includes flow direction arrows (blue) and *Margaritifera* First Order Rivers (pink[2]) – Source: EPA Maps

3.3 Project Approach

The project team for the proposed repowering of Barnesmore Windfarm are fully aware of the sensitive nature of the habitats within and surrounding the Application Site. The baseline for the proposal is therefore an operational windfarm. The project team consider that given that Windfarm infrastructure exists at this Barnesmore site for more than 20 years, it is a logical location for site selection, in order to install more modernised renewable energy infrastructure. The site offers the prospect of potentially removing the existing 25 no, 600 kW wind turbines, currently on site, replacing these with up to 13 no. modern machines, each with a generating capacity of 5 MW. This could bring the installed generating capacity of this facility from 15 MW to over 50 MW.

At this early stage, the intention for this project is to take every opportunity possible to repower the facility within the minimal footprint required for the new turbines and associated infrastructure. As part of the proposed repowering project, there are likely to be opportunities to remove some of the retired existing infrastructure (roads and hard-standings) and restoring these areas. It is considered that, if undertaken appropriately, such work could be to the benefit of some of the peatland habitats and associated species within the immediate environs of the existing windfarm site, where (localised) habitat degradation has occurred in the past.

As part of designing the new turbine layout, SPR will consider what the best approach is to manage the decommissioning of tracks, foundations and hard-standings to establish the best balance between restoration potential and avoiding further disturbance effects through removal operations, as well as assessing potential enduring value for infrastructure to afford access to the site for conservation or public amenity purposes.

3.4 Scoping the Potential for Ecological Effects

On completion of a preliminary assessment in 2017 (Woodrow, 2017[3]), it has been established that the peatland habitats surrounding the existing infrastructure largely comprise of intact, high quality EU Annex I habitats. The initial study recommended that the best approach for this scheme is likely to be a repowering proposal that concentrates on the existing infrastructure, enhancing this within areas of lower habitat quality. Progression of this scheme requires further detailed survey, which is intended to occur in 2019, and SPR are fully aware that well thought out measures are required in order to appropriately

[2] *This line feature dataset contains stretches of first order rivers (small tributaries), mainly located within the SAC catchments for which Sub-basin management plans have been written.*
[3] *(Woodrow, 2017) 2017 Vegetation and Habitat Survey – Potential for development and/or repowering of Barnesmore Wind Farm.*

mitigate for the significant habitat constraints posed at this site. As such, it is clear that detailed discussion with NPWS is fundamental to ascertain how best to proceed with this work.

Being mindful of the relative environmental sensitivity of the designated land, adjacent to the site, SPR are proposing to utilise the existing infrastructure where possible. It is possible to reuse existing tracks with only minor upgrading or re-profiling of specific sections to support larger component delivery.

3.5 Peatland & NHA

At this early stage, the extent of direct effects upon the Barnesmore Bog NHA is unclear, but some level of effect will be unavoidable. The aim is to minimise any encroachment into the NHA features of conservation interest as far as possible, instead focusing on upgrading the existing footprint of the Windfarm where possible and to mitigate effects, where unavoidable, by implementation of habitat restoration where appropriate, and enhancement where feasible. Although it is noted at this stage that secondary habitats, such as abandoned turbary or flooding of old cuttings where they are recolonised with *Sphagnum* mosses and other bog species, are unlikely to replicate all of the elements of intact blanket bog, such sites are proven to support a variety of blanket bog flora and fauna and therefore, such habitat restoration sites can have a considerable conservation value (Conaghan, *et. al.* 2000[4]).

There may also be opportunities to investigate the potential for mitigating Green House Gas emissions by avoiding new or recurrent drainage, and reducing emissions on existing drained areas by rewetting/restoration of peatlands at this site (Peatlands International Issue 1, 2017[5]). The EPA Bogland Report states that *"Irish peatlands are a huge carbon store, containing more than 75% of all the national soil organic carbon"* (Renou-Wilson, 2011[6]), with a high water table being a prerequisite for this storage capacity.

SPR are geared towards the responsible management of the peatland habitat within their ownership, which requires collaboration between the company and other key stakeholders, such as NPWS and neighbouring landowners. SPR would also like to cooperate together with NPWS and members of the Irish Peatland Conservation Council (IPCC) to ensure that their work is in line within the National Peatlands Strategy (published in 2015). The Irish Government has recently (August 2018) approved the publication of the Peatlands Strategy Implementation Group Progress Report 2017[7].

The strategy acknowledges that "due to the significant loss of active raised bogs habitat, and Ireland's alleged failure to meet obligations under EU Law, there will be a priority on the restoration of raised bog SACs in the first instance. However, the future management of raised bog NHAs, and designated blanket bog sites [such as Barnesmore Bog NHA] need also to be considered as a matter of urgency." (National Peatlands Strategy, Terms of Reference). **As such, any updates that can be provided by NPWS on the strategy for Upland blanket bog habitat within NHA sites in Ireland would be gratefully received as part of this scoping process.**

In relation to the inconsistencies with the mapped boundaries of the NHA and the existing infrastructure, it is considered that the existing windfarm infrastructure was intended to be excluded from the NHA designation. As such, it is envisioned that the project design will be progressed on that basis, with the newly proposed infrastructure reusing as much of the existing infrastructure footprint and materials as possible **SPR seek to ascertain if NPWS can confirm they are in agreement with this.**

Likely ecological effects posed by the project include the potential for direct effects upon intact EU Annex I upland habitats, as well as effects upon grassland and other habitats which have formed immediately around the existing infrastructure, but which are considered to be of a lower conservation value than the surrounding intact peatlands.

Based on initial concept layouts (which are subject to change based on further environmental assessments etc.), it is likely that there will be some direct loss of Intact active blanket bog* (*an EU Annex I Priority Habitat) and cutover bog; wet heath; montane heath (the former two habitats are also EU Annex I habitats); and, acid grassland (formed on the peripheries of existing

[4] *Conaghan, J., Douglas, C., Grogan, H., O' Sullivan, A., Kelly, L., Garvey, L., Van Doorslaer, L., Scally, L., Dunnells, D., & Wyse Jackson, M., Goodwillie, R., Mooney, E. (2000) Distribution, Ecology and Conservation of Blanket Bog in Ireland* https://www.npws.ie/sites/default/files/publications/pdf/Conaghan_2000_Blanket_Bog.pdf
[5] *Available at: http://www.peatlands.org/publications/peatlands-international/peatlands-international-12017*
[6] *BOGLAND – Renou-Wilson, F., T. Bolger, C. Bullock, F. Convery, J. P. Curry, S. Ward, D. Wilson, and C. Müller. Bogland - Sustainable Management of Peatlands in Ireland. Johnstown Castle, Co. Wexford: STRIVE Report No 75 prepared for the Environmental Protection Agency (EPA), 2011.*
[7] Available at: https://www.npws.ie/sites/default/files/publications/pdf/PSIG%20Progress%20Report%202017%20English.pdf

hardstanding). The specifics of this are unknown at this stage and require further detailed botanical assessment. However, the design is aiming to locate new infrastructure within the existing footprint as closely as possible, with the general approach being to use the existing infrastructure as far as possible and the locally disturbed ground around it, and minimising direct loss of important habitats by carefully choosing areas where the footprint can be minimised due to favourable contouring of the ground.

Where habitats are likely to be unavoidably impacted, areas where the effect can be contained to the loss of areas under the footprint of the development only will be favoured (i.e. those areas where, if impacted, will not be likely to have a wider hydrological or other effect). It is intended that any unavoidable significant effects will be compensated through habitat enhancement measures elsewhere. **SPR would appreciate any comments or concerns that NPWS would like to raise at this stage on this proposed approach, notably taking account of unavoidable effects upon EU Annex I habitats (and potentially, active blanket bog*) that lie outside of Natura 2000 Designated Sites (but within a NHA), so that this can lead the way forward for the design and layout of infrastructure for this repowering scheme.**

The proposed scheme is likely to require the removal of peat turves in certain locations, to establish working areas for larger turbines. As such, it is anticipated that any removal of turves would be used to restore defunct habitats where this is possible. A detailed study of the habitats on the site, and the key areas for potential restoration, is yet to be conducted as part of the EIAR. A high level, preliminary habitat assessment (conducted by Woodrow in 2017), has indicated some areas for which restoration opportunities might arise (following more detailed habitat assessment) – such as the species poor, 'Dry-Humid Acid Grassland' supporting mat grass *Nardus stricta* which has formed alongside some of the existing infrastructure.

3.6 Aquatic Ecology Considerations

Although 25 no. turbines and associated infrastructure already exist within this catchment, the potential for any associated hydrological effects of the proposed repowering scheme will also be thoroughly investigated – and how this might impact upon the local flora and fauna (particularly aquatic species within the environs of the site, such as the Freshwater Pearl Mussel *Margaritifera margaritifera* and Salmon *Salmo salar*).

The area of infrastructure within the catchment is highly likely to reduce overall, given that turbine numbers will be reduced from 25 no. to 13 no. units with areas outside the Freshwater Pearl Mussel catchment being favoured. Typical effects associated with wind farms and mitigation options are detailed in the report 'Practical Implementation of Freshwater Pearl Mussel Measures – Windfarm Development Guidelines' (Donegal County Council / NIEA June 2014[8]). These guidelines, and other best practice approaches will be followed. Taking into account the limited extent of the proposed wind farm within the Freshwater Pearl Mussel catchment, it is considered that there are opportunities to minimise and mitigate for any effects, including upgrading of the hydrological management associated with existing infrastructure to result in more sustainable hydrological flows which could be to the benefit to the surrounding habitats, as well as downslope and downstream areas.

3.7 Other Flora & Fauna

The potential for adverse effects upon the local flora and fauna will be ascertained, particularly in relation to any effects posed by the installation of new larger wind turbines (including land take for turbine hardstands and amendments to access tracks). In addition, to the benefits that might arise from a lower number of turbines existing on this site, and the potential for habitat restoration where turbines and access tracks are to be removed. Details regarding the potential for effects upon birds is provided in the Ornithological section of this scoping report, provided in Section 3.8. The surveys to be conducted within this EIA have been identified and are listed in Section 3.9 below. This list is under review as part of this scoping exercise, and feedback on the proposed scope is welcomed.

3.8 Scoping the Potential for Ornithological Effects

This section sets out the approach to the evaluation of the ornithological interest of the site and surrounding area, and to the assessment of potential effects on birds. The ornithology assessment will consider the potential effects of the development during the following development stages: dismantling and removal (decommissioning) of the operational Barnesmore windfarm; construction of the development; and operation of the site (in perpetuity). The decommissioning of the operational Barnesmore windfarm and the construction of the development is likely to occur at least partly simultaneously with the construction of the repowered turbines and associated infrastructure and restoration of retired infrastructure.

The knowledge of the spatial and temporal occurrence of bird species within and surrounding the site is essential to inform the likely effects of a development. The key objective of the ornithology surveys were to (i) provide baseline data on all extant

[8] *Available at: https://cawtdonegal.files.wordpress.com/2017/03/fwpm-draft-windfarm-guidance-2014.pdf*

ornithological features to establish the risk posed to birds due to the development; (ii) to quantify the risk of collision with turbines to extant bird species flying through the site throughout the year; and (iii) to identify locations of priority target species territories to establish risk posed due to the development.

Flight activity for key target species will require to be assessed during collision risk modelling once a final turbine layout and turbine metrics are known. Curlew were recorded in the wider 2 km survey area. However only a small part of the site boundary lies within 800 m of the recorded curlew location which is the published spatial sensitivity of this species (800 m; Pearce-Higgins et al., 2009; 2012). The development will be designed to avoid this buffer and as such no significant effects are anticipated. A number of breeding species including red grouse, common sandpiper and snipe territories were recorded within close proximity of the operational windfarm, and despite the reported sensitivity of snipe to windfarms (Pearce-Higgins *et al.*, 2009[9]; 2012[10]) there were an extensive number of snipe within the operational windfarm.

Consideration will be given to these findings in the context of habituation and displacement, and thus are considered to have lesser effects from the development subject to sensitive design and mitigation measures (e.g. during the construction phase). Since the site is within and/or close proximity to some locally designated sites including for peregrine falcon, hen harrier and Greenland white-fronted goose careful consideration will be given to these species and the potential effects of the development on these species including trans-boundary considerations given the proximity of the site to the Northern Ireland border. If necessary, an appropriate assessment will be prepared in consideration of the wider SPAs and/or associated site features, will be undertaken although currently this is not considered a likely significant effect.

The baseline data will be incorporated into the design and constraints process in the first instance to inform the design, layout iteration process as well as to minimise effects of displacement or collision. An assessment will be undertaken once the scheme design is finalised. Collision risk modelling (CRM) required for key ornithological receptors i.e. target species at risk of collision and displacement modelling required for snipe and curlew as well as footprint analysis for smaller passerines will be undertaken. There will be due consideration of all species recorded flying through the 500 m survey area and any potential significant effects arising from the final layout design will be considered.

The surveys conducted here have provided a robust baseline of data that is compliant with best practice guidance. Whilst the numbers or locations of species may vary marginally between years, the data is considered to provide a robust baseline for minimising effects during the design and constraints process and also for establishing the potential for significant effects, if any, during the final assessment of the development.

Further consideration and assessment is required based on a final layout, prior to determining if any ornithological effects can be scoped out of the assessment. It is anticipated that direct effects on curlew territories can be scoped out at this stage, due to the distance between the recorded curlew location and likely development area. It is noted that there is strong evidence of habituation of some species within the operational Barnesmore windfarm, in particular numerous active (and successful) snipe territories were recorded within the operational Barnesmore windfarm therefore indicating habituation to operational turbines. Red grouse territories recorded within the operational Barnesmore windfarm which some juveniles and coveys recorded in autumn counts, so grouse are breeding successfully in the site boundary. The baseline findings and low sensitivity identified in the literature and also evidence of habituation to the operational turbines but these, and other species, may still be vulnerable to construction and/or decommissioning activities.

Some (non-breeding) golden plover flights were recorded, which could be subject to collision risk and one pair were recorded breeding in the wider 2 km survey area. However published literature indicates that this species shows considerable avoidance and lack of effect due to windfarms (Fielding & Haworth, 2010[11]; Douglas *et al.*, 2011[12]). Thus significant effects may be considered unlikely based on published literature, as such they will be considered within the ES for breeding displacement

[9] Pearce-Higgins, J.W., Stephen, L., Langston, R.H.W., Bainbridge, I.P. & Bullman, R. (2009a). The distribution of breeding birds around upland wind farms. Journal of Applied Ecology 46: 1323-1331.
[10] Pearce-Higgins, J. W., Stephen, L., Douse, A. & Langston, R. H. W. (2012). Greater impacts of wind farms on bird populations during construction than subsequent operation: results of a multi-site and multi-species analysis. Journal of Applied Ecology 49: 386-394.
[11] Fielding, A.H., Haworth, P., (2010). Farr windfarm: A review of displacement disturbance on golden plover arising from operational turbines between 2005 and 2009. Unpublished report by Haworth Conservation Ltd.
[12] Douglas, D.J.T., Bellamy, P.E & Pearce- Higgins, J.W. (2011). Changes in the abundance and distribution of upland breeding birds at an operational wind farm. Bird Study 58: 37-43.

risks (Sansom et al., 2016[13]) but low weighting shall be given to the effects on this species from collision and/or displacement given the evidence contained in the literature.

To establish effects of the development additional mapping and modelling analyses are to be undertaken of the baseline ornithology data which includes comparative data between the existing infrastructure and turbines (baseline) compared to the proposed infrastructure and turbines. Additional analyses are to be completed using the baseline data to review:

- Potential effects on breeding birds and within 500 m of turbines and infrastructure footprint
- Potential effects on wintering birds within 500 m of turbines and infrastructure footprint
- Potential effects of collision on birds within 500 m of turbines
- Collision risk modelling (CRM)
- Potential effects on designated sites and/or site features

Key questions for consultees in respect of ornithology are:

- Do consultees agree that the surveys completed are of sufficient scope to allow an effective assessment?
- Do consultees hold any specific additional information that should be incorporated either in to the design or assessment for the development?
- Do consultees have any topics or details that they would require more information on within the assessment?

3.9 Ecological Information Likely to be contained in Biodiversity Chapter of the EIAR

The impact assessment methodology applied here will follow the Chartered Institute of Ecology and Environmental Management 'CIEEM' guidance (CIEEM, 2018), as well as building on other methodologies for faunal groups as recommend through best practice guidance (references for which are listed on the CIEEM website at https://www.cieem.net/competencies-for-species-survey-css-).

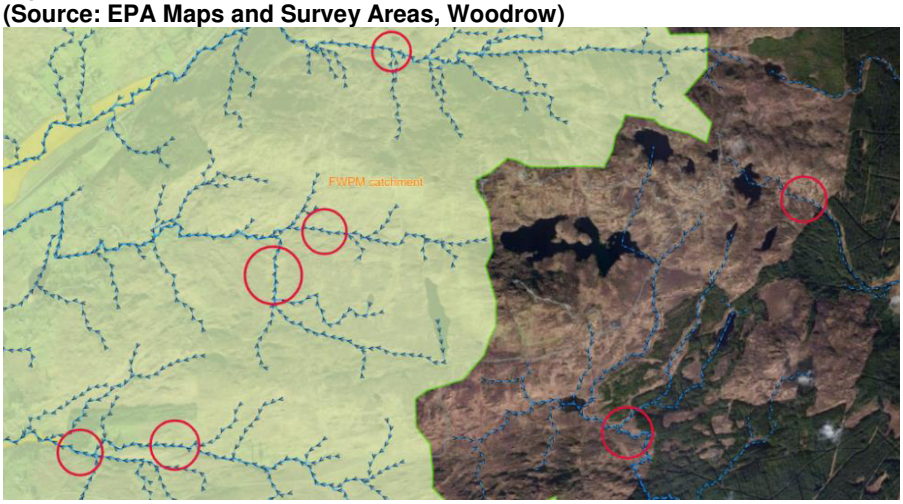
Initial investigation of the site and consideration of the proposed Development has identified the need to conduct the further ecological surveys as part of the Biodiversity Assessment. Further detail on the survey and assessment methodology can be seen in Table 1 below.

Table 1 – Survey and Assessment Methodology for the proposed Barnesmore Repowering project.

Subject	Survey/Assessment Methodology
Desk Study & Consultation	• Desk study - utilising sources of information such as the National Parks and Wildlife Service (NPWS) database, National Biodiversity Data Centre (NBDC), Birdwatch Ireland (BWI) and Bat Conservation Ireland (BCI) records services; published information and sensitivity mapping (McGuinness et al., 2015[14]) and consultation with relevant stakeholders e.g. Development Applications Unit (DAU) / NPWS, Inland Fisheries Ireland (IFI) etc. • This will form an important part of the surveys since it has the potential to shape survey emphasis in some areas.
Habitat Surveys	• Phase 1 Habitat (Fossitt, 2000) & National Upland Habitat Survey (Perrin, *et al.* 2014). • Habitats or areas of habitats which have a potential correspondence to Annex I Classifications will be target noted and mapped. Particular attention will be given to Annex I habitats which commonly occur in upland areas (although others may also occur) such as; - Blanket bogs that are still capable of peat formation correspond to the priority habitat, 'blanket bogs' (* - an EU priority habitat if active bog) (7130); - Depressions on peat substrates of the Rhynchosporion (7150); - Species-rich *Nardus* grasslands on siliceous substrates in mountain areas (6230); - European dry heaths (4030); and, - Northern Atlantic wet heaths with *Erica tetralix* (4010). • Surveys for different habitat types will be in line with recommendations in appropriate guidelines and reference documents. For example, areas of habitat with potential correspondence to Annex I upland bog habitats will be surveyed and classified in accordance with recommendations made in Guidelines for a 'National Survey and Conservation Assessment of Upland Vegetation and Habitats in Ireland'

[13] *Sansom, A., Pearce-Higgins, J.W. & Douglas, D.J.T. (2016). Negative impact of wind energy development on a breeding shorebird assessed with a BACI study design. IBIS 158: 541-555*

[14] *McGuinness, S., Muldoon, C., Tierney, N., Cummins, S., Murray, A., Egan, S. & Crowe, O. (2015). Bird sensitivity mapping for wind energy developments and associated infrastructure in the Republic of Ireland. BirdWatch Ireland, Kilcoole.*

Subject	Survey/Assessment Methodology
	(Perrin *et al*., 2014), and areas of grassland with the potential to correspond to Annex I grassland habitats will be surveyed and mapped in accordance with recommendations made in 'The Irish Semi-Natural Grasslands Survey 2007-2012' (O'Neill *et al.,* 2013).
Protected Species Surveys	• During the habitat surveys, areas which provide habitat for rare or protected species will be identified (an initial data request has been submitted to the National Parks and Wildlife Service for records), particularly, areas which contain devils' bit scabious *Succisa pratensis*, the larval food plant of the marsh fritillary *Euphydryas aurinia* (though it is considered that the majority of the higher parts of the site will be above the optimal altitude for the species).
Protected Species Surveys	• Non-volant mammal surveys (for terrestrial, land-based mammals) will be undertaken in the form of dedicated walkovers and well as being incorporated into other walkover surveys. For example, walkovers will be undertaken for general signs of mammals and all watercourses within 100 m of the proposal boundary will be systematically surveyed for otter signs while signs of other species, which may occur in other parts of the site will also be recorded during any other surveys. In addition to surveys for otter *Lutra lutra*, this will also include assessments for mammals which are known or likely within the environs, such as badger *meles meles* and red squirrel *Sciurus vulgaris*. • Dedicated common lizard surveys will be undertaken at this site. It is likely that the site holds common lizard, and they may use areas close to existing infrastructure which would have both cover vegetation and bare ground for basking. A survey, using refuge mats, will be undertaken for the species. The survey will be undertaken when a fairly advanced proposed layout has been agreed in order to target the surveys appropriately.
Aquatic Surveys	An initial scope is proposed that includes: • An ecological assessment of the streams within and draining the site (notability with respect to Salmonid suitability). Streams will be assessed under the Salmonid Habitat Suitability Index and River Hydromorphology Assessment Technique depending on the nature of the baseline, as agreed with IFI. • A macro-invertebrate survey and associated rating of streams within and draining the site in order to form an appropriate baseline, notably within the freshwater pearl-mussel catchment. Biological scoring of the streams draining the site, carried out to provide for Q-rating or Small Streams Risk Score depending on the nature of each watercourse, will be undertaken by macro-invertebrate sampling (kick-sampling) and standard assessment methodologies at outflow locations from the survey area in order to form a baseline for appropriate monitoring. Basic water quality parameters will be measured using portable meters to provide baseline profile of chemical quality in the principal watercourses. These will include temperature, pH, dissolved oxygen, conductivity and turbidity. • It is considered that a minimum required coverage would be for baseline assessments to be undertaken at approximately 7 no. locations. Figure 2 below shows the site in the context of watercourses and the Freshwater Pearl Mussel catchment (Eske catchment) to the west, and indicative survey locations in red circles. **Figure 2 – Watercourses, Freshwater Pearl Mussel catchment and indicative survey areas (Source: EPA Maps and Survey Areas, Woodrow)** 

Subject	Survey/Assessment Methodology
	• Freshwater Pearl Mussel, and the habitat that supports this species, can be impacted through sedimentation, nutrient and chemical pollution, or significant changes to the flow regime in a watercourse. Any works which result in the exposure of bare ground, or destabilisation of soils could increase fine sediment release, and increase the nutrient load of watercourses. The cumulative effects of such effects can have significant adverse effects upon this species. Pollution from the use of chemicals such as hydrocarbons, can have direct toxic effects on this aquatic invertebrate. Land drainage can also result in increased flows and associated erosion of the river channel and banks. • A detailed risk assessment will be carried out, in accordance with the guidelines, which will give due consideration to all of the potential effects of the windfarm repower project. This will include a risk assessment for the potential risks to Freshwater Pearl Mussel (and/or their habitat) posed by site preparation, construction, operation, maintenance and decommissioning. • Based on the results of the above risk assessment, appropriate mitigation will be devised to avoid any significant adverse effects upon this critically endangered species and the habitat that supports it, and to satisfactorily reduce any effects upon the local environment. This work shall seek to give robust assurance that the proposal will not impact on FPM and it will not impair the environmental conditions that are required to support the FPM population at a favourable conservation status. Mitigation will first propose to avoid effects through the layout and design of the project with respect to the FPM catchment and likely or confirmed hydrological linkages to this. Further mitigation will be based on site specific assessment, and the feasibility of implementing such measures at the site. • Early consultation will be undertaken with NPWS and IFI to determine the full extent of previous surveys for, and consequent knowledge of, Freshwater Pearl Mussel populations within the catchment. An appropriate survey scope will be then determined, following a detailed audit of this information, and of the drainage network, along with the detailed risk assessment of potential effects upon FPM.
Bat Activity Surveys	Bat surveys will be carried out in accordance with the Scottish Natural Heritage Guidance (2019). Considering the guidelines, and taking account the ecological contractor's own extensive experience of bat surveys on windfarms, the following is proposed as appropriate: • Bat surveys to be undertaken during the full season during which bats are predicted to be active within such a site. This is considered to be May to October inclusive. • Bat survey approaches will be strongly aimed at a full programme of static detector deployments, as per the SNH Guidelines, but will also include some transect coverage (walked / driven). • Static detectors will be deployed seasonally between May and October inclusive (4 deployments of 14 detectors). Detectors placed at proposed turbine locations, with potential for 1 or 2 detectors at features for context. • Two transects / vantage point watches will be undertaken between May and October, concentrating on the core summer period. • Potential roosts within 200 m of the site boundary (Appendix C shows site boundary) will be surveyed where they occur (The likelihood of these occurring at the site is low). • In line with the new SNH Guidelines, a weather station will be deployed at the site over the course of the static detector survey season to provide weather context for the results. Numbers of bats at this site are anticipated to be relatively low given the habitats on the site and the exposed nature of the area. However, NBDC records indicate that Soprano Pipistrelle *Pipistrellus pygmaeus* are recorded within this 10km grid square and it is likely that Leisler's bat *Nyctalus leisleri* (a species potentially sensitive to turbine development) will also be present within this area. Leisler's bats are thought likely to forage around the forestry to the east of the site and may forage within or cross the site. Surveys in similar areas have noted peaks in the usage of such sites by this species, including during May and in the core summer months. This is the driver for 4 deployments of static detectors rather than the minimum of 3.
Ornithology	The survey scope of works has been designed using an extensive desktop review of potential ornithological receptors (Bird Surveyors Ltd, 2016[15]) and following best practice guidance. In the absence of specific national ornithology guidance, the best practice from Scottish Natural Heritage (SNH)[16] was adopted. Surveys were undertaken within the site boundary and prescribed buffers of 500 m, 800 m and 2 km around the site boundary were surveyed and targeted at specific species.

[15] *Bird Surveyors Ltd. (2016). Barnesmore Scoping Report – Ornithology 2016. A technical report prepared for Scottish Power Renewables (SPR) by Dr Marc Ruddock Bird Surveyors Ltd, November 2016.*
[16] https://www.nature.scot/professional-advice/planning-and-development/renewable-energy-development/types-renewable-technologies/onshore-wind-energy/wind-farm-impacts-birds

Subject	Survey/Assessment Methodology
	It is recognised that the final layout and development footprint will be smaller than site boundary and that data and assessment will be adapted accordingly once the final layout and smaller footprint of the development is defined. The site boundary was digitally mapped in ArcGIS and defined as the maximum developable area. This was then buffered by 500 m to define the survey area ('500 m survey area') for breeding and wintering bird surveys, vantage point surveys and walkover surveys. An 800 m buffer defined the search area for curlew during breeding season surveys ('800 m survey area'). The priority species survey area was defined as a 2 km buffer ('2 km survey area') to search for priority species breeding locations and/or territories or wintering locations with additional 5 km and 10-15 km buffers searched for. The surveys were undertaken by experienced field ornithologists, and full details of the survey methods, survey effort, and weather conditions will be presented in the EIAR. There have been two years of surveys (2017 – 2019) carried out following recommended guidance and covering; • Breeding vantage point surveys (Mar – Aug) 500 m survey buffer • Wintering vantage point surveys (Sep – Feb) 500 m survey buffer • Migration vantage point surveys (spring; Jan - Apr & autumn; Sep – Nov) 500 m survey buffer • Breeding walkover surveys (Brown & Shepherd, 1993; all species particularly snipe, curlew (up to 800 m), golden plover, ring ouzel; Mar - Aug) within 500 m survey buffer • Wintering walkover surveys (all species Sep – Mar) within 500 m survey buffer • Breeding priority species surveys (to include 2 km all target species; 5 km hen harrier, 5-10 km golden eagle) (see Hardey et al., 2013) • Wintering priority species surveys (to include 2 km all species; as well as wider searches up 10-15 km particularly for swans and geese) • Prey species surveys (meadow pipits & skylarks; Apr & Jun) within 500 m survey buffer • Red grouse calling (dusk & dawn) survey (Apr) and walkover survey (Aug) within 500 m survey buffer • Snipe calling (dusk) surveys (Apr - May) within 500 m survey buffer
Impact Assessment Methodology	The impact assessment methodology will follow the *Chartered Institute of Ecology and Environmental Management 'CIEEM' guidance* (CIEEM, 2018[17]) as well as building on other methodologies for faunal groups (e.g. Percival, 2003[18]). This work also encompasses the advice provided within the Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports (EIAR) (EPA, 2017[19]) in order to meet the requirements of Directive 2014/52/EU.
Identifying Ecological Features within the Zone of Influence	Information acquired during the desk-study and field surveys will determine those ecological features which have the potential to be affected by the proposed development, and as such occur within its 'zone of influence'. The zone of influence depends on the type of development taking place, its likely effects and the presence of ecological connections which provide a pathway for such effects to an ecological feature of interest which is sensitive to such effects. As such, the zone of influence may extend beyond the boundaries of the Application Site due to the presence of ecological connections with an ecological feature of interest. Similarly, ecological features which have no ecological connection with the proposed development, and as such no pathway for effects, are not within the zone of influence regardless of their proximity to the Application Site. Any such ecological / hydrological connections, which provide potential pathways for effects, will be identified and described within the EIAR and Appropriate Assessment reporting for this project.
Evaluating Ecological Features within the	Those ecological features which occur within the zone of influence such as nature conservation sites, habitat or species will then be evaluated within a geographic hierarchy of importance. The Geographic Frame of

[17] *CIEEM 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater, Coastal and Marine. Available Online at: https://www.cieem.net/data/files/ECIA%20Guidelines.pdf (Accessed August 2018)*
[18] Percival, S. M. (2003). Birds and wind farms in Ireland: A review of potential issues and impact assessment. *Ecology Consulting*. 25pp.
[19] *Available at: https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf*

Subject	Survey/Assessment Methodology
Zone of Influence	Reference used, as recommended by CIEEM, will follow that which is described within the National Roads Authority 'NRA' (2009) Guidelines for the Assessment of Ecological Impacts[20]. This will refer to features identified within the Biodiversity Chapter of the EIAR as being at an International, National, County, Local (Higher Value) or Local (Lower Value) Level of Importance. Important Ecological Features will be those features which are within the zone of influence and are evaluated as being of Local Importance (Higher Value) or greater.

[20] *Available Online at:*
http://www.tii.ie/technical-services/environment/planning/Guidelines-for-Assessment-of-Ecological-Impacts-of-National-Road-Schemes.pdf

4 Consultation Request

4.1 Specific clarification points

The proposed survey, impact minimisation and assessment approaches have been set out above. In addition, a number of specific questions have also been asked (shown in bold within the text). SPR will be requesting a meeting with NPWS in order to discuss these questions so that we can progress in an agreed way in the assessment of the proposal. We ask that NPWS considers the questions posed with particular emphasis on the proposed approach of minimising impact and addressing unavoidable effect on Annex I habitats within the NHA through appropriate mitigation and compensation by habitat enhancement.

4.2 Scoping Consultation

This Scoping Document is intended to give an outline of the proposed development to allow relevant consultees to assess any potential effects on terrestrial and aquatic ecology as well as ornithology so that the windfarm design can take these into account during the iterative design process. The completed EIAR will be submitted to the relevant planning authority as part of the formal planning application process. Scoping and comments from consultees are specifically invited on the following sections of the EIAR:

- Content to be contained in the EIAR
- Assessment methods
- Additional data and sources

Specific queries related to ornithology are as follows:

- Do consultees agree that the surveys completed are of sufficient scope to allow an effective assessment?
- Do consultees hold any specific additional information that should be incorporated either into the design or assessment for the Development?
- Do consultees have any topics or details that they would require more information on or within the assessment?

All responses should be addressed to:

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Appendix A: Summary of Ornithology scope and survey findings

Ornithological surveys

Bird surveys have been undertaken at the operational windfarm at Barnesmore as part of the baseline information collection for potential re-powering of turbines. An extensive suite of bird surveys have been scoped into the work programme and undertaken according to best practice methodology and timings across the breeding, wintering and migration season. Whilst designing the survey scope, SPR has been cognisant of the extant habitats and any designated sites or citation species in the area. SPR also conducted an extensive scoping review of likely ornithological receptors, desktop data requests, designated sites and survey requirements before commencement of the bird surveys.

Surveys took place between March 2017 and April 2018 and a second year completed between April 2018 and April 2019. in Table 1. Surveys were undertaken within the windfarm site but also within wider buffer zones of the landownership areas which extends to 500 m, 2 km, 5 km, 10 km and 15 km from the landownership area. These buffers are larger than the footprint of the existing windfarm site to ensure extensive coverage of birds within the site and also the wider landscape.

Target species which have been identified breeding within the existing windfarm and the 500 m survey buffer include red grouse, common sandpiper and snipe, which are all breeding in relatively close proximity to existing windfarm infrastructure (i.e. tracks and turbines) indicating habituation of these species to the windfarm. Within a wider survey area extending to 2 km of the site boundary, there were other target breeding species recorded including detections of:

- hen harrier,
- merlin
- curlew
- golden plover
- sparrowhawk
- kestrel
- buzzard
- raven
- peregrine
- ring ouzel
- snipe
- red grouse

Additional breeding hen harriers were recorded within 5-10 km as well as other merlin and peregrine falcon pairs. There was one golden eagle territory identified (within 10 km) and occasional sightings of a satellite-tagged immature white tailed eagle in the survey area.

The breeding density of passerines is relatively low on the open moorland areas, with increased species occurrence and abundance around forested areas in the wider 500 m buffer. Passerines abundance and occurrence has been observed to be considerably lower during winter walkover surveys. Ring ouzel have been recorded within and adjacent to the site boundary of the existing windfarm.

Small numbers of ducks and cormorants utilise the loughs within the site and a small family party of whooper swans during the autumn and part of the winter were also recorded. Over-wintering birds were recorded at various locations within and in buffer survey areas from the site boundary including:

- red grouse
- snipe
- golden plover
- whooper swan
- mute swan
- mallard
- teal
- wigeon
- Canada geese
- red-throated diver
- heron
- sparrowhawk
- goldeneye
- tufted duck
- moorhen
- coot
- greylag geese
- buzzard
- peregrine falcon
- lesser black-backed gull
- golden eagle
- pale-bellied brent geese

- raven
- herring gull
- little grebe
- kestrel
- white-tailed eagle
- common gull
- sanderling
- merlin
- greater black-backed gull

Small numbers of hen harrier have been recorded roosting at a couple of different locations around 5-10 km from the site boundary. Wintering bird searches have been undertaken up to 15 km from the site boundary.

Flight paths, duration and heights of all target species have been recorded from 4 vantage point locations and also from additional migration vantage point locations. Target species detected from vantage point observations include:

- raven
- kestrel
- snipe
- cormorant
- golden eagle
- red grouse
- golden plover
- whooper swan
- common sandpiper
- teal
- mallard
- buzzard
- peregrine falcon
- heron
- white-tailed eagle
- wigeon
- heron
- curlew
- Canada geese
- hen harrier
- buzzard
- peregrine falcon

All survey information and findings will be aggregated and analysed as part of an EIAR in the future including displacement and/or collision risk modelling if necessary.

Appendix B: Barnesmore Bog NHA Site synopsis

SITE SYNOPSIS

SITE NAME: BARNESMORE BOG NHA

SITE CODE: 002375

Barnesmore Bog NHA is an area of upland blanket bog and heath in south Co. Donegal. It extends from Barnesmore Mountain in the north to Clogher Hill in the south and from the lower slopes of Croaghmeen and Croaghakeadew in the west to the Donegal/Tyrone border in the east. The site is bound to the north-west by the main road from Donegal to Ballybofey. The western boundary of the site extends down the slopes of Croaghmeen and Croaghakeadew as far as improved agricultural fields and overgrazed bog. Mature forestry plantations border the eastern, southern and northern parts of the site. Part of the eastern boundary of the site runs between Lough Innaghachola and Loughnaweelagh along the border between Co. Donegal and Co. Tyrone. A wind power installation and associated access roads, which occupies part of Croaghakeadew Mountain (398 m) on the west and extends eastwards to Loughnaweelagh, northwards to Lough Namaddy, and southwards to just north of Lough Naleaghany, has been excluded from the site.

The site has an altitude range 150 m to 450 m, Barnesmore Mountain being the highest point. The western part of the site is drained by tributaries of the Lowerymore River and the eastern part of the site by Camowen Burn and the Leaghany River, the latter watercourses flowing into Lough Derg. Bedrock geology consists of schist and gneiss.

The site is a complex mosaic of upland blanket bog, wet heath and flushes developed on a series of granite ridges connected by gently sloping terrain and incorporating a number of streams. Over twenty relatively nutrient-poor lakes occur within the site, the largest being Lough Golagh, Lough Slug, Lough Atlieve, Lough Namaddy, Lough Nabrackboy and Loughnaweelagh. The blanket bog reaches its greatest extent on the gently undulating slopes on the western, north-western and southern parts of the site.

The vegetation consists of a relatively intact assemblage of blanket bog species, including Ling Heather (*Calluna vulgaris*), Cross-leaved Heath (*Erica tetralix*), Purple Moor-grass (*Molinia caerulea*), Round-leaved Sundew (*Drosera rotundifolia*), Great Sundew (*D. anglica*), Common Cottongrass (*Eriophorum angustifolium*), Black Bog-rush (*Schoenus nigricans*), Deergrass (*Scirpus cespitosus*), Bog-myrtle (*Myrica gale*), Tormentil (*Potentilla erecta*), Carnation Sedge (*Carex panicea*), Bog Asphodel (*Narthecium ossifragum*), Bilberry (*Vaccinium myrtillus*) and Fir Clubmoss (*Huperzia selago*).

There are occasional bog pools on the site colonised with Bogbean (*Menyanthes trifoliata*) and Bog Sedge (*Carex limosa*) grading into quaking bog-moss lawns of *Sphagnum papillosum, S. cuspidatum* and *S. auriculatum* at the pool margins together with sundews and Marsh Violet.

Bog mosses are locally frequent throughout the site as hummock/hollow complexes (*Sphagnum subnitens, S. papillosum, S. capillifolium, S. compactum, S. auriculatum* and *S. cuspidatum*), quaking lawns and flushes (*S. recurvum*) or on localised areas of bare peat (*S. tenellum*). Other mosses include large hummocks of *Racomitrium lanuginosum*, *Hypnum jutlandicum, Pleurozium schreberi* and *Campylopus atrovirens.* Liverworts characteristic of blanket bogs include *Mylia taylori* and *Odontoschisma sphagni.* Lichens on the bog surface include *Cladonia portentosa, C. uncialis* and *C. subcervicornis.*

Other habitats on the site include scrub along stream corridors, dry heath, wet heath, acid grassland on peaty soil, lakes, streams and flushes. Regenerating cutover with deep pools occurs west of Lough Slug.

There is variation in the species composition and abundance of the aquatic flora in the lakes depending on exposure, water depth and the nutrient status of the lake waters. The aquatic flora of the lakes includes Broad-leaved pondweed (*Potamogeton natans*), Bladderwort (*Utricularia* sp.), Shoreweed (*Littorella uniflora*), Quillwort (*Isoetes lacustris*), Water Horsetail (*Equisetum fluviatile*), stands of Bottle Sedge (*Carex rostrata*) and Bogbean.

Flushes with a diverse flora occur throughout the site, along the stream corridors and in the vicinity of lakes and at the base of and on slopes. Vegetation includes stands of rushes (*Juncus effusus, J. conglomeratus, J. acutiflorus*), Marsh Thistle (*Cirsium palustre*), Purple Moor-grass, Black Bog-rush, Marsh Pennywort (*Hydrocotyle vulgaris*), Star Sedge (*Carex echinata*), Lesser Spearwort, Royal Fern (*Osmunda regalis*), Bulbous Rush (*Juncus Bulbosus*), Marsh Violet, Bog Pondweed (*Potamogeton polygonifolius*) and Common Butterwort (*Pinguicula vulgaris*).

There are patches of dry heath on the drier banks of the streams or on steep slopes with a thinner soil notably the eastern slopes of Barnesmore Gap and the north-eastern side of Lough Nabrackboy. The vegetation of these areas includes Tormentil, Ling Heather, Hard Fern (*Blechnum spicant*), Heath Milkwort (*Polygala serpyllifolia*), Bell Heather (*Erica cinerea*), Green-ribbed Sedge (*Carex binervis*), Wood Sorrel (*Oxalis acetosella*), wood-rushes (*Luzula multiflora, L. sylvatica*) and Bracken (*Pteridium aquilinum*).

Acid grassland/wet heath mosaics occurs on thinner mineral/peat soils on the slopes of Croaghmeen, to the west of the site, and the hill slopes north-east of Lough Slug. These are characterised by Mat Grass (*Nardus stricta*), Sweet Vernal-grass (*Anthoxanthum odoratum*), Heath Bedstraw (*Galium saxatile*), Green-ribbed Sedge, Sheep's Fescue (*Festuca ovina*), Devil's-bit Scabious (*Succisa pratensis*), Velvet Bent (*Agrostis canina*), Heath Grass (*Danthonia decumbens*) and the mosses *Pleurozium schreberi, Hylocomium splendens* and *Polytrichum commune.*

Irish Hare, Badger, Red Grouse, Golden Plover, Peregrine Falcon and Common Frog occur on the site. Peregrine Falcon nest on the steep slopes of Barnesmore Gap. These are all Irish Red Data Book species.

In general the blanket bog resource has decreased in the Barnesmore Gap area due to extensive afforestation on the eastern, northern and southern sides of the site. Relatively recent land uses on the western periphery of the site include localised heavy grazing by sheep.

Apart from very localised damage, Barnesmore Bog NHA is a site of considerable conservation significance containing a very large area of relatively intact upland blanket bog with virtually no peat extraction or overgrazing. This site supports a good diversity of blanket bog microhabitats including hummock/hollow complexes and flushes. Other habitats on the site include rocky outcrops, dry heath, wet heath, streams, several naturally nutrient-poor lakes that add to the habitat diversity and therefore conservation value of the site. Blanket bog habitat is a globally scarce resource. It is largely confined to coastal regions at temperate latitudes with cool, wet, oceanic climates. North-west Europe contains some of the best-developed areas of blanket bog in the world. The most extensive areas are found in Ireland and Britain. Upland blanket bogs, due to their exposure to severe climatic conditions at high elevations, are particularly vulnerable to erosion by human activities and extensive areas are currently undergoing active erosion due mainly to overgrazing. The current area of intact upland blanket bog in Ireland represents only a fraction of the original resource, due to the combined impacts of afforestation and overgrazing, and intact examples are therefore extremely valuable for nature conservation. Their long-term survival requires sensitive management.

Appendix C: Site Constraints Map

N
W E
S

REPUBLIC OF IRELAND

NORTHERN IRELAND

DRUMKEEN COILLTE LINK

MONGORRY HILL LINK

BARNESMORE SDH

LEAGANS HILL LINK

DONEGAL TOWN ABBEY HOTEL LINK

DRUMBAR LINK

COILLTE TRUMMAN EAST LINK

BULBIN HILL LINK

TRUSKMORE SDH LINK

TYRO14:002

TYRO14:001

CONTROL_BUILDING

MEENABROCK (ED Clogher)

LEGEND:

- Phone Mast Link
- Barnesmore Telecommunications Mast (Synochronous Digital Hierarchy - SDH)
- Existing Windfarm infrastructure
- SPR Land Ownership
- NHA
- Watercourse
- 30M Watercourse buffer
- Landslide Susceptibility - High
- 110kV OHL
- 110kV OHL 420m BUFFER
- Northern Ireland Sites & Monuments Record - NISMR

HABITAT MAP

- ER1 Exposed Siliceous Rock
- FL1 Dystrophic Lakes
- GS3 Dry-Humid Acid Grassland
- HH3 Wet Heath
- HH3 Wet Heath /HH4 Montane Heath
- HH3 Wet Heath /HH4 Montane Heath /PB2 Upland Blanket Bog
- HH3 Wet Heath /PB2 Upland Blanket Bog
- HH3 Wet Heath FB5 Eroding BlanketBog
- HH4 Montane heath
- HH4 Montane Heath PB2 Upland Blanket Bog
- PB2 Upland Blanket Bog
- PB2 Upland Blarket Bog PF2 Poor Fen and Flush
- PB4 Cutover Bog
- HH4 Montane Heath PB2 Upland Blanket Eog
- PF2 Poor Fen and Flush

03	Minor Revisions (Text Legend)	J.B.	S.M.	5/19
02	Minor Revisions	J.B.	S.M.	5/19
rev.	modifications	by	Check	date

Client
SCOTTISHPOWER RENEWABLES

Project
BARNESMORE REPOWER PROJECT

Stage
SCOPING

Title
CONSTRAINTS MAP

Scales
N.T.S.

Surveyed	Prepared By	Checked	Date
	J.B.	S.M.	MARCH 2019

SCOTTISHPOWER RENEWABLES

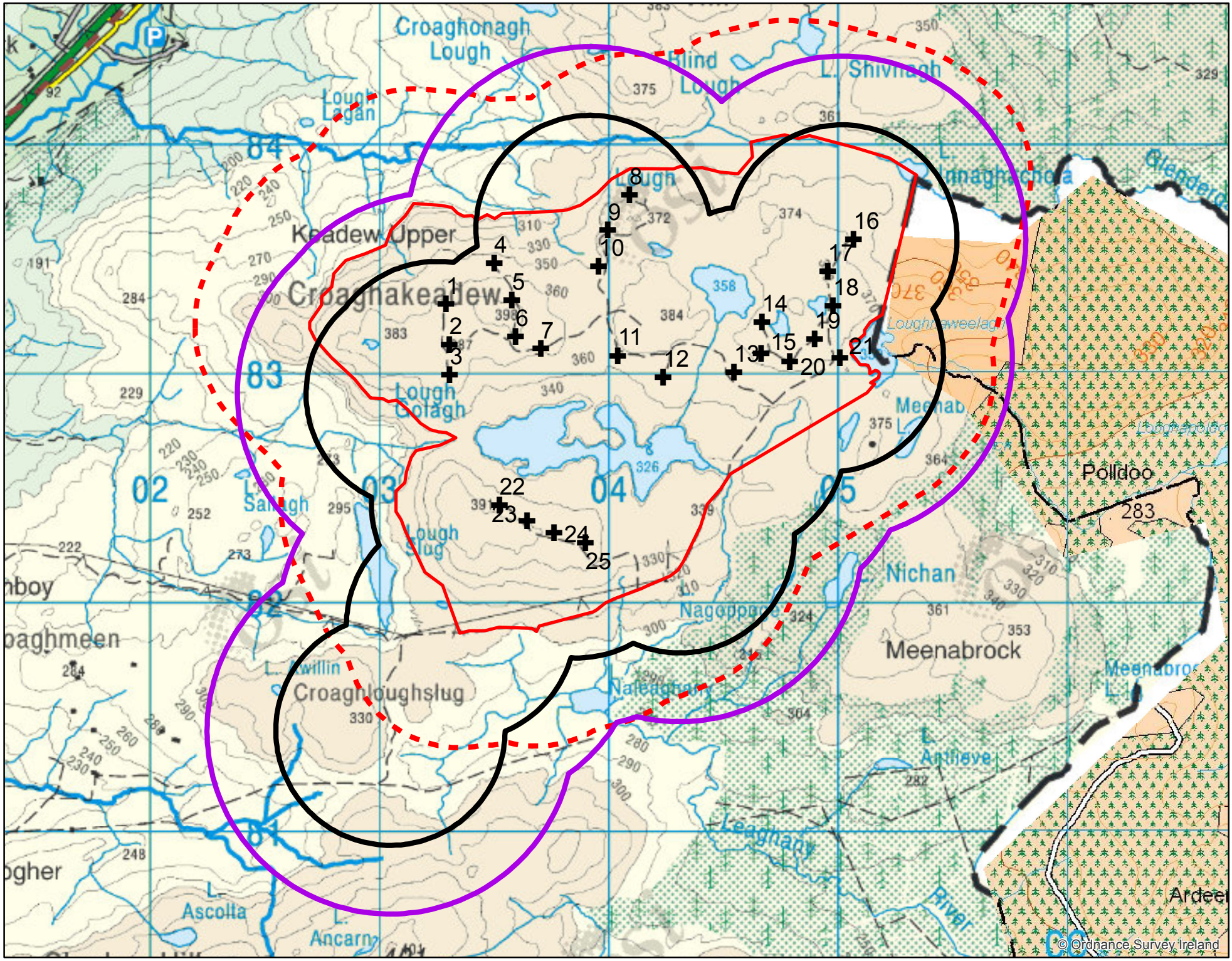
Job No.	Drawing no.	Revision
5952	S-001	03

Appendix D: Designated Sites

MapCode	SiteName	Country	Designation	AreaHA	Distance from nearest turbine	URL	Synopsis	Botanical	Vertebrate	Invertebrate
3	Barnesmore Bog NHA	ROI	NHA	2193.1	0.0	http://www.npws.ie/protected-sites/nha/002375	Peatlands [4]	Ling Heather (Calluna vulgaris), Cross-leaved Heath (Erica tetralix), Purple Moor-grass (Molinia caerulea), Round-leaved Sundew (Drosera rotundifolia), Great Sundew (D. anglica), Common Cottongrass (Eriophorum angustifolium), Black Bog-rush (Schoenus nigricans), Deergrass (Scirpus cespitosus), Bog-myrtle (Myrica gale), Tormentil (Potentilla erecta), Carnation Sedge (Carex panicea), Bog Asphodel (Narthecium ossifragum), Bilberry (Vaccinium myrtillus), Fir Clubmoss (Huperzia selago), Bogbean (Menyanthes trifoliata), Bog Sedge (Carex limosa), Sphagnum papillosum, S. cuspidatum, S. auriculatum,Marsh Violet, Sphagnum subnitens, S. papillosum, S. capillifolium, S. compactum, S. auriculatum, S. cuspidatum, S. recurvum, S. tenellum), Racomitrium lanuginosum, Hypnum jutlandicum, Pleurozium schreberi, Campylopus atrovirens, Mylia taylori, Odontoschisma sphagni, Cladonia portentosa, C. uncialis, C. subcervicornis, Juncus effusus, J. conglomeratus, J. acutiflorus, Marsh Thistle (Cirsium palustre), Purple Moor-grass, Black Bog-rush, Marsh Pennywort (Hydrocotyle vulgaris), Star Sedge (Carex echinata), Lesser Spearwort, Royal Fern (Osmunda regalis), Bulbous Rush (Juncus Bulbosus), Marsh Violet, Bog Pondweed (Potamogeton polygonifolius), Common Butterwort (Pinguicula vulgaris), Tormentil, Ling Heather, Hard Fern (Blechnum spicant), Heath Milkwort (Polygala serpyllifolia), Bell Heather (Erica cinerea), Green-ribbed Sedge (Carex binervis), Wood Sorrel (Oxalis acetosella), Luzula multiflora, L. sylvatica, Bracken (Pteridium aquilinum), Mat Grass (Nardus stricta), Sweet Vernal-grass (Anthoxanthum odoratum), Heath Bedstraw (Galium saxatile), Green-ribbed Sedge, Sheep's Fescue (Festuca ovina), Devil's-bit Scabious (Succisa pratensis), Velvet Bent (Agrostis canina), Heath Grass (Danthonia decumbens), Pleurozium schreberi, Hylocomium splendens, Polytrichum commune.	Irish Hare, Badger, Red Grouse, Golden Plover, Peregrine Falcon, Common Frog	
64	Killeter Forest and Bogs and Lakes	NI	ASSI	299.6	140.1	https://www.daera-ni.gov.uk/publications/killeter-forest-bogs-and-lakes-assi	Blanket bog, Oligotrophic lakes		Hen harrier, Red grouse, Greenland white-fronted geese	
46	Killeter Uplands	NI	LCA		152.9	https://www.daera-ni.gov.uk/sites/default/files/publications/doe/environment-land-information-ni-landscape-character-assessment-killeter-uplands-2010.pdf	Broad ridges with rounded summits and wide, relatively shallow valleys, Homogeneous, large-scale mosaic of open moorland and conifer plantations on upland summits; finely grained mosaic of scrubby woodland, rough pasture and peaty marsh within valleys. Irregular patchwork of pastures subdivided by angular stone walls on lower slopes; transition to marginal pastures, with broken stone walls and regenerating scrub on the fringes of the moor, No buildings on upper ridges; a few scattered farms and cottages on the lower slopes bordering the valley pastures, Small conifer shelterbelts beside isolated farmsteads, Derelict buildings, Peat cutting			
9	Lough Eske And Ardnamona Wood SAC	ROI	SAC	860.3	2300.9	http://www.npws.ie/protected-sites/sac/000163	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110], Petrifying springs with tufa formation (Cratoneurion) [7220], Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0], Margaritifera margaritifera (Freshwater Pearl Mussel) [1029], Salmo salar (Salmon) [1106], Trichomanes speciosum (Killarney Fern) [1421]	Phragmites australis, Star Sedge (Carex echinata), Pedunculate Oak (Quercus robur), Alder (Alnus glutinosa), Ash (Fraxinus excelsior), Rowan (Sorbus aucuparia), Downy Birch (Betula pubescens), Holly (Ilex aquifolium), Hazel (Corylus avellana), Willow (Salix spp.), mosses (Cratoneuron commutatum, C. filicinum and Eucladium verticillatum), Version date: 26.11.2015 2 of 2 000163_Rev15.Docx The Killarney Fern (Trichomanes speciosum), Whorled Caraway (Carum verticillatum), Six-stamened Waterwort (Elatine hexandra)	Atlantic Salmon, Freshwater Pearl Mussel (Margaritifera margaritifera), Arctic Char (Salvelinus alpinus)	
53	River Foyle and Tributaries	NI	SAC	770.1	2642.4	http://jncc.defra.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030320	Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260), Otter (Lutra lutra) (1355), Atlantic Salmon (Salmo salar) (1106)		Atlantic salmon	
59	River Foyle and Tributaries	NI	ASSI	770.1	2642.4	https://www.daera-ni.gov.uk/publications/river-foyle-tributaries-assi	River	Mosses (Brachythecium plumosum, Fontinalis squamosal, Racomitrium spp.), liverworts (Marchantia polymorpha), Stream Water-crowfoot (Ranunculus penicillatus, ssp. Penicillatus), Pondweeds (Potamogeton spp., Starworts Callitriche spp. and Water-milfoils Myriophyllum spp.), Branched Bur-reed (Sparganium erectum), Reed Canarygrass (Phalaris arundinacea), Marsh-marigold (Caltha palustris), Hedge Bindweed (Calystegia sepium), Great Willowherb (Epilobium hirsutum), Meadowsweet (Filipendula ulmaria), Purple-loosestrife (Lythrum salicaria), Common Valerian (Valeriana officinalis), Monkeyflower (Mimulus guttatus), Cow Parsley (Anthriscus sylvestris), Bulrush Typha latifolia, Willows (Salix spp.), Grey Club-rush (Schoenoplectus tabernaemontani), Sea Club-rush (Bolboschoenus maritimus), Sea Arrowgrass (Triglochin maritimum), English Scurvygrass (Cochlearia anglica), Sea Aster (Aster tripolium), Sessile Oak (Quercus petraea), Downy Birch (Betula pubescens), Hazel (Corylus avellana), Ash (Fraxinus excelsior), Alder (Alnus glutinosa), Beech (Fagus sylvatica), Sycamore (Acer pseudoplatanus), Hawthorn (Crataegus monogyna), Holly (flex aquifolium), Rowan (Sorbus aucuparia), Wood-sorrel (Oxalis acetosella), Herb Robert (Geranium robertianum), Pignut (Conopodium majus), Common Dog-violet (Viola riviniana), Great Wood-rush (Luzula sylvatica), Bramble (Rubus fruticosus)	Brown Trout, Atlantic Salmon, Stone Minnow, Eel, 3-spined Stickleback, Brook Lamprey, River Lamprey, Roach, Perch, Common Bream, Pike, Rudd, Sea Lamprey, Gudgeon, Flounder, Allis Shad, Twaite Shad	Freshwater Pearl Mussel
48	Killeter Forest	NI	NR	21.1	3302.7	https://www.doeni.gov.uk/articles/killeter-nature-reserve	Peatland	Sphagnum moss, heather, ling, White bog cotton, yellow bog asphodel	Greenland whitefronted geese	
6	Croaghonagh Bog SAC	ROI	SAC	248.9	3407.1	http://www.npws.ie/protected-sites/sac/000129	Blanket bogs (Active) [7130]	Bog mosses (Sphagnum spp., S. fuscum, S. imbricatum and S. magellanicum), Bogbean (Menyanthes trifoliata), Great Sundew (Drosera anglica), Lesser Bladderwort (Utricularia minor), Common Butterwort (Pinguicula vulgaris), Heather (Calluna vulgaris), Cross-leaved Heath (Erica tetralix), Hare's-tail Cottongrass (Eriophorum vaginatum), Cladonia lichens	Greenland White-fronted Goose, Merlin, Red Grouse, Curlew, Kestrel, Deer, Otter, Hare	
1	Cashelnavean Bog NHA	ROI	NHA	345.0	3563.3	http://www.npws.ie/protected-sites/nha/000122	Peatlands [4]	White Beak-sedge (Rhynchospora alba), Common Cottongrass (Eriophorum angustifolium), Crossleaved Heath (Erica tetralix), Purple Moor-grass (Molinia caerulea), Bog Asphodel (Narthecium ossifragum), Star Sedge (Carex echinata),Deergrass (Scirpus caespitosus), Sphagnum cuspidatum, S. auriculatum and S. papillosum, with S. capillifolium, S. subnitens, Round-leaved Sundew (Drosera rotundifolia), Great Sundew (D. anglica), Cladonia portentosa, Bogbean (Menyanthes trifoliata), Bog-sedge (Carex limosa) and Lesser Bladderwort (Utricularia minor),Ling Heather (Calluna vulgaris), Bell Heather (Erica cinerea), Purple Moor-grass, Tormentil (Potentilla erecta), Heath Bedstraw (Galium saxatile), Bilberry (Vaccinium myrtillus), Crowberry (Empetrum nigrum), Racomitrium lanuginosum, Hylocomium splendens, Rhytidiadelphus loreus, Juniper (Juniperus communis), Bog Myrtle (Myrica gale),	Red grouse, fox, snipe	
14	Dunragh Loughs/Pettigo Plateau SAC	ROI	SAC	2022.5	4051.2	http://www.npws.ie/protected-sites/sac/001125	Northern Atlantic wet heaths with Erica tetralix [4010], Blanket bogs (* if active bog) [7130]	Deergrass (Scirpus cespitosus), Common Cottongrass (Eriophorum angustifolium), Heather (Calluna vulgaris), Purple Moor-grass (Molinia caerulea), bog mosses (Sphagnum spp.), Common Reed (Phragmites australis), Great Fen-sedge (Cladium mariscus), Bottle Sedge (Carex rostrata), Bulrush (Typha latifolia), Broadleaved Pondweed (Potamogeton natans), Bulbous Rush (Juncus bulbosus), Water Horsetail (Equisetum fluviatile), Sharp-flowered Rush (Juncus acutiflorus), Cranberry (Vaccinium oxycoccos), Cowberry (Vaccinium vitisidaea), bog mosses, S. fuscum and S. imbricatum	Merlin, Golden Plover, Greenland White-fronted Goose (120 birds in 1994/95), Red-throated Diver, Red Grouse	
5	Lough Hill Bog NHA	ROI	NHA	95.4	5896.3	http://www.npws.ie/protected-sites/nha/002452	Peatlands [4]	Ling Heather (Calluna vulgaris), Deergrass (Scirpus cespitosus), cottongrasses (Eriophorum spp.), Purple Moor-grass (Molinia caerulea), Sphagnum spp., Racomitrium lanuginosum, Breutelia chrysocoma, White Beak-sedge (Rhynchospora alba), Bog Asphodel (Narthecium ossifragum), Lichens (Cladonia spp.)	Hen Harrier, Golden Plover, Red Grouse, Badger	Dragonfly
66	Croagh Bog	NI	ASSI	91.6	5903.9	https://www.daera-ni.gov.uk/publications/croagh-bog-assi	Blanket Bog			Argent and Sable moth, Black Darter (Sympetrum danae), Large Red Damselfly (Pyrrhosoma nymphula)
22	Pettigo Plateau Nature Reserve SPA	ROI	SPA	691.3	6252.2	http://www.npws.ie/protected-sites/spa/004099	Greenland White-fronted Goose (Anser albifrons flavirostris) [A395]		Greenland White-fronted Goose, Merlin, Hen Harrier	
57	Essan Burn and Mullyfamore	NI	ASSI	448.9	6376.9	https://www.daera-ni.gov.uk/publications/essan-burn-and-mullyfamore-assi	Blanket bog		Greenland white-fronted geese, Red grouse	
18	River Finn SAC	ROI	SAC	5499.4	6743.4	http://www.npws.ie/protected-sites/sac/002301	Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae) [3110], Northern Atlantic wet heaths with Erica tetralix [4010], Blanket bogs (* if active bog) [7130], Transition mires and quaking bogs [7140], Salmo salar (Salmon) [1106], Lutra lutra (Otter) [1355]	Common Cottongrass (Eriophorum angustifolium), Deergrass (Scirpus cespitosus), Purple Moor-grass (Molinia caerulea), Heather (Calluna vulgaris), mosses (Racomitrium lanuginosum, Sphagnum capillifolium, Sphagnum spp., S. papillosum, S. imbricatum, Sphagnum magellanicum, S. cuspidatum, S. recurvum), lichens (e.g. Cladonia portentosa), liverwort (Pleurozia purpurea), Soft Rush (Juncus effusus), Jointed Rush (J. articulatus), Bottle Sedge (Carex rostrata), Bog-sedge (C. limosa), Bogbean (Menyanthes trifoliata), Cross-leaved Heath (Erica tetralix), Heather, Mat-grass (Nardus stricta), Heath Rush (Juncus squarrosus),Tormentil (Potentilla erecta), Bog-rush (Schoenus nigricans), Shoreweed (Littorella uniflora), Water Lobelia (Lobelia dortmanna), moss (Fontinalis antipyretica), Bog Pondweed (Potamogeton polygonifolius), Water Horsetail (Equisetum fluviatile), Bulbous Rush (Juncus bulbosus), Broad-leaved Pondweed (P. natans), Common Reed (Phragmites australis), Bulrush (Typha latifolia), Reed Canary-grass (Phalaris arundinacea), Tufted Hair-grass (Deschampsia cespitosa), Willow (Salix spp.), Alder (Alnus glutinosa), Iris (Iris pseudacorus), Water Mint (Mentha aquatica), Purple Loosestrife (Lythrum salicaria), Meadowsweet (Filipendula ulmaria), Royal Fern (Osmunda regalis), Wild Angelica (Angelica sylvestris), Marsh-marigold (Caltha palustris), Great Wood-rush (Luzula sylvatica), Bell Heather (Erica cinerea), Bilberry (Vaccinium myrtillus), Bracken (Pteridium aquilinum), Rowan (Sorbus aucuparia), Silver Birch (Betula pendula), Narrow-leaved Helleborine (Cephalanthera longifolia)	Arctic Char (*Salvelinus alpinus*), Atlantic Salmon (*Salmo salar*), otter, Badger, Irish Hare, Common Frog, Golden Plover, Peregrine, Merlin, Red Grouse, Ring Ouzel	

4	Meenagarranroe Bog NHA	ROI	NHA	129.6	6793.4	http://www.npws.ie/protected-sites/nha/002437	Peatlands [4]	Ling Heather (Calluna vulgaris), Deergrass (Scirpus cespitosus), cottongrasses (Eriophorum spp.), White Beak-sedge (Rhynchospora alba), Bog Asphodel (Narthecium ossifragum), Bladderwort (Utricularia intermedia), Sphagnum auriculatum, S. magellanicum, S. cuspidatum, Sundews (Drosera anglica, D. rotundifolia), Bogbean (Menyanthes trifoliate), (Campylopus atrovirens, C. brevipilus), S. subnitens, S. capillifolium, S. imbricatum, S. papillosum, Racomitrium lanuginosum, Breutelia chrysocoma), liverworts (Odontoschisma sphagni, Pleurozia purpurea), lichens (Cladonia spp.), Bog-myrtle (Myrica gale), Purple Moor-grass (Molinia caerulea), Bell Heather (Erica cinerea), Common Reed (Phragmites australis), Purple Moor-grass	Irish Hare, Hen Harrier, Golden Plover, Merlin, Red Deer	
21	Lough Derg (Donegal) SPA	ROI	SPA	889.9	7082.0	http://www.npws.ie/protected-sites/spa/004057	Lesser Black-backed Gull (Larus fuscus) [A183], Herring Gull (Larus argentatus) [A184]	Shoreweed (Littorella uniflora), Water Lobelia (Lobelia dortmanna), moss (Fontinalis antipyretica), Broad-leaved Pondweed (Potamogeton natans), Bulbous Rush (Juncus bulbosus), Alder (Alnus glutinosa), Willow (Salix spp.), Rowan (Sorbus aucuparia), birch (Betula sp.)	Lesser Black-backed Gull, Herring Gull, Common Gull, Greenland White-fronted Goose, Tufted Duck, Mallard, Goldeneye, Greylag Goose, Arctic Char (Salvelinus alpinus)	

Appendix E: Survey Field Map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Blind Lough
L. Shivnagh
Lough Lagan
Kradew Upper
Croaghakeadew
Lough Golagh
Meenab
Polldoo
283
L. Nichan
Meenabrock
Nagoppan
Naleaghan
Croaghloughslug
L. Anflieve
Leaghany
River
Ascolla
L. Ancarn
Ardeer
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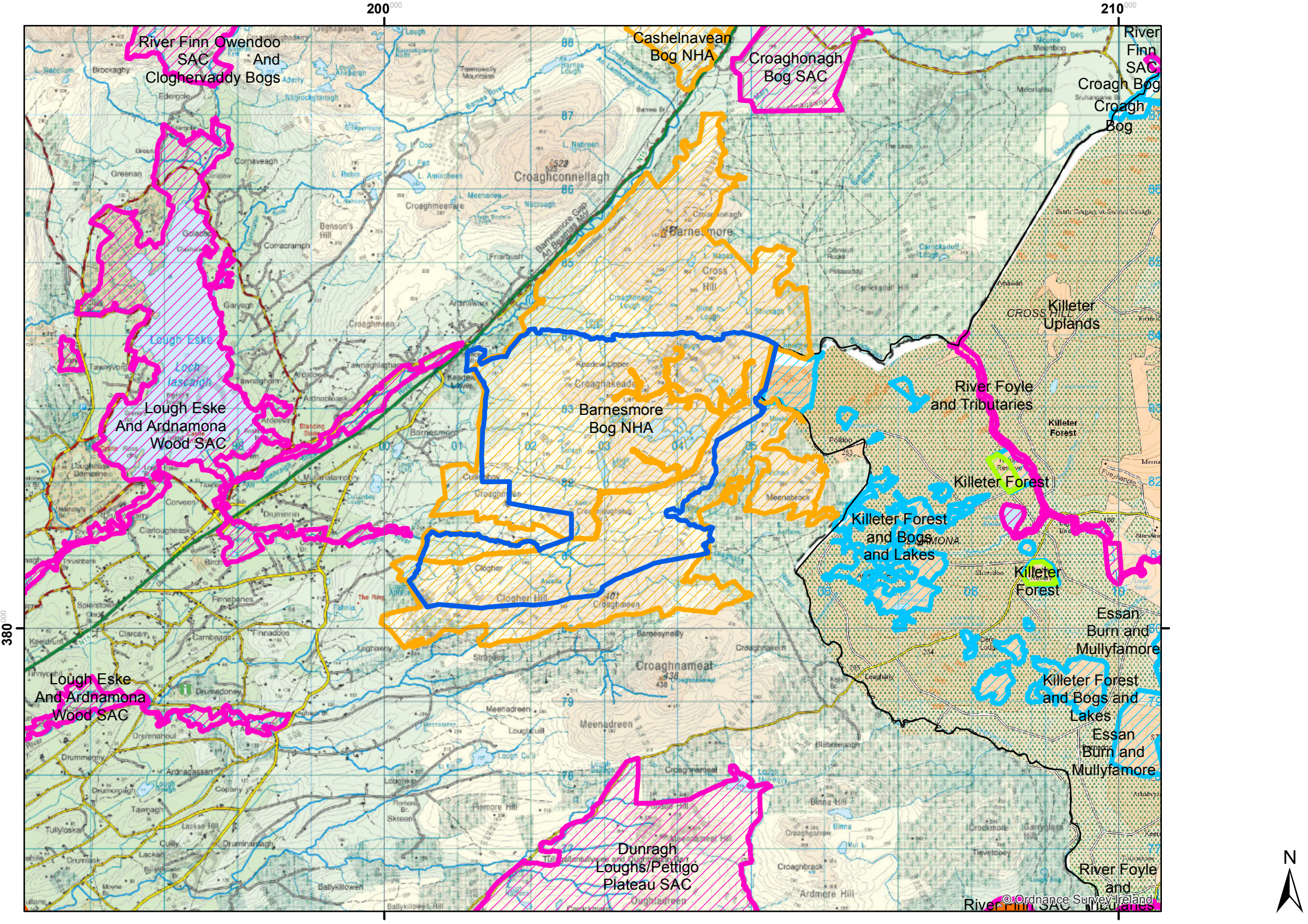
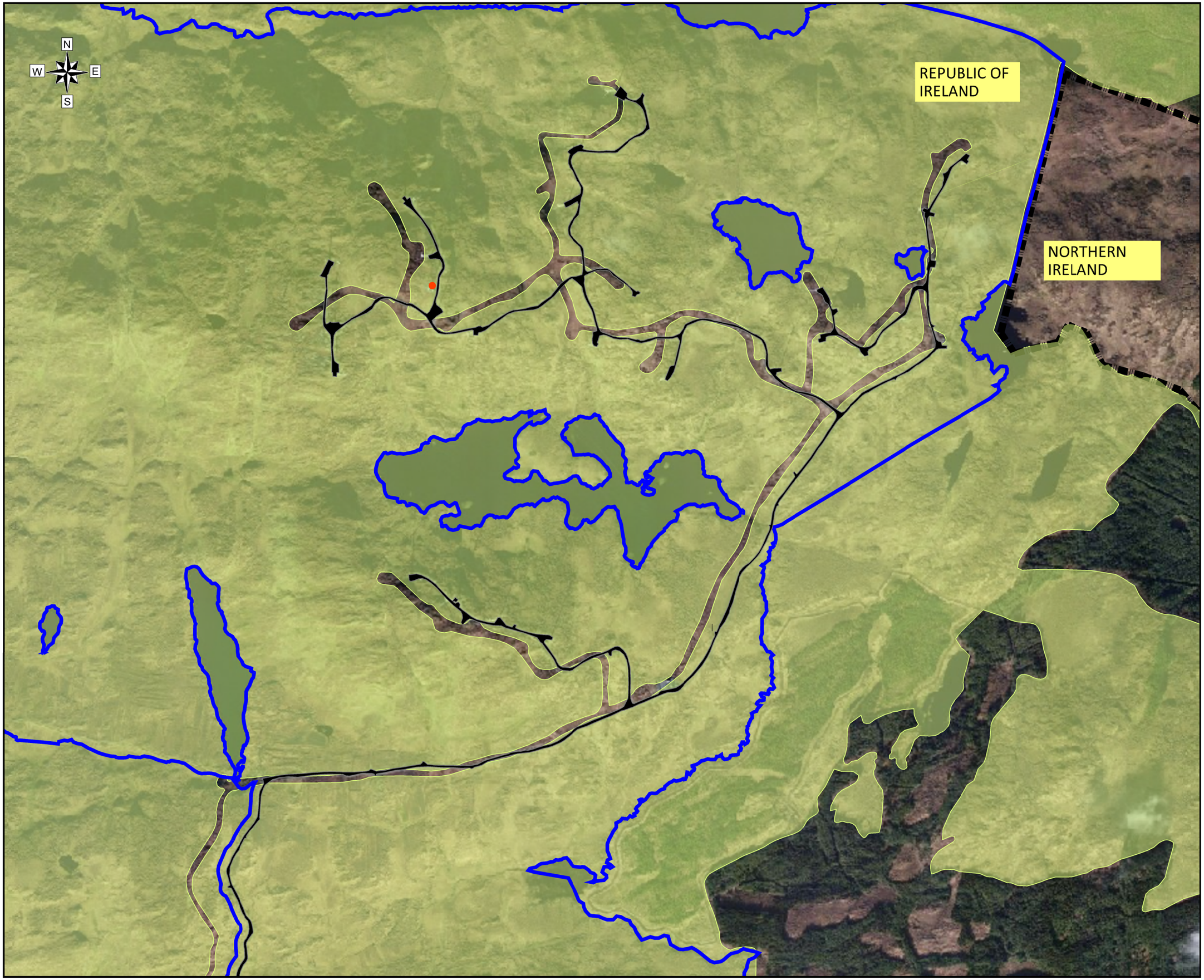
Appendix F: Map of Designated Sites


200000
210000
380000
River Finn Owendoo SAC And Cloghervaddy Bogs
Cashelnavean Bog NHA
Croaghonagh Bog SAC
River Finn SAC
Croagh Bog
Croagh Bog
Killeter Uplands
River Foyle and Tributaries
Killeter Forest
Killeter Forest
Killeter Forest and Bogs and Lakes
Killeter Forest
Essan Burn and Mullyfamore
Killeter Forest and Bogs and Lakes
Essan Burn and Mullyfamore
River Foyle and Tributaries
Barnesmore Bog NHA
Lough Eske And Ardnamona Wood SAC
Lough Eske And Ardnamona Wood SAC
Dunragh Loughs/Pettigo Plateau SAC
River Finn SAC
Croaghconnellagh
Barnesmore
Croaghnameat
Meenadreen
Lough Eske
Loch Iascaigh
N
© Ordnance Survey Ireland

Appendix G: NHA Boundary & Existing Site Infrastructure



LEGEND:

- Site Boundary
- SPR Lard Ownership
- NHA
- EXISTING WINDFARM INFRASTRUCTURE

Ordnance Survey Ireland National Mapping Agency

rev.	modifications	by	Check	date

Client
SCOTTISHPOWER RENEWABLES

Project
BARNESMORE REPOWER PROJECT

Stage
SCOPING

Title
NHA BOUNDARY OVERLAY

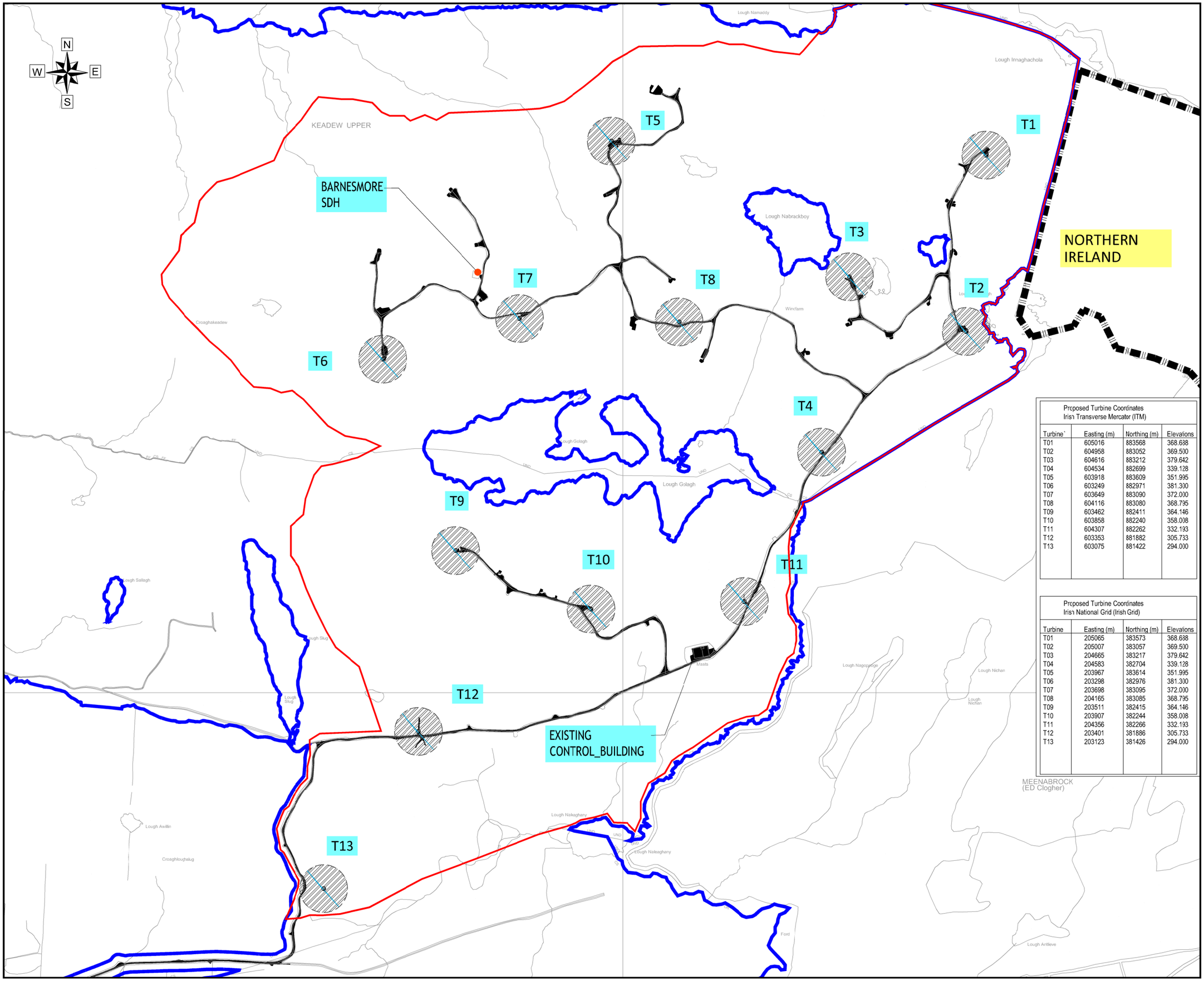
Scales
NTS

Surveyed	Prepared By	Checked	Date
	J.B.	S.M.	MARCH 2019

SCOTTISHPOWER RENEWABLES

Job No.	Drawing no.	Revision
5952	S-002	

Appendix H: Concept Layout



LEGEND:

- Proposed Turbine Location / Blade sweep (T9)
- Barnesmore Telecommunications Mast (Synochronous Digital Hierarchy - SDH)
- Existing Windfarm infrastructure
- SPR Land Ownership
- Preliminary Site Boundary

NOTE:
CONCEPT LAYOUT INDICATES LIKELY LOCATIONS FOR REPOWERED TURBINES ONLY BUT DOES NOT INCLUDE THE REVISED SITE ACCESS TRACK, HARDSTANDS AND THE NEW CONTROL BUILDING.

Proposed Turbine Coordinates
Irish Transverse Mercator (ITM)

Turbine`	Easting (m)	Northing (m)	Elevations
T01	605016	883568	368.638
T02	604958	883052	369.500
T03	604616	883212	379.642
T04	604534	882699	339.128
T05	603918	883609	351.995
T06	603249	882971	381.300
T07	603649	883090	372.000
T08	604116	883080	368.795
T09	603462	882411	364.146
T10	603858	882240	358.008
T11	604307	882262	332.193
T12	603353	881882	305.733
T13	603075	881422	294.000

Proposed Turbine Coordinates
Irish National Grid (Irish Grid)

Turbine	Easting (m)	Northing (m)	Elevations
T01	205065	383573	368.638
T02	205007	383057	369.500
T03	204665	383217	379.642
T04	204583	382704	339.128
T05	203967	383614	351.995
T06	203298	382976	381.300
T07	203698	383095	372.000
T08	204165	383085	368.795
T09	203511	382415	364.146
T10	203907	382244	358.008
T11	204356	382266	332.193
T12	203401	381886	305.733
T13	203123	381426	294.000

rev.	modifications	by	Check	date
03	Minor Revisions (Red Line Boundary Added)	J.B.	S.M.	6/2019
02	Minor Revisions (Text Legend , T13 New loc)	J.B.	S.M.	5/2019
01	Minor Revisions	J.B.	S.M.	5/2019

Client
SCOTTISHPOWER RENEWABLES

Project
BARNESMORE REPOWER PROJECT

Stage
SCOPING

Title
CONCEPT LAYOUT

Scales
1:5,000 @ A1 / 1:10,000 @ A3

Surveyed	Prepared By	Checked	Date
	J.B.	S.M.	APRIL 2019

SCOTTISHPOWER RENEWABLES

Job No.	Drawing no.	Revision
5952	S-003	03

SCOTTISHPOWER RENEWABLES

Ref: 5952/503/021/BC

The Manager
Development Applications Unit (DAU)
Department of Culture, Heritage and the Gaeltacht
Newtown Road, Wexford
County Wexford
Y35 AP90

12th June 2019

Email: nature.conservation@chg.gov.ie

Re: Request for Scoping Opinion on information to be included in the preparation of an Environmental Impact Assessment [EIA] for Barnesmore Windfarm Repowering Project, Keadew Upper, Barnesmore, Co. Donegal.

Dear Sirs,

On behalf of our client, ScottishPower Renewables (UK) Limited (SPR), ScottishPower Headquarters, 320 St. Vincent Street, Glasgow, G2 5AD, we Jennings O'Donovan & Partners Ltd., Consulting Engineers, Finisklin Business Park, Sligo, write to request a scoping opinion for Barnesmore Windfarm Repowering Project, Keadew Upper, Barnesmore, Co. Donegal.

The Proposed Development
SPR intends to apply for Strategic Infrastructure Development [SID] approval to remove the existing 25 wind turbines on-site and replace these with 13 turbines each typically of approximately 5 megawatts (MW) with a combined output which will exceed 50 MW at Barnesmore. The proposed development will be developed within the footprint of the existing windfarm in so far as possible. It is also proposed to include an energy storage facility as part of the application.

The purpose of this scoping request is to set out the intended scope of the Environmental Impact Assessment Report (EIAR) and the key issues to be considered as part of that EIAR. Accordingly, we enclose a copy of an Ecology Scoping Document for your consideration.

The EIAR will form part of a planning application which will be submitted to An Bord Pleanála for determination towards the end of 2019.

We look forward to receiving your formal acknowledgment of this letter and Scoping Response in due course. In the meantime, do not hesitate to contact Miss Breena Coyle at the address below, should you require any clarification on the project proposals.

Yours faithfully,

Breena Coyle

Jennings O'Donovan & Partners Limited,
Consulting Engineers, Finisklin Business Park, Sligo.
Tel.: 071 9161416
E-mail: bcoyle@jodireland.com

RE: Barnesmore Windfarm – Proposed Repowering

Scoping questions

The below questions have been formulated based on the scoping document that was provided to the DAU in June 2019 in order to be more specific in relation to consultation questions for this project. Questions provided below are those that remain following initial consultation.

The project team appreciate the NPWS taking the time to consider the following questions, to help to inform the best outcomes for the proposed Barnesmore Windfarm Repowering (the Development) and minimising impacts upon the local environment. Many thanks.

Q1: Are the NPWS satisfied with the proposed EIA Scope of Works (SoW) as described within the EIA Scoping Document issued to DAU in June 2019 (known hereafter as the Scoping Document)?

Q2: Are there any additional items, issues, comments or amendments that the NPWS would like to make in relation to the proposed EIA SoW for this project (e.g. any comments on Survey Assessment/Methodology from Page 7 – 12 in the Scoping Document)?

Our proposed approach to the design and assessment of the project is as follows:

- Minimise impact generally by keeping as far as possible to existing infrastructure or immediately adjacent;
- Minimise impact on particularly sensitive areas by avoiding deeper peat and Annex I habitats as far as possible, avoiding significant incursion into freshwater pearl mussel catchment and favouring works on already disturbed ground; and,
- Provide appropriate mitigation in the form of habitat enhancement within SPR owned / controlled land where possible.

Our interpretation of the (mis-drawn) NHA boundary will be that it covers areas falling outside the windfarm infrastructure as built and our approach will be to consider the impact on all ecological features, whether falling within or without the NHA on paper, within the spirit of the NHA designation.

However, the nature of the site means that there will be impacts on / loss of Annex I habitat within the NHA even though this will be minimised as far as possible, with the intention that impacts will be mitigated to result in as minimal an impact as possible on the wider area and the NHA.

Q3: Is the NPWS content with the approach that we are taking to the proposal, which takes account of the designated interest and ecological importance of the area (whether falling within or outside the 'mis-drawn' NHA boundary)?

Q4: As outlined within the Scoping Document, do you have any particular concerns with the initial proposed layout in relation to nearby Natura 2000 Sites (such as those listed below) that you wish to highlight?:

a. Lough Eske and Ardnamona Wood Special Area of Conservation [Site Code: 000163] (including the Qualifying Interest Species Freshwater Pearl Mussel *Margaritifera margaritifera*); and,

b. River Foyle and Tributaries Special Area of Conservation [UK Site Code: UK0030320].

Q5: Does the NPWS hold any recent information that could be of benefit to supplement our ongoing survey work e.g. any valuable monitoring results / case study information or useful examples from similar Developments?

a. Particularly in relation to ensuring implementation of successful mitigation measures? E.g. the restoration or enhancement of localised degraded peatland habitats in Ireland.

Q6: In terms of peatland habitat restoration, what monitoring commitments and safeguards would NPWS ideally expect to see within an EIAR?

Q7: During the decommissioning of the existing windfarm, subject to the findings of the EIA, SPR will consider the options of removal/reinstatement of redundant infrastructure, or leaving *in-situ* – does the NPWS have a specific preference in relation to these options either in principle, or in specific areas of the Site?

Q8: Do the NPWS have any particular comments in relation to the proposed re-use of the existing infrastructure on the Site where possible (with some upgrading and/or re-profiling of specific sections / stone pads being required to support large component delivery and installation)?

Q9: What is the NPWS view on loss of Blanket Bog, Wet heath or other Annex I peatland habitats (although minimised as far as possible), when viewed together with the restoration of such habitat, and how this fits in with the National Peatland Strategy?

Q10: Are there any updates that can be provided by the NPWS on the strategy for Upland blanket bog habitat within NHA sites in Ireland (as discussed on page 5 of the Scoping Document)?

Q11: As described on page 6 of the Scoping Document, SPR would appreciate any comments or concerns that the NPWS would like to raise at this stage on the proposed approach? Notably, taking account of the potential for unavoidable effects upon EU Annex I habitats (and potentially, active blanket bog*) that lie outside of Natura 2000 Designated Sites (but within a NHA), so that this can lead the way forward for the design and layout of infrastructure for this Development.

***** = ***Priority Annex I habitat;*** *Annex I: Habitat types whose conservation requires the designation of Special Areas of Conservation. Priority habitats, which are in danger of disappearing within the EU territory, are highlighted with an asterisk (NPWS, 2013 - The Status of Protected EU Habitats and Species in Ireland. Overview Volume 1. Unpublished Report, National Parks & Wildlife Services. Department of Arts, Heritage and the Gaeltacht, Dublin, Ireland. Editor: Deirdre Lynn)*

Q12: Do the NPWS agree that the surveys completed as part of the ornithological assessment are of sufficient scope to allow an effective assessment?

Q13: Do the NPWS hold any specific additional ornithological information that should be incorporated either in to the design and/or assessment of the development?

Q14: Do the NPWS have any ornithological topics or details that they would require more information on within the EIA?