UWF Grid Connection EIA Report (2019)

Volume C2: EIAR Main Report

Chapter 14: Material Assets (Built Services)

October 2019

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Material Assets (Built Services)

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There are no appendices associated with this topic chapter.	

Appendices referenced in this topic chapter can be found in **Volume C4 EIAR Appendices.**

Glossary of Terms

Term	Definition
Sensitive Aspect	Any sensitive receptor in the local environment which could be impacted by the project.
Project Design Measure	Measures for environmental protection, incorporated into the design of the project.

List of Abbreviations

Abbreviation	Full Term
PD	Ecopower Project Design Environmental Protection Measure developed by members of the EIAR Team
AMM	Ecopower Additional Mitigation Measure developed by members of the EIAR Team
Electrical grid	An interconnected network for delivering electricity from producers (generators such as windfarms) to consumers (industrial, business and residential electricity users).
LV	Low Voltage
MV	Medium Voltage – i.e. 10kV – 20kV (10,000 -20,000 Volts)
HV	High voltage – i.e. 38kV, 110kV and 220kV (38,000, 110,000 volts and 220,000 volts re-spectively)
UGC	Underground Cables
UWF	Upperchurch Windfarm

Executive Summary of the Material Assets (Built Services) Chapter

Baseline Environment: The Built Services in the area are mainly made up of underground water supply pipes, and overhead telephone and medium to high voltage electricity lines.

UWF Grid Connection will involve the connection of a new substation onto the Killonan – Nenagh 110kV overhead line (OHL) which originates in the Killonan 220kV Station and ends in the Nenagh 110kV Substation. The Killonan Station is the main bulk supply point for the Mid-West region using numerous regional networks at all voltages (110kV, 38kV and 20kV). One of these regional networks is the Killonan to Nenagh 110kV OHL.

Survey Results for Local Built Services in the Baseline Environment: A GPS survey of all existing Irish Water/Eir/ESBN Networks services within 20m of UWF Grid Connection works areas was conducted. Driven surveys of the 110kV UGC route were carried out with Irish Water Newport Regional Water Supply and Kilcommon supply Area Managers. There are Irish Water mains under all of the Regional Road 110kV route and also along the Local Roads between Irish Water wells in Carrowkeale townland and the Newport Regional Water Treatment plant in New Ross townland (L6009-0 and L2157-0). Project Design Measure PD09 to ensure protection of Irish Water assets, was developed as a result of these meetings.

Summary of the likely Impact on Local Residents & Community - Water Supply: During excavation works for cables trenches and joint bays for the 110kV UGC, existing water pipes under the road could be damaged and supply interrupted. The likely impact is evaluated as **Neutral** due to the implementation of project design environmental protection measures such as confirmatory consultations with Irish Water, Eir and ESB; review of all relevant infrastructure mapping before works; confirmatory ground surveys at service locations to be carried out ahead of works; excavations will be hand dug within 500mm of pipes; a banksman will accompany each excavator to oversee all excavation works and close contact with the local Newport Regional Supply office at Newross will be maintained by the Environmental Clerk of Works throughout the construction of the 110kV UGC. **Likely Cumulative effects will also be Neutral** due to project design measures including timing of works so that they don't coincide with Other Elements of the Whole UWF Project in the Knockmaroe/ Knockcurraghbola Crownlands area.

Summary of the Likely Impact on the Transmission System: it was evaluated that any interruptions to power supplies will be Neutral, with no potential for cumulative impacts due to the planning of supply outages on the system. While the addition of a control point on the existing Killonan – Nenagh Overhead Line will be a positive impact, it is in the context of the large extent of the national transmission system network. Other Projects (such as the consented Castlewaller Windfarm or potential Bunkimalta Windfarm) will not cause cumulative impacts as these projects are not expected to involve the construction of new substation assets on this OHL.

Conclusion: The UWF Grid Connection will not cause significant adverse effects to Material Assets (Built Services).

Topic Material Assets (Built Services)

14 Environmental Factor: Material Assets (Built Services)

14.1 Introduction to the Material Assets (Built Services) Chapter

14.1.1 What is Material Assets (Built Services)?

Built Services relate to the pipes, overhead lines, underground cables and wireless signals which supply drinking water, electricity, telephone and broadband services to houses, businesses and community facilities.

Water supply relates to the network of water mains and pipes which are part of the public Irish Water network. Pipes and mains related to private water supply (in the form of group schemes) are also considered, however the sources of water supply (i.e. wells, springs etc) are evaluated in Chapter 11: Water.

Electricity supply relates to both the local Low Voltage (LV), Medium Voltage (MV) such as the 20kV networks which supply local houses and businesses; and high voltage 38kV, 110kV and 220kV lines which form part of the electricity system.

Communications supply relates to the overhead lines and underground telecommunication cables, which form part of the Eir network. Communications supply also relates to privately owned telecommunication masts and associated wireless signals.

14.1.2 Overview of Built Services in the Local Environment

The Built Services in the area are mainly made up of overhead telephone and electricity lines, and underground water supply pipes.

The overhead telephone lines which are located along roadside boundaries, and overhead electricity lines are generally located in fields close to the local roads, both of these services are connected to local residences and well as community facilities and local businesses. Local electricity supply in the upland area is fed from a number of 38kV substations, including at Birdhill, Silvermines and Cappamore. Other above-ground built services include a telecommunications mast, known as the Foilnaman Mast, at Knockmaroe, along with other small masts in the wider area. There is a small Eir exchange building in Rear Cross village.

There are two high voltage lines near Newport, in the Mountphilips/Coole area - a 110kV overhead line and a 220kV overhead line, which are both connected to the Killonan Station, near Limerick City. The 220kV OHL is routed through the Mountphilips Substation site, and the Mountphilips Substation will be looped onto the 110kV OHL via the new End Masts.

There is one water treatment plant owned and operated by Irish Water in the area – the Newport Regional Water Supply, which supplies the towns of Newport and Ballina and the village of Birdhill. These water supplies are via underground water mains, which are located in and along public roads. Some of the water pipes in the Carrowkeale/Castlewaller area connect one of the sources of the Newport Regional Water Supply to the Irish Water treatment plant in Newross. There is also an Irish Water reservoir in Knocknabansha which supplies the villages of Kilcommon and Rear Cross.

The Newport Regional Water Supply sources comprise surface water abstractions and groundwater wells, sources include surface water abstractions from the Newport River upstream of Rockvale Bridge, close to the water treatment plant, and a small group (3 no.) of groundwater borehole wells in the townland of Castlewaller, ~0.7km to south of the Newport RWS plant. The water from the wells in Castlewaller is piped

to the Newport Regional Water Supply via mains placed in the public road, including pipes affixed to the outside of parapet walls at existing bridge crossings over 110kV UGC watercourse crossing points W8 and W9.

The location of the UWF Grid Connection is illustrated on OSI Mapping on Figure GC 14.1: Location of the UWF Grid Connection, which can be found in **Volume C3 EIAR Figures.**

14.1.3 Sensitive Aspects of the Material Assets (Built Services) 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	Local Residents & Community	Section 14.2
Sensitive Aspect No. 2	Electricity Transmission System	Section 14.3

Each of the above listed Sensitive Aspects are evaluated individually in Sections 14.2 to 14.3 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 14.2 to 14.3. The colour-codes have been applied to section headings, tables and on side-tabs on the edge of the pages.

14.1.4 Sensitive Aspects excluded from further evaluation

The following Sensitive Aspects **are excluded from this topic chapter**:

Built Services Infrastructure & the Owners & Operators of Built Services Infrastructure *(Owners/Operators of Public Water Mains and Pipes, Electricity Lines, Telephone Lines and Communication Cables, Telecommunication Masts, Gas Mains and Pipes, Waste Water pipes and treatment plants, private water supply pipes)*	Evaluated as excluded, no likely effects/ Neutral effects No likely impact during construction works due to the implementation of project design measures, including confirmatory surveys, consultation with the service owners and operators, and the use of goal posts and supervision. Notwithstanding the above, Neutral impact (worst case impact) due to the very small extent (62 km of underground water pipes, 73km of overhead electricity lines, 58km of overhead telephone line, 3km of underground electricity cables and 3km of underground communication cables) which could be affected by the UWF Grid Connection in the context of the size of the networks nationally. Each service equates to less than 0.1% of the owner/operators national networks – 63,000km of water mains, 150,000km of electricity lines[1], and overhead telephone lines and underground Eir communication cables supplying c.2 million customers in Ireland[2].
Newport Regional Water Supply	Evaluated as excluded: no likely effects/Neutral Effects There is one water treatment plant owned and operated by Irish Water in the area – the Newport Regional Water Supply, which supplies the towns of Newport and Ballina and the village of Birdhill. There is a groundwater source for the Newport RWS comprising borehole wells in the townland of Castlewaller. The water from the wells in Castlewaller is piped to the New-port Regional Water Supply via mains placed in the public road, including

[1] https://www.esbnetworks.ie/who-we-are/our-networks
[2] https://www.eir.ie/pressroom/

	pipes affixed to the outside of parapet walls at existing bridge crossings over 110kV UGC watercourse crossing points W8 and W9. Damage to these supply mains are not likely to occur with the implementation of Project Design Measures (see Section 14.2.3) and the design of the watercourse crossing works at W8 and W9 which will involve directional drilling under the watercourse rather than works over the bridge structures. In the unlikely event of damage to these mains, effects will have no practical implication on the regional supply due to the alternative sources available (abstraction from the Newport River) and the brief duration of any loss of supply due to the stocking of repair materials at works locations and the ongoing communication with the regional supply office during works.
Shannonbridge – Killonan 220kV Overhead Line	Evaluated as excluded, no likely effects Both the 110kV UGC and new access road to Mountphilips Substation pass under the 220kV overhead lines, which will result in construction works being carried out, and construction traffic passing, under the lines. It is evaluated that there is no likelihood of these lines being damaged during construction works – due to the implementation of UWF Grid Connection project design measures, including confirmatory surveys, consultation with EirGrid, the use of goal posts and supervision of the works. Additionally, the Code of Practice for Avoiding Danger from Overhead Electricity Lines 2019 will be implemented as part of standard construction practices for the project.

14.1.5 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 14-1 below.

Table 14-1: 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.

14.1.5.1 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.

14.1.6 The Authors of the Material Assets (Built Services) Chapter

This report on the Environmental Factor Material Assets - Built Services, was written by a number of authors.

The Water supply sections have been written by David Tarrant and Daithí Barrett both with project experience relating to the proposed type of works. David Tarrant is a Chartered Engineer with TLI Group with over 12 years' experience in the Irish construction sector and currently a lead civil design engineer with TLI Group. Daithí Barrett is a Lead Environmental Scientist within TLI Group and has over 6 years' experience dealing specifically with environmental issues relating to the utility sector. TLI Group is a utility infrastructure consultancy and construction company, operating extensively within the utilities sector both in Ireland and internationally.

The Water supply sections have been reviewed by David Broderick (BSc, H. Dip Env Eng, MSc): Hydrogeologist and Michael Gill (B.A., B.A.I., M.Sc., Dip. Geol, MIEI): Environmental Engineer of Hydro-Environmental Services (HES). HES specialise in surface water and groundwater management including water supply development and protection.

The Electricity supply and Transmission System sections have been written by Ruairí Geary, Chartered Engineer, who is a design team leader within TLI Group. Ruairí has over 10 years' experience in a wide range of Electrical/Mechanical engineering projects, specialising in the area of distribution and transmission network design, and in particular working on the ESBN/Eirgrid systems.

The Communications supply sections have been written by Kevin Hayes (Masters in Electronic Engineering and a Software Design Engineer) of Ai Bridges. Kevin has in excess of 15 years of experience in telecommunications network design, analysis and troubleshooting of radio frequency issues and development of telecommunication projects. Services provided by Ai Bridges include; Electromagnet Interference (EMI) Impact studies, TV interference Remediation, Aviation & Radar Studies, Hot Zone Studies and also expert witness reporting for planning and post-planning application requirements.

14.1.7 Sources of Baseline Information

The information sources outlined in Table 14-2 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 14-2: Sources of Baseline Information for Material Assets (Built Services)

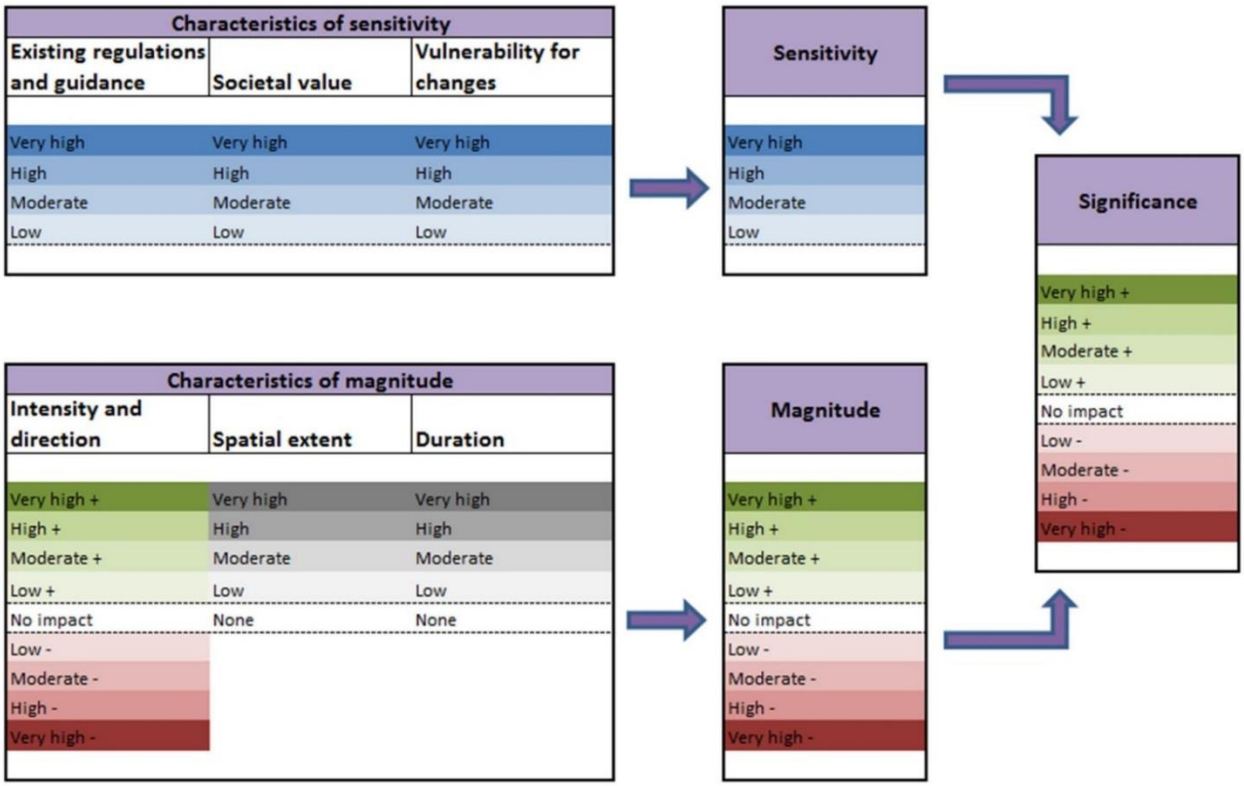
Type	Source
Consultation	Feedback was received from: • Infrastructure owners; ESB Networks, EirGrid, Eir, Irish Water, Airspeed, Three Ireland, and Gas Networks Ireland, • House calls to a number of local residents and local landowners regarding water supply • National Federation of Group Water Schemes • Irish Water Area Managers – Newport Area, Kilcommon Area See Chapter 3: The Scoping Consultations, Chapter 3 Appendices for further details.
Guidelines	• Irish Water (2016): Connections and Developer Services – Code of Practice for Water Supply Infrastructure (A Design and Construction Guide for Developers); and, • Health and Safety Authority (2016): Code of Practice for Avoiding Danger from Underground Services, • Health and Safety Authority (2019): Code of Practice for Avoiding Danger from Overhead Electricity Lines.
Desktop	• Review of Irish Water Services Mapping • Review of Eir Mapping • Review of ESBN Existing Asset Database • Review of Eirgrid 110kV Functional Specifications • Review of ESB Networks Functional Specifications • Review of Gas Networks Ireland Mapping • Review of ComReg Quarterly Key Data Report Q1 2017 • Modelling of microwave radio link paths to/from Foilnaman Telecommunications Mast • Review of Chapter 11: Water • Review of the existing EIS and planning documents for the Other Elements of the Whole UWF Project (i.e. the consented Upperchurch Windfarm, consented UWF Replacement Forestry, proposed UWF Related Works (currently under appeal to An Bord Pleanála)), contained in Volume F.
Fieldwork	• Survey of all construction works areas for UWF Grid Connection • GPS survey of all existing Irish Water/Eir/ESBN networks within 20m of UWF Grid Connection works areas • Route Survey with Matthew O'Leary Newport Area Manager Irish Water and Donal Ryan Kilcommon Area Manager Irish Water in August 2019.

14.1.8 Methodology used to Describe the Baseline Environment and to Evaluate Impacts

There are no specific guidelines on the evaluation of effects to Material Assets for an EIA Report. In this chapter, the methodology for evaluating impacts to the Material Asset – Built Services, uses a standard methodology – the IMPERIA methodology. The IMPERIA methodology is described in Section 14.1.8.1 below.

14.1.8.1 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.

14.1.8.1.1 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.

14.1.8.1.2 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 (green) 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.

14.1.8.2 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'.

14.1.9 Certainty and Sufficiency of the Evaluation/Information

The information which informed the baseline descriptions and impact evaluations was collated from data and maps (mapped water mains, overhead lines and underground etc) which were obtained through consultation with the service owners, i.e. Eir, ESBN, Irish Water etc. In all cases the most recent data and publications are relied upon. The location of services identified on the Eir, ESBN and Irish Water mapping were confirmed through surveys of the entire 110kV UGC route along the public road network.

In respect of Built Services, no significant limitations or difficulties were encountered.

14.2 Sensitive Aspect No.1: Local Residents & Community

This Section provides a description and evaluation of the Sensitive Aspect - Local Residents & Community.

Local Residents & Community relates to the local residences, businesses and community facilities that are connected to Built Services.

14.2.1 BASELINE CHARACTERISTICS of Local Residents & Community

14.2.1.1 STUDY AREA for Local Residents & Community

The study area for Local Residents & Community in relation to the UWF Grid Connection is described in Table 14-3 and illustrated on Figure GC 14.2: UWF Grid Connection Study Area for Local Residents & Community (Built Services) (Volume C3 EIAR Figures).

Table 14-3: UWF Grid Connection Study Area for Local Residents & Community

Study Area for Local Residents & Community	Justification for the Study Area Extents
Local residences, businesses and community facilities connected to: - underground pipes or cables within the UWF Grid Connection construction works area boundary, - overhead lines within 7m of the UWF Grid Connection construction works area boundary to allow for machinery movement. The extent of the study area is from the fault point to the nearest valve/transformer/cabinet.	Effects are limited to direct physical damage to the lines, pipes or cables during construction works. The extent of the study area is limited to those local residents/businesses/facilities using Irish Water/Eir/ESB services who could be affected by an outage and whose service cannot be re-directed through another part of the Irish Water/Eir/ESB networks.

14.2.1.2 Baseline Context and Character of Local Residents & Community in the UWF Grid Connection Study Area

The majority of Built Service users in the UWF Grid Connection Study Area comprise local residences. The number of businesses in the locality is few, and while most people commute to work, there may be a small number of people who use their house to work from home or as a home-office. Farming is an important enterprise in the study area, with farmsteads and farmyards scattered throughout the locale. There are also community facilities in the area, particularly in Newport town and Rear Cross village and along the regional R503 road.

During consultations with Irish Water, ESBN and Eir, a number of overhead and underground services were identified and mapped, and verified by the various authors of this chapter during site investigations. The properties in the area which could be connected to these Built Services were also identified through desktop and field surveys. The location of these services and the associated Local Residents & Community are outlined on Table 14-4 and illustrated on Figure GC 14.2.

Table 14-4: Summary of Local Residents & Community connected to Irish Water, ESB and Eir networks in the UWF Grid Connection Study Area

Project Element	Local Residents & Community connected to Irish Water Mains	Local Residents & Community connected to Local ESB Network	Local Residents & Community connected to the Local Eir Network
UWF Grid Connection	C.543 No. properties connected to 14 No. lengths of Irish Water Mains A water mains run parallel to the 110kV UGC in the L2166-0, L6013-0, L2156-0, L2157-0, L6009-0, R503 and L2264-50	C.716 No. properties connected to 65 No. overhead electricity lines and 1 No. underground electricity cable. These overhead lines and underground cable are generally located in fields beside the road network.	C.490 No. properties connected to 32 No. overhead lines telephone lines and 7 No. underground telephone lines These overhead lines are generally located in roadside boundaries.

14.2.1.3 Importance of Local Residents & Community

It is considered that public water supply is highly valued, as it is likely to be the sole source of water for most Irish Water customers.

Electricity supply is also considered to be of high value as the sole source of electricity for most local residents and businesses.

Fixed line telephone and broadband services, on the other hand, have less of an importance locally due to the availability and widespread use of mobile phones and wireless signals.

14.2.1.4 Sensitivity of Local Residents & Community

Local Residents & Community are sensitive to any temporary loss of built services due to damage to pipes, cables or overhead lines or due to planned outages. Based on the IMPERIA criteria (outlined in Section 14.1.8), the Sensitivity of Local Residents & Community is evaluated as **Moderate**.

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

Irish Water are currently undertaking a national programme of works on their networks to reduce leakage and improve water supply nationally. As part of their Capital Investment Programme, the water treatment plant and network associated with the Newport Regional Water Supply Scheme was upgraded in 2017[3]. Discussions with Irish Water (pers. comms Newport Regional Water Supply, September 2019) did not identify any upcoming plans to upgrade or reduce leakage on the local networks within the study area.

The electricity network is being continuously upgraded through refurbishment programs and expanded through new connections, though this is happening slowly, particularly in rural areas such as the study area.

In recent years the popularity and adoption of mobile telephones and mobile broadband has grown significantly and the dependence on fixed line telephone service using traditional overhead lines or underground cables is decreasing. This trend is likely to continue especially in rural areas where the use of fixed line telephone services are expected to continue decreasing, albeit at a slow rate.

[3] https://www.water.ie/projects-plans/national-projects/leakage-reduction-programme/, Pers.Comms Newport Regional Water Supply, September 2019

The number of residences, businesses and community facilities in the area is likely to increase slowly in line with increases in the population of the area. According to Chapter 6 Population (Section 6.2.1.5 and Section 6.2.1.6) of this EIAR, '*data from the past 10 years of Censuses suggests that population growth peaked in the decade to 2016, with a notable slowdown in population growth in the last five years recorded in Census 2016. Within the study area, Newport town has experienced rapid population growth, doubling in population between 1996 and 2016…… Under moderate assumptions, the CSO projects that the State population will increase by 19% from 4.7 million people in 2016 to 5.6 million by 2046.*[4] *Should local populations grow in tandem; the population of the UWF Grid Connection Study Area will grow by from 7,966 to c.9,480 persons by 2046'*.

It is expected that most new residences, business and community facilities will be located in or close to Newport town, Rear Cross village, and other villages in the surrounding area in line with the North Tipperary County Development Plan, (Section 2.3.1) which states 'it is planned that future population growth in the county will be accommodated in existing towns and villages in line with a county settlement hierarchy, and also through sensitive development in rural areas with infrastructure delivered in a timely fashion to ensure sustainable and inclusive communities'.

14.2.1.6 Receiving Environment (the Baseline + Trends)

As population trends and network upgrades are happening slowly, it is assumed that the existing baseline environment for Local Residents & Community, described above, will be the receiving environment during the construction stage of the subject development.

[4] http://www.cso.ie/en/media/csoie/releasespublications/documents/population/2013/poplabfor2016_2046.pdf

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14.2.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

14.2.2.1 Cumulative Evaluation Study Area

14.2.2.1.1 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 Local Residents & Community	Justification for the Study Area Extents
Local residences, businesses and community facilities connected to: - underground pipes or cables within the UWF Grid Connection construction works area boundary, - overhead lines within 7m of the UWF Grid Connection construction works area boundary to allow for machinery movement. The extent of the study area is from the fault point to the nearest valve/transformer/cabinet.	The potential for cumulative effects are limited to those local residents, businesses and community facilities that can be directly affected by UWF Grid Connection in the first instance.

The study is illustrated on Figure CE 14.2: UWF Grid Connection Cumulative Evaluation Study Area for Local Residents & Community (Built Services).

14.2.2.1.2 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 14.2.2.2.1 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 14-5 and illustrated on Figure WP 14.2: Whole Project Study Area for Local Residents & Community (Built Services) (Volume C3 EIAR Figures).

Table 14-5: Cumulative Evaluation Study Area for Local Residents & Community

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 1: UWF Grid Connection	Local residences, businesses and community facilities connected to: - underground pipes or cables within construction works area boundaries, - overhead lines within 7m of the construction works area	Effects to Local Residents & Community are limited to direct physical damage to the lines, pipes or cables which supply their properties during construction works. The extent of the study area is limited to those local residents using Irish Water/Eir/ESB services who could be affected by an
Element 2: UWF Related Works		
Element 3: UWF Replacement Forestry		

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Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 4: Upperchurch Windfarm	boundaries to allow for machinery movement. The extent of the study area is from the fault point to the nearest valve/transformer/cabinet.	outage and whose service cannot be re-directed through another part of the Irish Water/Eir/ESB networks.
Element 5: UWF Other Activities		

14.2.2.2 Scoping for Other Projects or Activities & Potential for Impacts

The evaluation of cumulative impacts to Local Residents & Community 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 Local Residents & Community 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 authors is included in Appendix 2.1: Scoping of Other Projects or Activities for the Cumulative Evaluations (Section A2.1.4.27).

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 Local Residents & Community.

14.2.2.2.1 Potential for Other Elements or Other Projects to cause Impacts to Local Residents & Community

An evaluation was carried out by the topic authors of the likelihood for the Other Elements of the Whole UWF Project to cause cumulative effects to the Sensitive Aspect Local Residents & Community. The results of this evaluation are included in Table 14-6.

The location of, and study area boundary associated with, the Other Elements which are included for cumulative evaluation is illustrated on Figure WP 14.2. The baseline character of the areas around these projects is described in Section 14.2.2.3.

Table 14-6: 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: No potential for effects due to • No potential to cause loss of supply of water, telephone or electricity services to Local Residences & Community, due to the absence of excavation works and large machinery - all planting and maintenance activities will be carried out by hand, any vehicles used will be standard vans or four-wheel drive vehicles and trailers.
Element 4: Upperchurch Windfarm (UWF)	Included for the evaluation of cumulative effects
Element 5: UWF Other Activities	Evaluated as excluded: No potential for effects due to: • The absence of any structures, and the absence of excavation works and large machinery associated with the Haul Route Activities, Overhead Line Activities, Monitoring Activities and the Upperchurch Hen Harrier Scheme.

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14.2.2.3 Cumulative Information: Baseline Characteristics – Context & Character

14.2.2.3.1 Element 2: UWF Related Works / Element 4: Upperchurch Windfarm

In relation to the Other Elements of the Whole UWF Project, the location of services and associated Local Residents & Community are outlined on Table 14-7 and illustrated on Figure WP 14.2.

Table 14-7: Summary of Local Residents & Community connected to Irish Water, ESB and Eir networks in the Whole Project Cumulative Evaluation Study Area

Cumulative Project	Local Residents & Community connected to Irish Water Mains	Local Residents & Community connected to Local ESB Network	Local Residents & Community connected to the Local Eir Network
UWF Related Works	C. 25 No. properties connected to 2 No. length of Irish Water Mains These water mains run parallel to construction works in the road (L-2264-50, L6188-0).	c.92 No. properties connected to 8 No. electricity lines and 2 No. underground electricity cables. These overhead lines and underground cables are generally located in fields beside the local road network.	C.57 No. properties connected to 9 No. telephone lines These overhead lines are generally located in roadside boundaries.
Upperchurch Windfarm	C. 25 No. properties connected to 2 No. length of Irish Water Mains These water mains run across the site entrances along the road (L-2264-50, L6188-0).	c.1 No. properties connected to 1 No. electricity line across a field at Knockmaroe.	C.40 No. properties connected to 3 No. telephone lines, these overhead lines are generally located in roadside boundaries.

UWF Grid Connection Cumulative Evaluation Study Area: Properties located off the L-2264-50 in the Knockmaroe/Knockcurraghbola area are located in the study area for the UWF Grid Connection and the UWF Related Works and the Consented Upperchurch Windfarm. These properties, identified on Figure CE 14.2 are supplied by:

- 1 No. Irish Water main on the L2264-50 (19 No. properties),
- 3 No. overhead electricity line (29 No. properties), and
- 1 no. overhead telephone line (21 No. properties).

Consideration of the Passage of Time in relation to Upperchurch Windfarm: There have been no new built services installed on stretches of road at Upperchurch Windfarm site entrances, and no new services built across lands under which Consented Upperchurch Windfarm construction works or construction machinery will pass. While the effects to local residents of an interruption of built service supplies was not specifically evaluated in the 2013 EIS, it is now considered in the evaluations in this EIAR for UWF Grid Connection.

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14.2.2.3.2 Element 3: UWF Replacement Forestry

Not applicable – Element evaluated as excluded. See Section 14.2.2.2.1

14.2.2.3.3 Element 5: UWF Other Activities

Not applicable – Element evaluated as excluded. See Section 14.2.2.2.1

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14.2.2.3.4 Other Projects or Activities

Not applicable – No Other Projects or Activities were scoped in for evaluation of cumulative effects, see Section 14.2.2.2.

14.2.3 PROJECT DESIGN MEASURES for Local Residents & Community

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 14-8 are relevant to the Environmental Factor, Material Assets (Built Services), and in particular to the sensitive aspect **Local Residents & Community**.

Table 14-8: UWF Grid Connection Project Design Measures relevant to Local Residents & Community

PD ID	Project Design Environmental Protection Measure (PD)
PD04	All construction works will be carried out during daylight hours.
PD07	110kV UGC construction works along the local roads L2264-50 and L6188-0, will not take place at the same time as the UWF Related Works Haul Route Works on these roads. The 110kV UGC construction works will also be scheduled so that the works do not occur on the same days as concrete deliveries for Consented UWF Turbines along these local roads.
PD08	Confirmatory consultations with Irish Water, Eir and ESB and review of all relevant infrastructure mapping before works, along with confirmatory ground surveys at service locations will be carried out ahead of works; 'Goal Posts' will be used to identify and highlight the height of nearby overhead lines; and a banksman will accompany each excavator to oversee all excavation works.
PD09	Close contact with the local Newport Regional Supply office at Newross will be maintained by the Environmental Clerk of Works throughout the construction of the 110kV UGC. The Environmental Clerk of Works will keep the Newport Regional Water Supply office up-to-date with the location and schedule of works. To reduce risk of damaging water mains; pre-construction confirmatory surveys will be carried out, and excavations will be hand dug within 500mm of pipes. So that any damage (should it occur) can be fixed immediately, a supply of water mains repair materials will be kept at the Mountphilips Substation compound and at each works location on the public road network.

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. These Project Design Measures are included in the description of these Elements, and can be found in this EIA Report in Appendices 5.3 (Volume C4: EIAR Appendices).

14.2.4 EVALUATION OF IMPACTS to Local Residents & Community

In this Section, the likely direct and indirect effects of the UWF Grid Connection and the likely cumulative effects of 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) - Local Residents & Community.

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

Table 14-9: List of all Impacts included and excluded from the Impact Evaluation Table sections

Impacts Included	***Impacts Excluded*** *(Justification in next section)*
Loss of public water supply (construction stage)	*Loss of electricity/ communications service(s) due to accidental damage (construction stage)*
	Loss of electricity/ communications service(s) due to planned outages (UWF Related Works only) (construction stage)
	Damage to communication services due to electromagnetic interference (operational stage)
	Damage to overhead lines or underground cables during any operational maintenance or repair works
	Decommissioning Effects

The source-pathway-receptor links for the impact included are described in the Impact Evaluation Table in the next section - **Section 14.2.4.1**.

The source-pathway-receptor links and the rationale for excluded impacts are described in the section directly after the Impact Evaluation Table in Section 14.2.4.2.

14.2.4.1 Impact Evaluation Table: Loss of Public Water Supply

Impact Description	
Project Life Cycle Stage:	Construction stage

Impact Source: excavations of public road pavements
Cumulative Impact Source: excavations of public road pavements
Impact Pathway: Physical contact

Impact Description: should damage occur, a brief (c.1 day) loss of water supply to local residences, businesses or community facilities due to direct damage to underground water mains which provide local supply during excavation works for cables trenches, joint bays and culvert replacement works.

The potential for impacts is reduced to 'unlikely' through the implementation of Project Design Measures including; the supervision of works, consultation with Irish Water and confirmatory surveys of works locations ahead of works and stocking of repair materials at works locations.

Impact Quality: **Negative**

Evaluation of the Subject Development Impact – Loss of Public Water Supply

Element 1: UWF Grid Connection – direct/indirect impact

Impact Magnitude:
There are 543 No. properties connected to 14 No. Irish Water main lines. As per IMPERIA methodology, the magnitude is evaluated as Negligible as a potential c.1 day supply disruption would have no practical implication, should a mains line be damaged during construction works.

While this would equate to an Imperceptible impact (given the Moderate Sensitivity and the Negligible magnitude, as per the IMPERIA methodology outlined in Section 14.1.8), the implementation of Project Design Measures (see Section 14.2.3) reduces the likelihood of the impact to 'unlikely'.

Significance of the Impact: Neutral impact

Rationale for Impact Evaluation:

- the Moderate sensitivity of Local Residents & Community using public water supply in the locality,
- this impact unlikely to occur with the implementation of project design, notwithstanding
- the Negligible magnitude of impacts in the unlikely event that they do occur, and the reversal of any impacts with the repair of damaged Irish Water pipes.

Element 1: UWF Grid Connection – cumulative impact

Cumulative Impact Magnitude: There are 19 No. properties connected to 1 No. Irish Water main lines along the L2264-50 (Borrisoleigh Road) and L6188-0 in the Knockmaroe/Knockcurraghbola Crownlands area which has potential to be damaged by UWF Grid Connection works and by UWF Related Works, and/or by Upperchurch Windfarm works. Due to the small number of properties, the Sensitivity is reduced to Low. While works for the three projects will not occur during the same period (as per Project Design measure PD07), there is potential for damage to this water pipe to occur more than once due to works for the various projects. As per IMPERIA methodology, the magnitude is slightly larger than for the UWF Grid Connection on its own, and is evaluated as Low as there is potential for short supply disruptions due to each of the projects, should a mains line be accidently damaged during construction works.

While this would equate to an Imperceptible impact (given the Low Sensitivity and the Low magnitude, as per the IMPERIA methodology outlined in Section 14.1.8), the implementation of Project Design Measures (see Section 14.2.3) reduces the likelihood of the impact to 'unlikely'.

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Significance of the Cumulative Impact: Neutral Cumulative Impact

Rationale for Cumulative Impact Evaluation:

- the Low sensitivity of Local Residents & Community using public water supply in the locality,
- this impact unlikely to occur with the implementation of project design, notwithstanding
- the Low magnitude of impacts in the unlikely event that they do occur, the potential for the impact to occur more than once, and the reversal of any impacts with the repair of damaged Irish Water pipes.

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

Element 2: UWF Related Works

Impact Magnitude:
There are 25 No. properties connected to 2 No. Irish Water main lines which have potential to be affected by excavations for the UWF Related Works.

As per IMPERIA methodology, the magnitude is evaluated as Negligible due to the low number of users connected to the lines. Properties will experience a c.1 day disruption of water supply should a mains line be damaged during construction works. While this would equate to an Imperceptible impact (given the Low Sensitivity and the Low Magnitude, as per the IMPERIA methodology outlined in Section 14.1.8), the implementation of Project Design Measures (see Section 14.2.3) reduces the likelihood of the impact to 'unlikely'.

Significance of the Impact: Neutral Impact

Rationale for Impact Evaluation:

- the Low sensitivity of Local Residents & Community using public water supply in the locality,
- this impact unlikely to occur with the implementation of project design, notwithstanding
- the Negligible magnitude of impacts in the unlikely event that they do occur, and
- the reversal of any impacts with the repair of damaged Irish Water pipes.

Element 3: UWF Replacement Forestry – *N/A, evaluated as excluded, see Section 14.2.2.2.1*

Element 4: Consented Upperchurch Windfarm

Impact Magnitude:
There are 25 No. properties connected to 2 No. Irish Water main lines which have potential to be affected by excavations for Upperchurch Windfarm.

As per IMPERIA methodology, the magnitude is evaluated as Negligible due to the low number of users connected to the lines. Properties will experience a c.1 day disruption of water supply should a mains line be damaged during construction works. While this would equate to an Imperceptible impact (given the Low Sensitivity and the Low Magnitude, as per the IMPERIA methodology outlined in Section 14.1.8), the implementation of Project Design Measures (see Section 14.2.3) reduces the likelihood of the impact to 'unlikely'.

Significance of the Impact: Neutral Impact

Rationale for Impact Evaluation:

- the Low sensitivity of Local Residents & Community using public water supply in the locality,
- this impact unlikely to occur with the implementation of project design, notwithstanding
- the Negligible magnitude of impacts in the unlikely event that they do occur, and
- the reversal of any impacts with the repair of damaged Irish Water pipes.

Element 5: UWF Other Activities – *N/A, evaluated as excluded, see Section 14.2.2.2.1*

Material Assets (Built Services)

Topic

Evaluation of Other Cumulative Impacts – Loss of Public Water Supply
Whole UWF Project Effect
Impact Magnitude: In total there are 555 No. properties connected to 15 No. Irish Water main lines which have potential to be affected by excavations for the UWF Grid Connection, UWF Related Works and Upperchurch Windfarm. As per IMPERIA methodology, the magnitude is evaluated as Negligible for each project individually, and Low in the Knockmaroe/Knockcurraghbola Crownlands area as any accidental damage would result in c.1 day supply disruption which would have no practical implication, should a mains line be damaged during construction works. While this would equate to an Imperceptible impact (given the Moderate/Low Sensitivity and the Negligible/Low magnitude, as per the IMPERIA methodology outlined in Section 14.1.8), the implementation of Project Design Measures (see Section 14.2.3) reduces the likelihood of the impact to 'unlikely'.
Significance of the Impact: Neutral Impact
Rationale for Impact Evaluation: • the Low to Moderate sensitivity of Local Residents & Community using public water supply in the locality, • this impact unlikely to occur with the implementation of project design, notwithstanding • the Negligible impact magnitude of the projects individually, and Low impact magnitude of projects cumulatively, in the unlikely event that they do occur, and the reversal of any impacts with the repair of damaged Irish Water pipes.

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Material Assets (Built Services)

Topic

14.2.4.2 Description and Rationale for Excluded (scoped out) Impacts

The source-pathway-receptor links and the rationale for impacts excluded from evaluation are described in Table 14-10 below.

Table 14-10: Description and Rationale for Excluded Impacts to Local Residents & Community

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				
Public road opening excavations Excavations associated with groundwork Movement of large machinery	1, 2, 4	Physical contact with overhead lines and underground cables	Loss of electricity/ communications service(s) due to accidently damage	Rationale for Excluding: No likely effect/Neutral Impact: No likely effect to underground services due to the very short length (c.20m) of underground electricity cables along the route of the 110kV UGC, and the absence of underground communication cables, in addition to the application of protection measures included as part of the project design (See Section 14.2.3), including direct supervision during construction; confirmatory pre-construction consultations with Eir and ESB; and pre-construction confirmatory surveys at service locations ahead of works. No likely effect to overhead lines due to the implementation of standard construction best practice as part of project design, including the preconstruction confirmatory surveys of overhead services, the use of goalposts, and the supervision of works. Additionally, the Code of Practice for Avoiding Danger from Overhead Electricity Lines 2019 will be implemented as part of standard construction practices for the project. In any case, should accidently damage occur, any effects will be Neutral, due to the short duration of any loss of service likely to be for c.1 day while damaged lines or cables are being repaired, the reversibility of the loss of service and in the context of the provision for a 3 day (ESB) or 5 day (Eir) repair/service restoration as standard, in service level agreements with these companies.
Relocation of telephone or electricity poles/lines	2	Planned outage	Loss of electricity/ communications service(s) due to a planned outage	Rationale for Excluding: No planned outages for UWF Grid Connection or Upperchurch Windfarm. Planned outages only relate to UWF Related Works, where any impacts will be Neutral, due to the notification of local residents or business of the outage ahead of works, which will allow them to plan for the outage; the alternative means of communication available, and the completion of works in one day in the context of the provision for 3 day (ESB) or 5 day (Eir)

Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
				repair/service restoration as standard in service level agreements.
Operational Stage				
Operation of UWF Grid Connection	1	Air	Damage to communication services due to electromagnetic interference	Rationale for Excluding: Neutral Impacts;
Public road opening excavations, and movement of large machinery during planned maintenance or unplanned repairs along the 110kV UGC.	1	Physical contact with overhead lines and underground cables	Loss of electricity/ communications service(s)/water mains due to accidently damage during any operational maintenance or repair works	Rationale for Excluding: No likely effect/Neutral Impact: No likely effect as any planned maintenance or unplanned repairs along the 110kV UGC will involve excavating road surfaces at joint bay locations, rather than involving new excavation works in the public road. No services will be located over joint bays. No likely effect to overhead lines due to the implementation of standard best practice as part of project design, including the use of goalposts, and the supervision of works. Additionally, the Code of Practice for Avoiding Danger from Overhead Electricity Lines 2019 will be implemented as part of standard practices for the project. In any case, should accidently damage occur, any effects will be Neutral, due to the short duration of any loss of service likely to be for c.1 day while damaged lines or cables are being repaired, the reversibility of the loss of service and in the context of the provision for a 3 day (ESB) or 5 day (Eir) repair/service restoration as standard, in service level agreements with these companies. No road works or excavation of new ground expected for any of the Other Elements.
Decommissioning Stage				
Rationale for Excluding: No potential for impacts/no likely impacts UWF Grid Connection will not be decommissioned, therefore no potential for impacts to occur. Decommissioning works and activities related to UWF Related Works or Upperchurch Windfarm will mainly take place from turbine hardstands on the Upperchurch Windfarm, at locations away from local Built Services, therefore there effects to Built Services are not likely to occur.				

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14.2.5 Mitigation Measures for Impacts to Local Residents & Community

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 Local Residents & Community**.

14.2.6 Evaluation of Residual Impacts to Local Residents & Community

Residual Impacts are the final or intended effects that will occur after mitigation measures have been put into place. No additional mitigation measures were required, and thus the Residual Impact is the same as the Impact set out in Section 14.2.4.1 – i.e. **Neutral Impacts/no likely impact**.

14.2.7 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.

Material Assets (Built Services)

Topic

14.2.8 Summary of Impacts to Local Residents & Community

A summary of the Impact to Local Residents & Community is presented in Table 14-11.

Table 14-11: Summary of the impacts to Local Residents & Community

Impact to Local Residents & Community:	**Loss of Public Water Supply**
Evaluation	*Section 14.2.4.1*
Project Life-Cycle Stage	Construction
UWF Grid Connection *direct/indirect impact*	**Neutral**
UWF Grid Connection *cumulative impact*	**Neutral**
Element 2: UWF Related Works	Neutral impact
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 14.2.2.2.1
Element 4: Upperchurch Windfarm	Neutral impact
Element 5: UWF Other Activities	No Potential for Impact - Evaluated as Excluded, see Section 14.2.2.2.1
Cumulative Impact:	
Whole UWF Project Effect	**Neutral**

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 Local Residents & Community with either the UWF Grid Connection or the Other Elements of the Whole UWF Project (see Section 14.2.2.2).

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Material Assets (Built Services)

Topic

14.3 Sensitive Aspect No.2: Electricity Transmission System

This Section provides a description and evaluation of the Sensitive Aspect - Electricity Transmission System.

In this EIA Report, the Electricity Transmission System relates to the Killonan – Nenagh 110kV Overhead Line. The consented Upperchurch Windfarm will connect to this line through the UWF Grid Connection.

14.3.1 BASELINE CHARACTERISTICS of Electricity Transmission System

14.3.1.1 STUDY AREA for Electricity Transmission System

The study area for Electricity Transmission System in relation to the UWF Grid Connection is described in Table 14-12 and illustrated on Figure GC 14.3: UWF Grid Connection Study Area for Electricity Transmission System (Volume C3 EIAR Figures).

Table 14-12: UWF Grid Connection Study Area for Electricity Transmission System

Study Area for Electricity Transmission System	Justification for the Study Area Extents
Existing Killonan to Nenagh 110kV overhead line	The new Mountphilips Substation will be connected to this tail fed line which is controlled from Killonan 220kV Station and ends in Nenagh 110kV Substation.

14.3.1.2 Baseline Context and Character of Electricity Transmission System in the UWF Grid Connection Study Area

The UWF Grid Connection is the only part of the Whole UWF Project which is relevant to the Electricity Transmission System, as it will involve the connection of a new substation onto the Killonan – Nenagh 110kV overhead line (OHL).

The Killonan – Nenagh 110kV OHL is controlled and fed from the Killonan 220kV/110kV Station, which is located to the southeast of Limerick City. The Killonan Station is one of the main transmission system stations in the country with 3 No. 220kV lines feeding into it - from Tarbert, Knockraha and Shannonbridge. This power is then distributed through the Killonan Station to the mid-west region using numerous regional networks at all voltages (110kV, 38kV and 20kV). One of these regional networks is the Killonan to Nenagh 110kV OHL, which is c.41km long, originating in the Killonan 220kV Station and ending in the Nenagh 110kV Substation.

The Killonan – Nenagh 110kV OHL is c.41km long and comprises 110kV overhead lines mounted on a mixture of double wooden poles and lattice steel towers. The middle section of the line between Ahane and Silvermines is relatively new, being built in 2012/2013. The other sections, between Killonan and Ahane, and Nenagh and Silvermines are older and were built in the 1970's and 1990's respectively.

The UWF Grid Connection will connect onto the Killonan – Nenagh 110kV OHL just to the north of Poleset No.79, approximately one third of the way along the line between Killonan and Nenagh.

The UWF Grid Connection will cross under the existing Shannonbridge – Killonan 220kV OHL in Coole town-land, close to the site entrance for Mountphilips Substation, however, no effects are likely to occur to the OHL, and as outlined in Section 14.1.4, this overhead line has been scoped out from further evaluation.

Electricity Transmission System

Sensitive Aspect

14.3.1.3 Importance of Electricity Transmission System

The nationwide electricity transmission system allows for the transport of large volumes of electricity from generation stations, including wind farms, to bulk supply points near the main population centres where it interconnects with the distribution system[5]. According to the Eirgrid Transmission Development Plan 2012 to 2022, the Killonan Station is the main bulk supply point for the Mid-West region. The Killonan – Nenagh 110kV OHL is one of the main electricity supplies into Nenagh town. The Killonan – Nenagh 110kV OHL is considered to have **High** societal value.

14.3.1.4 Sensitivity of Electricity Transmission System

The Killonan – Nenagh 110kV OHL can be affected by damage to the lines due to adverse weather conditions such as high wind and ice, or faults at the Killonan Station. However, the network protection and control systems would allow Nenagh to be fed from the 38kV network which is also connected to the Nenagh Substation.

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

Due to the condition and age of the transmission equipment in Killonan 220/110 kV station, a major project involving the replacement of the whole station is planned under Eirgrid's Transmission Development Plan 2012 to 2022, *CP0624: Reinforcement of the Transmission Network in Limerick City Project*. There are currently no plans for the 110kV part of the Nenagh Substation. Once lines or stations are built or upgraded, they generally do not need further upgrading works for c.40 years.

14.3.1.6 Receiving Environment (the Baseline + Trends)

It is assumed that the existing Killonan – Nenagh 110kV OHL will be the receiving environment at the commencement of the operational stage.

Material Assets (Built Services)

Topic

[5] https://www.esbnetworks.ie/who-we-are/our-networks

14.3.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

14.3.2.1 Cumulative Evaluation Study Area

14.3.2.1.1 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 Electricity Transmission System	Justification for the Study Area Extents
Existing Killonan to Nenagh 110kV overhead line	Transmission system asset to which the Upperchurch Windfarm will be connected.

The study is illustrated on Figure CE 14.3: UWF Grid Connection Cumulative Evaluation Study Area for Electricity Transmission System.

14.3.2.1.2 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.

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 14.3.2.2.1 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 14-13 and illustrated on Figure WP 14.3: Whole Project Study Area for the Electricity Transmission System (Volume C3 EIAR Figures).

Table 14-13: Cumulative Evaluation Study Area for Electricity Transmission System

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 1: UWF Grid Connection	Existing Killonan to Nenagh 110kV overhead line	Transmission system asset to which the Upperchurch Windfarm will be connected.
Element 2: UWF Related Works		
Element 3: UWF Replacement Forestry		
Element 4: Upperchurch Windfarm (UWF)		
Element 5: UWF Other Activities		

14.3.2.2 Scoping for Other Projects or Activities & Potential for Impacts

The evaluation of cumulative impacts to Electricity Transmission System 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 Electricity Transmission System 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 authors is included in Appendix 2.1: Scoping of Other Projects or Activities for the Cumulative Evaluations (Section A2.1.4.28).

The results of this scoping exercise are that: Bunkimalta Windfarm (potential windfarm and consent grid connection) and Castlewaller Windfarm (consented windfarm and potential grid connection) have been scoped in for evaluation of potential cumulative effects to Electricity Transmission System.

14.3.2.2.1 Potential for Other Elements or Other Projects to cause Impacts to Electricity Transmission System

An evaluation was carried out by the topic authors of the likelihood for the Other Elements of the Whole UWF Project and for the Other Projects or Activities to cause cumulative effects to the Sensitive Aspect Electricity Transmission System. The results of this evaluation are included in Table 14-14.

The location of, and study area boundary associated with, the Other Elements which are included for cumulative evaluation is illustrated on Figure WP 14.3. The baseline character of the areas around these projects is described in Section 14.3.2.3.

Table 14-14: Results of the Evaluation of the Other Elements and Other Projects or Activities

Other Elements of the Whole UWF Project	
Element 2: UWF Related Works	Evaluated as excluded: No potential for effects due to • the absence of any Electricity Transmission System Assets in the area. • Does not involve any direct connections onto the OHL
Element 3: UWF Replacement Forestry	Evaluated as excluded: No potential for effects due to • the absence of any Electricity Transmission System Assets in the area. • Does not involve any direct connections onto the OHL
Element 4: Upperchurch Windfarm (UWF)	Evaluated as excluded: No potential for effects due to • the absence of any Electricity Transmission System Assets in the area, • Does not involve any direct connections onto the OHL – while electricity generated by Upperchurch Windfarm will be transported on the Killonan-Nenagh 110kV OHL, this electricity will be carried via the UWF Grid Connection Element, and therefore any potential for effects have been evaluated as part of the UWF Grid Connection element.
Element 5: UWF Other Activities	Evaluated as excluded: Neutral impact or No potential for impacts due to: • Neutral effect to the Electricity Transmission System during the wrapping and re-sagging (Overhead Line Activities) due to the line between Killonan and Nenagh being de-energised and switched out. This will have no effect on Killonan as this station is the feed point, i.e. all power flows from Killonan to Nenagh. There will also be no interruption to the distribution of electricity from the Nenagh Substation as electricity supply to Nenagh will be sourced from the existing 38kV grid network at the Nenagh 110kV Substation,

	• No potential for effects caused by the remaining UWF Other Activities (Haul Route Activities, Monitoring Activities or Upperchurch Hen • Harrier Scheme) as these activities do not interact with the Electricity Transmission System.
Other Projects or Activities	
Castlewaller Windfarm Bunkimalta Windfarm (potential windfarm)	Included for the evaluation of cumulative effects

14.3.2.3 Cumulative Information: Baseline Characteristics – Context & Character

The UWF Grid Connection is the only part of the Whole UWF Project which is relevant to the Electricity Transmission System, as it will involve the connection of a new substation onto the Killonan – Nenagh 110kV overhead line (OHL).

14.3.2.3.1 Element 2: UWF Related Works

Not applicable – Element evaluated as excluded. See Section 14.3.2.2.1

14.3.2.3.2 Element 3: UWF Replacement Forestry

Not applicable – Element evaluated as excluded. See Section 14.3.2.2.1

14.3.2.3.3 Element 4: Already Consented Upperchurch Windfarm

Not applicable – Element evaluated as excluded. See Section 14.3.2.2.1

14.3.2.3.4 Element 5: UWF Other Activities

Not applicable – Element evaluated as excluded. See Section 14.3.2.2.1

14.3.2.3.5 Other Projects or Activities

Bunkimalta Windfarm - it is likely that any future Bunkimalta Windfarm will connect to Nenagh Substation via the consented grid connection.

Castlewaller Windfarm – the windfarm element of this project is already consented, and a potential route for the underground grid connection was the subject of an SID pre-application consultation process with An Bord Pleanála. The potential route for the grid connection was directly to Killonan, this route is not the subject of any current connection offer.

14.3.3 PROJECT DESIGN MEASURES for Electricity Transmission System

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.

There are no Project Design Measures specific to the Electricity Transmission System.

14.3.4 EVALUATION OF IMPACTS to Electricity Transmission System

In this Section, the likely direct and indirect effects of the UWF Grid Connection and the likely cumulative effects with Other Projects or Activities 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) - Electricity Transmission System.

As a result of the exercise, **no impacts were included for evaluation** – all were excluded.

Table 14-15: List of all Impacts included and excluded from the Impact Evaluation Table sections

Impacts Included	***Impacts Excluded*** *(Justification in next section)*
No Impacts included for Evaluation	*Interruption of power supply on the electricity system (construction stage)*
	Adding a control point to the Killonan to Nenagh 110kV OHL (operational stage)
	Decommissioning Effects

The source-pathway-receptor links and the rationale for excluded impacts are described in Section 14.3.4.1.

14.3.4.1 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 14-16 below.

Table 14-16: Description and Rationale for Excluded Impacts to Electricity Transmission System

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				
Commissioning of the Mountphilips Substation	1	Planned outage	Interruption of power supply on the electricity system	Rationale for Excluding: Neutral Impact During the commissioning of the new Mountphilips Substation, the line between Killonan and Nenagh will be de-energised and switched out. This will have no effect on Killonan as this station is the feed point, i.e. all power flows from Killonan to Nenagh. There will also be no interruption to the distribution of electricity from the Nenagh Station as electricity supply to Nenagh will be sourced from the existing 38kV grid network at the Nenagh 110kV Station. Potential cumulative impacts with a potential Bunkimalta Windfarm are not likely as the two connections will be planned by EirGrid/ESBN in a manner that avoids power supply interruptions on the system. Similarly, any potential connection for Castlewaller Windfarm will be planned to avoid power supply interruptions by EirGrid/ESBN.
Operational Stage				
Addition of new substation onto the Killonan - Nenagh 110kV OHL	1	Killonan to Nenagh 110kV overhead line	Adding a control point to the Killonan to Nenagh 110kV OHL	Rationale for Excluding: The addition of the Mountphilips Substation will add an operational control point for ESBN on this tail fed line. The main function of the new substation will be to transport electricity from the Upperchurch Windfarm onto the line, and although the addition of a new control point will be of benefit to ESB Networks in the form of a new asset and will strengthen the network into Nenagh, it will not cause significant positive effects to the transmission system due to the size of the overall Irish transmission system. There is no likely cumulative impacts with a potential Bunkimalta Windfarm as that project is not likely to involve a new substation on the line. Similarly a potential connection of Castlewaller Windfarm is not expected to involve a new substation on the line.
Decommissioning Stage				
Rationale for Excluding: No potential for impacts to Electricity Transmission System as the UWF Grid Connection will form part of the National Grid on a permanent basis and will not be decommissioned.				

14.3.5 Mitigation Measures for Impacts to Electricity Transmission System

Mitigation measures are not relevant as the UWF Grid Connection as the topic authors conclude that **significant impacts are not likely to occur** to the Electricity Transmission System.

14.3.6 Evaluation of Residual Impacts to Electricity Transmission System

Residual Impacts are the final or intended effects that will occur after mitigation measures have been put into place. No mitigation measures were required, and thus the Residual Impact is the same as the Impact set out in Section 14.3.4.1 – i.e. **Neutral Impacts/no likely impacts/ no significant adverse impacts are likely to occur**.

14.3.7 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.

14.3.8 Summary of Impacts to Electricity Transmission System

A summary of the Impact to Electricity Transmission System is presented in Table 14-17.

Table 14-17: Summary of the impacts to Electricity Transmission System

Impact to Electricity Transmission System:	**No Impact** - All impacts are evaluated as excluded
Evaluation Impact Table	*Section 14.3.4.1*
Project Life-Cycle Stage	Construction/Operation
UWF Grid Connection	**No potential for Impact**
Element 2: UWF Related Works	No Potential for Impact - Evaluated as Excluded, see Section 14.3.2.2.1
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 14.3.2.2.1
Element 4: Upperchurch Windfarm	No Potential for Impact - Evaluated as Excluded, see Section 14.3.2.2.1
Element 5: UWF Other Activities	Neutral Impact/No Potential for Impact - Evaluated as Excluded, see Section 14.3.2.2.1
Cumulative Impact:	
All Elements of the Whole UWF Project	**No potential for Cumulative Impacts**
All Elements of the Whole UWF Project *cumulatively with* Other Projects or Activities Castlewaller Windfarm (consented windfarm, potential grid connection) Bunkimalta Windfarm (potential windfarm and consented grid connection)	**No potential for/No Likely Cumulative Impacts**

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.

Electricity Transmission System

Sensitive Aspect

Material Assets (Built Services)

Topic

14.4 Reference List

ESB Networks, Who We Are, https://www.esbnetworks.ie/who-we-are/our-networks

Eir, Pressroom, https://www.eir.ie/pressroom

Irish Water, Leakage Reduction Programme https://www.water.ie/projects-plans/national-projects/leakage-reduction-programme/