UWF Grid Connection EIA Report (2019)

Volume C2: EIAR Main Report

Chapter 9: Land

Environmental Agricultural Engineering Consultancy

ECOPOWER

October 2019

Topic **Land**

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Topic Land

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Figures and mapping referenced in this topic chapter can be found in **Volume C3 EIAR Figures.**

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Glossary of Terms

Term	Definition
Afforestation	The planting of land with woody plants with a view to forest establishment.
Agriculture	The growing of crops and the rearing of animals for food, fibre or sporting purposes
Low Intensity Farming	Lands which are lightly used and lightly stocked and subject to low levels of farming management.
Felling	The process of cutting down and extracting timber from a forest.
Grassland	Land which has been sown with productive grass species.
Improved grassland	Land which has been sown with particularly productive grass species and whose continued productivity is dependent on regular supplemental inputs of fertiliser and lime
Landuse	The use to which land is put by human activity
Landholding	The land area operated by a farming entity, usually a farmer.
Natura 2000	Lands designated for wildlife on an EU wide basis and having legal standing. Includes SPA and SAC designated land.
Sensitive Aspect	Any sensitive receptor in the local environment which could be impacted by the project.
Special Protection Area (SPA)	Areas of land designated for the protection of certain species of wild birds under the EU Birds Directive (Dir 79/409/EEC) and normally subject to certain landuse limitations.
Slievefelim to Silvermine Mountains Upland Area	The wider Slievefelim to Silvermines upland area south of Keeper Hill, Mother Mountain and Knockmaroe, between Newport and Upperchurch, County Tipperary. Much of the site is over 200 metres in altitude
Plantation Forestry	Forest sown by man, usually for commercial reasons and mostly of a small number of tree species.
Project Design Measure	Measures for environmental protection, incorporated into the design of the project.

List of Abbreviations

Abbreviation	Full Term
BPM	Ecopower Best Practice Measure developed by members of the EIAR Team
PD	Ecopower Project Design Environmental Protection Measure developed by members of the EIAR Team
UGC	Underground Cables
UWF	Upperchurch Windfarm

Executive Summary of the Land Chapter

Baseline Environment: The dominant land usage in the baseline environment is permanent agricultural grassland with a notable commercial plantation forestry component. Some small areas of low intensity farmed Natura 2000 designated land, also occurs. Public roads comprising both regional and county roads, and private access roads serving domestic houses, farms and forest, also feature in the existing land use pattern.

Survey Results for Sensitive Aspects in the Baseline Environment: Construction works areas are located on 4.8 hectares of agricultural land spread over 2 No. agricultural landholdings at the Mountphilips Substation site, with a total landholding area of c.21.1 hectares. Livestock farming, dairying and beef cattle rearing, are the main activities carried out in lands adjacent to the road network along the route of the 110kV UGC. Where there is an SPA designation farming is effectively restricted to low impact grazing. Forestry Land comprises commercial forestry plantations within the upland area.

Effects to Agricultural and Forestry Land were considered. Only Loss of Use and Connectivity of Agricultural Landholdings during construction was evaluated in-depth for likely effects. In relation to Forestry Land, the 110kV UGC will be installed within an existing private paved road which passes through a forestry landholding - no works will be carried out off this road, and therefore **no impacts will occur to Forestry Land**.

Summary of the Likely Impact to Agricultural Lands: The **agricultural lands** at the works area at Mountphilips Substation Site will be fenced off and unavailable for farming use during construction and, in the early operational stage until vegetation has re-established on reinstated land. The impact is evaluated as **Imperceptible** due to the moderate scale (23% of the project) of agricultural lands subject to works; the availability of agricultural lands in the surrounding area; the small extent of permanent effects which are limited to 2 No. of the landholdings.

Summary of the Likely Cumulative Impact: There is no interaction of **agricultural land holdings** between UWF Grid Connection and Upperchurch Windfarm/UWF Related Works and therefore there is **No Cumulative Impact**. The effect of the **Whole UWF Project** (whether the project Elements interact or not) will be **Imperceptible**.

Conclusion: The UWF Grid Connection will not cause significant adverse effects to Land.

Topic **Land**

9 Environmental Factor: Land

9.1 Introduction to the Land Chapter

9.1.1 What is Land?

Land is the portion of the earth's surface not covered by water. In this chapter land and landuse are addressed. Landuse relates to the various ways in which society uses land. Land take is the removal of productive land from agricultural or other beneficial uses. In the Irish context, land is used for agriculture, forestry, extractive uses, urbanisation, recreation, and infrastructure provision. Certain development undertakings can change current landuse to other landuse types.

9.1.2 Overview of Land in the Local Environment

From a land and landuse perspective the existing environment is rural countryside. The dominant usage is permanent agricultural grassland with a notable commercial plantation forestry component. Some areas of low intensity farmed Natura 2000 designated land also occurs. Public roads comprising both regional and county roads, and private access roads serving domestic houses, farms and forest also feature in the existing land use pattern.

The location of the UWF Grid Connection is illustrated on OSI Mapping on Figure GC 9.1: Location of the UWF Grid Connection.

Figures and mapping referenced in this topic chapter can be found in **Volume C3 EIAR Figures.**

9.1.3 Sensitive Aspects of the Land Environment included for further evaluation

Any sensitive receptor in the local environment which could be impacted by the project is a Sensitive Aspect. The following Sensitive Aspects **are included in this topic chapter** as they could be potentially impacted:

Sensitive Aspect No. 1	Agricultural Land	Section 9.2
Sensitive Aspect No. 2	Forestry Land	Section 9.3

Each of the above listed Sensitive Aspects are evaluated individually in Sections 9.2 to 9.3 of this Chapter.

To help readers navigate to individual sensitive aspect sections, the colour codes for each Sensitive Aspect used above are also used in the Sensitive Aspect sections Section 9.2 to 9.3. The colour-codes have been applied to section headings, tables and on side-tabs on the edge of the pages.

9.1.4 Sensitive Aspects excluded from further evaluation

No Sensitive Aspects **were excluded from this topic chapter**:

9.1.5 Overview of the Subject Development

The UWF Grid Connection is the subject development, being the subject of a current application to An Bord Pleanála. The main parts of the UWF Grid Connection are identified in Table 9-1 below.

Table 9-1: Subject Development – UWF Grid Connection

Project ID	The Subject Development	Composition of the Subject Development
Element 1	The Subject Development UWF Grid Connection (GC)	Mountphilips Substation Mountphilips – Upperchurch 110kV UGC Ancillary works at Mountphilips Substation site

Note: The UWF Grid Connection is 'Element 1' of the Whole UWF Project.

A description of the location, size and design, life-cycle stages, use of natural resources, emissions and wastes, and the vulnerability to major accidents and natural disasters is provided in Chapter 5: Description of the Development – UWF Grid Connection (Volume C2 EIAR Main Report).

This EIA Report is also available on www.upperchurchwindfarmgridconnection.ie.

9.1.5.1 Changes to the development from the 2018 Application

This is the 2nd Application for UWF Grid Connection (2019 Application). The previous application (2018 Application) was refused by An Bord Pleanála in December 2018. There are changes in this 2019 UWF Grid Connection Application from the 2018 Application. These comprise;

- In this 2019 Application, the route of the 110kV UGC from Mountphilips Substation Site entrance to the Consented UWF Substation site is wholly under the public road (except for 700m under a private paved road at the Consented UWF Substation end) and is 30.5km in length. By comparison, the 2018 Application 110kV UGC route was through agricultural and forestry tracks and lands with some public road crossings and 27.5km in length.
- Mountphilips Substation is at the same location, but the footprint of the Substation Compound is increased by 15% (from 8930m^2 to 10290m^2) and the footprint of the control building is increased from 205m^2 to 375m^2. ***Note***: Details of the changes/no changes to the Mountphilips Substation Site as a result of the increased dimensions are listed in Chapter 5: Description of the Development: Section 5.1.1.1.

9.1.6 The Author of the Land Chapter

This report has been written by Andy Dunne (B.Agr.Sc., M.Sc.(Agr.)) director of Environmental Agricultural Engineering Consultancy (EAEC), a firm of agricultural and engineering consultants. Andy has been involved in a great variety of land use and agricultural development activity for more than 20 years and he is familiar with national and EU regulation and policy in the area.

9.1.7 Sources of Baseline Information

The information sources outlined in Table 9-2 were reviewed during desktop studies and confirmed during fieldwork in order to gather information on the baseline environment. The recommendations in the guidelines listed in the table, have been considered during the preparation of this chapter.

Table 9-2: Sources of Baseline Information for Land

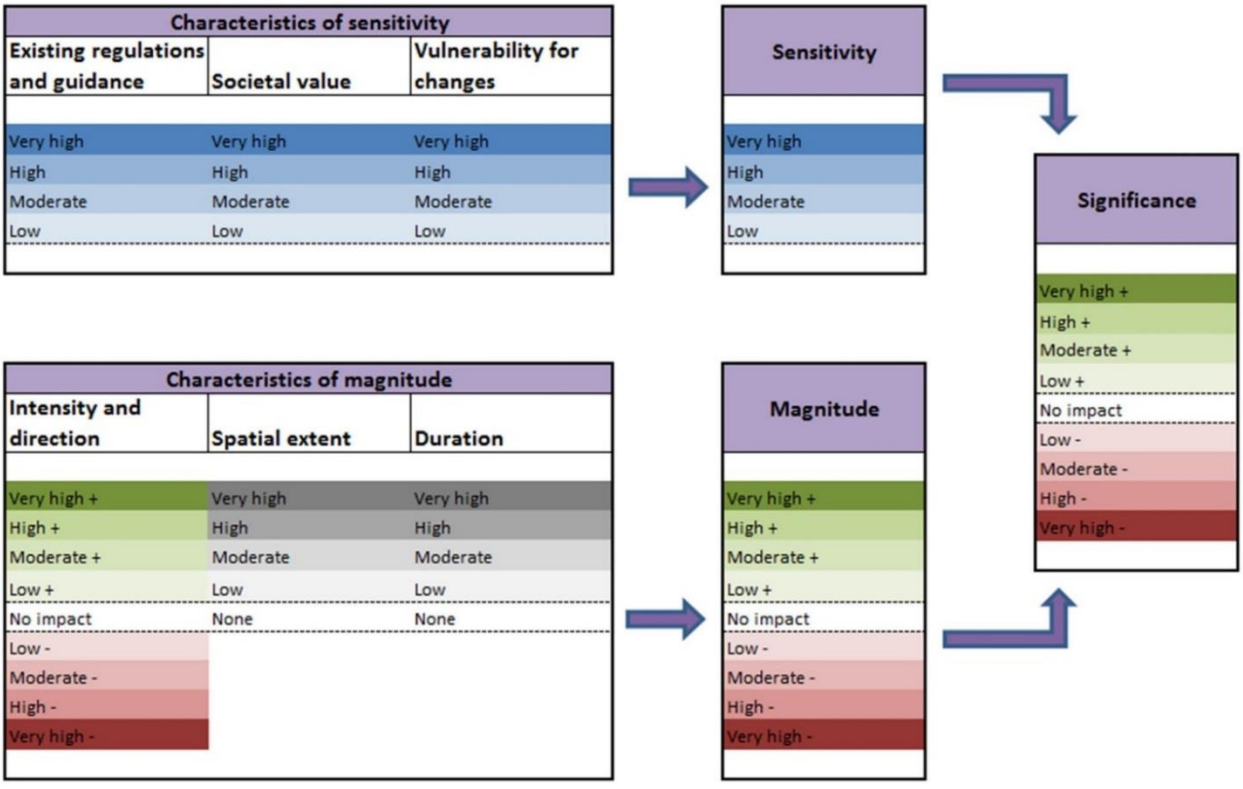
Type	Source
Consultation	No feedback was received from consultees with regard to land or land use. See Chapter 3: The Scoping Consultations, Chapter 3 Appendices for further details.
Desktop	• Department of Agriculture, Food and Forestry's Rural Development Programme 2014-2020 • 2016 State of the Environment Report • North Tipperary County Development Plan (2010) • Available online aerial imagery from National Parks and Wildlife Service, Bing and Google • Chapter 10 Soil • Chapter 11: Water • Review of planning/ environmental information documents for the Other Elements of the Whole UWF Project as contained in Volume F of the planning application
Fieldwork	• Site Visit

9.1.8 Methodology for Evaluating Effects

There is no specific guidance on the evaluation of Land for an EIA Report. However, extensive experience with EIA and agricultural and forestry management together with the EPA guidance on EIS preparation (2002 & 2017) has informed the production of this report. As there are no industry guidelines/standards for the evaluation of effects to Land, a standard methodology – the IMPERIA methodology – is employed. The IMPERIA methodology is described in Section 9.1.8.1 below.

9.1.8.1 Overview of the IMPERIA Methodology

In the framework developed under the EC LIFE project - IMPERIA, the evaluation of impact significance uses a replicable, multi-criteria decision analysis, where the sensitivity of the receptor (i.e. the sensitivity of a Sensitive Aspect of the environment) and the magnitude of the change caused by a project are rated using sub-criteria or scales, and then the overall significance is evaluated using a matrix.



The criteria for determining the overall sensitivity of a receptor and magnitude of the change (impact) to the receptor, is provided in the tables below. The matrix for determining the significance of the impact to the receptor is provided after these tables.

9.1.8.1.1 Criteria for Evaluating the Sensitivity of a Receptor

Sensitivity of the receptor is a description of the characteristics of the receptor or aspect of the environment which will be affected by the development. It is a measure of 1) existing regulations and guidance, 2) societal value and 3) vulnerability for the change. The sensitivity of a receptor is estimated in its current state prior to any change implied by the project.

Existing regulations and guidance describes whether there are any such objects in the impact area, which have some level of protection by law or other regulations (e.g. prohibition against polluting groundwater and Natura areas), or whose conservation value is increased by programs or recommendations (e.g. landscapes designated as nationally valuable).

Societal value describes the value of the receptor to the society and depending on the type of impact may be related to economic values (e.g. water supply), social values (e.g. landscape or recreation) or environmental values (e.g. natural habitat). Societal value measures general appreciation from the point of view of the society. When relevant, the number of people impacted is taken into account.

Vulnerability for the change describes how liable the receptor is to be influenced or harmed by changes to its environment.

Sensitivity	Criteria Existing regulations/guidance	Criteria Societal value	Criteria Vulnerability to change
Low	Few or no recommendations which add to the conservation value of the impact area, and no regulations restricting use of the area (e.g. zoning plans).	The receptor is of small value or uniqueness. The number of people impacted is small.	Even a large external change would not have substantial impact on the status of the receptor. There are only few or none vulnerable receptors in the area.
Moderate	Regulation sets recommendations or reference values for an object in the impact area, or the project may impact an area conserved by a national or an international program.	The receptor is valuable and locally significant but not very unique. The number of people impacted is moderate.	At least moderate changes are needed to substantially change the status of the receptor. There are some vulnerable receptors in the area.
High	The impact area includes an object that is protected by national law or an EU directive (e.g. Natura 2000 areas).	The receptor is unique and valuable to society. It may be deemed nationally significant and valuable. The number of people impacted is large.	Even a small external change could substantially change the status of the receptor. There are many vulnerable receptors in the area.
Very High	The impact area includes an object that is protected by national law or an EU directive (e.g. Natura 2000 areas).	The receptor is highly unique, very valuable to society and possibly irreplaceable. It may be deemed internationally significant and valuable. The number of people affected is very large.	Even a very small external change could substantially change the status of the receptor. There are very many vulnerable receptors in the area.

The **overall sensitivity of a receptor** is assessed by the competent expert on the basis on his/her assessment of the components of sensitivity. A general guide for deriving the overall sensitivity is to pick the maximum of existing regulations and guidance and societal value and then adjust that value depending on the level of vulnerability.

Determining the Overall Sensitivity of a Receptor	
Low	The receptor has minor social value, low vulnerability for the change and no existing regulations and guidance. Even a receptor which has major or moderate social value may have low sensitivity if it's not liable to be influenced by the development.
Moderate	The receptor has moderate value to society, its vulnerability for the change is moderate, regulation may set reference values or recommendations, and it may be in a conservation program. Even a receptor which has major social value may have moderate sensitivity if it has low vulnerability, and vice versa.
High	Legislation strictly conserves the receptor, or it is very valuable to society, or very liable to be harmed by the development.
Very High	Legislation strictly conserves the receptor, or it is irreplaceable to society, or extremely liable to be harmed by the development. Even minor influence by the proposed development is likely to make the development unfeasible.

9.1.8.1.2 Criteria for Evaluating the Magnitude of an Impact

Magnitude of the impact describes the characteristics of the changes or effects that the planned project is likely to cause. Magnitude is a combination of 1) intensity and direction, 2) spatial extent, and 3) duration. Assessment of magnitude evaluates the likely changes affecting the receptor *without* taking into account the receptors sensitivity to those changes.

Intensity describes the physical dimension of a development. The direction of the change/effect is either positive (brown) or negative (red).

Magnitude	Criteria – Intensity & Direction
Very High	The proposal has an extremely beneficial effect on nature or environmental load. A social change benefits substantially people's daily lives.
High	The proposal has a large beneficial effect on nature or environmental load. A social change clearly benefits people's daily lives.
Moderate	The proposal has a clearly observable positive effect on nature or environmental load. A social change has an observable effect on people's daily lives.
Low	An effect is **positive** and observable, but the change to environmental conditions or on people is small.
No impact	An effect so small that it has no practical implication. Any benefit or harm is negligible.
Low	An effect is **negative** and observable, but the change to environmental conditions or on people is small.
Moderate	The proposal has a clearly observable negative effect on nature or environmental load. A social change has an observable effect on people's daily lives and may impact daily routines.
High	The proposal has a large detrimental effect on nature or environmental load. A social change clearly hinders people's daily lives.
Very High	The proposal has an extremely harmful effect on nature or environmental load. A social change substantially hinders people's daily lives.

Spatial extent describes the geographical reach of, or the range within which, an effect is observable.

Duration describes the length of time during which an impact is observable and it also takes other related issues such as timing and periodicity into account. These are relevant for impacts which aren't observable all the time such as periodic impacts.

Magnitude	Criteria Spatial Extent	Criteria Duration
Low	Impact extends only to the immediate vicinity of a source. Typical range is < 1 km.	An impact whose duration is at most one year, for instance during construction and not operation. A moderate-term impact may fall into this category if it's not constant and occurs only at periods causing the least possible disturbance.
Moderate	Impact extends over one municipality. Typical range is 1-10 km.	An impact lasts from one to a number of years. A long-term impact may fall into this category if it's not constant and occurs only at periods causing the least possible disturbance.
High	Impact extends over one region. Typical range is 10-100 km.	An impact lasts several years. The impact area will recover after the project is decommissioned.
Very High	Impact extends over several regions and may cross national borders. Typical range is > 100 km.	An impact is permanent. The impact area won't recover even after the project is decommissioned.

Deriving the overall magnitude of the change from components of magnitude

Magnitude of the change is a comprehensive synthesis of its component factors. In a case, where intensity, spatial case and duration all get the same value, the magnitude would also be given this value. In other cases, intensity should be taken as a starting point, and the assessment should be adjusted based on spatial extent and duration to obtain an overall estimate. The aim is that the overall assessment should capture the characteristics of an effect. The table below describes some example descriptions of different categories for the magnitude of the change.

Determining the Overall Magnitude of the Change/Effect	
Very High	The proposal has beneficial effects of very high intensity and the extent and the duration of the effects are at least high.
High	The proposal has beneficial effects of high intensity and the extent and the duration of the effects are high.
Moderate	The proposal has clearly observable positive effects on nature or people's daily lives, and the extent and the duration of the effects are moderate.
Low	An effect is positive and observable, but the change to environmental conditions or on people is small.
No impact	No change is noticeable in practice. Any benefit or harm is negligible.
Low	An effect is negative and observable, but the change to environmental conditions or on people is small.
Moderate	The proposal has clearly observable negative effects on nature or people's daily lives, and the extent and the duration of the effects are moderate.
High	The proposal has harmful effects of high intensity and the extent and the duration of the effects are high.
Very High	The proposal has harmful effects of very high intensity and the extent and the duration of the effects are at least high.

9.1.8.2 Assessing the significance of an impact

The **assessment of the overall significance uses the matrix below,** where positive impacts are in green and negative in red. The matrix is based on the **magnitude of the change** affecting a receptor and on the **sensitivity of the receptor** to those changes.

The values obtained from the table are indicative because the most relevant dimensions for characterising an impact are dependent on the type of impact. Thus, some discretion from the expert is required, in particular in cases, where the one component is low and the other one high or very high.

Determining the Overall Significance of an Impact

Impact Significance		Magnitude of change								
		Very High	**High**	**Moderate**	**Low**	**No Change**	**Low**	**Moderate**	**High**	**Very High**
Receptor Sensitivity	**Low**	Significant*	Moderate*	Slight	Imperceptible	Neutral	Imperceptible	Slight	Moderate*	Significant*
	Moderate	Significant	Significant	Moderate	Slight	Neutral	Slight	Moderate	Significant	Significant
	High	Profound	Significant	Significant	Moderate*	Neutral	Moderate*	Significant	Significant	Profound
	Very High	Profound	Profound	Significant	Significant*	Neutral	Significant*	Significant	Profound	Profound

* Especially in these cases, significance might get a lower estimate, if sensitivity or magnitude is near the lower bound of the classification

Note on Terms used in 'Determining the Overall Significance of an Impact' Table: *The Significance rating ascribed in the Table above have been refined from the ARVI tool, to provide a more nuanced understanding of the significance and also to be compatible with the terms used throughout this EIA Report, which have been informed by the EPA Guidelines on Information to be contained in EIAR (2017) for description of effects.*

In the above Table - Low has been refined as Slight or Imperceptible depending on context; High has been renamed as Significant; Very High has been renamed as Profound; No Impact is understood to also mean Neutral effect, which is defined in the EPA Guidelines as 'no effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error'.

9.1.9 Certainty and Sufficiency of Evaluation/Information

A documentary trail is provided throughout this chapter to verify the competency of data and methods used and the rationale for selection of same. The information used to compile this chapter is collated from reports and documents generated by local authorities and statutory agencies, with remit in the regulatory field, including the Department of Agriculture, Food and the Marine and North Tipperary County Development Plan 2010 (as varied). In all cases the most recent publications are relied on. All documentation used is referenced at the end of the chapter.

In respect of Land no significant limitations or difficulties were encountered.

9.2 Sensitive Aspect No.1: Agricultural Land

This Section provides a description and evaluation of the Sensitive Aspect - Agricultural Land.

9.2.1 BASELINE CHARACTERISTICS of Agricultural Land

9.2.1.1 STUDY AREA for Agricultural Land

The study area for Agricultural Land in relation to the UWF Grid Connection is described in Table 9-3 and illustrated on Figure GC 9.2: UWF Grid Connection Study Area for Agricultural Lands (Volume C3 EIAR Figures).

Table 9-3: UWF Grid Connection Study Area for Agricultural Land

Study Area for Agricultural Land	Justification for the Study Area Extents
Boundary of construction works areas in general, and the individual landholdings where there is any potential to split parcels of land	Impacts limited to areas of physical disturbance and any restriction of access.

9.2.1.2 Baseline Context and Character of Agricultural Land in the UWF Grid Connection Study Area

UWF Grid Connection will be developed in rural countryside in County Tipperary.

Construction works areas are located on 4.8 hectares of agricultural land spread over 2 No. agricultural landholdings, with a total landholding area of c.21.1 hectares. The two landholdings are at the Mountphilips Substation site. It should be noted that while there is a grassland field at the eastern extremity of the 110kV UGC route where the already Consented Upperchurch Windfarm Substation will be located - construction works in this field will only be in the future compound area, and this grassland field is not considered to be an agricultural holding in this EIAR because UWF Grid Connection will not be the cause of landuse change at this location – the land will have already changed use before UWF Grid Connection works can occur there. There are no other agricultural landholdings within the study area.

Within the study area, the farmed area at the Mountphilips Substation site is under permanent grassland. No tillage farming was observed. The quality of the grassland varies with some being well improved from a farming perspective to grassland which is noticeably less productive. Livestock farming, dairying and beef cattle rearing, are the activities carried out on the landholdings of Mountphilips Substation site.

Agriculture comprising livestock farming, dairying and beef cattle rearing, are also the main activities carried out within the wider area, outside the substation site, and outside of construction works areas along the road network for the 110kV UGC. Such farming practice is long established and although there has been notable production upscaling, restructuring of farm holdings, enlargement of field layouts and technological improvement over time, the use of the land for milk and livestock production in these districts stretches back to post-famine times.

The setting of the wider area is the Slievefelim to Silvermine uplands area, the highest points of which remain generally unenclosed and are only used for low intensity farming. Significant parts of these uplands are also designated a Special Protection Area (SPA 4165 – Slievefelim to Silvermines Mountain) under the Birds Directive principally because of the occurrence of the hen harrier (*Circus cyaneus*). The SPA designation effectively restricts farming usage to low impact grazing. Pasture improvement, land reclamation and afforestation is not generally permitted within the SPA.

9.2.1.3 Importance of Agricultural Land

Farming is an important use of land in both the study area and in the wider area around the development. This landuse contributes at a notable level to the local economy in the commercial production of food and therefore to rural livelihoods. On a broader scale however, there is no particular strategic or significant aspect to the farming hereabouts at regional or national level.

9.2.1.4 Sensitivity of Agricultural Land

The farming use of land as it occurs in this area is a practice that modifies and maintains what would otherwise be natural systems into productive agricultural usage. Agricultural land is a dynamic entity and land maintenance and development works are routine and ongoing in the management of farmland.

No sensitivity is therefore anticipated around agricultural landuse.

9.2.1.5 Trends in the Baseline Environment (the 'Do-Nothing' scenario)

In terms of landuse trends in the area, no particularly strong tendency is apparent in farming. Agricultural usage is the dominant landuse and will remain so for the foreseeable future, although over time, emphasis on a particular farm enterprise may alter arising from consumer demand or policy changes. Such change is well accommodated in farmed land. The SPA designation in the Slievefelim to Silvermines uplands area will also tend to hold existing farming patterns in the wider surrounding area.

It is, however, likely that the size of individual farm holdings will increase with the passage of time and there may be some relatively small further movement from agricultural to forestry use.

9.2.1.6 Receiving Environment (the Baseline + Trends)

Change in farming is very slow. Modification to the existing environment will be at a rate that is barely perceptible over time. Therefore it is assumed in this report that the baseline environment identified above will be the receiving environment.

9.2.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

9.2.2.1 Cumulative Evaluation Study Areas

9.2.2.1.1 UWF Grid Connection Cumulative Evaluation Study Area

The UWF Grid Connection was evaluated for cumulative effects with other projects and the study area is set out in the table below.

UWF Grid Connection Cumulative Evaluation Study Area for Agricultural Land	Justification for the Study Area Extents
Boundary of works areas in general, and the individual landholdings where there is any potential to split parcels of land	Impacts limited to areas of physical disturbance and any restriction of access.

The study area is illustrated on Figure CE 9.2: UWF Grid Connection Cumulative Evaluation Study Area for Agricultural Lands.

9.2.2.1.2 Whole Project Cumulative Evaluation Study Area

UWF Grid Connection is part of a whole project which comprises the following Other Elements; Element 2: UWF Related Works, Element 3: UWF Replacement Forestry, Element 4: Upperchurch Windfarm (UWF), and Element 5: UWF Other Activities. The Subject Development, UWF Grid Connection is Element 1. All five elements are collectively referred to as the Whole UWF Project in this EIA Report.

The Other Elements must be considered because UWF Grid Connection is part of a whole project. Therefore, the cumulative information and evaluations for the Other Elements of the Whole UWF Project are included in order to present the totality of the project. A description of these Other Elements is included in this EIA Report at Appendices 5.3, 5.4, 5.5 and 5.6**,** in Volume C4 EIAR Appendices**.** Scoping of these Other Elements is presented in Section 9.2.2.2.1 below.

The Whole Project Cumulative Evaluation Study Area comprises of the UWF Grid Connection Study Area along with the study areas for Other Elements which are described in Table 9-4, and illustrated on Figure WP 9.2: Whole Project Study Area for Agricultural Lands.

Table 9-4: Whole Project Cumulative Evaluation Study Area for Agricultural Land

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 1: UWF Grid Connection	Boundary of works areas in general, and the individual landholdings where there is any potential to split parcels of land	Impacts limited to areas of physical disturbance and any restriction of access.
Element 2: UWF Related Works		
Element 3: UWF Replacement Forestry		
Element 4: Upperchurch Windfarm (UWF)		
Element 5: UWF Other Activities		

9.2.2.2 Scoping for Other Projects or Activity & Potential for Impacts

The evaluation of cumulative impacts to Agricultural Land also considered Other Projects or Activities. A scoping exercise was carried out to determine which projects or activities, if any, have potential to cause cumulative effects to Agricultural Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project and therefore should be brought forward for evaluation in this topic chapter. A brief overview of the Other Projects or Activities and the scoping exercise by the topic author is included in Appendix 2.1: Scoping of Other Projects or Activities for the Cumulative Evaluations (Section A2.1.4.14).

The results of this scoping exercise are that: it is evaluated that no Other Projects or Activities are likely to cause cumulative effects with either the UWF Grid Connection or the Other Elements of the Whole UWF Project, and therefore no Other Projects or Activities are scoped in for evaluation of cumulative effects to Agricultural Land.

9.2.2.2.1 Potential for Other Elements or Other Projects to cause Impacts to Agricultural Land

An evaluation was carried out by the topic author of the likelihood for the Other Elements of the Whole UWF Project to cause cumulative effects to the Sensitive Aspect Agricultural Land. The results of this evaluation are included in Table 9-5.

The location of, and study area boundary associated with, the Other Elements which are included for cumulative evaluation is illustrated on Figure WP 9.2.

Table 9-5: Results of the Evaluation of the Other Elements of the Whole UWF Project

Other Elements of the Whole UWF Project	
Element 2: UWF Related Works	Included for the evaluation of cumulative effects
Element 3: UWF Replacement Forestry	Evaluated as excluded: Neutral effect/No potential for effects due to: • There will be no temporary loss of use of lands or loss of connectivity due to planting activities, • Neutral impacts as a result of change of landuse - while 6ha of agricultural land (on a landholding area of 70ha) will change use to forestry at the UWF Replacement Forestry site, the use of land is changing from one productive use to another. In addition both of these landuses are the predominant landuses in this upland area. • No potential for permanent loss of connectivity as the existing farm access road will continue to be used by the landowner to gain access to other lands.
Element 4: Upperchurch Windfarm (UWF)	Included for the evaluation of cumulative effects
Element 5: UWF Other Activities	Evaluated as excluded: Neutral effect/No potential for effects due to: • The Haul Route Activities are located entirely within the public road corridor and do not require any works to adjoining lands, therefore no impacts to agricultural land or landuse can occur. • Monitoring Activities do not require any works to land or result in land use change, therefore no impacts can occur. • Upperchurch Hen Harrier Scheme: Once off activities will take place initially, and comprise planting and fencing at hedgerows, watercourse boundaries and areas of scrub. These activities will generally take place on the periphery of fields and will not cause any impacts to landuse or connectivity. During the Operational Stage of the Upperchurch Windfarm, farming practices under the Upperchurch Hen Harrier Scheme will, to a certain extent, cause lands to revert back to wet grassland. It

	is considered that due to the current low productivity level on the lands, combined with the scheme payments that the landowners will receive, no impacts are expected to farm productivity levels. • The Overhead Line Activities will involve access over agricultural lands using established access routes mainly along existing tracks. No works are required to lands, and activities are limited to in situ pole sets and angle masts and the existing overhead line, therefore there is no potential for effects to agricultural lands or landuse.

9.2.2.3 Cumulative Information: Baseline Characteristics – Context & Character

9.2.2.3.1 Element 2: UWF Related Works

Just over a half of UWF Related Works construction works areas relate to sections of Internal Windfarm Cabling which will be located within Consented UWF Roads. In relation to the remaining UWF Related Works areas, one third of the construction works areas will be located on agricultural lands, with 7.2 hectares of land within construction works areas spread across 41 no. agricultural landholdings. These 41 No. landholdings together have a total area of c.1133 hectares.

9.2.2.3.2 Element 3: UWF Replacement Forestry

Not applicable – Element evaluated as excluded. See Section 9.2.2.2.1.

9.2.2.3.3 Element 4: Upperchurch Windfarm

The footprint of the Upperchurch Windfarm will be 56.3ha of lands, 46.5ha of which are agricultural lands. In relation to landholdings, 23 No. agricultural landholdings, which together have a total area of c.1050 hectares, are associated with the Upperchurch Windfarm.

Consideration of the Passage of Time: There has been no material changes in landholdings in the Upperchurch Windfarm since 2013, as there has been no change to the proportion of agricultural land at the windfarm. It is therefore considered that the descriptions in the 2013 and 2014 documents remain relevant to the cumulative evaluations in this 2019 EIAR for UWF Grid Connection.

9.2.2.3.4 Element 5: UWF Other Activities

Not applicable – Element evaluated as excluded. See Section 9.2.2.2.1

9.2.2.3.5 Other Projects or Activities

Not applicable – No Other Projects or Activities were scoped in for evaluation of cumulative effects, see Section 9.2.2.2.

9.2.3 PROJECT DESIGN MEASURES for Agricultural Land

At the conception of the UWF Grid Connection, the design team evaluated the potential for significant impacts to the environment. Impacts will only take place where three components exist together; (1) the source of the impact (project), (2) the receptor of the impact (sensitive aspect) and (3) a pathway between the source and the sensitive aspect. The objective of mitigation measures is to avoid, prevent or reduce, one of the three components of an impact by choosing an alternative location, alternative design or an alternative process.

Potential or likely significant impacts were avoided, prevented or reduced by integrating mitigation measures into the fundamental design of the development – these are the Project Design Environmental Protection Measures, which are shortened to 'Project Design Measures' in this EIA Report.

The development as evaluated in the EIA Report incorporates the Project Design Measures.

The Project Design Measures outlined in Table 9-6 are relevant to the Environmental Factor, Land, and in particular to the sensitive aspect **Agricultural Land**.

Table 9-6: UWF Grid Connection Project Design Measures relevant to Agricultural Land

PD ID	Project Design Environmental Protection Measure (PD)
PD05	At the Mountphilips Substation site, construction traffic will be restricted to the construction works area and tracking across adjacent ground will not be permitted. A speed limit of 25km/hr for all traffic/machinery will be implemented at the Mountphilips Substation site. Outside of Mountphilips Substation site, all construction will be restricted to the paved road surfaces or built surfaces along the 110kV UGC. A speed limit of 50km/hr for all delivery and construction traffic will be implemented on Local Roads ('L' roads).

It should be noted that in order to mitigate splitting of land parcels, the design of the new access road at Mountphilips Substation site includes gates located along the access road which will provide access across the new access road to the agricultural lands on either side of the access road. These gates are located in each of the fields through which the new access road is routed.

Cumulative Information: Potential or likely significant impacts caused by the Other Elements of the Whole UWF Project were avoided, prevented or reduced by incorporating Project Design Measures into the design of the UWF Related Works, and into the consented design of the Upperchurch Windfarm. These Project Design Measures are included in the description of these Elements, and can be found in this EIA Report in Appendices 5.3 and 5.5, in Volume C4: EIAR Appendices.

9.2.4 EVALUATION OF IMPACTS to Agricultural Land

In this Section, the likely direct and indirect effects of the UWF Grid Connection are identified and evaluated. Then the likely cumulative effects of the UWF Grid Connection together with the Other Elements of the Whole UWF Project are identified and evaluated.

A conceptual site model exercise was carried out to facilitate the identification of source-pathway-receptor links between the project (source) and the sensitive aspect (receptor) - Agricultural Land.

As a result of the exercise, some impacts were included and some were excluded.

Table 9-7: List of all Impacts included and excluded from the Impact Evaluation Table sections

Impacts Included (Evaluated in the Impact Evaluation Table sections)	***Impacts Excluded*** *(Justification at the end of the Impact Evaluation Table sections)*
Loss of Use and Connectivity of Landholdings (Construction stage/Early Operational Stage)	*Reduction in grass growth rates due to a change in the drainage regime (construction stage)*
	Change of land use (operational stage)
	Improvement in infrastructure (operational stage)
	Loss of use and connectivity of land through the splitting of parcels of land (operational stage)
	Decommissioning Effects

The source-pathway-receptor links for the impact included are described in the Impact Evaluation Table in the next section - **Section 9.2.4.1.**

The source-pathway-receptor links and the rationale for impacts excluded are described in the section directly after the Impact Evaluation Table in Section 9.2.4.2.

Agricultural Land

Sensitive Aspect

9.2.4.1 Impact Evaluation Table: Loss of Use and Connectivity of Landholdings

Impact Description	
Project Life Cycle Stage:	Construction stage and early operational stage

Impact Source: Construction works areas
Cumulative Impact Source: Construction works areas
Impact Pathway: Fences, presence of construction machinery

Impact Description: Agricultural Lands within the construction works areas will be fenced off and unavailable for farming use during construction and in the early operational stage until vegetation has re-established on reinstated land. Such fencing and access modification at times will prevent access to and the use of farmlands, which will result in plots of land becoming disconnected and potentially unavailable for farming use.

Impact Quality: Negative

Evaluation of the Subject Development Impact – Loss of Use and Connectivity of Landholdings

Element 1: UWF Grid Connection – direct/indirect impact

Impact Magnitude:
Construction works areas are located on 4.8 hectares of agricultural land spread over 2 No. agricultural landholdings, with a total landholding area of c.21.1 hectares. Loss of use and connectivity impacts only relate to the Mountphilips Substation site.
It should be noted that there will be no loss of use or connectivity at the agricultural landholding at the eastern extremity of the 110kV UGC as construction works for the UWF Grid Connection will take place in the future compound area for the Consented Upperchurch Windfarm substation.

Significance of the Impact: Imperceptible

Rationale for Impact Evaluation:

- the moderate scale (23%) of agricultural lands subject to works, limited to 2 agricultural landholdings in the context of the availability of agricultural lands in the surrounding area;
- the small extent of permanent effects which are limited to 2 no. landholdings.

Element 1: UWF Grid Connection – cumulative impact

Cumulative Impact Magnitude: Cumulative impacts mainly relate to landholdings where both UWF Grid Connection works and works for Other Elements of the Whole UWF Project will take place, and are limited to the 1 No. landholding at the eastern extremity of the 110kV UGC in Knockcurraghbola Commons - at the site of the Consented Upperchurch Windfarm Substation. As UWF Grid Connection works, in this agricultural landholding, will only take place within the future compound area, it is considered that cumulative effects will not occur because the impact to land will already have taken place during building of the compound for Upperchurch Windfarm and the UWF Grid Connection cannot add to impact magnitude, as the land will already have changed use (i.e. land use will only change to utility/infrastructure use once). As UWF Grid Connection will not cause any loss of land or change of use in the Knockcurraghbola Commons area, the magnitude of cumulative impacts will be none.

Significance of the Cumulative Impact: No Cumulative Impact

Rationale for Cumulative Impact Evaluation:

- UWF Grid Connection will not cause any additional loss of use or connectivity impacts to the agricultural land-holding at the Consented Upperchurch Windfarm Substation site.

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Cumulative Information: Individual Evaluations of Other Elements of the Whole UWF Project

Element 2: UWF Related Works

Impact Magnitude:
The construction works areas are located on 7.2 hectares of agricultural land spread over 41 No. landholdings, with a total landholding area of c.1133 hectares. Works will generally take place through landholdings rather than on the periphery of holdings.

Significance of the Impact: Neutral effect

Rationale for Impact Evaluation:

- the very small extent of lands subject to works (less than 1%), in the context of the size of agricultural landholdings, will not cause any impacts greater than Neutral to the productivity levels on the land-holdings,
- the temporary duration (up to 1 year maximum), and
- the alternative access available on many landholdings

Element 3: UWF Replacement Forestry – *N/A, evaluated as excluded, see Section 9.2.2.2.1*

Element 4: Upperchurch Windfarm

Impact Magnitude:
The footprint of the Upperchurch Windfarm comprises 56.3 hectares. Construction works will take place on 46.5 hectares of land over 23 No. landholdings, with a total landholding area of c.1,050 hectares.

Significance of the Impact: Imperceptible

Rationale for Impact Evaluation:

- the small scale (4%) of lands subject works, in the context of the size of agricultural landholdings
- the short-term duration (up to 1.5 years)
- the alternative access available on many landholdings, and
- the ease with which such alternative access can be provided.

Element 5: UWF Other Activities – *N/A, evaluated as excluded, see Section 9.2.2.2.1*

Evaluation of Other Cumulative Impacts – Loss of Use and Connectivity of Landholdings

Whole UWF Project Effect

Magnitude:
In total, 58 hectares of agricultural lands are located within construction works areas associated with the UWF Grid Connection, UWF Related Works and Upperchurch Windfarm. These lands are spread over 43 No. landholdings, with a total landholding area of c.1147 hectares. Loss of use and connectivity impacts to agricultural lands will occur on both the western side of the Slievefelim and Silvermines Mountain upland area in Mountphilips and Coole townlands for the UWF Grid Connection only, and on the eastern side of the upland area for the consented Upperchurch Windfarm and UWF Related Works only. No agricultural landholdings will be affected between these two areas, which are separated by a distance of c.22km.

Significance of the Whole Project Effect: Imperceptible

Rationale for Impact Evaluation:

- the very small scale of land area subject to works, 5% of farmed area on average for all landholdings,
- the location of the majority of the 110kV UGC for UWF Grid Connection on public roads
- the location of the majority of Internal Windfarm Cables for UWF Related Works within Consented UWF Roads,
- the temporary to short-term duration (up to 1.5 years) of impacts in the Upperchurch area,
- the reversibility of the impact with the restoration of lands, and
- the alternative access available on many landholdings.

- the scale of the permanent nature of landuse change in the Mountphilips area, in the context of the very small number of landholdings involved (2) within a broader area of extensive agricultural use; and the separation of landholdings associated with UWF Grid Connection.

Note: No cumulative evaluation of Other Projects or Activities is included in the table above, because no Other Projects or Activities were evaluated as having potential to cause cumulative effects to Agricultural Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project (see Section 9.2.2.2).

9.2.4.2 Description and Rationale for Excluded (scoped out) Impacts

The source-pathway-receptor links and the rationale for impacts excluded from the Impact Evaluation Table sections are described in Table 9-7 below.

Table 9-8: Description and Rationale for Excluded Impacts to Agricultural Land

Key: 1: UWF Grid Connection; 2: UWF Related Works; 3: UWF Replacement Forestry; 4: Upperchurch Windfarm; 5: UWF Other Activities

Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
Construction Stage				
Trench and Foundation excavations	1,2,4	Ground-water flow paths	Reduction in grass growth rates due to a change in the drainage regime	Rationale for Excluding: Neutral impact, As per Chapter 11: Water, due to the shallow nature of the trenches and excavations associated with the Individual Project Elements, the impact on groundwater will be of imperceptible significance within 30m and Neutral beyond this distance. Based on the evaluation contained in Chapter 11 Water, it is considered that any reduction in grass growth rates caused by a change in the drainage regime will have a Neutral effect on the productivity of land.
Operational Stage				
Forestry felling, presence of above ground structures	1,2,4	Land cover	Change of land use	Rationale for Excluding: Neutral impact, In relation to the UWF Grid Connection, UWF Related Works and Upperchurch Windfarm, it is considered that due to the very small scale of land use change (less than 1% of the landholding area) that a Neutral effect to agricultural lands will occur.
Construction of new access roads & upgrading of existing private roads	1,2,4	Private Roads	Improvement in infrastructure	In relation to the UWF Grid Connection, UWF Related Works and Upperchurch Windfarm, although the upgrade of existing farm roads and the construction of some short lengths of new roads will be a positive effect on agricultural landholdings, the scale of road upgrading or construction will equate to less than 1% of the landholding areas. Therefore, it is considered that the upgrade/construction of roads will have a Neutral effect to the productivity or use of agricultural lands.
Operational activities	1,2,4	Work area boundaries	Loss of use and connectivity of land through the splitting of parcels of land	Maintenance activities will range from routine monthly and annual testing of the UWF Grid Connection, to monthly inspection of UWF Related Works, to weekly maintenance of the Upperchurch Windfarm. All of these activities will take place from compound and hard-core road areas, with the vast majority of activity taking place on the turbine hardstands, and there will be no requirement for a works area boundary to be erected. Therefore, operational activities will have a Neutral effect on land use.
Decommissioning Stage				
Rationale for Excluding: No potential for impacts/Neutral impacts, UWF Grid Connection will remain part of the National Grid, therefore no impacts can occur.				

Agricultural Land

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Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
UWF Related Works: The cables will be pulled from the Internal Windfarm Cabling ducts at the turbines or at the substation; the ducting, Realigned Windfarm Roads and Haul Route Works will remain in-situ; therefore no decommissioning works to lands are required. The Telecom Relay Pole will be removed, and the compound area reinstated and returned to agricultural use. Due to the very small size of the compound in the context of the land holding (less than 0.005%), Neutral impacts to the landholding will occur. Upperchurch Windfarm: It is likely that the Consented UWF Substation will remain in-situ for use by ESBN and that the Consented UWF Roads will also remain in-situ for use by the landowner. Decommissioning works will be limited to the Consented UWF Turbines, hardstanding areas and associated drainage systems, along with the meteorological masts. All decommissioning works will take place from hard-core areas, with the vast majority of activity taking place on the turbine hardstands. Works area boundaries will not be required for decommissioning activities. Therefore, it is considered that decommissioning activities will have a Neutral effect on land use.				

Topic Land

9.2.5 Mitigation Measures for Impacts to Agricultural Land

Mitigation measures were incorporated into the UWF Grid Connection project design, including the Project Design Measures. No additional mitigation measures are required as the topic authors conclude that **significant impacts are not likely to occur to Agricultural Land**.

9.2.6 Evaluation of Residual Impacts to Agricultural Land

Residual Impacts are the final or intended effects that will occur after mitigation measures have been put into place. No additional mitigation measures are required and thus the Residual Impact is the same as the Impact set out in Impact Evaluation Table sections for Agricultural Land above (Section 9.2.4) – i.e. **no significant adverse impacts**.

9.2.7 UWF Grid Connection Environmental Management Plan

The Project Design measures will be implemented by the Project Manager and the main Contractor during the construction stage, under the Environmental Management Plan for the UWF Grid Connection (EMP). The EMP is appended to this EIA Report as Volume D.
The EMP will be an important contract document for the main construction contractor (Contractor) who will be contractually obliged to comply with the EMP. An Environmental Clerk of Works will be appointed, who will be independent of the construction Contractor, and it will be the responsibility of the Environmental Clerk of Works to monitor the compliance of the Contractor with the EMP through liaising with the Construction Site Manager and the Project Manager, monitoring construction works on a daily basis and by carrying out regular audits on EMP compliance. The Environmental Clerk of Works will be resourced to employ a team of environmental specialists including a Site Ecologist, Site Hydrologist and an Invasive Species Specialist.

9.2.8 Summary of Impacts to Agricultural Land

A summary of the Impact to Agricultural Land is presented in Table 9-8.

Table 9-9: Summary of the impacts to Agricultural Land

Impact to Agricultural Land:	**Loss of Use and Connectivity of Landholdings**
Evaluation Impact Table	*Section 9.2.4.1*
Project Life-Cycle Stage	*Construction/Early Operation*
UWF Grid Connection *direct/indirect impact*	**Imperceptible**
UWF Grid Connection *cumulative impact*	**No Cumulative Impact**
Element 2: UWF Related Works	Neutral Effect
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 9.2.2.2.1
Element 4: Upperchurch Windfarm	Imperceptible
Element 5: UWF Other Activities	No Potential for Impact - Evaluated as Excluded, see Section 9.2.2.2.1
Cumulative Impact:	
Whole UWF Project Effect	**Imperceptible**

The greyed out boxes in the above summary table relate to the cumulative information for the Other Elements of the Whole UWF Project, which are included to show the totality of the project.

Note: No cumulative information for Other Projects or Activities is included in the table above, because no Other Projects or Activities were evaluated as having potential to cause cumulative effects to Agricultural Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project (see Section 9.2.2.2).

9.3 Sensitive Aspect No.2: Forestry Land

This Section provides a description and evaluation of the Sensitive Aspect - Forestry Land.

9.3.1 UWF Grid Connection – EVALUATED AS EXCLUDED

9.3.1.1 Baseline Context and Character of Forestry Land in the UWF Related Works Study Area

Forest cover as a landuse in Ireland was very low at the time of the foundation of the state but since the 1930's there has been a gradual increase in the national forest estate and land cover under forest is now approaching 12%. Afforestation was solely in the hands of the state until the late 1980's but has largely become the domain of private landowners since then. A review of aerial imagery indicates a level of forest cover in the Slievefelim to Silvermines uplands area which is substantially greater than the national average, and is estimated to be 30 to 35% of the land cover.

The UWF Grid Connection traverses one forestry landholding, at the eastern end of the 110kV UGC route, however in this landholding all construction works for the 110kV UGC will take place on an existing private paved road. No felling or off-road works will be required.

9.3.1.2 Evaluation of UWF Grid Connection

UWF Grid Connection was evaluated for its potential to cause impacts to Forestry Lands.

It was evaluated by the topic authors that UWF Grid Connection **will cause Neutral impacts to Forestry Lands,** for the following reasons

- There will be no loss of use impact, as the UWF Grid Connection is not located within any forestry plots
- The magnitude of connectivity loss impacts will be neutral, as the extent of UWF Grid Connection on forestry land is limited to one private paved road through one landholding.
- There will be no landuse change in this landholding, as the private paved road through forestry lands will be reinstated following construction works.
- There will be no potential for improvements to forestry infrastructure, as the UWF Grid Connection will not involve upgrading or new access roads in forestry lands.
- There will be no potential for effects to growth or harvesting of the adjacent forestry due to the location of the 110kV UGC under the existing private paved road.

9.3.1.3 Cumulative Evaluation for the Other Elements of the Whole UWF Project (grey background)

UWF Grid Connection is part of a whole project which comprises the following Other Elements; Element 2: UWF Related Works, Element 3: UWF Replacement Forestry, Element 4: Upperchurch Windfarm (UWF), and Element 5: UWF Other Activities. The Subject Development, UWF Grid Connection is Element 1. All five elements are collectively referred to as the Whole UWF Project in this EIA Report.

UWF Grid Connection will cause Neutral impacts to Forestry Lands by itself, and therefore any cumulative effects will be negligible. However, the Other Elements must be considered because the UWF Grid Connection is part of a whole project. Therefore, the cumulative information and evaluations for the Other Elements of the Whole UWF Project are included in Section 9.3.2 to Section 9.3.4 and included in the summary table in Section 9.3.8 in order to show the totality of the project.

Forestry Land

Sensitive Aspect

9.3.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

9.3.2.1 Cumulative Evaluation Study Areas

9.3.2.1.1 UWF Grid Connection Cumulative Evaluation Study Area

The UWF Grid Connection have been excluded as a source of impacts (either positive or negative) to Forestry Lands primarily due to the location of works on the existing private paved road, with no works in off-road plots.

9.3.2.1.2 Whole Project Cumulative Evaluation Study Area

UWF Grid Connection is part of a whole project which comprises the following Other Elements; Element 2: UWF Related Works, Element 3: UWF Replacement Forestry, Element 4: Upperchurch Windfarm (UWF), and Element 5: UWF Other Activities. The Subject Development, UWF Grid Connection is Element 1. All five elements are collectively referred to as the Whole UWF Project in this EIA Report.

UWF Grid Connection will cause Neutral impacts to Forestry Lands by itself, and therefore will not cause noticeable cumulative effects. However, the Other Elements must be considered because UWF Grid Connection is part of a whole project. Therefore, the cumulative information and evaluations for the Other Elements of the Whole UWF Project are included in Section 9.3.2 to Section 9.3.4 and included in the summary table in Section 9.3.8 in order to show the totality of the project.

A description of these Other Elements is included in this EIA Report at Appendices 5.3, 5.4, 5.5 and 5.6**,** in Volume C4 EIAR Appendices**.** Scoping of these Other Elements is presented in Section 9.3.2.2.1 below.

The Whole Project Cumulative Evaluation Study Area comprises of the UWF Grid Connection Study Area along with the study areas for Other Elements which are described in Table 9-9, and illustrated on Figure WP 9.3: Whole Project Study Area for Forestry Lands.

Table 9-10: Cumulative Evaluation Study Area for Forestry Land

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 2: UWF Related Works	Boundary of works areas in general, and the individual landholdings where there is any potential to split parcels of land	Impacts limited to areas of physical disturbance and any restriction of access.
Element 3: UWF Replacement Forestry		
Element 4: Upperchurch Windfarm (UWF)		
Element 5: UWF Other Activities		

Land

Topic

9.3.2.2 Scoping for Other Projects or Activities & Potential for Impacts

The evaluation of cumulative impacts to Forestry Land also considered Other Projects or Activities. A scoping exercise was carried out to determine which projects or activities, if any, have potential to cause cumulative effects to Forestry Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project and therefore should be brought forward for evaluation in this topic chapter. A brief overview of the Other Projects or Activities and the scoping exercise by the topic author is included in Appendix 2.1: Scoping of Other Projects or Activities for the Cumulative Evaluations (Section A2.1 .4.15).

The results of this scoping exercise are that: it is evaluated that no Other Projects or Activities are likely to cause cumulative effects with either the UWF Grid Connection or the Other Elements of the Whole UWF

Project, and therefore no Other Projects or Activities are scoped in for evaluation of cumulative effects to Forestry Land.

9.3.2.2.1 Potential for Other Elements or Other Projects to cause Impacts to Forestry Lands

An evaluation was carried out by the topic author of the likelihood for the Other Elements of the Whole UWF Project to cause cumulative effects to the Sensitive Aspect Forestry Land. The results of this evaluation are included in Table 9-10. The location of, and study area boundary associated with, the Other Elements which are included for cumulative evaluation is illustrated on Figure WP 9.3.

Table 9-11: Results of the Evaluation of the Other Elements of the Whole UWF Project

Other Elements of the Whole UWF Project	
Element 2: UWF Related Works	Included for the evaluation of cumulative effects
Element 3: UWF Replacement Forestry	Evaluated as excluded: Neutral effect/No potential for effects due to • No potential for loss of use or loss of connectively impacts, as the land is currently set to agricultural grassland. • Neutral positive land use change impacts - While 6ha of agricultural land will change use to forestry at the UWF Replacement Forestry site, it is considered that a Neutral effect to Land will occur as the use of land is changing from one main land use to another. • No potential for improvements to forestry infrastructure, as there will be no new or upgraded roads associated with the UWF Replacement Forestry. • No potential for effects during the growth stage, due to the very small scale of activities associated with site management, and the absence of any requirement to restrict access along the existing farm access road. • No potential for harvesting related impacts, as the UWF Replacement Forestry will be permanent woodland and will not be harvested.
Element 4: Upperchurch Windfarm (UWF)	Included for the evaluation of cumulative effects
Element 5: UWF Other Activities	Evaluated as excluded: Neutral effect/No potential for effects due to: • The Haul Route Activities are located entirely within the public road corridor and do not require any works to adjoining lands, therefore no impacts to forestry land or landuse can occur. • Monitoring Activities do not require any works to land or result in land use change, therefore no impacts can occur. • Upperchurch Hen Harrier Scheme: no potential for impacts, as all activities and management practices will take place on agricultural lands. • The Overhead Line Activities will involve access over forestry lands using established access routes mainly along existing tracks and along forestry firebreaks. No works are required to lands, and activities are limited to in situ pole sets and angle masts and the existing overhead line, therefore there is no potential for effects to forestry lands or landuse.

Forestry Land

Sensitive Aspect

9.3.2.3 Cumulative Information: Baseline Characteristics – Context & Character

In the Whole UWF Project context, forestry lands occurs within the landholdings the subject of the Upperchurch Windfarm and the UWF Related Works.

9.3.2.3.1 Element 2: UWF Related Works

Just over a half of UWF Related Works construction works areas relate to sections of Internal Windfarm Cabling which will be located within Consented UWF Roads. In relation to the remaining UWF Related Works areas, a small proportion (6%) will be located on forestry lands with 1.3 hectares of land within construction works areas spread across 6 no. forestry landholdings. These 6 No. landholdings together have a total area of c.112 hectares. 5 of the 6 No. forestry landholdings will also contain Upperchurch Windfarm works areas.

9.3.2.3.2 Element 3: UWF Replacement Forestry

Not applicable – Element evaluated as excluded. See Section 9.3.2.2.1

9.3.2.3.3 Element 4: Upperchurch Windfarm

The footprint of the Upperchurch Windfarm will be 56.3 hectares of lands, 9.8 hectares of which are forestry lands. In relation to landholdings, 5 No. forestry landholdings, which together have a total area of c.104 hectares, are associated with the Upperchurch Windfarm.

Consideration of the Passage of Time: There has been no material changes in landholdings in the Upperchurch Windfarm since 2014, as there has been no change to the proportion of forestry land at the windfarm. It is therefore considered that the descriptions in the 2013 and 2014 documents remain relevant to the cumulative evaluations in this 2019 EIAR for UWF Grid Connection.

9.3.2.3.4 Element 5: UWF Other Activities

Not applicable – Element evaluated as excluded. See Section 9.3.2.2.1

9.3.2.3.5 Other Projects or Activities

Not applicable – No Other Projects or Activities were scoped in for evaluation of cumulative effects, see Section 9.3.2.2.

Land

Topic

9.3.3 PROJECT DESIGN MEASURES for Forestry Land

Impacts to Forestry Lands were avoided through Alternatives Considered which avoided any UWF Grid Connection works within forestry plots. There are no additional Project Design Environmental Protection Measures specific to Forestry Land.

Cumulative Information: Potential or likely significant impacts caused by the Other Elements of the Whole UWF Project were avoided, prevented or reduced by incorporating Project Design Measures into the design of the UWF Related Works and into the consented design of the Upperchurch Windfarm. These Project Design Measures are included in the description of these Elements, and can be found in this EIA Report in Appendices 5.3 and 5.5, in Volume C4: EIAR Appendices.

9.3.4 EVALUATION OF IMPACTS to Forestry Land

It is evaluated that UWF Grid Connection has no potential to cause impacts greater than Neutral to Forestry Lands, and therefore this sensitive aspect has been excluded in relation to the UWF Grid Connection project, see Section 9.3.1.

This Section evaluates the **likely cumulative effects of Other Elements** of the Whole UWF Project (in particular the Upperchurch Windfarm) and Other Projects or Activities.

A conceptual site model exercise was carried out to facilitate the identification of source-pathway-receptor links between the project (source) and the sensitive aspect (receptor) - Forestry Land.

As a result of the exercise, some impacts were included and some were excluded.

Table 9-12: List of all Impacts included and excluded from the Impact Evaluation Table sections

Impacts Included (Evaluated in the Impact Evaluation Table sections)	***Impacts Excluded*** *(Justification at the end of the Impact Evaluation Table sections)*
Loss of Use and Connectivity of Landholdings (Construction stage)	*Reduction in forest growth rates due to a change in the drainage regime (construction stage)*
	Change of land use (operational stage)
	Improvement in infrastructure (operational stage)
	Loss of use and connectivity of land through the splitting of parcels of land (operational stage)
	Decommissioning Effects

The source-pathway-receptor links for the impact included are described in the Impact Evaluation Table in the next section - **Section 9.3.4.1.**

The source-pathway-receptor links and the rationale for impacts excluded are described in the section directly after the Impact Evaluation Table, in Section 9.3.4.2.

9.3.4.1 Impact Evaluation Table: Loss of Use and Connectivity of Landholdings

Evaluation of UWF Grid Connection Excluded: As the location of UWF Grid Connection is limited to an existing private paved road through 1 No. forestry landholding, impacts to Forestry Lands will be Neutral as a result of the construction of the UWF Grid Connection, and consequently this project will not cause measurable cumulative effects.

However, the Other Elements must be considered because the UWF Grid Connection is part of a whole project. Therefore, the cumulative information and evaluation for the Other Elements of the Whole UWF Project are included in this Impact Evaluation Table, in order to show the totality of the project.

Impact Description for the Other Elements of the Whole UWF Project	
Project Life Cycle Stage:	Construction & Early Operational Stage
Cumulative Impact Source: Construction works, forestry felling, haul routes on forestry roads Impact Pathway: Forestry plots, forestry roads, presence of construction/delivery machinery Impact Description: Forestry lands (not forestry roads) within the construction works areas associated with UWF Related Works and Upperchurch Windfarm will be fenced off and unavailable for forestry use during construction and in the early operational stage until vegetation has re-established on construction works areas. Construction machinery and construction works will also be present on some sections of forestry roads, although alternative access routes are available in forestry lands, which will avoid the disconnection of forestry lands in most instances. Impact Quality: Negative	
Cumulative Information: Individual Evaluations of Other Elements of the Whole UWF Project	
Element 2: UWF Related Works	
Impact Magnitude: The construction works areas are located on 1.3 hectares of forestry land spread over 6 No. landholdings, with a total forestry landholding area of c.112 hectares. Haul routes are located on 0.9 km of the existing forestry road network.	
Significance of the Impact: Imperceptible	
Rationale for Impact Evaluation: • the small scale (1%) of lands subject to works, in the context of the size of forestry landholdings • the temporary duration (up to 1 year), • the reversibility of the impact with the completion of the works, and • the alternative access available on forestry landholdings.	
Element 3: UWF Replacement Forestry – *N/A, evaluated as excluded, see Section 9.3.2.2.1*	
Element 4: Upperchurch Windfarm	
Impact Magnitude: The footprint of the Upperchurch Windfarm comprises 56.3 hectares. Construction works will take place on 9.8 hectares of forestry land over 5 No. landholdings, with a total landholding area of c.104 hectares.	
Significance of the Impact: Slight	
Rationale for Impact Evaluation: • the small scale (9%) of lands subject to works, in the context of the size of forestry landholdings, • the temporary to short-term duration (up to 1.5 years), and,	

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• the alternative access available on forestry landholdings.
Element 5: UWF Other Activities – *N/A, evaluated as excluded, see Section 9.3.2.2.1*
Evaluation of Other Cumulative Impacts – Loss of Use and Connectivity of Landholdings
Whole UWF Project Effect
Magnitude: In total, construction works are located on 11.2 hectares of forestry lands, spread over 6 landholdings with a total landholding area of c.112 hectares.
Significance of the Whole Project Effect: Imperceptible
Rationale for Impact Evaluation: • the small scale (10%) of lands subject to works, in the context of the size of forestry landholdings, • in the context of the abundance of forestry landholdings in this upland area; • the temporary duration • the reversibility of the impact with the completion of the works, and, • the alternative access available on forestry landholdings.

Note: No cumulative evaluation of Other Projects or Activities is included in the table above, because no Other Projects or Activities were evaluated as having potential to cause cumulative effects to Forestry Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project (see Section 9.3.2.1).

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9.3.4.2 Description and Rationale for Excluded (scoped out) Impacts

The source-pathway-receptor links and the rationale for impacts excluded from the Impact Evaluation Table sections are described in Table 9-12 below.

Table 9-13: Description and Rationale for Excluded Impacts to Forestry Land

Key: 1: UWF Grid Connection; 2: UWF Related Works; 3: UWF Replacement Forestry; 4: Upperchurch Windfarm; 5: UWF Other Activities

Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
Construction Stage				
Trench and Foundation excavations	1,2,4	Ground-water flow paths	Reduction in forestry growth rates due to a change in the drainage regime	Rationale for Excluding: Neutral impact, As per Chapter 11: Water, due to the shallow nature of the trenches and excavations associated with the Individual Project Elements, the impact on groundwater will be of imperceptible significance within 30m and Neutral beyond this distance. Based on the evaluation contained in Chapter 11 Water, it is considered that any reduction in forest growth rates caused by a change in the drainage regime will have a Neutral effect on the productivity of land.
Operational Stage				
Forestry felling, afforestation, presence of above ground structures	2,4	Land cover	Change of land use	Rationale for Excluding: Neutral impact, in relation to the UWF Related Works and Upperchurch Windfarm, it is considered that due to the very small scale of land use change (less than 1% of the landholding area) that a Neutral effect to forestry lands will occur.
Construction of new access roads & upgrading of existing private roads	2,4	Private Roads	Improvement in infrastructure	Rationale for Excluding: Neutral impact, in relation to the UWF Related Works and Upperchurch Windfarm, although the upgrade of forestry roads and the construction of some short lengths of new roads will be a positive effect on forestry landholdings, the scale of road upgrading or construction will equate to 3.3% of the landholding areas. Therefore, it is considered that the upgrade/construction of roads will have a Neutral effect to the productivity or use of forestry lands.
Operational activities	1,2,4	Work area boundaries	Loss of use and connectivity of land through the splitting of parcels of land	Rationale for Excluding: Neutral impact, maintenance activities will range from annual testing of the UWF Grid Connection 110kV, to monthly inspection of UWF Related Works, to weekly maintenance of the Upperchurch Windfarm. All of these activities will take place from road/hard-core areas, with the vast majority of activity taking place on the turbine hardstands, and there will be no requirement for a works area boundary to be erected. Therefore operational activities will have a Neutral effect on land use.
Decommissioning Stage				
Rationale for Excluding: No potential for impacts/Neutral impacts: UWF Grid Connection will remain part of the National Grid, therefore no impacts can occur. UWF Related Works: The cables will be pulled from the Internal Windfarm Cabling ducts at the turbines or at the substation; the ducting, Realigned Windfarm Roads and Haul Route Works will remain in-situ; therefore, no decommissioning works to lands are required.				

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Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
Upperchurch Windfarm: It is likely that the Consented UWF Substation will remain in-situ for use by ESBN and that the Consented UWF Roads will also remain in-situ for use by the landowner. Decommissioning works will be limited to the Consented UWF Turbines, hardstanding areas and associated drainage systems, along with the meteorological masts. All decommissioning works will take place from hard-core areas, with the vast majority of activity taking place on the turbine hardstands. Works area boundaries will not be required for decommissioning activities. Therefore, it is considered that decommissioning activities will have a Neutral effect on land use.				

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9.3.5 Mitigation Measures for Impacts to Forestry Land

Mitigation measures were incorporated into the UWF Grid Connection project design, including the Project Design Measures. No additional mitigation measures are required as the topic authors conclude that **significant impacts are not likely to occur to Forestry Land**.

9.3.6 Evaluation of Residual Impacts to Forestry Land

Residual Impacts are the final or intended effects that will occur after mitigation measures have been put into place. No additional mitigation measures are required and thus the Residual Impact is the same as the Impact set out in Impact Evaluation Table sections for Forestry Land above (Section 9.3.4) – i.e. **no significant adverse impacts**.

9.3.7 UWF Grid Connection Environmental Management Plan

The Project Design measures will be implemented by the Project Manager and the main Contractor during the construction stage, under the Environmental Management Plan for the UWF Grid Connection (EMP). The EMP is appended to this EIA Report as Volume D.
The EMP will be an important contract document for the main construction contractor (Contractor) who will be contractually obliged to comply with the EMP. An Environmental Clerk of Works will be appointed, who will be independent of the construction Contractor, and it will be the responsibility of the Environmental Clerk of Works to monitor the compliance of the Contractor with the EMP through liaising with the Construction Site Manager and the Project Manager, monitoring construction works on a daily basis and by carrying out regular audits on EMP compliance. The Environmental Clerk of Works will be resourced to employ a team of environmental specialists including a Site Ecologist, Site Hydrologist and an Invasive Species Specialist.

9.3.8 Summary of Impacts to Forestry Land

A summary of the Impact to Forestry Land is presented in Table 9-13.

Table 9-14: Summary of the impacts to Forestry Land

Impact to Forestry Land:	**Loss of Use and Connectivity of Landholdings**
Evaluation Impact Table	*Section 9.3.4.1*
Project Life-Cycle Stage	*Construction/early operational*
UWF Grid Connection Impact	**Neutral Impact - evaluated as excluded**
Element 2: UWF Related Works	Imperceptible
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 9.3.2.2.1
Element 4: Upperchurch Windfarm	Slight
Element 5: UWF Other Activities	No Potential for Impact - Evaluated as Excluded, see Section 9.3.2.2.1
Cumulative Impact:	
Whole UWF Project Effect	**Imperceptible**

The greyed out boxes in the above summary table relate to the cumulative information for the Other Elements of the Whole UWF Project, which are included to show the totality of the project.

Note: No cumulative information for Other Projects or Activities is included in the table above, because no Other Projects or Activities were evaluated as having potential to cause cumulative effects to Forestry Land with either the UWF Grid Connection or the Other Elements of the Whole UWF Project (see Section 9.3.2.2).

9.4 Reference List

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