

# **UWF Grid Connection EIA Report (2019)**

## **Volume C2: EIAR Main Report**

### **Chapter 7: Human Health**



RPS Group



*October 2019*

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

**List of Appendices**

<b>Appendix No.</b>	<b>Appendix Title</b>
There are no appendices associated with this topic chapter.	

## Glossary of Terms

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

## List of Abbreviations

<u>Abbreviation</u>	<u>Full Term</u>
<b>AA</b>	Appropriate Assessment
<b>COMEAP</b>	Committee on the Medical Effects of Air Pollutants
<b>CSO</b>	Central Statistics Office
<b>dB</b>	Decibel
<b>DECC</b>	Department for Energy and Climate Change
<b>EIA</b>	Environmental Impact Assessment
<b>EIAR</b>	Environmental Impact Assessment Report
<b>EMF</b>	Electro-magnetic Fields
<b>EPA</b>	Environmental Protection Agency
<b>EU</b>	European Union
<b>HDPE</b>	High-density polyethylene
<b>IAQM</b>	Institute of Air Quality Management
<b>ICNIRP</b>	International Commission on Non-Ionizing Radiation Protection
<b>IFA</b>	Irish Farmers' Association
<b>IPH</b>	Institute of Public Health in Ireland
<b>PD</b>	Ecopower Project Design Environmental Protection Measure developed by members of the EIAR Team
<b>PM</b>	Particulate Matter
<b>WHO</b>	World Health Organisation
<b>UGC</b>	Underground Cables
<b>UWF</b>	Upperchurch Windfarm

## Executive Summary of the Human Health Chapter

**Baseline Environment:** The environment in which people live, work and use recreationally is characterised by good air quality with very low background concentrations of air pollutants; normal rural and road traffic background noise levels; two high voltage (110kV and 220kV) overhead lines in the vicinity of Coole/Mountphilips; the area is generally serviced by overhead electricity lines and overhead telephone lines and many residents and community facilities have access to public water supply, particularly in the Newport area, in Rear Cross and along the R503; and the roads in general are lightly trafficked.

**Survey Results for Local Residents & Community and Transient People in the Baseline Environment:** There are 391 No. local residences and 19 No. public & community facilities within 350m of construction works. Also, 301 No. of the local residents and 33 No. of the public & community facilities are located within 50m of construction material haul routes. In relation to the potential for electromagnetic field related effects, there are no residents or community facilities within 100m of Mountphilips Substation and 317 No. local residences and 17 No. public & community facilities (2 of which are schools) within 100m of the 110kV UGC along the public road.

The surrounding area is comprised of agricultural land and countryside, with a number of minor roads and waymarked trails where transient people may be present either travelling, recreationally, or working on the land. The Slievefelim Way and Ormond Way (cycle) are routed through the UWF Grid Connection study area.

**Results from other Topic Chapters:** The authors examined other topic chapter results in order to evaluate likely cross-factor effects to Human Health. Likely effects examined in Chapter 6: Population (Local Economy); Chapter 11: Water (water quality); Chapter 12: Air (construction dust and noise, operational noise and EMF); and Chapter 15: Material Assets (road users) and Appendix 15.4: Stage 1 Road Safety Audit & Review and Appendix 15.1 Traffic & Transportation Assessment Report were examined, and it was evaluated by the Human Health topic authors that, with the exception of local economy cross-factor effects, that any cross factor effects to the health of Local Residents & Community or of Transient People will be Neutral.

**Summary of the Likely Impact on Local Residents & Community:** The only likely impact is Increased Employment which represents a positive effect on Human Health of Local Residents & Community. The impact is evaluated as **Slight (Positive)** because 100 people will work on the construction of UWF Grid Connection and while the employment is temporary, it still represent a minor positive effect on health from direct income and employment, with indirect and diffuse benefits at the regional and local level. **Summary of the Likely Cumulative Impact:** The UWF Grid Connection will be constructed during the same period as Upperchurch Windfarm and the Other Elements, this will lead to greater benefits to the local economy with resultant greater positive impacts on Human Health. The cumulative impact is also evaluated as **Slight (Positive)**. Should the *potential* Bunkimalta Windfarm and Castlewaller Windfarm be also built during the same period then these projects will also contribute to positive health effects, although the overall significance will remain the same due to the larger study area involved.

**Summary of the Likely Impact on Transient People:** Neutral health impacts during construction works primarily due to the brief to momentary duration of any impacts, and the transient and temporary nature of the works, being carried out during daylight hours. Operational effects will also be neutral due to the transitional nature of this sensitive aspect and the increase in levels of EMF remaining substantially below the internationally agreed threshold levels.

**Conclusion: The UWF Grid Connection will not cause significant adverse effects to Human Health.**

Human Health
Topic



## 7 Environmental Factor: Human Health

### 7.1 Introduction to the Human Health Chapter

#### 7.1.1 What is Human Health?

The World Health Organisation (WHO) defines health as ‘a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity’. Health is determined not only by access to quality healthcare services and lifestyle choices but also by the social and economic conditions in which people live (IPH, 2009).

#### 7.1.2 Overview of Human Health in the Local Environment

The UWF Grid Connection is located in the Mid-West region within North Tipperary. North Tipperary performs marginally worse than the national average for the majority of health status indicators. However, mental health indicators such as “deliberate self-harm”, those diagnosed with a “psychological or emotional condition”, and “deaths from respiratory disease” all perform better in North Tipperary compared to the national average.

The location of the UWF Grid Connection is illustrated on OSI Mapping on **Figure GC 7.1: Location of the UWF Grid Connection**.

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

#### 7.1.3 Sensitive Aspects of the Human Health 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 ( <i>such as schools</i> )	Section 7.2
Sensitive Aspect No. 2	Transient People (walkers, road users, farm workers etc)	Section 7.3

**Each of the above listed Sensitive Aspects are evaluated individually in Sections 7.2 to 7.3 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 7.2 to 7.3. The colour-codes have been applied to section headings, tables and on side-tabs on the edge of the pages.

#### 7.1.4 Sensitive Aspects excluded from further evaluation

No Sensitive Aspects are excluded from this topic chapter.

### 7.1.5 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 7-1 below.

**Table 7-1: Subject Development – UWF Grid Connection**

Project ID	The Subject Development	Composition of the Subject Development
Element 1	<a href="#">The Subject Development</a> 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](http://www.upperchurchwindfarmgridconnection.ie).

#### 7.1.5.1 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<sup>2</sup> to 10290m<sup>2</sup>) and the footprint of the control building is increased from 205m<sup>2</sup> to 375m<sup>2</sup>. **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](#).

### 7.1.6 The Authors of the Human Health Chapter

The RPS Health and Social Impact Assessments (HIA) team is a market leader for robust planning focussed HIA services, with an unrivalled catalogue of major HIA examples, and an unmatched level of proven HIA expertise and experience.

This report was written by Dr Andrew Buroni (PhD, MSc, BSc (Hons)), Fellow of the Royal Society of Medicine, Fellow of the Royal Society of Public Health), who has over 20 years of experience as a Health and Social Impact Assessment practitioner within the energy, oil and gas, waste management, transport, civil aviation, spatial planning, regeneration and sustainable development sectors.

Tara Barratt (MSc, DIC, BSc (Hons), AIEMA) assisted in the composition of this report. Tara has a Master of Science in Environmental Technology with a focus in environmental epidemiology, following a Bachelor of Science in Geography. Tara has a range of HIA experience which includes windfarms and their grid connections and major transport infrastructure projects.

### 7.1.7 Sources of Baseline Information

The information sources outlined in Table 7-2 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 7-2: Sources of Baseline Information for Human Health**

Type	Source
Consultation	<p>Feedback was received from</p> <ul style="list-style-type: none"> <li>• Health Services Executive</li> <li>• Members of the public during the Public Consultation and Information Day</li> </ul> <p>See <b>Chapter 3: The Scoping Consultations, and Chapter 3 Appendices</b> for further details.</p>
Guidelines	<ul style="list-style-type: none"> <li>• Institute of Public Health in Ireland (2009). Health Impact assessment Guidance (<a href="http://publichealth.ie/files/file/IPH%20HIA.pdf">http://publichealth.ie/files/file/IPH%20HIA.pdf</a>)</li> <li>• EPA Ireland (2017). Guidelines on the information to be contained in Environmental Impact Assessment Reports (<a href="https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf">https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf</a>)</li> <li>• European Commission (2017). Guidance on the preparation of the Environmental Impact Assessment Report (<a href="http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf">http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf</a>)</li> <li>• DECC, “Power Lines: Demonstrating compliance with EMF public exposure guidelines. A voluntary Code of Practice,” Department of Energy and Climate Change, 2012 (UK)</li> <li>• The Committee on Medical Effects for Air Pollution (COMEAP) quantitative exposure response functions for changes in air quality</li> <li>• International Commission on Non-ionizing Radiation Protection., “ICNIRP guidelines for Limiting Exposure to Time Varying Electric and Magnetic Fields (1 Hz to 100 kHz),” Health Physics, vol. 99, no. 6, pp. 818-836, 2010</li> <li>• EirGrid (2014) Study 1: EMF Literature review of electromagnetic fields (EMF) and human health, and an evidence base of EMF measurements from the Irish Transmission System</li> </ul>
Desktop	<ul style="list-style-type: none"> <li>• Available Census of Population data published by the CSO</li> <li>• Committee on Medical Effects for Air Pollution (COMEAP)</li> <li>• EirGrid (2014) Study 1: EMF Literature review of electromagnetic fields (EMF) and human health, and an evidence base of EMF measurements from the Irish Transmission System</li> <li>• Public health and hospital admissions data from the Public Health Well</li> <li>• EIAR Chapter 6: Population, Chapter 11: Water, Chapter 12: Air, Chapter 14: Material Assets (Built Services), Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit &amp; Review and Appendix 15.1 Traffic &amp; Transportation Assessment Report.</li> <li>• Review of planning/ environmental information documents for the Other Elements of the Whole UWF Project as contained in Volume F of the planning application.</li> </ul>

### 7.1.8 Methodology for Evaluating Effects

The Human Health section follows the approach recommended by the Institute of Public Health in Ireland (IPH, 2009). Such an approach provides the flexibility to investigate, remove and address potential environmental health issues, while also providing a framework to explore wider determinants of health and community requirements important to good health and wellbeing.

The Human Health section draws from and builds upon the wider EIA technical disciplines, most notably Chapter 6: Population, Chapter 11: Water (in particular Local Wells & Springs), Chapter 12: Air (air quality, noise, vibration, and electromagnetic fields), Chapter 14: Material Assets (Built Services, Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit & Review and Appendix 15.1 Traffic & Transportation Assessment Report.

### 7.1.9 Certainty and Sufficiency of the Evaluation/Information

As per the EPA guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2017), the Human Health chapter investigates and assesses the likelihood of significant effects directly attributable to what is proposed, and sets out analysis used to form the conclusions. In respect of Human Health no significant limitations or difficulties were encountered.

## 7.2 Sensitive Aspect No.1: Local Residents & Community

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

The Human Health section draws from and builds upon the wider EIA technical disciplines, most notably Chapter 6: Population, Chapter 11: Water (in particular Local Wells & Springs), Chapter 12: Air (air quality, noise, vibration, and electromagnetic fields) Chapter 14: Material Assets (Built Services), Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit & Review and Appendix 15.1 Traffic & Transportation Assessment Report. The authors of this Human Health topic chapters used the results of the evaluations in the other topic chapters and appendices in order to evaluate any cross-factor effects to health.

### 7.2.1 BASELINE CHARACTERISTICS of Local Residents & Community

#### 7.2.1.1 STUDY AREA for Local Residents & Community

The study area for Local Residents & Community in relation to the UWF Grid Connection is described in Table 7-3 and illustrated on the Figures and Mapping associated with [Chapter 6: Population \(Figure GC 6.2\)](#), [Chapter 11: Water \(Figure GC 11.4\)](#); [Chapter 12: Air \(Figures GC 12.2.1, GC 12.2.2, GC 12.2.3\)](#); [Chapter 14: Material Assets \(Built Services\) \(Figures GC 14.2\)](#) and [Chapter 15: Material Assets \(Roads\) \(Figure GC 15.3\)](#), these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

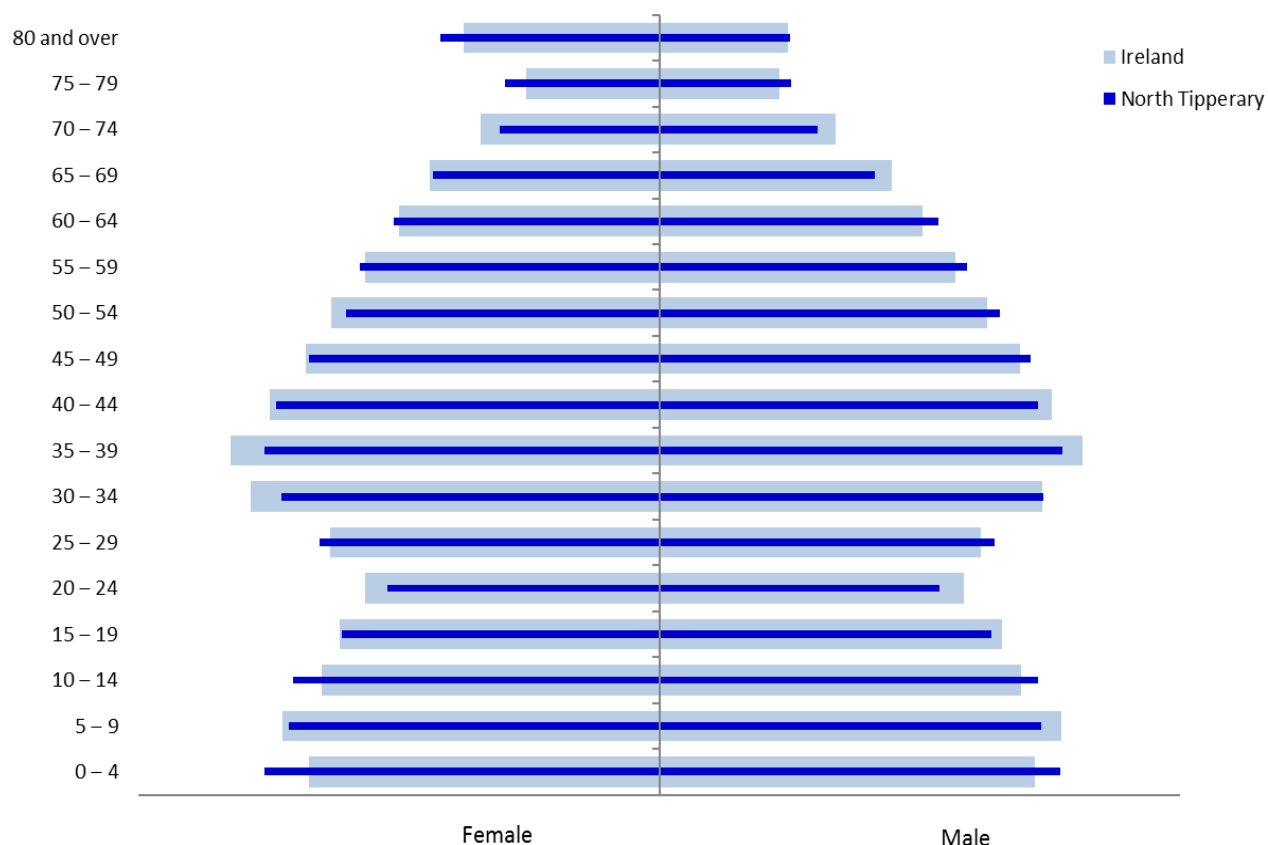
**Table 7-3: UWF Grid Connection Study Area for Local Residents & Community**

Study Area for Local Residents & Community	Justification for the Study Area Extents
In order to evaluate cross-factor effects, the same geographical boundaries were used for Human Health as those used for Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air (Local Residents & Community), Chapter 14: Material Assets – Built Services (Local Residents & Community) and Chapter 15: Material Assets - Roads (Road Users).	The justification for the geographic boundaries is consistent with Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air (Local Residents & Community), Chapter 14: Material Assets – Built Services (Local Residents & Community) and Chapter 15: Material Assets - Roads (Road Users), thereby enabling the Human Health section to appraise the potential change in environmental and socio-economic determinants of health.

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

The UWF Grid Connection is located within North Tipperary, the area surrounding area the UWF Grid Connection is sparsely populated due to its rural nature.

Mountphilips Substation is located off a local road to the north of Newport town, while the 110kV UGC is routed along the public roads around Newport, then along the R503 through Rear Cross village to Knockmaroe and then along local roads to the Consented Upperchurch Windfarm Substation. The population structure within North Tipperary is displayed in Graph 7-1.

**Graph 7-1: Population Structure of North Tipperary Compared to Ireland, Source: (CSO, 2016)**

As shown in Graph 7-1, local residents and communities in North Tipperary are generally of a similar demographic to the national average. The most significant differences can be seen in the youngest and oldest age categories where there is a higher proportion of those aged 0-4, 10-14, and 75-80+ in North Tipperary compared to the national average.

Physical, mental and social health status of the population in North Tipperary, in which the UWF Grid Connection is located, is summarised and compared to the national average in Table 7-4. The table also includes data for South Tipperary and County Limerick to reflect the study area for Population (Local Economy). Cells highlighted in green indicate a better health status than the national average, while red highlighted cells represent a worse health status compared to the national average.

**Table 7-4: North Tipperary Health Baseline Compared to the Ireland Average**

Indicator	North Tipperary	County Limerick	South Tipperary	Ireland Average
<b>Limiting Long-Term Illness (2011)</b>				
Total persons with a disability	13.7%	12.6%	14.7%	13.0%
Condition that limits basic physical activities	43.8%	42.2%	44.2%	41.1%
<b>Mental Health</b>				
Psychological or emotional condition (2011)	14.6%	15.1%	15.6%	16.1%
Suicide per 100,000 (2007-2013)	12.8	11.6	14.5	11.3
Deliberate self-harm per 100,000 (2012)	417.8	314.7	401.1	423.1
<b>5 Year Standardised Mortality Rates</b>				

Indicator	North Tipperary	County Limerick	South Tipperary	Ireland Average
All deaths – all ages	669.7	643.1	536.1	563.6
Deaths heart disease and stroke – all ages (2008-2012)	252.6	215.5	180.4	182.8
Deaths cancer – all ages (2008-2012)	204.6	188.6	166.9	175.6
Deaths respiratory disease – all ages (2008-2012)	57.4	81.6	51.8	64.9

Sources: (IPH, n.d.) (Lenus, 2015)

As shown in Table 7-4, North Tipperary performs marginally worse than the national average for the majority of health status indicators. However, mortality from respiratory disease and mental health indicators such as deliberate self-harm and those diagnosed with a psychological or emotional condition are lower in North Tipperary compared to the national average. Overall, the most noticeable health status disparities in the study area compared to the national average are the higher mortality rates for all-causes, cardiovascular disease, and cancer.

#### Local environmental and socio-economic context:

As described in Chapters 6: Population, with the exception of the Newport area, the upland area around the 110kV UGC is sparsely populated, comprising one off houses and farmsteads and small villages. The nearest villages are Rear Cross and Kilcommon. Local residents and community facilities in the area are concentrated in Newport town and Rear Cross village. Two local primary schools – Lackamore National School and Rear Cross National School, are located along the route of the 110kV UGC on the Regional Thurles to Limerick Road R503.

As described in Chapters 12: Air, there is a good air quality with very low background concentrations of air pollutants. The area around Mountphilips Substation is an area of low background noise, while the area along public road networks is considered to have normal background noise levels. There are two high voltage (110kV and 220kV) overhead lines in the vicinity of Coole/Mountphilips.

In relation to potential air quality and noise related effects, there are 391 no. local residents and 19 no. community facilities within 350m of construction works.

Construction material haulage will also occur on these roads, and 301 no. of the local residents and 33 no. of the community facilities are located within 50m of construction material haul routes.

In relation to the potential for electromagnetic field related effects, there are 317 no. local residents, 17 no. community facilities (2 of which are schools) within 100m of the 110kV UGC. The distance of the UWF Grid Connection from these 2 local schools is 16m from Lackamore National School and 62m from Rear Cross National School.

As described in Chapter 11: Water, it is likely that local residents and community facilities in Newport and Rear Cross are on the public water supply network. While it is also likely that the majority of houses in close proximity to the 110kV UGC route are supplied via public water supply pipelines, there may be some wells which are close to construction works areas.

As described in Chapters 14: Material Assets (Built Services), local residents are generally serviced by overhead electricity lines and overhead telephone lines. Underground water supply also occurs along some roads in the area.

As described in Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit & Review and Appendix 15.1 Traffic & Transportation Assessment Report, roads in the UWF Grid Connection study area

primarily comprise local roads with one regional road (R503). These roads are lightly trafficked at present. Traffic speeds on roads are generally below the posted speed limit. As per Chapter 15 Material Assets (Roads), a review of the Road Safety Authority (RSA) online collision database shows that 2 no. serious collisions and 3 no. minor collisions were recorded along the route of the 110kV UGC on the R503 between 2005-2015 inclusive. No collisions were recorded on the local roads within the study area during this period.

#### 7.2.1.3 Importance of Local Residents & Community

In the absence of good physical, mental and social health and wellbeing, individuals and communities become limited in achieving their full potential. Therefore, achieving and maintaining good health and wellbeing through prevention techniques rather than treatment is of utmost importance. In addition to the clear benefits of good health on an individual and community scale, healthy lifestyles and behaviours contribute to relieving any unnecessary burden on healthcare services across Ireland to maintain good quality, access, value, standards of care and patient outcomes.

#### 7.2.1.4 Sensitivity of Local Residents & Community

Individuals are considered more sensitive if there is an existing burden of poor health within an area, or there is a dominantly older or younger demographic. The age structure presented in Graph 7-1 is generally very similar to the national average but shows the most significant differences in the youngest and oldest age categories, where there is a higher proportion of those aged 0-4, 10-14, and 75-80+ in North Tipperary compared to the national average. In addition, the health baseline presented in Table 7-4 shows a higher existing burden of poor health in comparison to the national average. Overall, this suggests that the community surrounding the UWF Grid Connection are marginally more sensitive to changes to environmental and socio-economic health pathways than the average population in Ireland, potentially resulting in disproportionate health effects. This spatial sensitivity has been taken into account within the health assessment.

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

In terms of population in the area, 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.

In relation to local wells and springs, no trends are known in respect of water quality or quantity of the sources identified. Similarly no trends or plans are known for public water supplies.

Air quality, noise and EMF are expected to remain largely the same, however noise could increase in the Upperchurch area should the Upperchurch Windfarm be built.

Very slow increases in annual traffic volumes on the local and regional roads in the study area, are expected, in the region of 1-2% per annum.

#### 7.2.1.6 Receiving Environment (the Baseline + Trends)

The trends identified will not significantly change by the time the construction or operation phases commence. Therefore, it is assumed that the baseline environment identified will be the receiving environment.



## 7.2.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

### 7.2.2.1 UWF Grid Connection Cumulative Evaluation Study Area

#### 7.2.2.1.1 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
In order to evaluate cross-factor cumulative effects, the same geographical boundaries were used for Human Health as those used for Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air (Local Residents & Community), Chapter 14: Material Assets – Built Services (Local Residents & Community) Chapter 15: Material Assets - Roads (Road Users).	The geographic boundaries are consistent with Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air (Local Residents & Community), Chapter 15: Material Assets - Roads (Road Users), thereby enabling the Human Health section to appraise the potential cumulative change in environmental and socio-economic determinants of health.

The study area is illustrated on Chapter 6: Population Figure CE 6.2, Chapter 11: Water Figure CE 11.4, Chapter 12: Air Figure CE 12.2.2.1 to CE 12.2.2.3, Chapter 14: Material Assets (Built Services) Figure CE 14.2 and Chapter 15: Material Assets (Roads) Figure CE 15.3, these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

#### 7.2.2.1.2 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 7.2.2.2.1 below.

The Whole Project Cumulative Evaluation Study Area comprises of the UWF Grid Connection Study Area along with the study areas for Other Elements and Other Projects or Activities which are described in Table 7-5 and illustrated on Chapter 6: Population Figure WP 6.2, Chapter 11: Water Figure WP 11.4, Chapter 12: Air Figure WP 12.2.1 to Figure WP 12.2.3, Chapter 14: Material Assets (Built Services) Figure WP 14.2 and Chapter 15: Material Assets (Roads) Figure WP 15.3, these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

**Table 7-5: Whole Project Cumulative Evaluation Study Area for Local Residents & Community**

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 1: UWF Grid Connection	In order to evaluate cross-factor cumulative effects, the same geographical boundaries were used for Human Health as those	The geographic boundaries are consistent with Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air
Element 2: UWF Related Works		

<u>Cumulative Project</u>	<u>Cumulative Study Area Boundary</u>	<u>Justification for Study Area Extent</u>
Element 3: UWF Replacement Forestry	used for Chapter 6: Population (Local Economy), Chapter 11: Water (Local Wells & Springs), Chapter 12: Air (Local Residents & Community), Chapter 14: Material Assets – Built Services (Local Residents & Community) and Chapter 15: Material Assets - Roads (Road Users).	(Local Residents & Community), and Chapter 15: Material Assets - Roads (Road Users) thereby enabling the Human Health section to appraise the potential cumulative change in environmental and socio-economic determinants of health.
Element 4: Upperchurch Windfarm (UWF)		
Element 5: UWF Other Activities		

### 7.2.2.2 Scoping for Other Projects or Activities & Potential for Impacts

The Whole Project 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 Cumulative Evaluations \(Section A2.1 .4.2\)](#).

The results of this scoping exercise are that: the existing Shannonbridge – Killonan 220kV OHL, Bunkimalta Windfarm (potential windfarm and consented grid connection) and Castlewaller Windfarm (consented windfarm and potential grid connection) have been scoped in for evaluation of cumulative effects to Local Residents & Community.

#### 7.2.2.2.1 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 and for the Other Projects or Activities to cause cumulative effects to the Sensitive Aspect Local Residents & Community. The results of this evaluation are included in Table 7-6.

The location of, and study area boundary associated with, the Other Elements and Other Projects or Activities which are included for cumulative evaluation is illustrated on the Figures and Mapping associated with [Figure WP 6.2](#), [Figure WP 11.4](#); [Figure WP 12.2.1](#) to [Figure WP 12.2.3](#), [Figure WP 14.2](#) and [Figure WP 15.3](#) all in Volume C3 EIAR Figures.

**Table 7-6: Results of the Evaluation of the Other Elements and Other Projects or Activities**

<u>Other Elements of the Whole UWF Project</u>	
Element 2: UWF Related Works	<u>Included</u> for the evaluation of cumulative effects
Element 3: UWF Replacement Forestry	<p><u>Evaluated as excluded</u>: no potential to cause any adverse health impacts to Local Residents &amp; Community, as there will be:</p> <ul style="list-style-type: none"> <li>Neutral impacts to the local economy: as per <a href="#">Chapter 6: Population, Section 6.2.2.2.1</a>, trees are likely to be sourced from Dundrum or further afield, which is located just outside the larger cumulative evaluation study area. At a local scale, the financial transactions (positive</li> </ul>

	<p>impact) associated with the UWF Replacement Forestry will be relatively low. Capital expenditure will be greatest during the planting stage and will represent less than 1% of the Local Economy. On this basis, health impacts to local populations will be Neutral.</p> <ul style="list-style-type: none"> <li>• No impact to water quality in local wells &amp; springs: as per <a href="#">Chapter 11: Water, Section 11.2.4</a>, due to Project Design Measures any impacts to local surface water bodies will be no greater than Imperceptible, additionally no springs or wells were identified within 50m of the UWF Replacement Forestry (<a href="#">Chapter 11: Water, Section 11.4.2.2.1</a>). On this basis, there is no potential for any impact on local water quality or water availability sufficient to impact upon local health.</li> <li>• No material adverse impact on air quality, noise or vibration: as per <a href="#">Chapter 12: Air, Section 12.2.2.2.1</a>, planting of the new woodland will have Neutral impact on air quality as works will be carried out by hand using spades, with use of vehicles limited to personnel vehicles. No mechanical noise or vibration sources during planting stage, as planting will be carried out by hand in grassland fields, therefore no noise or vibration impact will occur. During the growth stage, chainsaws may be used during thinning activities, however this type of activity will be infrequent, brief in nature and at a distance from local residents. Potential community exposure to environmental health pathways are therefore not of a magnitude, timing or duration to quantify any adverse impacts to local community health during any planting activities or thinning activities.</li> <li>• No likely impacts to public water supply: as per <a href="#">Chapter 14: Material Assets (Built Services), Section 14.2.4</a>, due to Project Design measures. On this basis there is no potential for any health impacts due to contaminated water or disruption of supply.</li> <li>• No EMF emissions: in relation to electromagnetic fields, there are no electrical or radio-communication parts associated with the UWF Replacement Forestry. Therefore, the UWF Replacement Forestry will not influence local EMF or result in any change in exposure, with no potential for impacts to health.</li> <li>• Neutral impact on traffic volumes: as per <a href="#">Chapter 15: Material Assets (Roads), Section 15.3.2.2.1</a>, the planting programme will generate extremely low traffic volumes, with 1-2 vehicles movements per day over a one month period. As a comparative example this level of traffic is substantially less than the daily level of traffic generated by a single residential dwelling. During the growth stage, traffic will be in the region of 2 to 4 vehicle movements <u>per year</u>. Due to the extremely low traffic volumes associated with the UWF Replacement Forestry, it is considered that Neutral effects will occur to Road Users on the local roads in the vicinity, with Neutral impact on local health.</li> <li>• No decommissioning effects, as UWF Replacement Forestry will be permanent woodland.</li> </ul>	Local Residents & Community
Element 4: Upperchurch Windfarm (UWF)	<u>Included</u> for the evaluation of cumulative effects	
Element 5: UWF Other Activities	<p>Evaluated as <u>excluded</u>: <b>no potential to cause any adverse health impacts to Local Residents &amp; Community</b>, as there will be:</p> <ul style="list-style-type: none"> <li>• Neutral impacts to the local economy: as per <a href="#">Chapter 6: Population, Section 6.2.2.2.1</a>, at a local scale, the financial transactions (positive impact) associated with the UWF Other Activities will be relatively low and will not cause any measurable effect to the local economy. Specifically in relation to the Haul Route Activities, no business disruption is likely given the location of these activities on the verges of regional and national roads, the small extent and momentary to temporary duration of the activities. On this basis, there is no material risk to health.</li> </ul>	Human Health Topic

- Neutral impacts to water quality: as per [Chapter 11: Water, Section 11.4.2.2.1](#), no likely effects to water quality as a result of Haul Route Activities, Overhead Line Activities or Monitoring Activities, only minor groundworks required for Upperchurch Hen Harrier Scheme, therefore any effects to water quality will be neutral. On this basis, health effects caused by contaminated water are not likely to occur.
- Neutral impacts to Air: as per [Chapter 12: Air, Section 12.2.2.2.1](#), any vehicle and equipment use will be of a short duration, transient in nature, and the relative change in concentration and community exposure will be orders of magnitude lower than is required to quantify any material impact on health. Any noise or vibration emitted by machinery or vehicles used to carry out the UWF Other Activities, will be in the context of background noise and vibration from regional or national roads, or will not be noticeable in the context of local traffic and farming activity. Equipment which will be used includes a hedge cutter and tractor and hand tools. Activities will take between 15 minutes and 2 days to complete at the various locations. Given that any change will be temporary and transient in nature, of a short duration and low magnitude with limited opportunity for community exposure, there is Neutral risk to health. In relation to electromagnetic fields, there are no electrical or radio-communication parts associated with the UWF Other Activities. On this basis, there is no potential for changes in exposure to EMF, and Neutral risk to health.
- No likely impacts to public water supply: as per [Chapter 14: Material Assets \(Built Services\), Section 14.2.2.2.1](#).
- Neutral impacts to Road Users: as per [Chapter 15: Roads & Road Users, Section 15.3.2.2.1](#), the traffic increases as a result of the Haul Route Activities (tree trimming, laying of matting, street furniture removal), will be in all cases considerably less than 1% of the current traffic volumes on these roads. Given that the normal day-to-day variation in traffic conditions can be as much as 10%, the relative change is not of a level to quantify any impact on local community health. In addition, no works to the road network or road boundaries form part of the Overhead Line Activities, or Upperchurch Hen Harrier Scheme or Monitoring Activities, and taking into consideration the extremely low volumes of traffic associated with these activities, and the brief duration of any public road use, no effects to Road Users are likely.
- No decommissioning effects, as any activities consequent of Upperchurch Windfarm decommissioning will be minimal, brief and reversible.

#### **Other Projects or Activities**

Shannonbridge – Killonan 220kV OHL	The existing <u>Shannonbridge – Killonan 220kV OHL</u> is included for the evaluation of cumulative cross-factor effects from changes to EMF levels in the Air.
Bunkimalta Windfarm	The potential <u>Bunkimalta Windfarm</u> is included for the evaluation of cumulative cross-factor effects from changes to the local economy.
Castlewaller Windfarm	The <u>Castlewaller Windfarm</u> is included for the evaluation of cumulative cross-factor effects from changes to the local economy. The potential Castlewaller Windfarm grid connection is included for the evaluation of cumulative cross-factor effects from changes to air quality, noise and damage to road pavements during construction, and for changes to EMF levels during the operational stage.

**7.2.2.3 Cumulative Information: Baseline Characteristics – Context & Character**

The cumulative study area, in relation to Other Elements of the Whole UWF Project and Other Existing or Consented Projects, includes additional areas in North Tipperary, and also extends into South Tipperary and County Limerick to reflect the entire Slievefelim to Silvermine Upland Area for the evaluation of indirect Population effects. It is assumed in this chapter that the population structure of the Cumulative Evaluation Study is similar to that of North Tipperary, as shown in Graph 7-1.

The physical, mental and social health status of population in North Tipperary, South Tipperary and County Limerick is replicated in Table 7-7 below.

**Table 7-7: South Tipperary and County Limerick Health Baseline**

Indicator	North Tipperary	County Limerick	South Tipperary	Ireland Average
<b>Limiting Long-Term Illness (2011)</b>				
Total persons with a disability	13.7%	12.6%	14.7%	13.0%
Condition that limits basic physical activities	43.8%	42.2%	44.2%	41.1%
<b>Mental Health</b>				
Psychological or emotional condition (2011)	14.6%	15.1%	15.6%	16.1%
Suicide per 100,000 (2007-2013)	12.8	11.6	14.5	11.3
Deliberate self-harm per 100,000 (2012)	417.8	314.7	401.1	423.1
<b>5 Year Standardised Mortality Rates</b>				
All deaths – all ages	669.7	643.1	536.1	563.6
Deaths heart disease and stroke – all ages (2008-2012)	252.6	215.5	180.4	182.8
Deaths cancer – all ages (2008-2012)	204.6	188.6	166.9	175.6
Deaths respiratory disease – all ages (2008-2012)	57.4	81.6	51.8	64.9

Sources: (IPH, n.d.) (Lenus, 2015)

**7.2.2.3.1 Element 2: UWF Related Works**

UWF Related Works is located in the same area as the Consented Upperchurch Windfarm, the description of the below baseline environment is relevant.

**7.2.2.3.2 Element 4: Consented Upperchurch Windfarm**

Upperchurch Windfarm is a consented 22-turbine windfarm, which is located on a series of hills between the villages of Kilcommon and Upperchurch.

Local environmental and socio-economic context:

As described in Chapter 6: Population, the area around the Consented Upperchurch Windfarm is sparsely populated, comprising once off houses and farmsteads and the small villages of Upperchurch and Kilcommon.

As described in Chapter 12 Air, there is a good air quality with very low background concentrations of air pollutants. In relation to potential air quality and noise related effects, there are 29 no. local residences (no community facilities) within 350m of construction works areas, and 33 no. local residences within 50m of construction material haul routes on the local roads in the windfarm area. In relation to potential electromagnetic field related effects, there are no local residences or community facilities within 100m of Consented UWF Turbines or the Consented UWF Substation.

As described in Chapter 11: Water, there are no wells or springs within 100m of construction works.

As described in Chapters 14: Material Assets Built Services, local residents are serviced by overhead electricity and telephone lines. Underground water supply also occurs along most roads in the area.

As described in Chapter 15: Material Assets Roads, roads in the Upperchurch Windfarm study area primarily comprise local roads with one regional road (R503). These roads are lightly trafficked at present.

Consideration of the Passage of Time: Human health was not explicitly evaluated in the 2013 and 2014 assessments for the consented Upperchurch Windfarm. However, this environmental factor is now considered in the evaluations in this EIAR for UWF Grid Connection, and a cumulative evaluation is carried out for Upperchurch Windfarm.

#### 7.2.2.3.3 Element 5: UWF Other Activities

Not applicable – Element evaluated as excluded. See Section 12.2.2.2.1

#### 7.2.2.3.4 Other Projects or Activities

Shannonbridge – Killonan 220kV OHL: There is 1 No. local residence (no community facilities) within 100m of both the 110kV UGC (95m distance) and the existing 220kV OHL (53m distance). This residence is located in Coole townland on the L2166-0.

Bunkimalta Windfarm: potential 34MW windfarm, possibly comprising approximately 16 turbines and substation, with a consented underground grid connection mainly along roads to Nenagh town. The Bunkimalta Windfarm is located in the northern half of the Slievefelim to Silvermines Mountain upland area, and at a substantial separation distance to any of the Whole UWF Project Elements.

Castlewaller Windfarm: Is a consented 16 – turbine windfarm, located in the northern half of the Slievefelim to Silvermines Mountain upland area, the nearest turbine is 1.2km north of the 110kV UGC. A potential grid connection, is predominantly on public roads to Killonan Station outside Limerick City. Part of the potential underground grid connection route is along the L6009-0, just east of Newport Town (*along which a section of the UWF Grid Connection 110kV UGC is currently proposed*). A potential site entrance on the R503 (along the UWF Grid Connection route) was also included in the SID Pre-Application consultations for the potential grid connection. The Castlewaller Windfarm project is at a substantial separation distance to the other Whole UWF Project Elements.



### 7.2.3 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 are 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 7-8 are relevant to the Environmental Factor, Human Health, and in particular to the sensitive aspect **Local Residents & Community**.

**Table 7-8: 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
PD06	Construction works will not be carried out within 150m of Rearcross National School or Lackamore National School, during school hours. In addition, the project Community Liaison Officer will keep each school informed of construction timetables and scheduling.
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.
PD10	Flag-men will be used at 110kV UGC works locations on the public roads subject to one lane closures. These flagmen will control the movement of traffic on the public road, so that road users can continue to use the public road network in a safe and efficient manner. The works will be carried out according to the Traffic Management Plan for UWF Grid Connection. The Traffic Management Plan forms part of the Environmental Management Plan.
PD11	Construction works for the 110kV UGC in Knocknabansha, Knockmaroe, Knockcurraghbola Crownlands and Knockcurraghbola Commons townlands, which are within 350m of local residences, will not take place at the same time as either the UWF Related Works or Upperchurch Windfarm where those works also occur within 350m.
PD12	As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the works along the public road network will be scheduled to minimise impacts on schools and local businesses. The works will be scheduled so that they do not disrupt or interfere with Tipperary County Council’s road works programme on the R503 through Newport town.
PD13	As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the Promoter will fund the costs of Tipperary County Council engaging a chartered

Local Residents & Community

Sensitive Aspect

	Civil Engineer to oversee quality control and compliance with drawings, specifications and road opening conditions for the duration of the works
PD16	No refuelling of plant or equipment will be permitted within 100m of identified water supply wells

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

Human Health

Topic



## 7.2.4 EVALUATION OF IMPACTS to Local Residents & Community

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

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

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

<b>Impacts Included</b> (Evaluated in the Impact Evaluation Table sections)	<b>Impacts Excluded</b> (Justification at the end of the Impact Evaluation Table sections)
Increased employment which is a wider determinant of health (construction stage)	Potential impact on health as a result of contamination of well water supplies (construction stage)
	Potential impact on health as a result of contamination of public water supplies (construction stage)
	Potential impact upon cardiovascular and respiratory health from changes to air quality (construction stage)
	Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration (construction stage)
	Increased risk of injury from road traffic accidents (construction stage)
	Increased employment which is a wider determinant of health (operational stage)
	Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration (operational stage)
	Potential impact on health as a result of exposure to EMF (operational stage)
	Increased risk of injury from road traffic accidents (operational stage)
	Decommissioning Effects

The source-pathway-receptor links for the impact included are described in the Impact Evaluation Table in the next section. **The Impact Evaluation Table is presented in the following Section 7.2.4.1.**

The source-pathway-receptor links and the rationale for impacts excluded are described in the section directly after the Impact Evaluation Table section, in Section 7.2.4.2.

### 7.2.4.1 Impact Evaluation Table: Increased Employment

#### Impact Description

Project Life Cycle Stage: Construction stage

Impact Source: Construction contracts

Cumulative Impact Source: Construction contracts

Impact Pathway: Financial transactions

Impact Description: An increase in direct employment within the study area which is associated with individual financial welfare, and also results in indirect employment opportunities within the supply chain and induced spending in the local economy.

Impact Quality: **Positive**

#### Evaluation of the Subject Development Impact – Increased Employment

##### Element 1: UWF Grid Connection – direct/indirect impact

Impact Magnitude:

There will be approximately 100 people working directly on the UWF Grid Connection element of the project over the course of the construction phase.

##### **Significance of the Impact: Slight Positive**

Rationale for Impact Evaluation:

- Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase are temporary but still represent a minor positive effect on health from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.

##### Element 1: UWF Grid Connection – cumulative impact

Cumulative Impact Magnitude:

UWF Grid Connection is expected to be constructed at the same time as the other elements of the Whole UWF Project, in addition, although unlikely, Bunkimalta Windfarm and Castlewaller Windfarm could potentially be constructed at the same time as UWF Grid Connection. Cumulative local impacts include:

- approximately 100 people working directly on the UWF Grid Connection element of the project over the course of the construction phase
- approximately 100 people working directly on UWF Related Works and Upperchurch Windfarm over the course of the construction phase (there is no increase in employment numbers as UWF Related Works will be carried out by Upperchurch Windfarm construction crews) and
- approximately 130 people working directly on the Bunkimalta Windfarm project
- approximately 130 people working directly on the Castlewaller Windfarm project

##### **Significance of the Cumulative Impact: Slight Positive**

Rationale for Cumulative Impact Evaluation:

- Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase are temporary but still represent a minor positive effect on health at the individual level from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.
- The temporary duration of the construction stage, in the context of the size of the local economy in the UWF Grid Connection Cumulative Evaluation Study Area.

<b>Cumulative Information: Individual Evaluations of Other Elements of the Whole UWF Project</b>	
<b>Element 2: UWF Related Works</b>	
Impact <u>Magnitude</u> : There will be approximately 5 people working directly on the UWF Related Works element of the project over the course of the construction phase.	
<u>Significance of the Impact</u> : Imperceptible	
<u>Rationale</u> for Impact Evaluation: <ul style="list-style-type: none"> <li>Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase offer little cumulative contribution and are therefore considered imperceptible.</li> </ul>	
<b>Element 3: UWF Replacement Forestry – N/A, evaluated as excluded, see Section 7.2.2.2.1</b>	
<b>Element 4: Consented Upperchurch Windfarm</b>	
Impact <u>Magnitude</u> : There will be approximately 100 people working directly on the Upperchurch Windfarm element of the project over the course of the construction phase.	
<u>Significance of the Impact</u> : Slight positive	
<u>Rationale</u> for Impact Evaluation: <ul style="list-style-type: none"> <li>Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase are temporary but still represent a minor positive effect on health at the individual level from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.</li> </ul>	
<b>Element 5: UWF Other Activities – N/A, evaluated as excluded, see Section 7.2.2.2.1</b>	
<b>Cumulative Information: Individual Evaluations of Other Projects or Activities</b>	
<b>Other Project: Potential Bunkimalta Windfarm</b>	
Impact <u>Magnitude</u> : the potential Bunkimalta Windfarm (34MW), possibly comprises 16 turbines, a substation, and an already consented grid connection. As per Chapter 6 Population: it is estimated that there will be approximately 130 people working directly on the Bunkimalta Windfarm project and over the course of its construction period.	
<u>Significance of the Impact</u> : Slight positive	
<u>Rationale</u> for Impact Evaluation: <ul style="list-style-type: none"> <li>Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase are temporary but still represent a minor positive effect on health at the individual level from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.</li> </ul>	
<b>Other Project: Castlewaller Windfarm (consented windfarm and potential grid connection)</b>	
Impact <u>Magnitude</u> : Castlewaller Windfarm if constructed, will consist of 16 turbines and one substation and a potential underground grid connection mainly along public roads. As per Chapter 6 Population: it is estimated that there will be approximately 130 people working directly on the Castlewaller Windfarm project and over the course of its construction period.	
<u>Significance of the Impact</u> : Slight positive	

Rationale for Impact Evaluation:

- Income and employment are key determinants of health. In this instance, the direct employment opportunities offered during the construction phase are temporary but still represent a minor positive effect on health at the individual level from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.

**Evaluation of Other Cumulative Impacts – Increased Employment****Whole UWF Project Effect**Magnitude:

Overall, there will be approximately 200 people working directly on the UWF Grid Connection and the UWF Related Works and the Upperchurch Windfarm over the course of the construction phase.

**Significance of the Whole Project Effect: Slight Positive**Rationale for Impact Evaluation:

- Income and employment are key determinants of health. The cumulative direct employment opportunities offered during the construction phase are temporary but support job security; and represent a minor positive contribution effect on health at the individual level from direct income and employment, with residual indirect and diffuse benefits at the regional and local level.

**All Elements of the Whole UWF Project with Other Projects or Activities**Cumulative Impact Magnitude:

Overall, there will be approximately 460 people working directly on the Whole UWF Project, the Bunkimalta Windfarm project and the Castlewaller Windfarm project during their construction periods.

**Significance of the Cumulative Impact: Imperceptible Positive**Rationale for Cumulative Impact Evaluation:

- The temporary duration of the construction stage, in the context of the larger Cumulative Evaluation Study Area.

### 7.2.4.2 Description and Rationale for Excluded (scoped out) Impacts

The source-pathway-receptor links and the rationale for impacts excluded from the Impact Evaluation Table sections are described in Table 7-10 below.

**Table 7-10: 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)
<b>Construction Stage</b>				
Contamination of water supply	1, 2, 4	Water	Potential impact on health as a result of contamination of well water supplies	Rationale for Excluding: No likely health impacts As stated in Chapter 11 (Water) there are small volumes of potential contamination sources on-site (fuels and oils). In addition, appropriate project design measures will be put in place during the construction phase and it was considered by the authors of Chapter 11 (Water) that effects to water supply are not likely to occur. As a result, health effects caused by contaminated water are also not likely to occur.
Contamination of water supply	1,2	Water	Potential impact on health as a result of contamination of public water supplies	Rationale for Excluding: No potential for health impacts. The vast majority of local residents, local community facilities, including local schools (UWF Grid Connection only), are serviced by water supply is via the piped Irish Water public supply, as stated in Chapter 14: Material Assets (Built Services - Water Supply) due to project design measures for UWF Grid Connection and UWF Related Works, there is no likelihood of any impacts to this water supply. It is expected that construction works for Castlewaller grid connection will be carried out to best practice and in compliance with a Road Opening License, adverse impacts to water supplies are unlikely to occur. As a result, health effects caused by contaminated water are also not likely to occur.
Air quality impacts from vehicle emissions and dust (PM <sub>10</sub> and PM <sub>2.5</sub> )	1, 2, 4	Air	Potential impact upon cardiovascular and respiratory health from changes in air quality	Rationale for Excluding: Neutral health impacts According to IAQM guidelines, the sensitivity of the surrounding area to human health impacts is Low and the majority of residential properties and community facilities are greater than 50m away from construction works or construction haul routes. In addition, background levels of pollutants are significantly below relevant EU limit values set for the protection of the environment and human health. As a result, any impact to air quality during the construction phase will be temporary, intermittent and not of a concentration or exposure to quantify any adverse health outcome to local residents or members of the community (including schools). In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction

Local Residents & Community	Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
Sensitive Aspect					impacts are not expected as works will either take place at separate times, or should works be carried out at the same time, then works on the grid connection for both projects are likely to be carried out by one crew, with no material cumulative increase in dust at local residents, and although a longer construction periods is possible on the local road L6009-0, this will not cause significant effects to residential amenity, as the works are still temporary and of short duration, during daylight hours. Works at the R503 entrance will not cause cumulative significant impacts to local residents due the very short duration of both 110kV UGC works and the entrance works.
	Noise impacts from machinery	1, 2, 4	Air	Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration	<p>Rationale for Excluding: Neutral health impacts</p> <p>The nature of construction noise will be temporary and intermittent. Noise generated from construction activities (measured at the façade of dwellings) has potential to exceed the NRA threshold limits over a period of 1-2 days at a limited number of houses, the threshold limits will not be exceeded at other house locations, and any increases in noise will be temporary.</p> <p>Noise impacts will be mitigated through project design measures such as limiting working hours to daytime hours only (07:00-19:00hrs Monday to Friday and 08:00-16:30hrs on Saturday), along with the control of sequencing of works in the Knockmaroe/Knockcurraghbola to ensure only one Element is being constructed at any one time within 350m of a residence. Although not planned, any construction works that take place between 19:00 and 22:00 (Monday to Friday), 08:00 to 16:30 (Sunday and bank holidays), or at any other time, would require the explicit permission of the relevant local authority unless in an emergency and will be limited to 60 LAeq(1 hour) dB.</p> <p>As a result, noise generated during the construction phase presents limited opportunity for any risk of annoyance or sleep disturbance, and when considered in the context of the very short duration of works within close proximity to any property it is considered that there will be Neutral health effects to local residents or community.</p> <p>In relation to local schools: Lackamore National School and Rear Cross National School are located 16m and 62m from the UWF Grid Connection, respectively. As per Section 12.2.4.2: these receptors are both located along the regional public road network, where the normal construction threshold of 70dB(A) applies. In addition, the UWF Grid Connection will not be constructed within 150m of Local Schools during school opening hours, therefore it is</p>

Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
				<p>considered that health effects to children and teachers at Local Schools will be neutral.</p> <p>In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction impacts are not expected as works will either take place at separate times, or should works be carried out at the same time, then works on the grid connection for both projects are likely to be carried out by one crew, with no material cumulative increase in noise at local residents, and although a longer construction periods is possible on the local road L6009-0, this will not cause significant effects to residential amenity, as the works are still temporary and of short duration, during daylight hours. Works at the R503 entrance will not cause cumulative significant impacts to local residents due the very short duration of both 110kV UGC works and the entrance works.</p>
Construction traffic and road works along haul routes	1, 2, 4	Roads	Increased risk of injury from road traffic accidents	<p><b>Rationale for Excluding:</b> No likely health impacts</p> <p>As per Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit &amp; Review and Appendix 15.1 Traffic &amp; Transportation Assessment Report, the local roads in the study area are lightly trafficked, with no records of serious traffic accidents on any of the local roads. The speeds recorded during traffic counts were well below to allowable limits (80km) on most of the roads in the area. In relation to the R503, this road is also lightly trafficked with 2 serious accident between 2005 and 2015.</p> <p>Construction traffic will not add substantial volumes of traffic, and in excess of 90% of road capacity will remain available. In addition, road safety measures have been designed into the UWF Grid Connection project through the use of appropriate advance warning signage, flagmen and traffic management measures.</p> <p>As a result, any changes to traffic flows as a result of the construction phase will be temporary and appropriately managed resulting in a neutral contribution to risk of injury from road traffic accidents.</p> <p>In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction impacts are not expected as works will either take place at separate times, or should works be carried out at the same time, then works on the grid connection for both projects are likely to be carried out by one crew, under the conditions of a road opening license, as the works are still temporary and of short duration, during daylight hours it is not expected that any combined works will cause any increased risk of road traffic accidents. Works</p>

Local Residents &amp; Community

Sensitive Aspect

Human Health

Topic



Local Residents & Community	Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
					at the R503 entrance will not cause cumulative significant impacts because Castlewaller entrance works will take place on forestry lands, off the public road.
Sensitive Aspect	<b>Operational Stage</b>				
	Employment opportunities	1, 2, 4	Financial transactions	Increased employment which is a wider determinant of health	Rationale for Excluding: Neutral health impacts Employment levels during the operational phase are very low for the UWF Grid Connection (c. 13 man days per year), UWF Related Works (c. 3 man days per year) and Upperchurch Windfarm (8 permanent jobs). Consequently, while there will be a positive impact to individual financial prosperity important to socio-economic health and wellbeing, this would not be of a magnitude sufficient enough to assess at a population level.
	Noise impacts from the Mountphilips Substation, the Consented UWF Substation, and the Consented UWF Turbines	1, 2, 4	Air	Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration	Rationale for Excluding: No likely health impacts <u>UWF Grid Connection</u> : There are 6 local residences (no schools or community facilities) within 400m of the Mountphilips Substation; the nearest of these is 385m to the east of the substation along the L2166-0 local road. A noise level of 60dB(A) was measured at 5m away from a representative substation, which has been calculated to result in a worst case noise level of 22dB(A) at 385m; this is below the background noise threshold of 35dB(A) for low background noise locations. The WHO state that "Guideline values for annoyance have been set at 50-55dB(A), representing daytime levels below which a majority of the adult population will be protected from becoming moderately or seriously annoyed, respectively". As the worst case noise level at 385m will be well below the 50dB(A) WHO guideline, it is expected that there will be no annoyance or consequential health impact as a result of the operation of the existing Mountphilips Substation. <u>UWF Related Works</u> : No noise will be omitted by the operational Telecom Relay Pole or by any other part of the UWF Related Works. <u>Upperchurch Windfarm</u> : The consented UWF Substation will emit a similar level of noise as the Mountphilips Substation. The nearest residence to the UWF Substation is similarly just less than 400m away (360m) and is the only residence within 400m from the Consented UWF Substation. In relation to the operational turbines, as stated in the RFI 2013, there are approximately 93 dwellings within 900m of the Consented UWF Turbines. Despite an increase in ambient noise levels as a result of the operational Consented UWF Turbines, the level of increase will be lower than WHO guideline values for annoyance, even in a worst case scenario. The



Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
				<p>Grant of Permission explicitly states that “subject to compliance with the conditions set out below, the proposed development would not seriously injure the amenities of the area or of property in the vicinity, would not be prejudicial to public health and would be acceptable in terms of traffic safety and convenience”.</p> <p>It is also considered that there is no potential for cumulative effects from all individual project elements as the noise emissions from the UWF Grid Connection (Mountphilips Substation) will not be heard in the same places as noise emissions from the Upperchurch Windfarm.</p>
Operational transmission of electricity	1, 2, 4	Air	Potential impact on health as a result of exposure to EMF	<p>Rationale for Excluding: Neutral health impacts. There are no residents or community facilities within 100m of Mountphilips Substation. There will be some increase in magnetic field levels at the 317 No. local residences and 17 No. community facilities (including 2 No. schools) which are within 100m of the 110kV UGC along the public road. The worst case increase in levels of magnetic fields at local residences and community facilities will range from 4.45µT to 0.13µT for residences/community/businesses between 5m and 30m from the 110kV UGC. These levels, albeit small increase, will rapidly reduce with distance from the cabling. All other properties will remain under 1.26µT and will be similar to existing ambient levels and in any case all increases remain substantially under the ICNIRP guideline limits of 100µT. At the 2 local schools (Lackamore National School and Rear Cross National School), the worst case increase in levels of magnetic fields is 0.123µT at Lackamore National School and 0.046µT at Rear Cross National School. There will be no increase in electric fields due to the complete screening by both the metallic sheath surrounding the cables and by the concrete and back-fill materials above the cables.</p> <p>There are 6 No. local residences which are within 100m of both the 110kV UGC and the Internal Windfarm Cabling in the Knockmaroe and Knockcurraghboola Commons area. At these residences the cumulative, worst case increase in magnetic fields will be 0.046µT, which will increase ambient magnetic fields at the closest local residences to 0.246µT.</p> <p>The worst case in-combination ambient magnetic field levels due to both the UWF Grid Connection and the existing overhead line network relates to 1 No. local residence in Coole which is within 100m of</p>

Local Residents &amp; Community

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Local Residents & Community	Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
Sensitive Aspect					<p>both the existing 220kV and the 110kV UGC, worst case EMF would be 0.99<math>\mu</math>T.</p> <p>Along the L6009-0 local road where both UWF Grid Connection 110kV UGC cables and Castlewaller Windfarm 110kV cables could be located, the worst case cumulative levels would be 56.7<math>\mu</math>T.</p> <p>All of these worst case levels remain below the more conservative 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) magnetic field reference level of 100<math>\mu</math>T (ICNIRP, 1998). As a result, it is expected that there will be a Neutral impact to human health.</p>
	Operational traffic and road works along haul routes	1, 2, 4	Roads	Increased risk of injury from road traffic accidents	<p>Rationale for Excluding: No likely health impacts</p> <p>As per Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit &amp; Review and Appendix 15.1 Traffic &amp; Transportation Assessment Report, the local roads in the study are lightly trafficked, with no records of serious traffic accidents on any of the local roads. In relation to the R503, this road is also lightly trafficked with 2 serious accident on the R503 in the 10 years between 2005 and 2015.</p> <p>The speeds recorded during traffic counts were well below to allowable limits (80km) on most of the roads in the area. Operational traffic associated with the UWF Grid Connection, UWF Related Works and the Upperchurch Windfarm will add negligible volumes of traffic to the local or regional road network (either individually or cumulatively). In addition, the vast majority of vehicle journeys will be by van or four wheel drive vehicle. Any testing of Joint Bays (UWF Grid Connection) on public roads will be subject to traffic management with advance signage, flagmen/stop-go systems put in place.</p> <p>As a result, any changes to traffic flows as a result of the operation phase is not likely to cause health effects from increased risk of injury due to road traffic accidents.</p>
Human Health	<b>Decommissioning Stage</b>				
	<p>Rationale for Excluding: Neutral impacts</p> <p>No decommissioning of the UWF Grid Connection.</p> <p>Decommissioning activities associated with the UWF Related Works or the Upperchurch Windfarm will be minimal, temporary, intermittent, and will only be taking place during the day time. Therefore, no health impacts are anticipated.</p>				
Topic					

## 7.2.5 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**.

## 7.2.6 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 are required and thus the Residual Impact is the same as the Impact set out in Impact Evaluation Table sections for Local Residents & Community above (Section 7.2.4) – i.e. **no adverse health impacts**.

## 7.2.7 Application of Best Practice and the EMP for Local Residents & Community

Best Practice Measures (BPM), although not part of the Project Design for the UWF Grid Connection, will be employed to afford further protection to the Environment.

The following Best Practice Measures have been developed, to support the Local Economy and Air, and indirectly **Local Residents & Community**, using industry best practice:

GC-BPM-09	Local Employment and Local Sourcing
GC-BPM-08	Minimising Dust Emissions from Site Activities
GC-BPM-10	Measuring Operational EMF Emissions

These Best Practice Measures form part of the **UWF Grid Connection Environmental Management Plan**, which is appended to the EIA Report as **Volume D**.

A Traffic Management Plan also forms part of the **UWF Grid Connection Environmental Management Plan**. The Traffic Management Plan (TMP) for the public roads will be a key construction contract document, the implementation of which will reduce possible impacts which may occur due to the presence of construction traffic and works on the public roads. It is a particular objective of this plan to control and minimise the traffic impacts of construction insofar as it may affect the local environment, local residents and the travelling public on the public roads close to and adjacent to the construction site, through measures to maximise the safety while keeping traffic flowing as freely as possible.

## 7.2.8 Summary of Impacts to Local Residents & Community

A summary of the Impact to Local Residents & Community is presented in Table 7-11.

**Table 7-11: Summary of the impacts to Local Residents & Community**

Impact to Local Residents & Community:	Increased Employment
<i>Evaluation Impact Table</i>	<i>Section 7.2.4.1</i>
Project Life-Cycle Stage	Construction Stage
<b><u>UWF Grid Connection</u></b> <i>Direct/indirect impact</i>	<b>Slight (positive)</b>
<b><u>UWF Grid Connection</u></b> <i>Cumulative impacts</i>	<b>Slight (positive)</b>
Element 2: UWF Related Works	Imperceptible (positive)
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 7.2.2.2.1
Element 4: Upperchurch Windfarm	Slight (positive)
Element 5: UWF Other Activities	No Potential for Impact - Evaluated as Excluded, see Section 7.2.2.2.1
<b><u>Cumulative Impact:</u></b>	
Whole UWF Project Effect	<b>Slight (positive)</b>
All Elements of the Whole UWF Project <i>cumulatively with</i> - Potential Bunkimalta Windfarm - Castlewaller Windfarm (consented windfarm, potential grid connection)	<b>Imperceptible (positive)</b>

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.

## 7.3 Sensitive Aspect No.2: Transient People

**This Section** provides a description and evaluation of the Sensitive Aspect - Transient People.

The Human Health section draws from and builds upon the wider EIA technical disciplines, most notably, Chapter 12: Air (air quality, noise, vibration, and electromagnetic fields) and Chapter 15 Material Assets (Roads). The authors of this Human Health topic chapters used the results of the evaluations in the other topic chapters and appendices in order to evaluate any cross-factor effects to health.

### 7.3.1 BASELINE CHARACTERISTICS of Transient People

#### 7.3.1.1 STUDY AREA for Transient People

The study area for Transient People in relation to the UWF Grid Connection is described in Table 7-12 and illustrated on [Chapter 12: Air \(Figure GC 12.3\)](#), [Chapter 15: Material Assets \(Roads\) \(Figure GC 15.3\)](#), these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

**Table 7-12: UWF Grid Connection Study Area for Transient People**

Study Area for Transient People	Justification for the Study Area Extents
In order to evaluate cross-factor effects, the same geographical boundaries were used for Human Health as those used for Chapter 12: Air (Transient People), and Chapter 15: Material Assets - Roads (Road Users).	The justification for the geographic boundaries is consistent with Chapter 12: Air (Transient People) and Chapter 15: Material Assets - Roads (Road Users), thereby enabling the Human Health section to appraise the potential change in environmental determinants of health.

#### 7.3.1.2 Baseline Context and Character of Transient People in the UWF Grid Connection Study Area

Transient people represent those who may work in or visit the area such as farm and forestry workers, road users, walkers and other recreational users.

The surrounding rural area of the UWF Grid Connection is comprised of agricultural land and countryside, with a number of minor roads and waymarked trails. Here, there is the potential for transient people to be present who are travelling, present for recreation purposes, or undertaking work on the land.

Specifically, in relation to waymarked trails, the Slievefelim Way and Ormond Way (cycle) are routed through the UWF Grid Connection study area.

#### 7.3.1.3 Importance of Transient People

In the absence of good physical, mental and social health and wellbeing, individuals and communities become limited in achieving their full potential. Therefore, achieving and maintaining good health and wellbeing through prevention techniques rather than treatment is of utmost importance. In addition to the clear benefits of good health on an individual and community scale, healthy lifestyles and behaviours contribute to relieving any unnecessary burden on healthcare services across Ireland to maintain good quality, access, value, standards of care and patient outcomes.

**7.3.1.4 Sensitivity of Transient People**

It is difficult to obtain demographic and health status data for visitors classified as transient people as their origin is unknown. However, visitors to the area (for walking, bird watching etc.) will only be exposed to changes in the environment temporarily and as a result, are not considered particularly sensitive.

In relation to individuals who live and work on the land, such as farmers, or individual using the roads in the area, will also be temporarily exposed to changes in the environment associated with the UWF Grid Connection. It should be noted that recent research suggests that farmers are 7 times more at risk to mortality from circulatory diseases than other occupation groups (IFA, 2012) and as a result are considered marginally more sensitive to changes in the environment than the average population. However, due to the temporary nature of their exposure it persists that farmers are not considered particularly sensitive receptors.

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

As stated in Chapter 6: Population, Fáilte Ireland's *Tourism Facts* for recent years point to very strong growth in both international and domestic tourist numbers in Ireland. The statistics confirm that walking and hiking have maintained their strong popularity for tourists as overall numbers have grown, and it is likely that the number of walkers using the waymarked trails in the Slievefelim to Silvermines Upland Area will continue to increase slowly over time, notwithstanding that tourists and visitor favour tourism products in South Tipperary over those in North Tipperary.

Road user numbers are increasing very slowly. The number of people working on farmland and forestry land in the area is expected to remain the same due to changes in landuse practices typically happening very slowly over time.

**7.3.1.6 Receiving Environment (the Baseline + Trends)**

Any changes to the baseline environment are anticipated to occur slowly. Therefore, it is assumed that the baseline environment identified will be the receiving environment.

## 7.3.2 CUMULATIVE INFORMATION - Cumulative Projects & Baseline Characteristics

### 7.3.2.1 Cumulative Evaluation Study Area

#### 7.3.2.1.1 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 Transient People	Justification for the Study Area Extents
In order to evaluate cross-factor cumulative effects, the same geographical boundaries were used for Human Health as those used for Chapter 12: Air (Transient People) and Chapter 15: Material Assets - Roads (Road Users).	The geographic boundaries are consistent with Chapter 12: Air (Transient People) and Chapter 15: Material Assets - Roads (Road Users), thereby enabling the Human Health section to appraise the potential cumulative changes in environmental determinants of health.

The study area is illustrated on [Chapter 12: Air Figure CE 12.3](#) and [Chapter 15: Material Assets \(Roads\) Figure CE 15.3](#), these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

#### 7.3.2.1.2 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 7.3.2.2.1](#) below.

The Whole Project Cumulative Evaluation Study Area comprises of the UWF Grid Connection Study Area along with the study areas for Other Elements and Other Projects or Activities which are described in Table 7-13 and illustrated on [Chapter 12: Air \(Figure WP 12.3\)](#), [Chapter 15: Material Assets \(Roads\) \(Figure WP 15.3\)](#) ([Volume C3 EIAR Figures](#)), these figures have been reproduced for the Human Health figures and are included in Volume C3 EIAR Figures.

**Table 7-13: Whole Project Cumulative Evaluation Study Area for Transient People**

Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
Element 1: UWF Grid Connection	In order to evaluate cross-factor cumulative effects, the same geographical boundaries were used for Human Health as those used for Chapter 12: Air (Transient People), and Chapter 15: Material Assets - Roads (Road Users).	The geographic boundaries are consistent with Chapter 12: Air (Local Residents & Community), and Chapter 15: Material Assets - Roads (Road Users) thereby enabling the Human Health section to appraise the potential cumulative changes in environmental determinants of health.
Element 2: UWF Related Works		
Element 3: UWF Replacement Forestry		
Element 4: Upperchurch Windfarm (UWF)		
Element 5:		



Cumulative Project	Cumulative Study Area Boundary	Justification for Study Area Extent
UWF Other Activities		

### 7.3.2.2 Scoping of Other Elements, Other Projects or Activities & Potential for Impacts

The evaluation of cumulative impacts to Transient People 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 Transient People 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 Cumulative Evaluations \(Section A2.1 .4.2\)](#).

The results of this scoping exercise are that: the existing Shannonbridge – Killonan 220kV OHL, existing Killonan – Nenagh 110kV OHL and Castlewaller Windfarm (potential grid connection) have been scoped in for evaluation of cumulative effects to Transient People.

#### 7.3.2.2.1 Potential for Impacts to Transient People

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 Transient People. The results of this evaluation are included in Table 7-14.

The location of, and study area boundary associated with the Other Elements which are included for cumulative evaluation is illustrated on [Figure WP 12.3](#) and [Figure WP 15.3](#). The baseline character of the areas around these projects is described in Section 7.3.2.3.

**Table 7-14: 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	<u>Included</u> for the evaluation of cumulative effects
Element 3: UWF Replacement Forestry	<p><u>Evaluated as excluded</u>: No potential for any adverse health impacts to Transient People, as there will be as there will be:</p> <ul style="list-style-type: none"> <li>• No material impact on air quality, noise or vibration: <a href="#">as per Chapter 12: Air, Section 12.3.2.2.1</a>, planting works associated with UWF Replacement Forestry will have a neutral impact on air quality as works will be carried out by hand using spades, with use of vehicles limited to personnel 4WD vehicles. There will be no mechanical noise or vibration sources during planting stage, as planting will be carried out by hand in grassland fields, therefore no noise or vibration impact will occur. During the growth stage, chain-saws may be used during thinning activities, however this type of activity will be infrequent, brief in nature and at a distance from Transient People. Potential exposure of Transient People to environmental health pathways are therefore not of a magnitude, timing or duration to cause impacts to their health during any planting or thinning activities.</li> <li>• No EMF emissions: there are no electrical or radio-communication parts associated with the UWF Replacement Forestry. Therefore, the UWF Replacement Forestry will not influence local EMF or result in any change in exposure, with no impact to health.</li> <li>• Extremely low traffic volumes: as per <a href="#">Chapter 15: Material Assets (Roads), Section 15.3.2.2.1</a>, the planting programme will generate extremely low traffic volumes, with 1-2 vehicles movements per day over a one month period. As a comparative example this</li> </ul>



	level of traffic is substantially less than the daily level of traffic generated by a single residential dwelling. During the growth stage, traffic will be in the region of 2 to 4 vehicle movements <u>per year</u> . Due to the extremely low traffic volumes associated with the UWF Replacement Forestry, it is considered that neutral effects will occur to Road Users on the local roads in the vicinity, with no impacts to the health of any Transient People who may be using the roads.
Element 4: Upperchurch Windfarm (UWF)	<u>Included</u> for the evaluation of cumulative effects
Element 5: UWF Other Activities	<p><u>Evaluated as excluded</u>: No potential for any adverse health impacts to Transient People, as there will be as there will be:</p> <ul style="list-style-type: none"> <li>• No material impact on air quality, noise or vibration: as per <b>Chapter 12: Air, Section 12.3.2.2.1</b>, any emissions from vehicles and equipment used will be of a short duration, transient in nature, and the relative change in air quality will be orders of magnitude lower than is required to quantify any material impact on health, any noise or vibration emitted by machinery or vehicles used to carry out the UWF Other Activities, will be in the context of background noise and vibration from regional or national roads, or will not be noticeable in the context of local traffic and farming activity. Notwithstanding the very low magnitude and brief duration of UWF Other Activities, any exposure of Transient People to dust, noise or vibration will be of a momentary duration as a person passes in close proximity to activities, and therefore no impacts to health are likely to occur.</li> <li>• No EMF emissions: there are no electrical or radio-communication parts associated with the UWF Other Activities. On this basis, there is no potential for changes in exposure to EMF, and no risk to health.</li> <li>• Extremely low traffic volumes: as per <b>Chapter 15: Material Assets (Roads), Section 15.3.2.2.1</b>, the traffic increases as a result of the Haul Route Activities (tree trimming, laying of matting, street furniture removal), will be in all cases considerably less than 1% of the current traffic volumes on these roads. Given that the normal day-to-day variation in traffic conditions can be as much as 10%, the relative change is not of a level to quantify any impact on health from risk of accident and injury due to traffic accidents. In addition, no works to the road network or road boundaries form part of the Overhead Line Activities or the Upperchurch Hen Harrier Scheme or Monitoring Activities, and taking into consideration the extremely low volumes of traffic associated with these activities, and the brief duration of any public road use, no effects to Road Users are likely, consequently there will be no impacts to the health of any Transient People who may be using the local roads.</li> </ul>
<b><u>Other Projects or Activities</u></b>	
Shannonbridge – Killonan 220kV OHL	The existing <u>Shannonbridge – Killonan 220kV OHL</u> and existing <u>Killonan – Nenagh 110kV OHL</u> are included for the evaluation of cumulative cross-factor effects from changes to EMF levels in the Air.
Killonan – Nenagh 110kV OHL	The potential <u>Bunkimalta Windfarm</u> is included for the evaluation of cumulative cross-factor effects from changes to the local economy.
Castlewaller Windfarm	The potential Castlewaller Windfarm grid connection is included for the evaluation of cumulative cross-factor effects from changes to air quality, noise and damage to road

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Transient People	Sensitive Aspect		pavements during construction, and for changes to EMF levels during the operational stage.
		<b>7.3.2.3 Cumulative Information: Baseline Characteristics – Context &amp; Character</b>	
			<p>Transient people represent those who may work in or visit the area such as farm and forestry workers, road users, walkers and other recreational users.</p> <p>The surrounding rural area of UWF Related Works and Upperchurch Windfarm is comprised of agricultural land and countryside, with a number of minor roads and waymarked trails. Here, there is the potential for transient people to be present who are travelling, present for recreation purposes, or undertaking work on the land.</p>
		<b>7.3.2.3.1 Element 2: UWF Related Works</b>	
			Specifically, in relation to waymarked trails, the Eamonn a Chnoic Loop, Ormond Way (walking and cycle) are routed through the UWF Related Works study area, see <b>Figure WP 12.3</b> .
Human Health	Topic	<b>7.3.2.3.2 Element 3: UWF Replacement Forestry</b>	
			Not applicable – Element evaluated as excluded. See Section 7.3.2.2.1
		<b>7.3.2.3.3 Element 4: Consented Upperchurch Windfarm</b>	
			<p>Walkers may also be present on the Eamonn a Choic Loop or Ormond Way walking route, which is currently under development, where these walks are routed through the consented Upperchurch Windfarm.</p> <p><u>Consideration of the Passage of Time:</u> Human health was not explicitly evaluated in the 2013 and 2014 assessments for the consented Upperchurch Windfarm. However, this environmental factor is now considered in the evaluations in this EIAR for UWF Grid Connection, and a cumulative evaluation for Transient People is carried out for Upperchurch Windfarm.</p>
		<b>7.3.2.3.4 Element 5: UWF Other Activities</b>	
Human Health	Topic		Not applicable – Element evaluated as excluded. See Section 7.3.2.2.1
		<b>7.3.2.3.5 Other Projects or Activities</b>	
			<p>Farm or forestry workers or road users may be present within 100m of both the UWF Grid Connection and the <u>Shannonbridge – Killonan 220kV OHL</u> or the <u>Killonan – Nenagh 110kV OHL</u>.</p> <p>A potential grid connection for the consented <u>Castlewaller Windfarm</u>, is predominantly on public roads to Killonan Station outside Limerick City. Part of the potential underground grid connection route is along the L6009-0, just east of Newport Town (<i>along which a section of the UWF Grid Connection 110kV UGC is currently proposed</i>). A potential site entrance on the R503 (along the UWF Grid Connection route) was also included in the SID Pre-Application consultations for the potential grid connection. Farm or forestry workers or road users may be present within 100m of the potential Castlewaller Windfarm grid connection works on the L6009-0. The Castlewaller Windfarm project is at a substantial separation distance to the other Whole UWF Project Elements.</p>

### 7.3.3 PROJECT DESIGN MEASURES for Transient People

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 are 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 7-8 are relevant to the Environmental Factor, Human Health, and in particular to the sensitive aspect **Transient People**.

**Table 7-15: 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.
PD10	Flag-men will be used at 110kV UGC works locations on the public roads subject to one lane closures. These flagmen will control the movement of traffic on the public road, so that road users can continue to use the public road network in a in a safe and efficient manner. The works will be carried out according to the Traffic Management Plan for UWF Grid Connection. The Traffic Management Plan forms part of the Environmental Management Plan.
PD12	As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the works along the public road network will be scheduled to minimise impacts on schools and local businesses. The works will be scheduled so that they do not disrupt or interfere with Tipperary County Council’s road works programme on the R503 through Newport town.
PD13	As requested by the Roads Department of Tipperary County Council, during pre-planning consultations, the Promoter will fund the costs of Tipperary County Council engaging a chartered Civil Engineer to oversee quality control and compliance with drawings, specifications and road opening conditions for the duration of the works

### 7.3.4 EVALUATION OF IMPACTS to Transient People

**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) - Transient People.

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

**Table 7-16: List of all Impacts included and excluded from the Impact Evaluation Table sections**

<b>Impacts Included</b> (Evaluated in the Impact Evaluation Table sections)	<b>Impacts Excluded</b> (Justification at the end of the Impact Evaluation Table sections)
<b>No Impacts were Included for Further Evaluation</b>	<i>Potential impact upon cardiovascular and respiratory health from changes to air quality (construction stage)</i>
	<i>Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration (construction stage)</i>
	<i>Increased risk of injury from road traffic accidents (construction stage)</i>
	<i>Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration (operational stage)</i>
	<i>Increased risk of injury from road traffic accidents (operational stage)</i>
	<i>Potential impact on health as a result of exposure to EMF (operational stage)</i>
	<i>Decommissioning Effects</i>

The source-pathway-receptor links and the rationale for excluded impacts are described in Section 7.3.4.1.

### 7.3.4.1 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 7-16 below.

**Table 7-17: Description and Rationale for Excluded Impacts to Transient People**

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)
<b>Construction Stage</b>				
Air quality impacts from vehicle emissions and dust (PM10 and PM2.5)	1, 2, 4	Air	Potential impact upon cardiovascular and respiratory health from changes to air quality	<p>Rationale for Excluding: Neutral health impacts</p> <p>According to IAQM guidelines, the sensitivity of the surrounding area to human health impacts is Low and the majority of waymarked trails and agricultural/forestry lands (where workers may be present) are greater than 50m away from construction works or construction haul routes. In addition, background levels of pollutants are significantly below relevant EU limit values set for the protection of human health. As a result, any impact to air quality during the construction phase will be temporary, intermittent and not of a concentration or exposure to quantify adverse health impact to any Transient People.</p> <p>In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction impacts are not expected as works will either take place at separate times, or should works be carried out at the same time, then works on the grid connection for both projects are likely to be carried out by one crew, with no material cumulative increase in dust levels and although a longer construction periods is possible on the local road L6009-0, this will not cause significant effects to transient people, as the works are still temporary and of short duration, during daylight hours. Works at the R503 entrance will not cause cumulative significant impacts to local residents due the very short duration of both 110kV UGC works and the entrance works.</p>
Noise impacts from machinery	1, 2, 4	Air	Potential impact upon mental health (from stress, annoyance and sleep disturbance) and as a consequence, impact on cardiovascular health associated with exposure to noise and vibration	<p>Rationale for Excluding: Neutral health impacts</p> <p>The nature of construction noise will be temporary and intermittent. As a result, noise generated during the construction phase presents limited opportunity for any risk of annoyance. When considered in the context of the very short duration of works within close proximity to any waymarked walks and the linear nature of works in agricultural lands or forestry lands, adverse health effects are not likely to occur to Transient People who may be working or walking close to construction works.</p> <p>In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction impacts are not expected as works will either take place at separate times, or should works be carried out at the</p>

Topic	Human Health	Sensitive Aspect	Transient People	Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
				Construction traffic and road works along haul routes	1, 2, 4	Roads	Increased risk of injury from road traffic accidents	<p>same time, then works on the grid connection for both projects are likely to be carried out by one crew, with no material cumulative increase in noise levels and although a longer construction periods is possible on the local road L6009-0, this will not cause significant effects to transient people, as the works are still temporary and of short duration, during daylight hours. Works at the R503 entrance will not cause cumulative significant impacts to local residents due the very short duration of both 110kV UGC works and the entrance works.</p> <p>Rationale for Excluding: No likely health impacts As per Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit &amp; Review and Appendix 15.1 Traffic &amp; Transportation Assessment Report, the local roads in the study area are lightly trafficked, with no records of serious traffic accidents on any of the local roads. The speeds recorded during traffic counts were well below allowable limits (80km) on most of the roads in the area. In relation to the R503, this road is also lightly trafficked with 2 serious accident in the 10 year period between 2005 and 2015.</p> <p>Construction traffic will not add substantial volumes of traffic, and in excess of 90% of road capacity will remain available. In addition, road safety measures have been designed into the UWF Grid Connection and UWF Related Works projects through the use of appropriate advance warning signage, flagmen and traffic management measures.</p> <p>As a result, any changes to traffic flows as a result of the construction phase will be temporary and appropriately managed resulting in a neutral contribution to risk of injury to Transient People from road traffic accidents.</p> <p>In relation to cumulative impacts with Castlewaller Windfarm grid connection works on L6009-0 and site entrance works off R503, cumulative construction impacts are not expected as works will either take place at separate times, or should works be carried out at the same time, then works on the grid connection for both projects are likely to be carried out by one crew, under the conditions of a road opening license, as the works are still temporary and of short duration, during daylight hours it is not expected that any combined works will cause any increased risk of road traffic accidents. Works at the R503 entrance will not cause cumulative significant impacts because Castlewaller entrance works will take place on forestry lands, off the public road.</p>
				<b>Operational Stage</b>				
				Noise impacts from the Mountphilip	1, 4	Air	Potential impact upon mental health (from	<p>Rationale for Excluding: Neutral health impacts There are no waymarked trails within 400m of the Mountphilips Substation or the Consented UWF Substation and as a result, there is no potential for</p>

Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)
s Substation, Consented UWF Substation, and Consented UWF Turbines			stress or annoyance) and as a consequence, impact on cardiovascular health	health impacts to Transient People. Noise will be emitted by the operational UWF Turbines; while turbines will be heard in close proximity by transient people, the noise will not be intrusive (either alone or cumulatively with neighbouring Milestone Windfarm turbines) and as a result there will be a Neutral impact to human health.
Operational traffic and road works along haul routes	1, 2, 4	Roads	Increased risk of injury from road traffic accidents	<p>Rationale for Excluding: No likely health impacts</p> <p>As per Chapter 15: Material Assets (Roads), Appendix 15.4: Stage 1 Road Safety Audit &amp; Review and Appendix 15.1 Traffic &amp; Transportation Assessment Report, the local roads in the study are lightly trafficked, with no records of serious traffic accidents on any of the local roads. The speeds recorded during traffic counts were well below to allowable limits (80km) on most of the roads in the area. In relation to the R503, this road is also lightly trafficked with 2 serious accidents in the 10 year period between 2005 and 2015.</p> <p>Operational traffic associated with the UWF Grid Connection, UWF Related Works and the Upperchurch Windfarm will add negligible volumes of traffic to the local or regional road network (either individually or cumulatively). In addition, the vast majority of vehicle journeys will be by van or four wheel drive vehicle. Any testing of Joint Bays on public roads will be subject to traffic management with advance signage, flagmen/stop-go systems put in place.</p> <p>As a result, any changes to traffic flows as a result of the operation phase is not likely to cause health effects to Transient People from increased risk of injury due to road traffic accidents.</p>
Operational transmission of electricity	1, 2, 4	Air	Potential impact on health as a result of exposure to EMF	<p>Rationale for Excluding: Neutral health impacts</p> <p>As per Chapter 12: Air, Section 12.3.4.1, the maximum level of cumulative EMF in relation to 110kV UGC and UWF Related Works/Upperchurch Windfarm will be generated on the local road L-2264-50, where some agricultural and forestry lands and a short section of the Ormond Way cycle and walking routes will be within 100m of both the 110kV UGC and the Internal Windfarm Cabling in Knockmaroe/Knockcurraghbola townlands, where the Internal Windfarm Cabling is routed across the 110kV UGC on the L-2264-50. The worst case possible levels will be 55.8 <math>\mu</math>T at a public road crossing point.</p> <p>On the Upperchurch Windfarm site, farm/forestry workers and walkers on the Ormond Way or Eamonn a Chnoic Loop will be within 100m of both the Internal Windfarm Cabling and the Consented UWF Turbines. The worst case possible cumulative</p>

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Transient People		Sensitive Aspect				
Source(s) of Impacts	Project Element	Pathway	Impacts (Consequences)	Rationale for Excluding (Scoping Out)		
				<p>increase in magnetic field levels will be 7.8 <math>\mu</math>T beside the turbine towers and over Internal Windfarm Cabling.</p> <p>The worst case in-combination ambient magnetic field levels relates to farm/forestry workers who are within 100m of both the 110kV UGC and the existing 110kV overhead line, or within 100m of both the 110kV UGC and the existing 220kV overhead line in Mountphilips, where worst case EMF would be 69<math>\mu</math>T and 79.7<math>\mu</math>T, respectively.</p> <p>The worst case in-combination ambient magnetic field levels would be 0.98<math>\mu</math>T due to both the UWF Grid Connection and the existing overhead line network relates to 1 No. local residence in Coole which is within 100m of both the existing 220kV and the 110kV UGC.</p> <p>Along the L6009-0 local road where both UWF Grid Connection 110kV UGC cables and Castlewaller Windfarm 110kV cables could be located, the worst case cumulative levels would be 56.7<math>\mu</math>T.</p> <p>These values remain below the more conservative 1998 International Commission on Non-Ionizing Radiation Protection (ICNIRP) magnetic field reference level of 100<math>\mu</math>T (ICNIRP, 1998). As a result, it is expected that there will be no impact to human health.</p>		
Decommissioning Stage						
<p>Rationale for Excluding: Neutral impact</p> <p>The UWF Grid Connection will not be decommissioned. Decommissioning activities will be minimal in relation to UWF Related Works and Upperchurch Windfarm and decommissioning activities will be temporary, intermittent, and will only be taking place during the day time.</p>						



### 7.3.5 Mitigation Measures for Impacts to Transient People

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 occur to to Transient People.

### 7.3.6 Evaluation of Residual Impacts to Transient People

Residual Impacts are the final or intended effects that will occur after mitigation measures have been put into place. No additional mitigation measures are required and thus the Residual Impact is the same as the Impact set out in the Evaluation of UWF Grid Connection (Section 7.3.1), i.e. **neutral impacts**.

### 7.3.7 Application of Best Practice and the EMP for Transient People

Best Practice Measures (BPM), although not part of the Project Design for the UWF Grid Connection, will be employed to afford further protection to the Environment.

The following Best Practice Measures have been developed using industry best practice, to provide further protection to Air and Road Users, and indirectly to **Transient People**:

GC-BPM-08	Minimising Dust Emissions from Site Activities
GC-BPM-10	Measuring Operational EMF Emissions

These Best Practice Measures form part of the **UWF Grid Connection Environmental Management Plan**, which is appended to the EIA Report as **Volume D**.

A Traffic Management Plan also forms part of the **UWF Grid Connection Environmental Management Plan**. The Traffic Management Plan (TMP) for the public roads will be a key construction contract document, the implementation of which will reduce possible impacts which may occur due to the presence of construction traffic and works on the public roads. It is a particular objective of this plan to control and minimise the traffic impacts of construction insofar as it may affect the local environment, local residents and the travelling public on the public roads close to and adjacent to the construction site, through measures to maximise the safety while keeping traffic flowing as freely as possible.

### 7.3.8 Summary of Impacts to Transient People

**The topic authors conclude that impacts to Transient People as a consequence of the development of the UWF Grid Connection will be neutral.**

**Table 7-18: Summary of the impacts to Transient People**

Impact to Transient People:	Impact
<i>Impact Evaluation</i>	<i>Section 7.3.4.1 – All impacts excluded</i>
Project Life-Cycle Stage	All
<b><u>UWF Grid Connection</u></b>	<b>Neutral Impacts</b>
Element 2: UWF Related Works	Neutral Impacts
Element 3: UWF Replacement Forestry	No Potential for Impact - Evaluated as Excluded, see Section 7.3.2.2.1
Element 4: Upperchurch Windfarm	Neutral Impacts
Element 5: UWF Other Activities	No Potential for Impact - Evaluated as Excluded, see Section 7.3.2.2.1
<b><u>Cumulative Impact:</u></b>	
Whole UWF Project Effect	<b>Neutral Cumulative Impacts</b>
All Elements of the Whole UWF Project <u>cumulatively with</u> - Shannonbridge – Killonan 220kV OHL, - Killonan – Nenagh 110kV OHL - Castlewaller Windfarm (potential grid connection)	<b>Imperceptible (positive)</b>

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.

## 7.4 Reference List

- CSO. (2016). Census 2016 Small Area Population Statistics. Retrieved from CSO: <http://census.cso.ie/sapmap/>
- EPA. (2017, August). Guidelines on the Information to be Contained in Environmental Impact Assessment Reports Draft. Retrieved from Environmental Protection Agency Ireland: <https://www.epa.ie/pubs/advice/ea/EPA%20EIAR%20Guidelines.pdf>
- European Commission. (2017). Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). Retrieved December 21, 2018, from [http://ec.europa.eu/environment/eia/pdf/EIA\\_guidance\\_EIA\\_report\\_final.pdf](http://ec.europa.eu/environment/eia/pdf/EIA_guidance_EIA_report_final.pdf)
- IPH. (n.d.). IPH Community Profiles. Retrieved from IPH: <http://www.thehealthwell.info/community-profiles/VIEWINDICATOR/atlas.html?data=final-master-roi&select=2>
- IPH. (2009). Health Impact Assessment Guidance. Retrieved from Institute of Public Health in Ireland : [https://www.publichealth.ie/sites/default/files/documents/files/IPH%20HIA\\_0.pdf](https://www.publichealth.ie/sites/default/files/documents/files/IPH%20HIA_0.pdf)
- Lenus. (2015). Health Profile 2015 Limerick County. Retrieved from Lenus: <http://www.lenus.ie/hse/bitstream/10147/584048/1/Limerick+County.pdf>
- Lenus. (2015). Health Profile 2015 Tipperary North. Retrieved from Lenus: <http://www.lenus.ie/hse/bitstream/10147/584062/1/Tipperary+North.pdf>
- Smyth, B., Evans, D., Kelly, A., Cullen L., and O'Donovan, D. "The farming population in Ireland: mortality trends during the 'Celtic Tiger' years," *European Journal of Public Health*, vol. 23, no. 1, pp. 50-55, 2012.

