

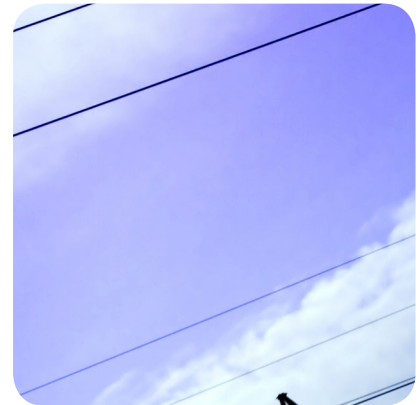


# SONI

## Transmission Development Plan for Northern Ireland 2018 - 2027

### Strategic Environmental Assessment Environmental Report

Nov 2018 / IBE1426







**SONI**  
**Transmission Development Plan for**  
**Northern Ireland 2018 - 2027**  
**Strategic Environmental Assessment**  
**Environmental Report**  
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## ABBREVIATIONS

AA	Appropriate Assessment
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
AQS	Air Quality Strategy
ASSI	Area of Special Scientific Interest
DAERA	Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food and the Marine
DCCAE	Department of Communications, Climate Action and the Environment
DCHG	Department of Culture, Heritage and Gaeltacht
DEFRA	Department for Environment, Food & Rural Affairs
DfI	Department for Infrastructure
DHPLG	Department of Housing, Planning and Local Government
DSD	Department for Social Development
EPA	Environmental Protection Agency
HRA	Habitats Regulation Assessment
LAQM	Local Air Quality Management
MCZ	Marine Conservation Zones
NHA	Natural Heritage Area
NIE	Northern Ireland Electricity
NIEA	Northern Ireland Environment Agency
NIO	Northern Ireland Office
PAH	Polycyclic Aromatic Hydrocarbons
PM	Particulate Matter
PNHA	Proposed Natural Heritage Area
PPC	Pollution Prevention and Control
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SEA	Strategic Environmental Assessment
SEO	Strategic Environmental Objective
SLNCI	Sites of Local Nature Conservation Importance
SMR	Site and Monuments Record
SONI	Systems Operator for Northern Ireland
SPA	Special Protection Area
TDPNI	Transmission Development Plan for Northern Ireland
TSO	Transmission System Operator
WFD	Water Framework Directive



## NON-TECHNICAL SUMMARY

### INTRODUCTION

In line with its licence obligations as Transmission System Operator (TSO) in Northern Ireland, System Operator for Northern Ireland (SONI) is obliged to draft a 10 year Transmission Development Plan outlining projects that are needed for the operation of the transmission system. Using the most up to date information on the current and projected future requirements for the operation of a secure, reliable grid, the Transmission Development Plan for Northern Ireland (TDPNI) is currently being compiled. In addition, future needs that may drive future potential projects will also be considered.

The TDPNI will present the potential projects required in Northern Ireland over the next 10 years (2018-2027) to reinforce the electrical transmission grid and ensure the connection of generation and demand for Northern Ireland.

Substantial system reinforcement is required to ensure that the transmission system continues to meet the planning standards as changes to the generation portfolio and demand occur over time including the connection of renewable generation. When considering system reinforcement SONI is obliged to balance the costs to the consumer, system security and its impact on the environment.

The TDPNI is being prepared in accordance with Article 22 of European Directive 72/2009 and Condition 40 of the SONI TSO Licence. In accordance with the license condition the TDPNI has the following overarching objectives, which are the key drivers for the Plan:

- a) Indicate to market participants the main transmission infrastructure that needs to be built or upgraded over the next ten years;
- b) Contain all the investments already approved by the Utility Regulator and identify new investments which have to be executed in the next three years;
- c) Provide for a time frame and estimate of costs (where reasonable) for all investment projects;
- d) Contain such other matters as shall be specified in directions issued by the Utility Regulator from time to time for the purposes of the condition; and
- e) Contain a reasonable number of future scenarios, which reflect uncertainties and shall, as far as practicable, be consistent with scenarios that licensee uses in other relevant areas of work.

### METHODOLOGY AND CONSULTATION

The TDPNI has been developed to ensure future requirements of the electrical network in Northern Ireland will be met. This SEA Environmental Report has been produced to assess the environmental impacts of the various development options (alternatives) within the TDPNI and to provide the

environmental guidance to help create a more sustainable TDPNI. In parallel to this, a Habitats Regulation Assessment (HRA) has been prepared to inform the decision making process, in terms of the potential for the development options to impact the integrity of any European sites in view of that sites conservation objectives. Both environmental assessments have been central to the development of the draft TDPNI.

The TDPNI has been assessed via a Baseline Led Assessment. This method involves the assessment of each option available in the potential developments of the TDPNI against each of the following topics:

- Biodiversity, Flora & Fauna (BFF)
- Population & Human Health (PHH)
- Soils, Geology and Land use (S)
- Water (W)
- Air (A)
- Climatic Factors (C)
- Material Assets & Infrastructure (MA)
- Cultural, Architectural & Archaeological Heritage (H)
- Landscape & Visual Amenity (L)

Each potential development option/project in the TDPNI has been assessed in the short, medium and long term for likely effects, the significance of the effects, and whether they are positive or negative effects. Other impacts that have been assessed for significance are secondary effects, cumulative effects, synergistic effects, temporary and permanent effects, and the inter-relationship of effects. The scenario of “The Evolution of the Environment without the Plan” has also been assessed in the same format. This will be considered the Do-Nothing Scenario.

Each potential development option/ project has been assessed against the SEA Objectives to examine the likely significant environmental impacts of their implementation. These are referred to as the Strategic Environmental Objectives (SEOs). This assessment is strategic, with the aim of reporting likely impacts at the regional level to reflect the scale at which the options are being planned. The SEOs, Sub-Objectives, Indicators and Targets used are given in **Table 1**.

Environmental constraint modelling was undertaken using ArcGIS Spatial Analyst. The environmental indicators used in this modelling, along with a brief description and their relative scoring is provided in **Table 3.4**. For each development option the output constraints map demonstrates the overall sensitivity in that potential area for transmission infrastructure. The least cost environmental corridors



(areas within 1% of the best environmental line) demonstrate the areas of lowest sensitivity, based on the parameters used, to develop the transmission infrastructure. Geographical buffers were applied to the proposed data, based on the findings of the EirGrid Evidence Based Studies, to minimise risks to sensitive receptors.

Consultations on the draft TDPNI, SEA Environmental Report and HRA will commence in November 2018 and will run for 9 weeks. Documents will be made available for viewing at the RPS offices (Elmwood House, 74 Boucher Road, Belfast, BT12 6RZ) and digitally via the SONI website – <http://www.soni.ltd.uk>.

## **DESCRIPTION OF THE TRANSMISSION DEVELOPMENT PLAN FOR NORTHERN IRELAND 2018**

The TDPNI is a national level Plan that will cover the electricity transmission system in Northern Ireland and will link into the transmission systems of Great Britain and the Republic of Ireland. While the TDPNI is primarily concerned with grid development projects in Northern Ireland, the draft TDPNI and associated environmental documents will have careful regard to any likely significant environmental effects of a transboundary nature.

The geographical scope of the SEA (i.e. the area with a potential to be impacted by the developments of the TDPNI) will be mainly within Northern Ireland, within the vicinity of proposed developments, however transboundary impacts to receptors in the Republic of Ireland will also be considered on a case by case basis.

The SONI TDPNI is proposed to cover the period from 2018 to 2027. Projects from the TDPNI that are likely to be progressed over the next 10 years will be detailed within the Plan. The TDPNI will be a rolling plan, which is updated annually as per licence requirements set out by the Utility Regulator.

As the timeframes for all the potential developments in the TDPNI are currently not defined the SEA will assess these options for potential impacts in the short term - construction phase, the medium term – re-establishment and initial operational phase (0-5 years post construction) and the long term – operational phase (5 years onwards).

## **ENVIRONMENTAL BASELINE**

An environmental baseline was produced by SEA environmental topic. The purpose of this section is to demonstrate the level of baseline environmental information to be used in the assessment of potential impacts of the transmission development options. The full environmental baseline can be found in **Section 5** of this report.

## **Biodiversity, Flora and Fauna**

There are a wide variety of natural habitats and species within the overall study area, protected by a range of designations. There are 56 Special Areas of Conservation (SACs) and 16 Special Protection Areas (SPAs) within Northern Ireland. Together these European sites form part of the Natura 2000 Network. There is the potential for transboundary impacts on Natura 2000 sites within the Republic of Ireland, particularly those which are located in close vicinity to the border between Northern Ireland and the Republic of Ireland. There are 21 internationally protected Ramsar sites within Northern Ireland. There are 392 Areas of Special Scientific Interest (ASSI) within Northern Ireland, along with 13 Natural Heritage Areas (NHAs) and one proposed NHA (pNHA) along the border area in the Republic of Ireland. There are 50 National Nature Reserves (NNRs) within Northern Ireland. Within Northern Ireland there are five designated Marine Conservation Zones (MCZs). In addition to these marine designated areas, other prominent surface waterbodies include the 413 rivers and 20 lakes which contain salmonid species, along with the seven Fresh Water Pearl Mussel catchments in Northern Ireland. There are seven designated areas for the protection of shellfish production and production within Northern Ireland. There are 728 Sites of Local Nature Conservation Importance (SLNCI) within Northern Ireland; along with six RSPB Nature Reserves and 18 Ulster Wildlife Nature Reserves. There are also over 100km<sup>2</sup> of ancient woodlands within Northern Ireland.

## **Population and Human Health**

There are over 1,810,800 people living in Northern Ireland, with the higher density population areas located within cities and towns across Northern Ireland, mainly Belfast, Derry / Londonderry and Lisburn. Four-fifths (80%) of Northern Ireland residents reported themselves to be of good or very good general health. Two-thirds of all residents in Northern Ireland aged 16 to 74 years were economically active in the 2011 census. Within Northern Ireland there are several areas which would be considered socially sensitive, including peace line areas and Neighbourhood Renewal Areas, of which there 22 and 36 respectively.

## **Geology, Soils and Land use**

There are 148 ASSIs in Northern Ireland that are designated for, or partially for, their Earth Science interest, and may be considered as geological heritage. The one UNESCO world heritage site in Northern Ireland, the Giant's Causeway, is designated for its unique geological heritage. The land use within Northern Ireland is predominantly improved grassland, followed by arable land. Areas of sensitive land use and soils for transmission infrastructure development in Northern Ireland have been identified as cultivated lands, peatlands, ancient woodland and commercial forestry. Additional land types and land uses that may be constraints to transmission development include quarries, mines, landslide areas, unstable grounds, and potentially contaminated sites.

## **Water**

There are 496 surface water bodies within Northern Ireland – 450 rivers, 21 lakes and 25 marine. Of the 471 river and lake water bodies, 152 (32%) were classed as good or better in 2015, with 68% classed as less than good. Of the 25 marine water bodies, nine (36%) were classed as good or better in 2015, with 64% classed as less than good. Of the surface water bodies in Northern Ireland, 56 rivers, collectively measuring 2,050 km in length, are designated drinking waters; as are 11 lakes which make up an area of over 370km<sup>2</sup>. In addition, there are 16 designated bathing waters which collectively span an area of 6km<sup>2</sup>. Northern Ireland has a total of 75 groundwater bodies, 65% of which are at good status and 35% of them are of poor status.

There is a significant degree of fluvial flood risk in Northern Ireland, with the impact of fluvial flooding being significantly greater within urban and suburban areas. Significant risk of surface water (pluvial) and coastal flooding also exists throughout Northern Ireland. Consideration needs to be given to such flood risks in planning for transmission infrastructure to avoid the poor siting of facilities so as they may be at risk of inundation or to cause knock on flooding to local receptors or material assets.

## **Air**

There are 24 active Air Quality Management Areas (AQMAs) in Northern Ireland. Construction and maintenance activities associated with the development of the transmission infrastructure may lead to increased air pollution, including ambient PM<sub>10</sub> and nitrogen dioxide emissions, resulting in both short and long term negative impacts upon air quality, climatic factors, human health and biodiversity. Further to this, there is the potential for disturbance impacts, such as dust deposition and visible plumes, as a result of ground movement and weather conditions. In some instances, this can occur at great distances from the originating site. With that being said, the potential for connecting new renewable energy generators such as wind and tidal turbines to the national grid is likely to result in a reduced dependence upon fossil fuels. This will have a positive impact upon air quality insofar as it will result in a net reduction of the number of pollutants released into the atmosphere in the medium and long term. This could have far-reaching positive consequences upon other factors such as biodiversity, climate, human health and population.

## **Climatic Factors**

The predicted impacts of climate change are likely to include increases in the frequency and intensity of rainfall, the increases in peak flows in rivers, a rise in sea levels and increased storminess. These effects of climate change are likely to increase pluvial, fluvial and coastal flooding and will require future development to be adaptable or resilient to future climatic changes and its associated impacts.

Activities associated with the development of the transmission infrastructure may lead to the increased emission of pollutants into the atmosphere, thus contributing towards anthropogenic climate change. Having said that, the government has set a green energy target in Northern Ireland for 40% electricity consumption from renewables by 2020. Progress has been made towards this target over

the last decade, with a quarter of the total energy now consumed being from renewables, mainly wind and solar. Continued progress in this way, through the ongoing connection of renewable energy generators to the national grid, is likely to result in a reduced dependency upon fossil fuels, a net reduction in the emission of pollutants into the atmosphere, and thus the reduced onset, and indeed offset, of anthropogenic climate change.

### **Material Assets**

Given the geographic scope and large scale nature of proposed alternatives there is the potential for transmission infrastructure development and operation to impact upon, or be impacted by existing material assets. Within Northern Ireland there is approximately 25,000km of public road, 9,000km of footways, 5,800 bridges and 261,000 street lights. In addition to this, Northern Ireland has six designated railway routes covering a total distance of 329,855km. There is already 400km of 275 kV overhead line, 924km of 110kV overhead line, 90km of 110 kV cable and 8,427 substations within Northern Ireland. There are four existing gas transmission lines within Northern Ireland, and a fifth one is currently being constructed. There are three main commercial airports within Northern Ireland, along with 23 smaller commercial, private and military airfields.

### **Cultural, Architectural and Archaeological Heritage**

There are 16,572 heritage features which are registered on the Site and Monuments Record within Northern Ireland, including 1,981 Scheduled Zones and 10,229 Listed Buildings. In addition to these, there are 9,636 industrial heritage features and 738 defence heritage features. There are 10 Areas of Significant Archaeological Interest in Northern Ireland and 117 Areas of Archaeological Potential. Within Northern Ireland there are 242 Historic Parks and Gardens. There is one UNESCO world heritage site in Northern Ireland; being the Giant's Causeway, designated for its unique geological heritage.

### **Landscape and Visual**

Northern Ireland comprises a wide variety of different landscapes, including river valleys, drumlin hills, lakelands, raised bogs and rolling farmlands, to name a few. The value of Northern Ireland landscape is recognised through the designation of eight areas as Areas of Outstanding Natural Beauty (AONB), making up 22% of its total land area. There are seven NIEA Country Parks and 56 National Trust Sites in Northern Ireland. The overall landscape has been designated into 130 Landscape Character Areas and into 24 Seascape Character Areas. The Northern Ireland Landscape Character Assessment 2000 identifies six distinctive landscapes. Within these areas, and throughout Northern Ireland, there are a wide variety of Tourism Conservation Zones, Local Landscape Policy Areas and Areas of Village Character.

### **Evolution of the Environment in the Absence of the TDPNI**

The evolution of the environment in the absence of the TDPNI was assessed in the SEA Environmental Report, i.e. the Do Nothing Scenario. In the absence of the TDPNI there would be no overarching strategic planning of transmission infrastructure, and therefore the construction and maintenance of transmission infrastructure will take place in a more ad hoc manner. There is likely to be less transmission development and maintenance under the Do Nothing scenario. The projects that go ahead may not strategically be the best projects to be pursued, and may not be the most sustainable.

## **REVIEW OF RELEVANT PLANS, PROGRAMMES AND POLICIES**

A review of the Plans, Policies and Programmes relevant to the TDPNI was carried out at International, European, National, Regional and Sub-Regional scales. This exercise was carried out with a view to establishing the hierarchical position of the TDPNI, the influence these Plans and Programmes will have on the TDPNI and how the TDPNI will interact with the objectives of these other Plans. As a consequence, the absence of the TDPNI will dictate that, due to a lack of investment into the transmission network, the supply of electricity to commercial and residential properties will become less stable, potentially resulting in power shortages, as demand exceeds supply at certain peak times.

## **ENVIRONMENTAL OBJECTIVES, TARGETS AND INDICATORS**

Each potential development / project has been assessed against the SEA Objectives to examine the likely significant environmental impacts of their implementation **Table 1**. These are referred to as the Strategic Environmental Objectives (SEOs), and have been developed by the SEA team in line with the environmental topics from the SEA Directive.

**Table 1. Strategic Environmental Objectives**

Environmental Topic	Objective	Sub-Objective	Indicators	Targets
<b>Biodiversity, Flora &amp; Fauna</b>	<b>1</b> Avoid damage to, and where possible enhance, biodiversity, flora and fauna.	<b>A</b> Preserve, protect, maintain and where possible enhance internationally protected species and their key habitats.	Status, condition, area and number of internationally protected species and their key habitats. SACs, SPAs, Ramsar sites	Potential to maintain or enhance internationally protected species and their key habitats, in line with conservation objectives.
		<b>B</b> Preserve, protect, maintain and where possible enhance national and local nature conservation sites and protected species, or other know species of conservation concern.	Status, condition, area and number of ASSI, NHA, pNHA, SLNCI and local conservation designations and their species.	Potential to maintain or enhance national and local conservation sites, in line with conservation objectives.
<b>Population &amp; Human Health</b>	<b>2</b> Minimise the risk to and provide benefit for the community and human health.	<b>A</b> Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.	Population density within proximity to potential transmission system developments.	Minimal potential disruption to the local population in development and operation of infrastructure.
		<b>B</b> Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.	Perceived health of the local population within proximity to potential transmission system developments.  Socially sensitive areas within proximity to potential transmission system developments.	Minimal potential disruption to sensitive and deprived communities in development and operation of infrastructure.
<b>Soils, Geology and Landuse</b>	<b>3</b> Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<b>A</b> Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	Loss or damage to sensitive soils and land uses, e.g. peatlands, ancient woodland, commercial forestry, cultivated lands  Interactions with potentially	Minimal potential for disruption to and loss of sensitive soil and land resources.  Potential to avoid hazardous sites and topographically unsuitable areas

				hazardous soils and activities, e.g. PPC sites, mines, quarries, historically contaminated sites  Interactions with topographically difficult sites, e.g. steep slopes and uplands.	
<b>Water</b>	<b>4</b>	Avoid impacts and interaction with water quality, quantity and resource.	<b>A</b>	Avoid damage to or deterioration of water status, quality and resource.  WFD water status of surface, coastal, transitional and groundwater's within proximity to potential transmission system developments.  Sensitive waterbodies, e.g. drinking and bathing waters within proximity to potential transmission system developments.	Limited potential for deterioration of water status or quality, upstream or downstream, in development and operation of infrastructure.
			<b>B</b>	Avoid interactions with coastal, pluvial or fluvial flood extents.  Medium probability flood extents - Pluvial and fluvial 100 year and coastal 200 year flood extents.	Minimal potential development within medium probability flood extents, unless resilient to flooding.
<b>Air</b>	<b>5</b>	Minimise risk to local air quality and contribute to improving regional emissions	<b>A</b>	Minimise risk to local air quality and contribute to improving regional emissions  Development in air quality sensitive areas.  Enable increased renewable energy connection to reduce requirements for fossil fuel burning.	Minimal potential development within air quality sensitive areas.  Potential to reduce requirement for fossil fuel power station activity and emissions.

<b>Climatic Factors</b>	<b>6</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	<b>A</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	Medium probability climate change (cc) influenced flood extents - Pluvial and fluvial 100 year + cc and coastal 200 year +cc flood extents.  Enable increased renewable energy connection to reduce requirements for fossil fuel burning.	Minimal potential development within medium probability climate change flood extents, unless resilient to flooding.  Potential to reduce regional and national GHG emissions.
<b>Material Assets &amp; Infrastructure</b>	<b>7</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	<b>A</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	Transmission infrastructure developed or upgraded.  Potential for impacts on transport (road, rail, air) and energy infrastructure (gas).  Potential for loss of or impacts to agricultural land assets.	New and reinforced electricity grid infrastructure, with minimal potential disruption to other assets and infrastructure.
<b>Cultural, Architectural &amp; Archaeological Heritage</b>	<b>8</b>	Protect the historic environment and cultural heritage.	<b>A</b>	Protect the historic environment and cultural heritage.	Potential for impacts on, or the setting of, known archaeological heritage features.  Potential for impacts on, or the setting of, known architectural heritage features.	Minimal potential impacts on, or the setting of, known archaeological and architectural heritage features, in development and operation of infrastructure.
<b>Landscape &amp; Visual Amenity</b>	<b>9</b>	Minimise the potential for negative impacts on landscape and visual amenity.	<b>A</b>	Minimise the potential for negative impacts on landscape and visual amenity.	Landscape sensitivity to infrastructure development.  Potential for impacts on visually sensitive areas, such as AONBs and country parks.	Minimal potential impacts on sensitive landscapes and visual amenity, in development and operation of infrastructure.



## PROPOSED OPTIONS / ALTERNATIVES

The draft TDPNI provides a list of the potential project options that could be developed within the Plan period up to 2027. These are all the development “alternatives” available to the Plan. A number of these potential projects were screened out of requiring assessment as the works are of such a scale as not to be considered significant and / or are localised to within existing electrical transmission sites / substations, or as the proposals have gone beyond strategic planning to the detailed planning stage and so will only be considered for cumulative and in-combination impacts. The projects that were screened in and to be assessed in the SEA are presented in **Table 2**.

**Table 2. Project Options Screened In and Assessed in the SEA**

Project ID	Project Name	Development Type
1	Coolkeeragh – Magherafelt 275 kV Circuits Restrung	Transmission Line Restrung / Uprate
2	Agivey 110/33 kV Cluster	New Substation and Transmission Line
3	Kells Wind 110/33 kV Cluster	New Substation and Transmission Line
4	Fair Head / Torr Head Tidal Scheme connection	New Transmission Line
5	Belfast Power Station	New Transmission Line
6	Compressed Air Energy Storage Scheme connection	New Transmission Line
7	Omagh Main – Omagh South Uprate	Transmission Line Restrung
8	Omagh Reactive Compensation	Substation Extension or Upgrade
9	Tamnamore Reactive Compensation	Substation Extension or Upgrade
10	Coleraine Reactive Compensation	Substation Extension or Upgrade
11	Kells/Creagh – Rasharkin New 110 kV Circuit	New Transmission Line
12	Tamnamore – Turleenan Uprate	Transmission Line Restrung
13	Coolkeeragh – Trillick new 110 kV Line	New Transmission Line
14	Turleenan – Omagh South – Co. Donegal new 275 kV Line	New Transmission Line
15	<i>North West of Northern Ireland Reinforcement</i> Kilroot – Coolkeeragh HVDC Link	New Transmission Line (Subsea)
16	<i>North West of Northern Ireland Reinforcement</i> Magherafelt – Coolkeeragh new 275 kV or 110 kV Circuit	New Transmission Line
17	<i>North West of Northern Ireland Reinforcement</i> Magherafelt – Strabane (new substation) new 275 kV or 110 kV Circuit	New Transmission Line
18	<i>North West of Northern Ireland Reinforcement</i> Agivey Cluster – Limavady new 110 kV Circuit	New Transmission Line and New Substation
19	<i>North West of Northern Ireland Reinforcement</i>	Transmission Line Restrung / Uprate

	Strabane – Omagh 110 kV Uprate	
<b>20</b>	<i>North West of Northern Ireland Reinforcement</i> Coolkeeragh – Strabane 110 kV Uprate	Transmission Line Restrung / Uprate
<b>21</b>	<i>North West of Northern Ireland Reinforcement</i> Coolkeeragh – Killymallaght 110 kV Uprate	Transmission Line Restrung / Uprate
<b>22</b>	<i>North West of Northern Ireland Reinforcement</i> Coolkeeragh – Limavady 110 kV Uprate	Transmission Line Restrung / Uprate
<b>23</b>	North West of Northern Ireland Reinforcement – Killymallaght – Strabane 110 kV Uprate	Transmission Line Restrung / Uprate
<b>24</b>	Sydenham Road Main (new station)	New Substation
<b>25</b>	Ballylumford – Castlereagh 110 kV Circuit Restrung	Transmission Line Restrung
<b>26</b>	Drumnakelly and Armagh Development Plan – new 110/33 kV substation adjacent to Drumnakelly Main and 33 kV reinforcements to Armagh area	New Substation and Transmission Line
<b>27</b>	Drumnakelly and Armagh Development Plan – 110/33 kV substation at Armagh and 110 kV circuits from Tandragee or Drumnakelly	New Substation and Transmission Line
<b>28</b>	Castlereagh – Knock 110 kV Cables Uprate	Transmission Line Restrung / Uprate

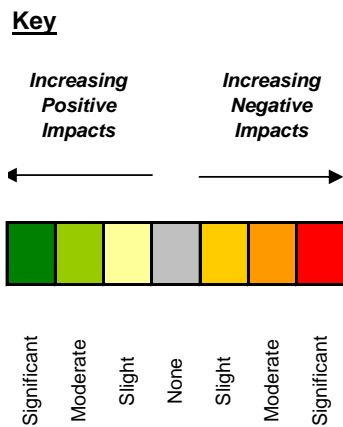
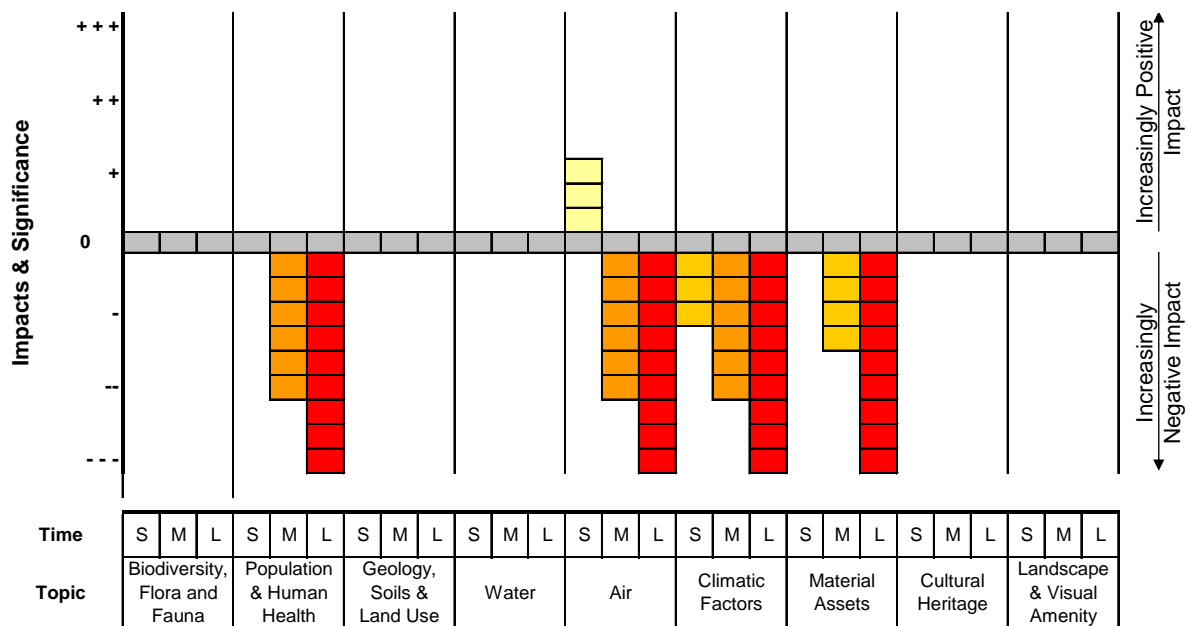
## ASSESSMENT

Each potential project available to the TDPNI has been assessed against the SEOs. All potential positive and negative impacts are presented individually, with a text description, and then a summary graphic. In addition, a summary of the overall balanced potential effect has been presented for each environmental issue area. The scores assigned to impacts are from +3 to -3. If a development proposal is thought to have the potential for unacceptable impacts a score of -999 has been assigned. The purpose of adding numerical scores is to assist in the ranking of options and for potential incorporation of the environmental and social criteria into future decision making by the Plan team, as this can easily be tied into a multi-criteria analysis of alternatives if desired.

Each potential project available in the Plan has been assessed in the short, medium and long term for likely effects, the significance of the effects, and whether they are positive or negative effects. Other impacts that have been assessed for significance are secondary effects, cumulative effects, synergistic effects, temporary and permanent effects, and the inter-relationship of effects. The scenario of “The Evolution of the Environment without the Plan” has also been assessed in the same format. This was considered as the Do-Nothing Scenario.

### 1. Do Nothing Scenario

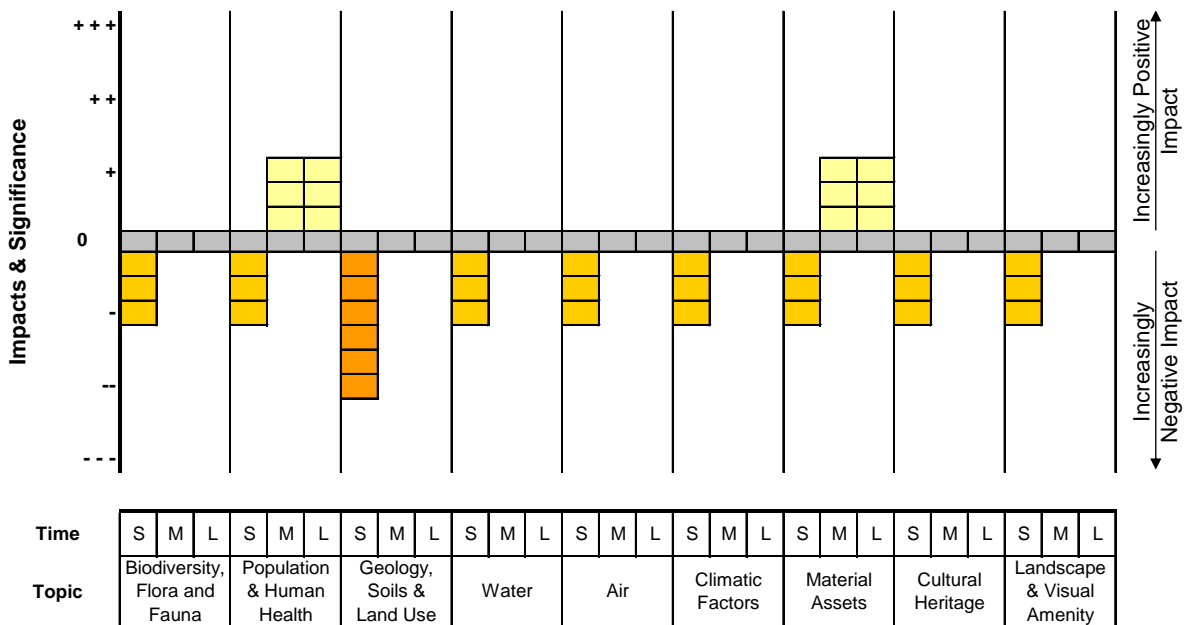
In the absence of the Plan there would likely be more ad hoc development of electrical transmission infrastructure without a strategic structure. It is likely that projects will be developed and maintenance would be scheduled as needs arise. However, this approach has the potential to negatively impact population and human health, air, climatic factors and material assets and infrastructure in the medium and long term. This is the case as a lack of structured development may result in some areas having insufficient infrastructure and electricity supply to meet increased future demands. Unstructured development and maintenance of electricity transmission infrastructure may also hinder the potential connection of renewable energy sources to the electricity supply network. This in turn would result in the continued reliance upon finite fossil fuels and ongoing, long term emissions of pollutants into the atmosphere. Not implementing the TDPNI is unlikely to have any impacts on designated European sites.



## 2. Coolkeeragh-Magherafelt 275 kV Circuits Restrung

Development of the 275kV restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog during the restrung. There are unlikely to be any further medium or long term negative impacts following the restrung of the 275 kV line. Development of the 275kV restrung has the potential for medium and long term, slight improvements to existing transmission infrastructure, having positive impacts on population and human health, along with material assets.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on seven European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

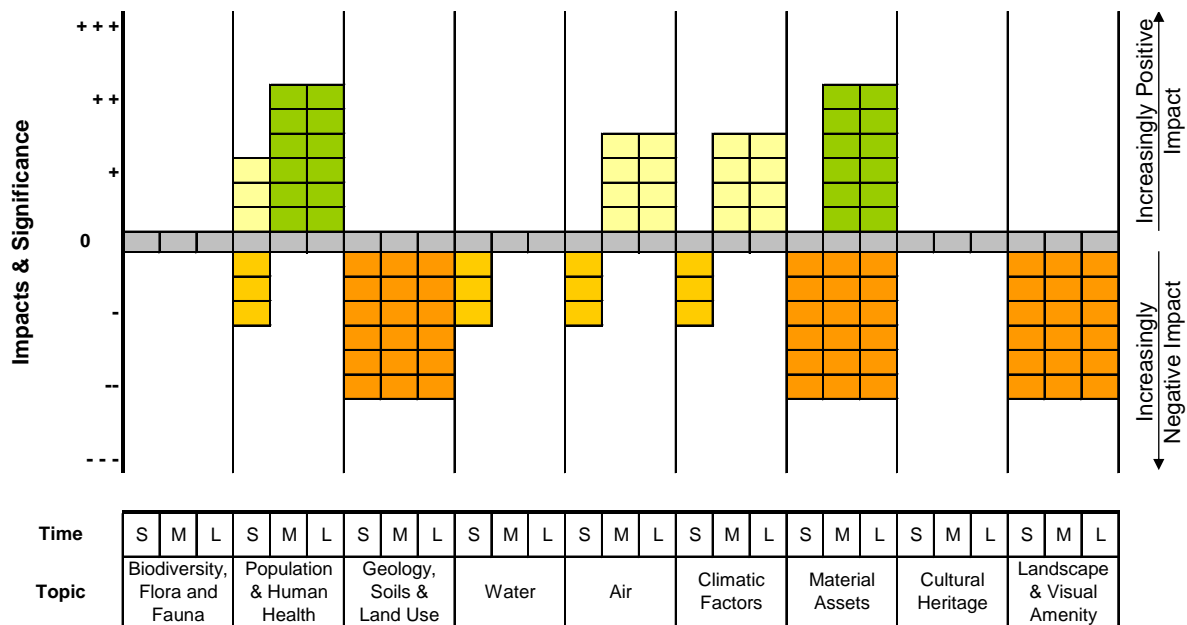


## 3. Agivey 110/33 kV Cluster

Development of the new substation within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There is the potential for medium and long term, permanent, moderate negative impacts on geology, soils and land use, material assets and landscape and visual amenity, following the construction of the new substation, if it is developed within the lower sensitivity area. These moderate negative impacts include the permanent loss of agricultural land and permanent negative landscape

effects on areas sensitive to development. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale local development of new electricity grid infrastructure and therefore the provision of secure and reliable electricity, to meet future needs.

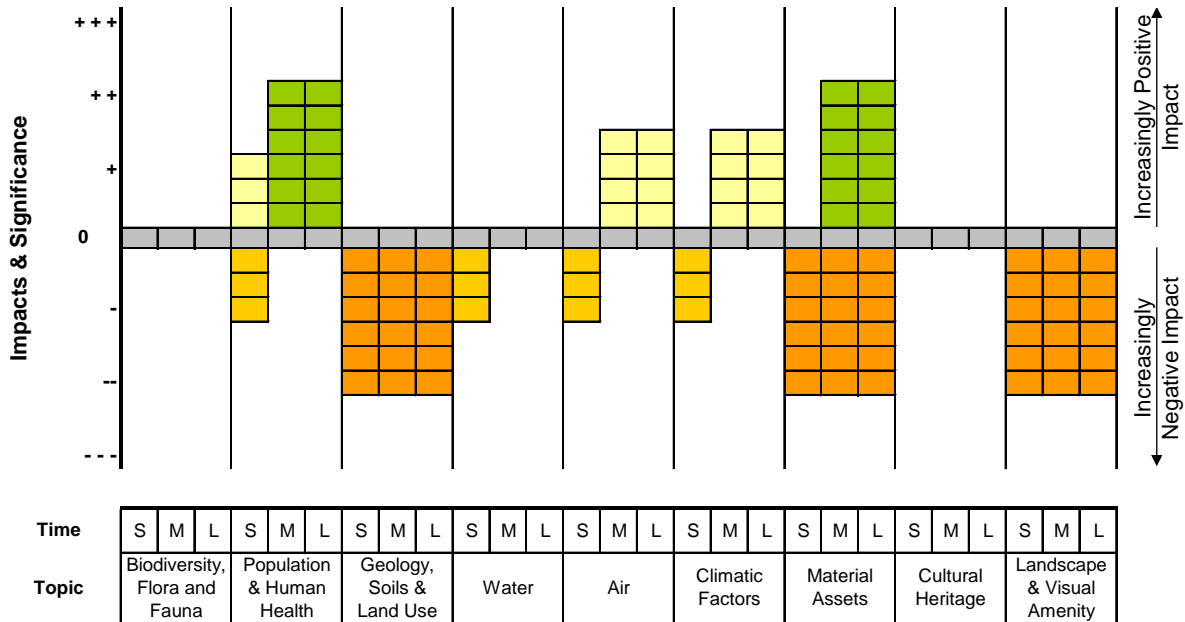
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



#### 4. Kells Wind 110/33 kV Cluster

Development of the new substation within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There is the potential for medium and long term, moderate negative impacts on geology, soils and land use, material assets and landscape and visual amenity, following the construction of the new substation, if it is developed within the lower sensitivity area. These moderate negative impacts include the permanent loss of agricultural land and permanent negative landscape effects on areas sensitive to development. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These positive impacts include the moderate scale local development of new electricity grid infrastructure and therefore the provision of secure and reliable electricity to meet future needs.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

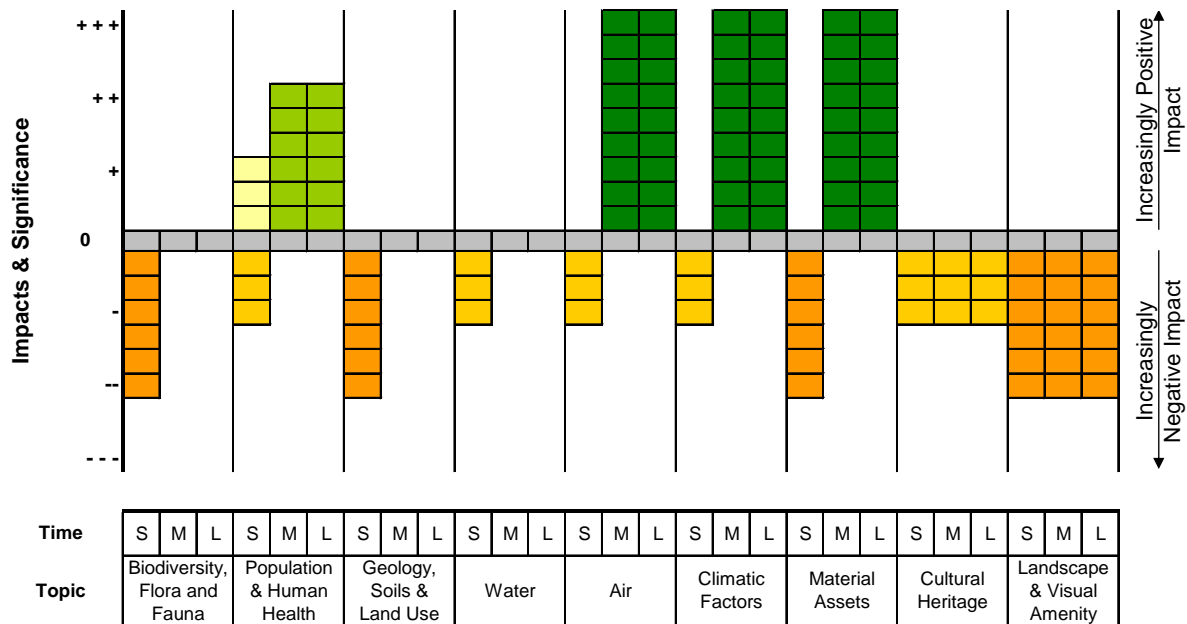


### 5. Fair Head/Torr Head Tidal Scheme Connection

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include construction phase disturbance and sedimentation impacts on SAC and Ramsar sites, and associated species. There is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity, following the construction of the new transmission line if it is developed within 1% of the best environmental line. These moderate negative impacts include visual and landscape effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to significant positive impacts on population and human health, air, climatic factors and material assets. These significant positive impacts include permanent reductions in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on ten European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the

application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

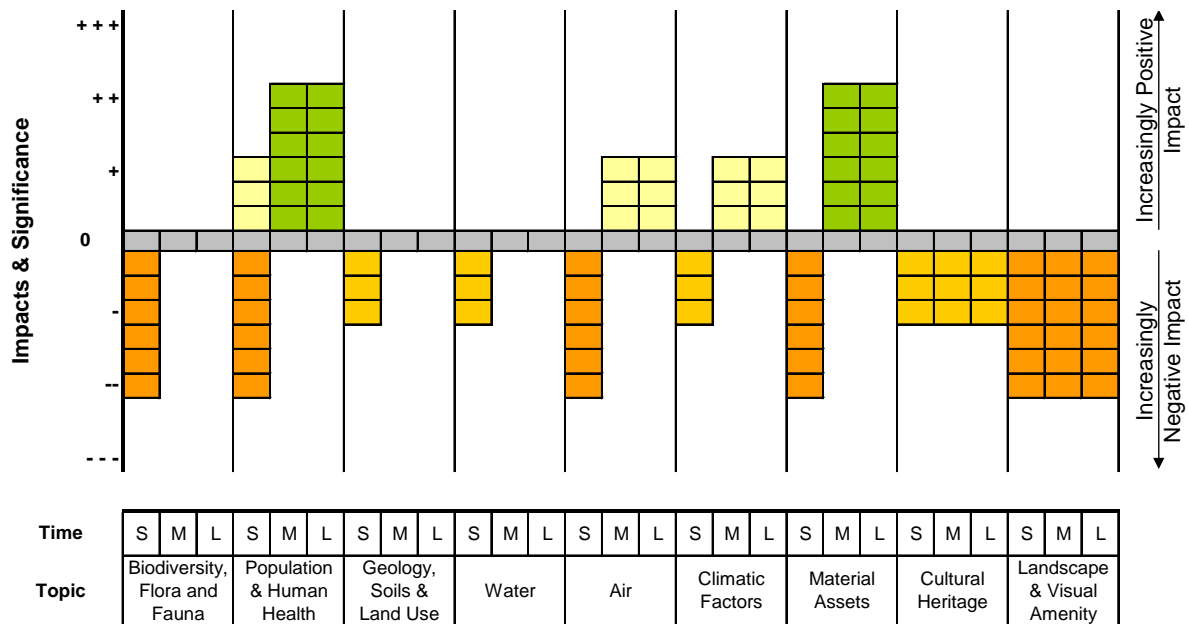


### 6. Belfast Power Station

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage and landscape and visual amenity. These moderate negative impacts include disturbance impacts to people in high density settlements, during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium to long term, slight to moderate negative impacts on cultural heritage and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on a highly sensitive Landscape Character Area. There is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets in the development of the new transmission line, if it is developed within 1% of the best environmental line. These moderate positive impacts include the moderate local scale development of new electricity grid infrastructure, providing a supply of secure and reliable electricity.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration, along with disturbance and displacement impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of

measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

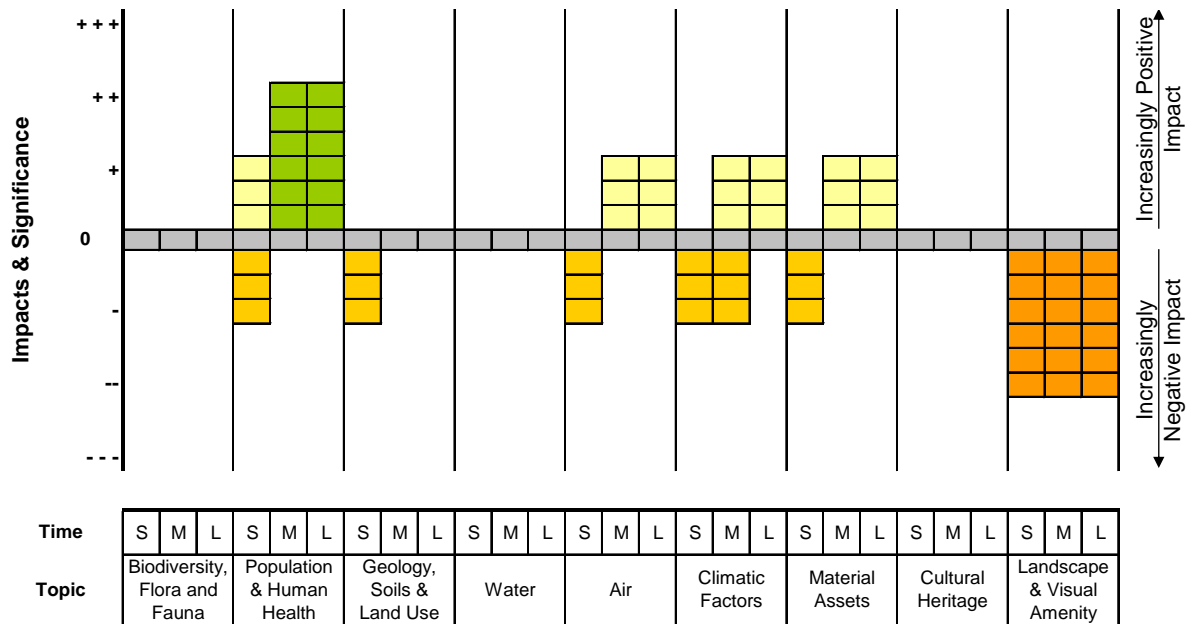


### 7. Compressed Air Energy Storage Scheme Connection

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the new transmission line there is the potential for medium and long term, slight to moderate negative impacts on climatic factors and landscape and visual amenity, if it is developed within 1% of the best environmental line. These moderate negative impacts include landscape and visual effects on a highly sensitive Landscape Character Area. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium to long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of new transmission infrastructure, providing a secure and reliable electricity supply to meet future needs.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on five European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

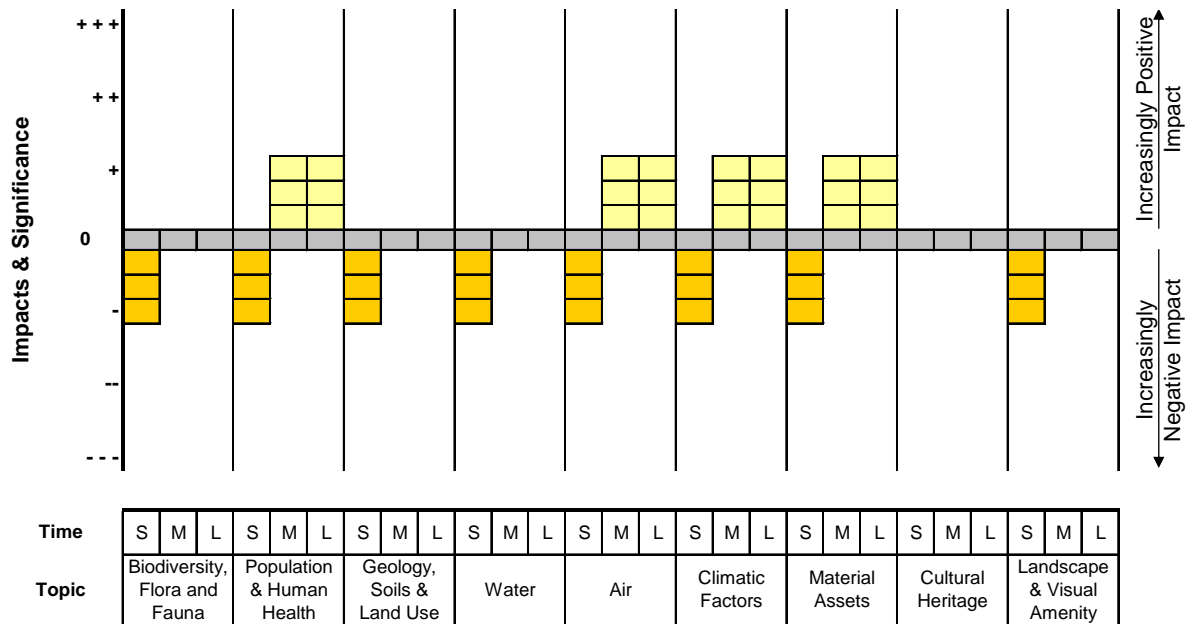




### 8. Omagh Main - Omagh South Uprate

Development of the restrung has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

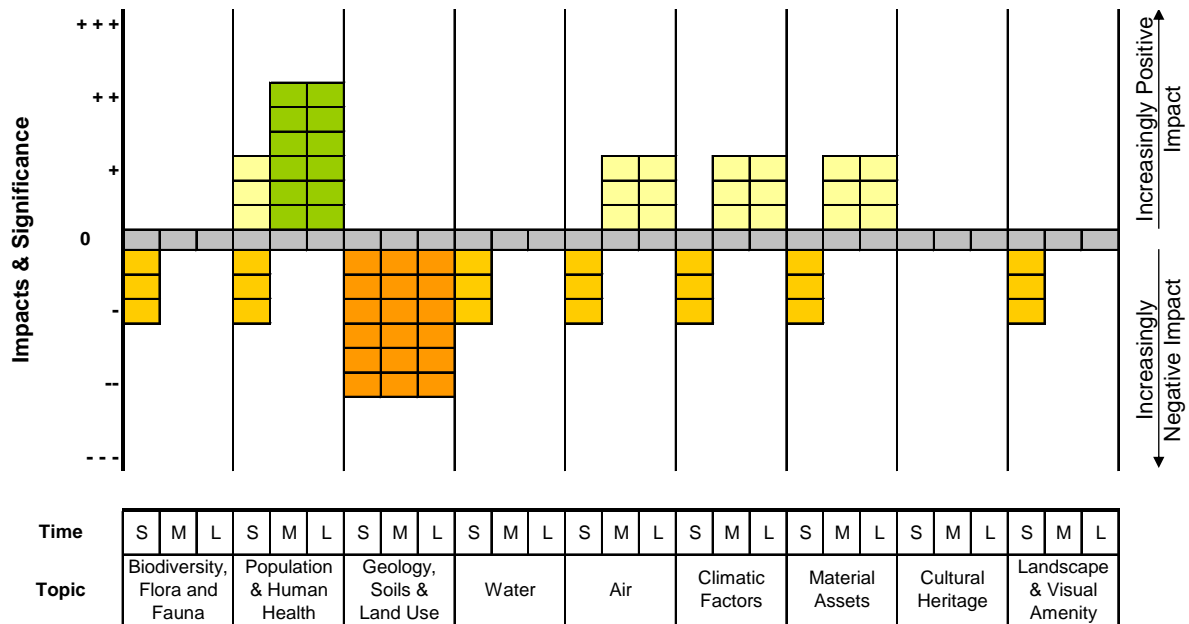
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on three European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 9. Omagh Reactive Compensation

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

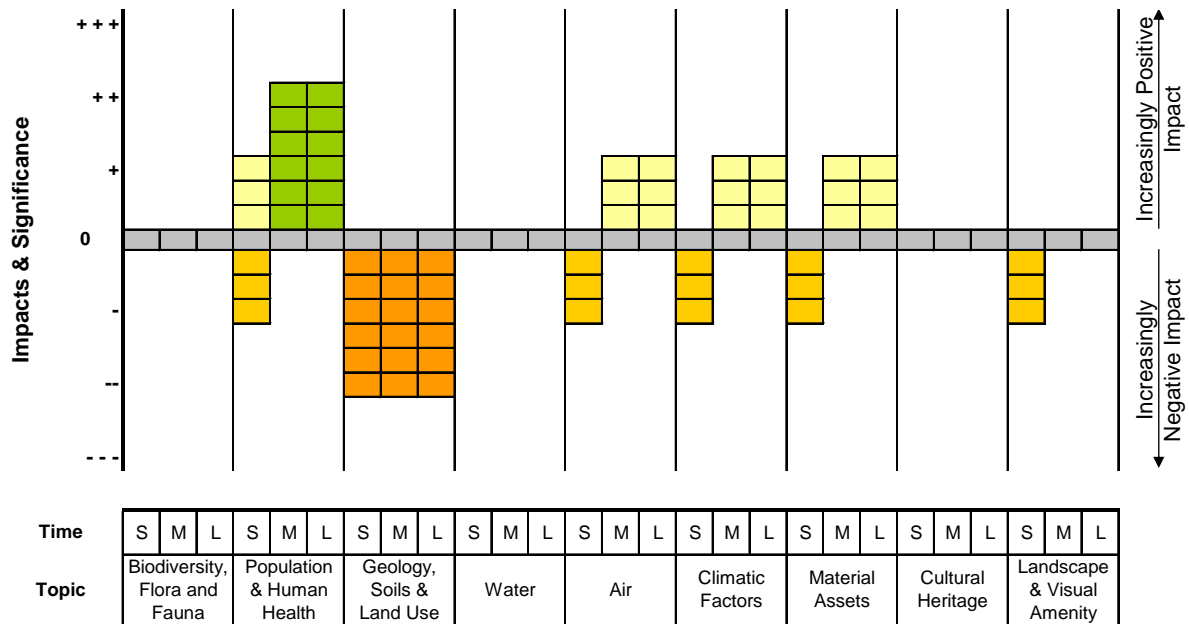
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on three European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 10. Tamnamore Reactive Compensation

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

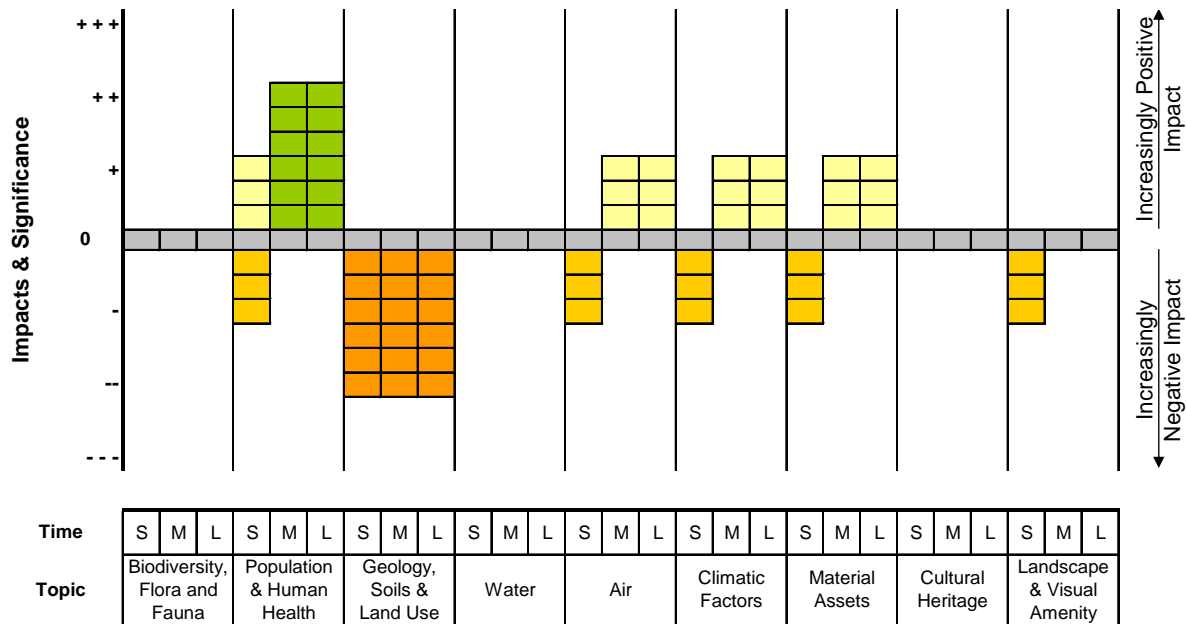
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 11. Coleraine Reactive Compensation

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

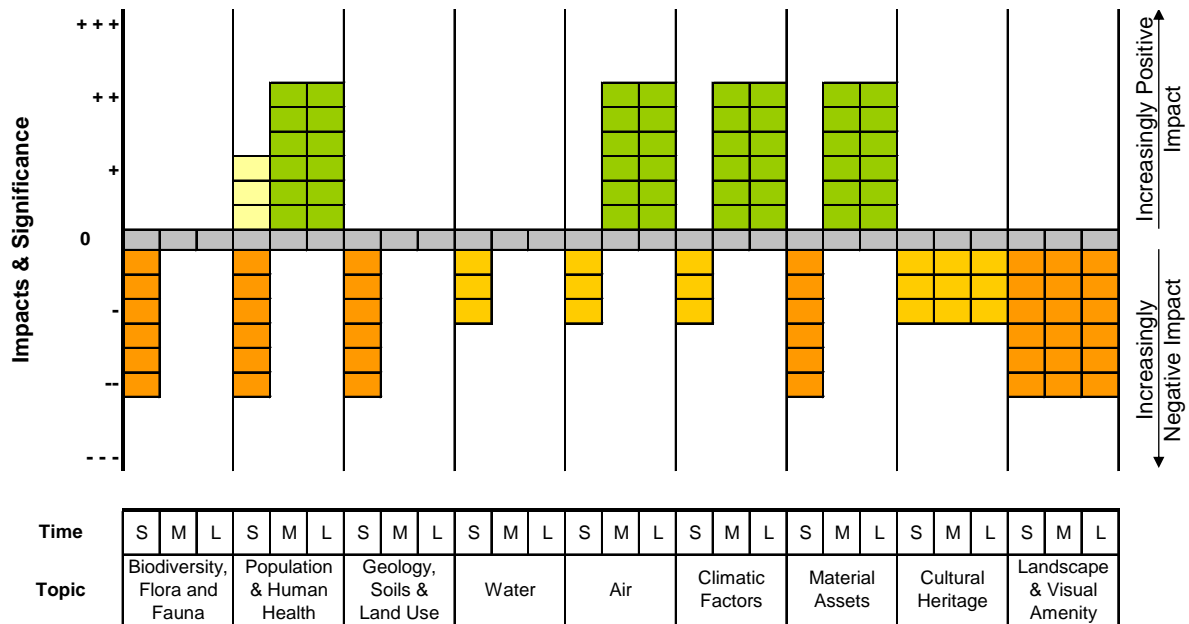
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on one European Site, from this project. The possibility of likely significant effects cannot be discounted on this site at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on the European site, as necessary, will be required.



### 12. Kells/Creagh – Rasharkin New 110 kV Circuit

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage and landscape and visual amenity. These moderate negative impacts include disturbances to several transport networks and power supply disruptions, during construction works. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

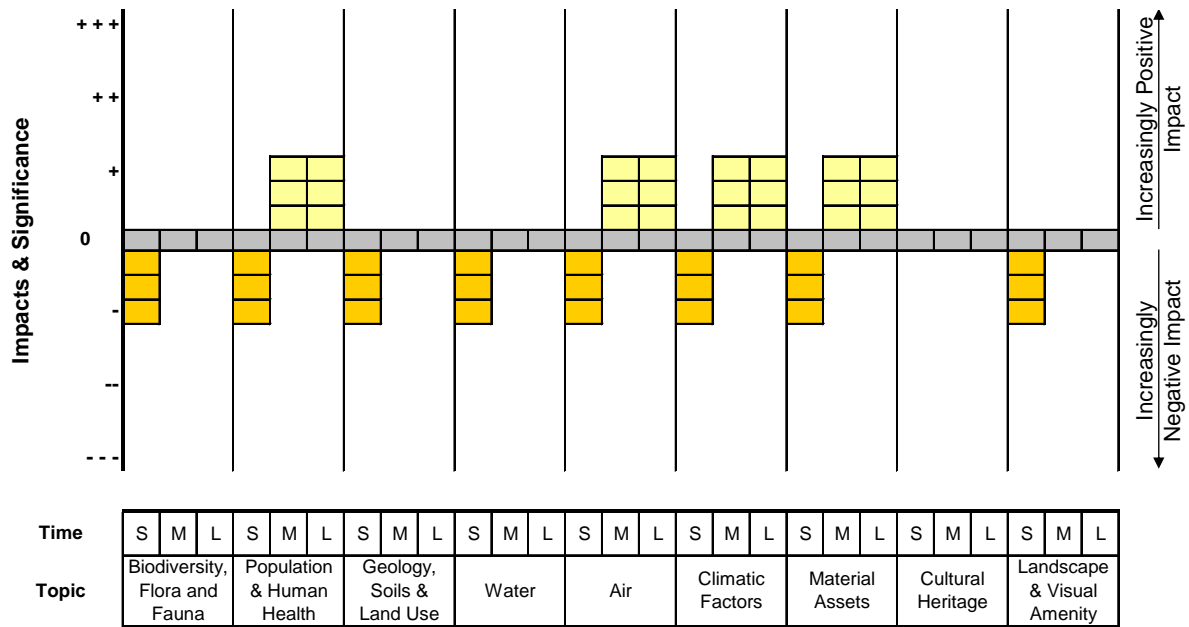
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 13. Tamnamore – Turleenan Uprate

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

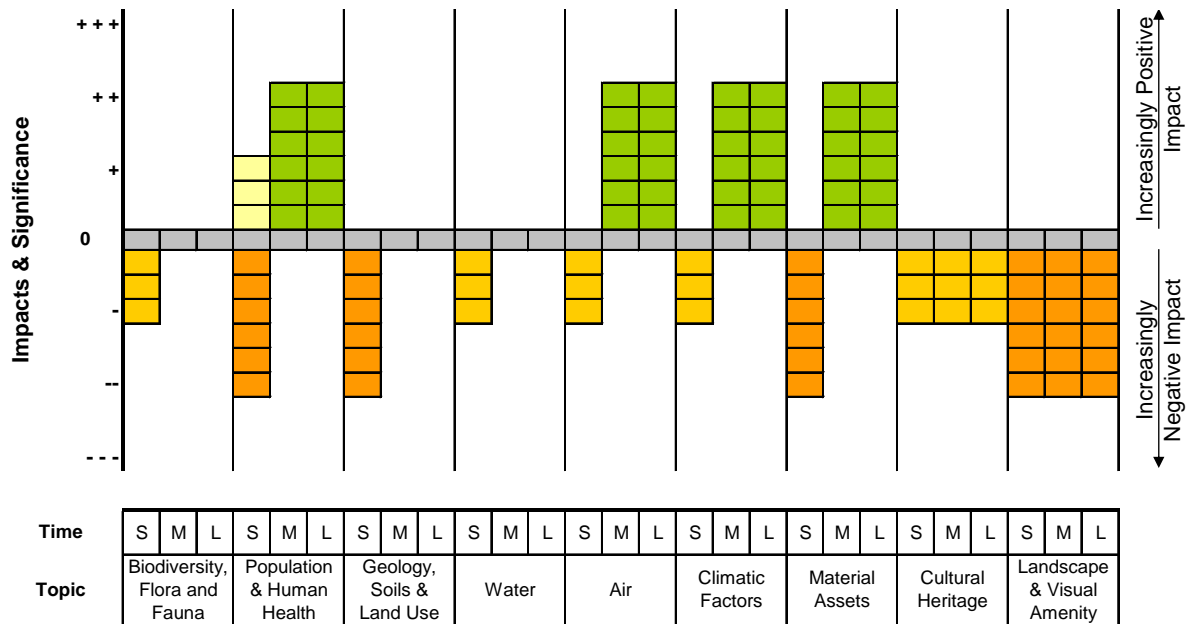
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 14. Coolkeeragh – Trillick New 110 kV Line

Development of the new 110 kV transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include compaction to several areas of sensitive peat bog, along with noise disturbance impacts to people in high density population areas, during the construction of the new line. Following the construction of the new line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual effects on highly sensitive Landscape Development Areas. If the new 110 kV transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure providing an increased supply of secure and reliable renewable energy into the future.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

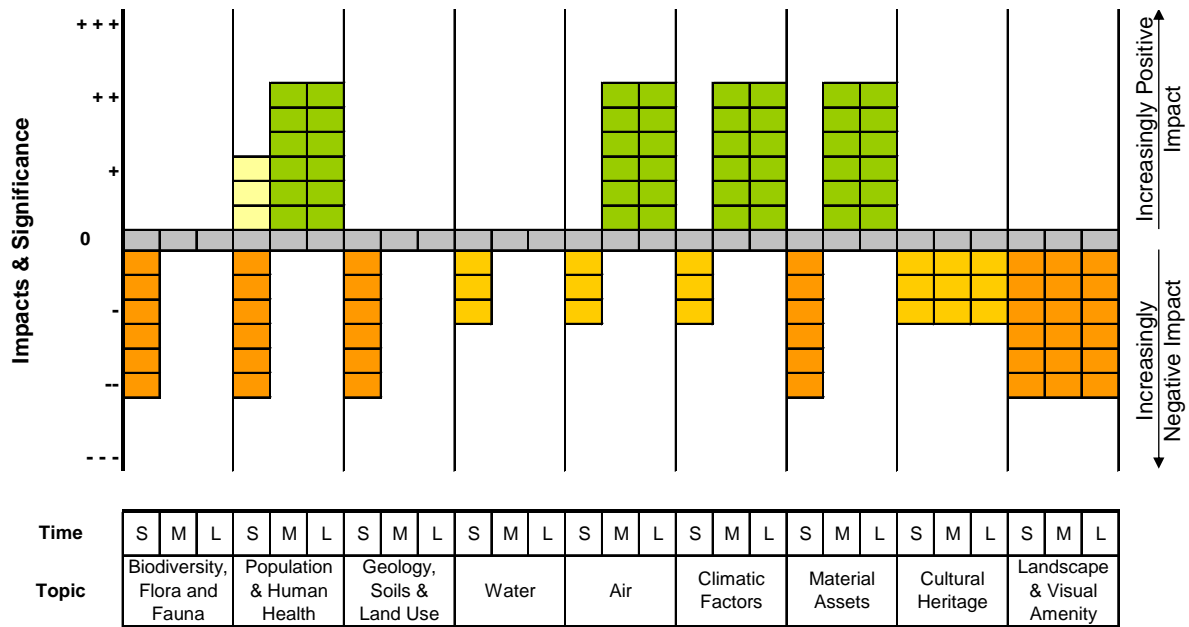


### 15. Turleenan – Omagh South – County Donegal New 275 kV Line

Development of the new 275 kV transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts to SAC sites and associated species, along with disturbances, such as power supply disruptions, to transport networks, during the construction of the new line. Following the construction of the new 275 kV transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent, negative, landscape and visual amenity impacts to highly sensitive Landscape Character Areas. Development of the new 275 kV transmission line has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 14 European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

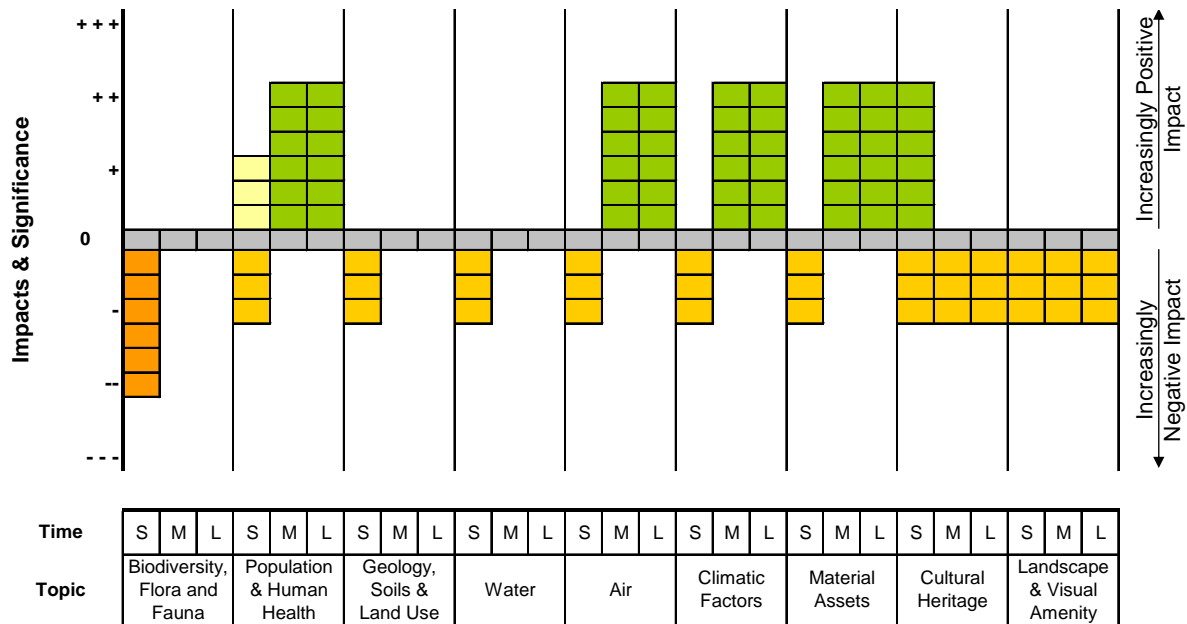




**16. Kilroot – Coolkeeragh HVDC Link (North West of Northern Ireland Reinforcement)**

Development of the new subsea transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance and sedimentation impacts to SAC sites and associated species during the construction on the new line. Following the construction of the new subsea transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight negative impacts on cultural heritage, and landscape and visual amenity. If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors, material assets and cultural heritage. These moderate positive impacts include permanent reductions in in GHG emissions, as a result of increased connection to renewable energy.

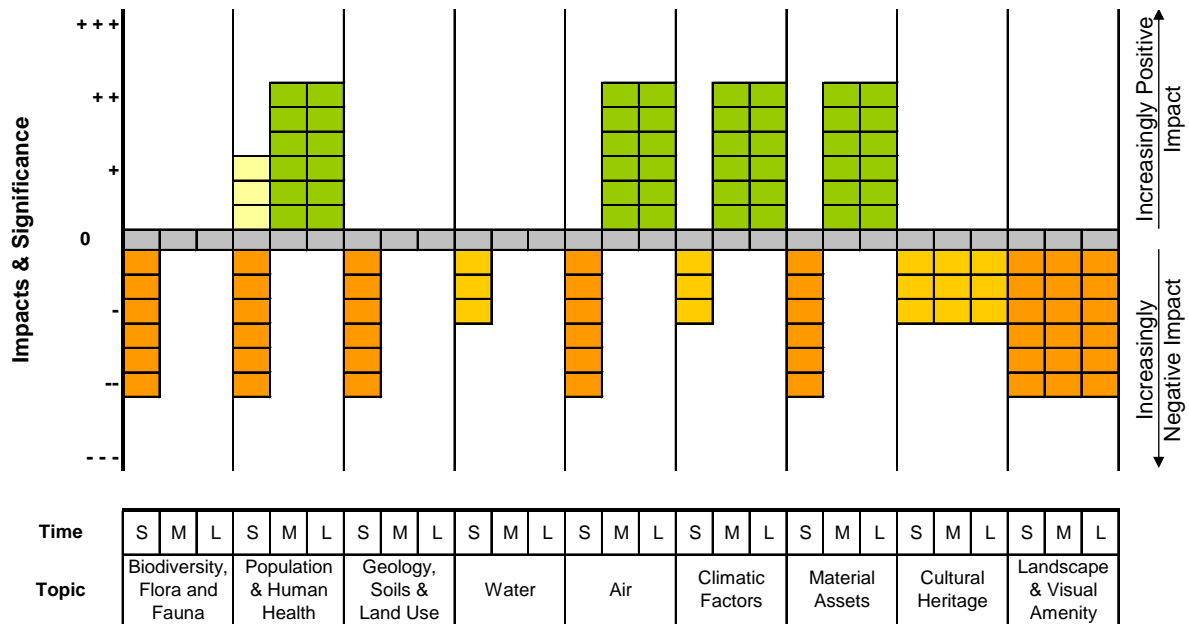
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



### 17. Magherafelt – Coolkeeragh 275 kV or 110 kV Circuit (North West of Northern Ireland Reinforcement)

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include temporary increases in local air emissions and reduction in local quality in an AQMA, during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable renewable energy into the future.

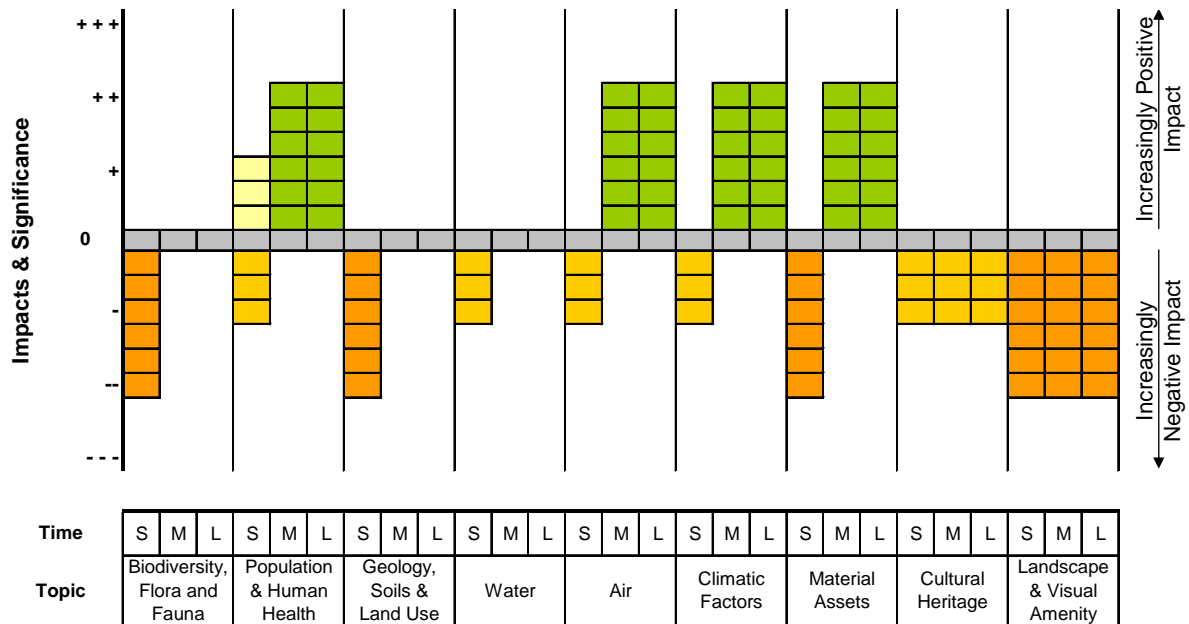
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



### 18. Magherafelt to Strabane 275 kV or 110 kV Circuit (North West of Northern Ireland Reinforcement)

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog, along with disturbance to transport networks, such as power supply disruptions, during construction works. Following the development of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include landscape and visual amenity effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable renewable energy into the future.

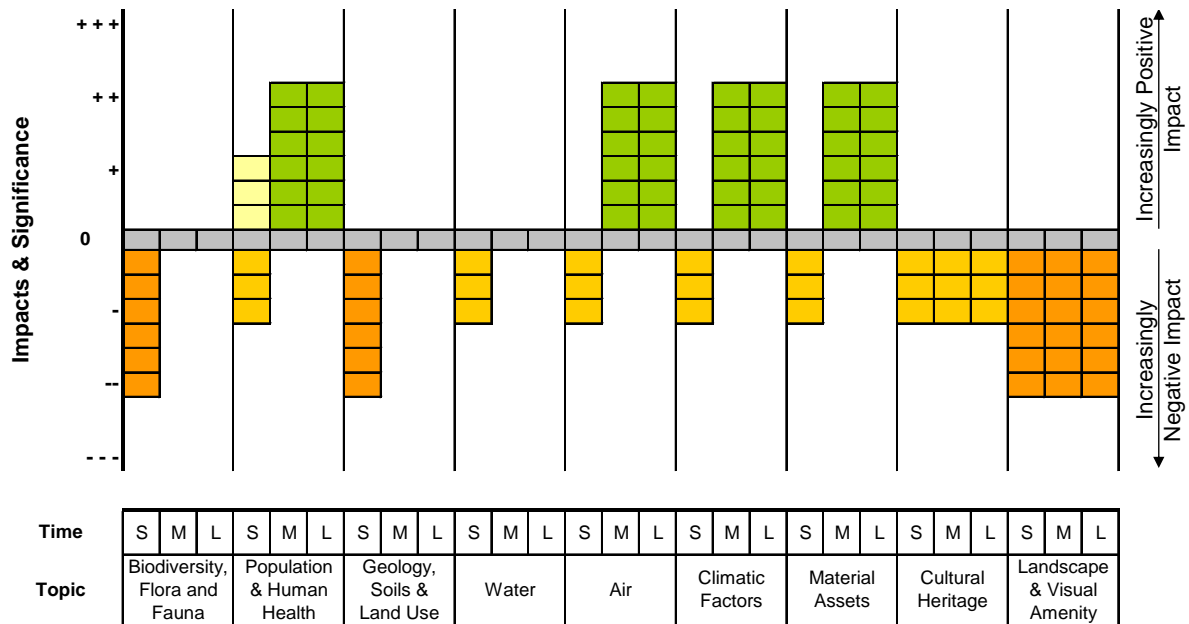
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



### 19. Agivey Cluster – Limavady 110 kV Circuit (North West of Northern Ireland Reinforcement)

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual effects on a highly sensitive Landscape Character Area. If the the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

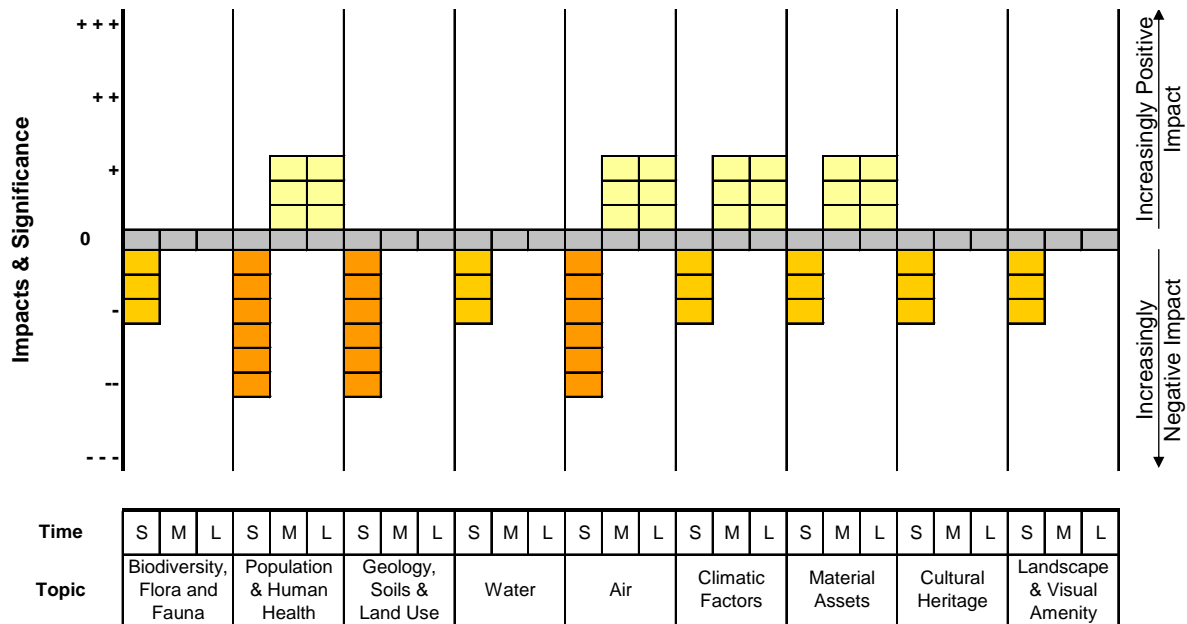
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



**20. Strabane – Omagh 110 kV Uprate (North West of Northern Ireland Reinforcement)**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in areas of lower perceived health, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

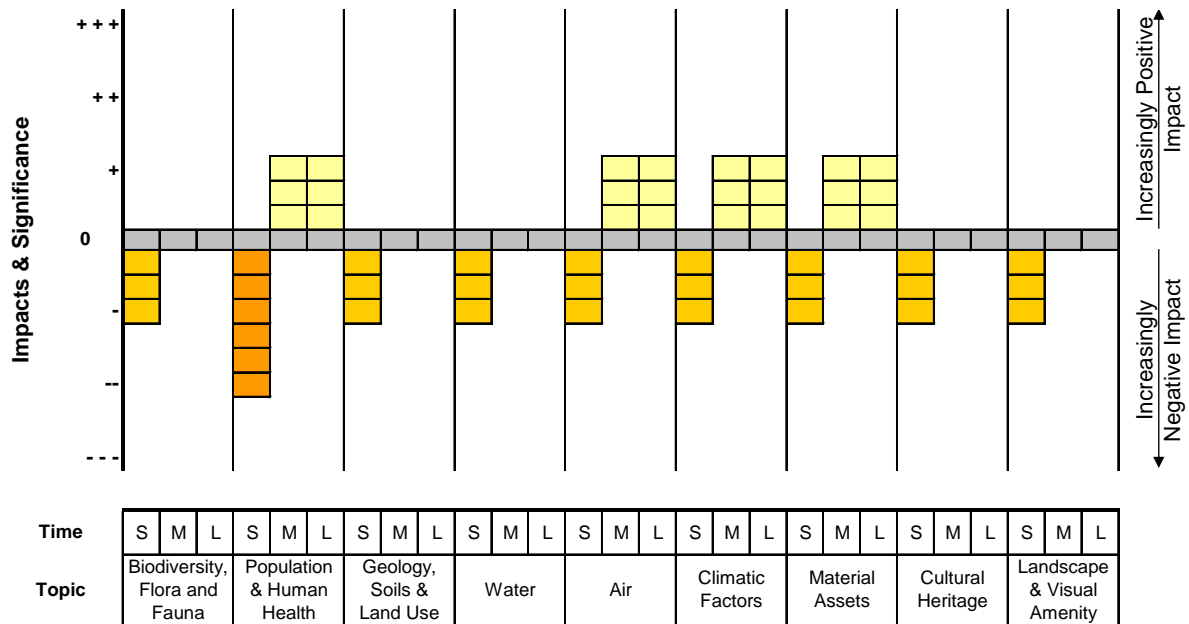
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



## 21. Coolkeeragh – Strabane 110 kV Uprate (North West of Northern Ireland Reinforcement)

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in a Neighbourhood Renewal Area, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

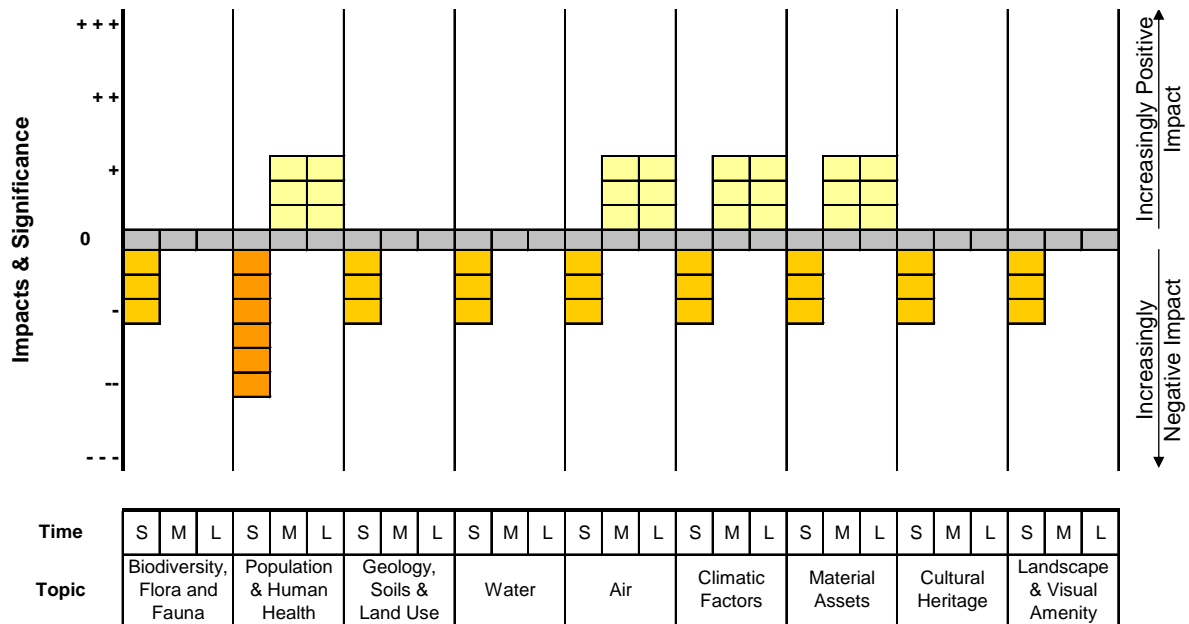
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



**22. Coolkeeragh – Killymallaght 110 kV Uprate (North West of Northern Ireland Reinforcement)**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in a Neighbourhood Renewal Area, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

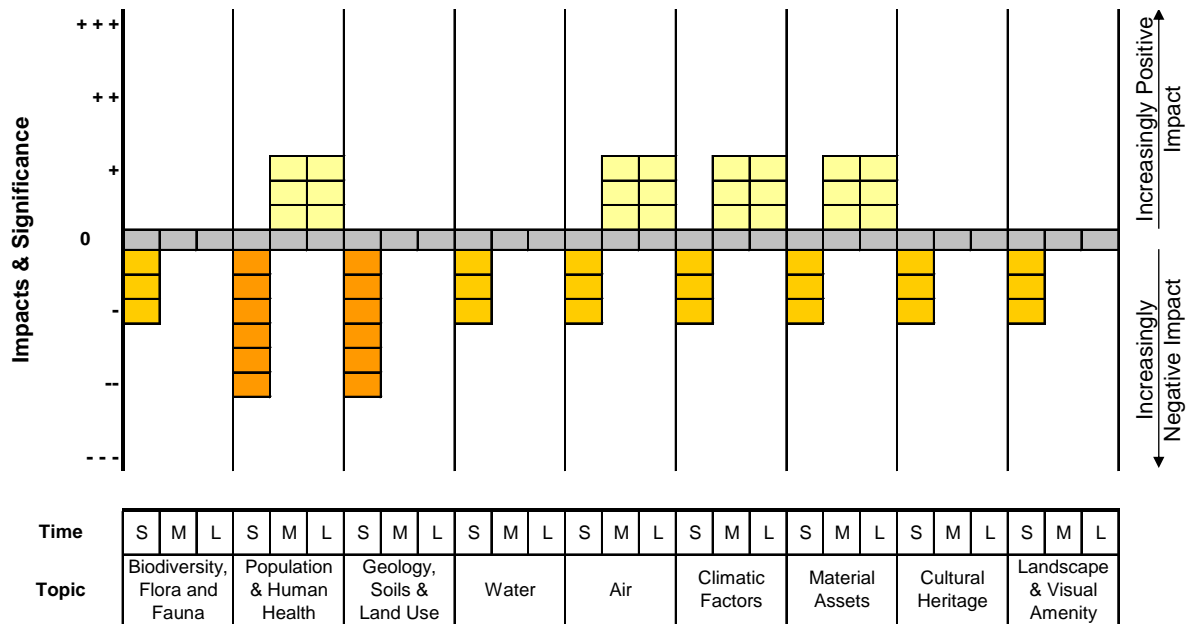


### 23. Coolkeeragh – Limavady 110 kV Uprate (North West of Northern Ireland Reinforcement)

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include compaction of a sensitive area of peat bog during the restrung works, as it is crossed by the existing line. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

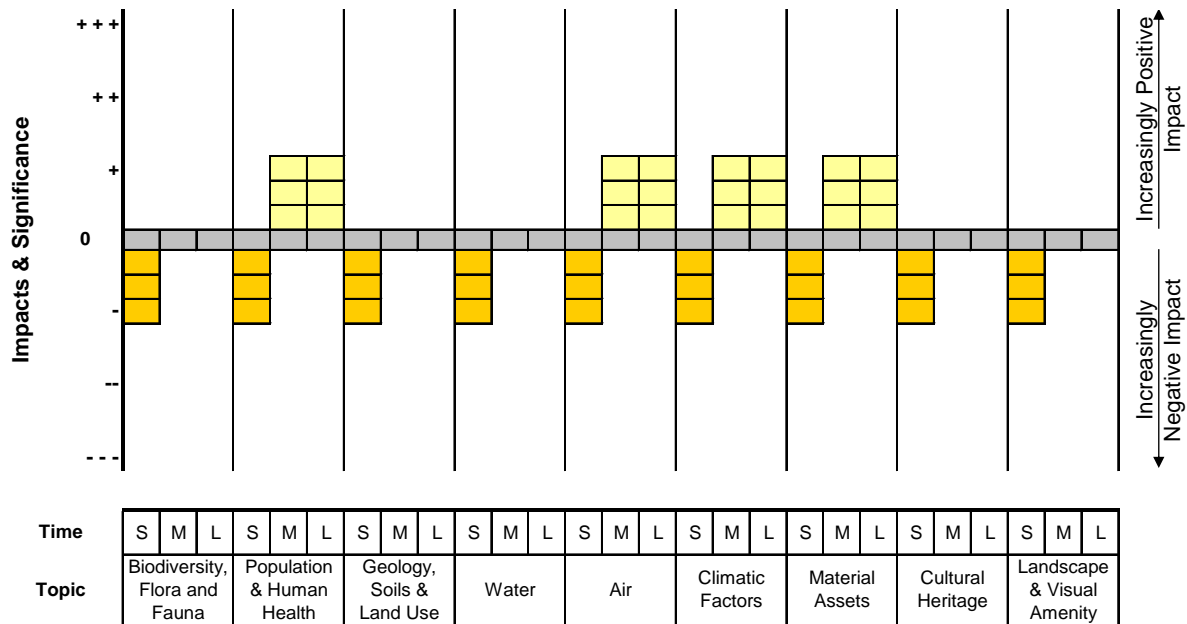




## 24. Killymallaght – Strabane 110 kV Uprate (North West of Northern Ireland Reinforcement)

Development of the transmission line restring has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restring of the transmission line.

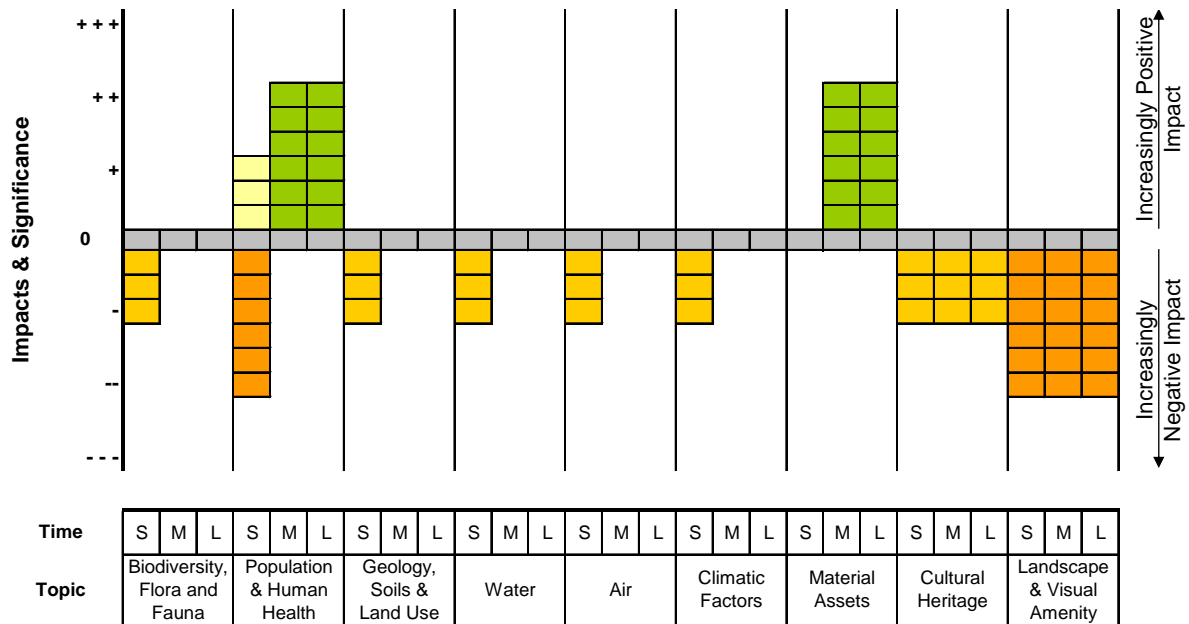
The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.



### 25. Sydenham Road Main (New Station)

Development of the new substation in the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noiconstruction of the new substation, if it is developed within the lower sensitivity area, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual amenity impacts on a sensitive Landscape Character Area. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, and material assets. These moderate positive impacts include the moderate scale local development of new electricity grid infrastructure, providing an increased supply of secure and reliable electricity into the future.

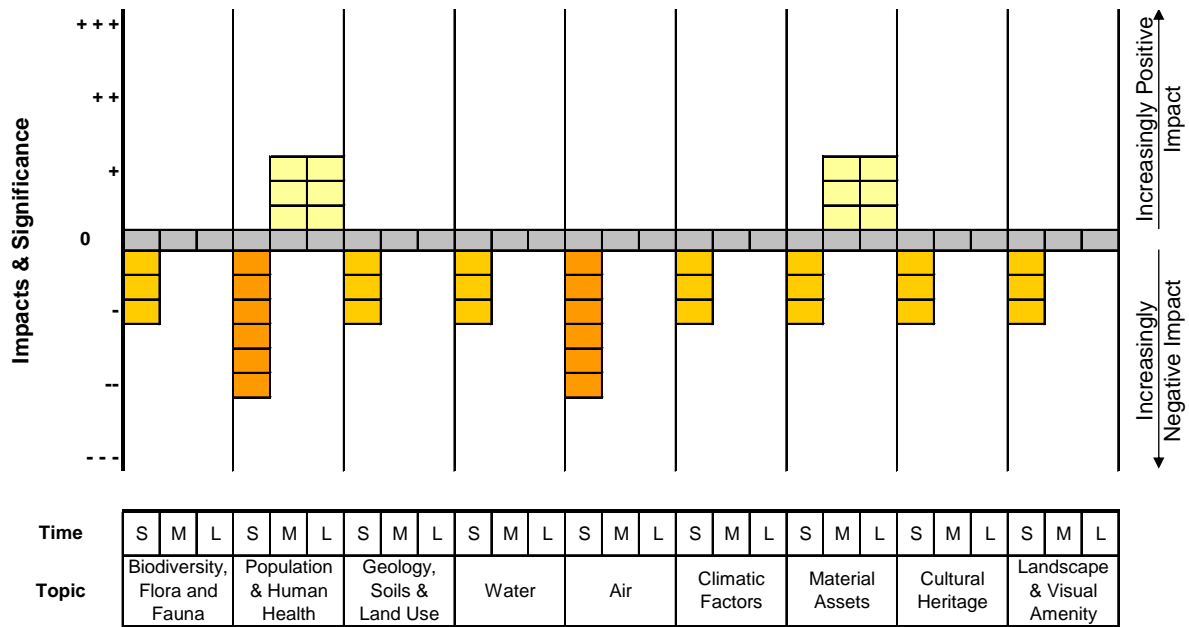
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration, and disturbance and displacement impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 26. Ballylumford – Castlereagh 110 kV Circuit Restrung

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include increases in local air emissions and reduction in local air quality in an AQMA, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, and material assets, following the restrung of the transmission line.

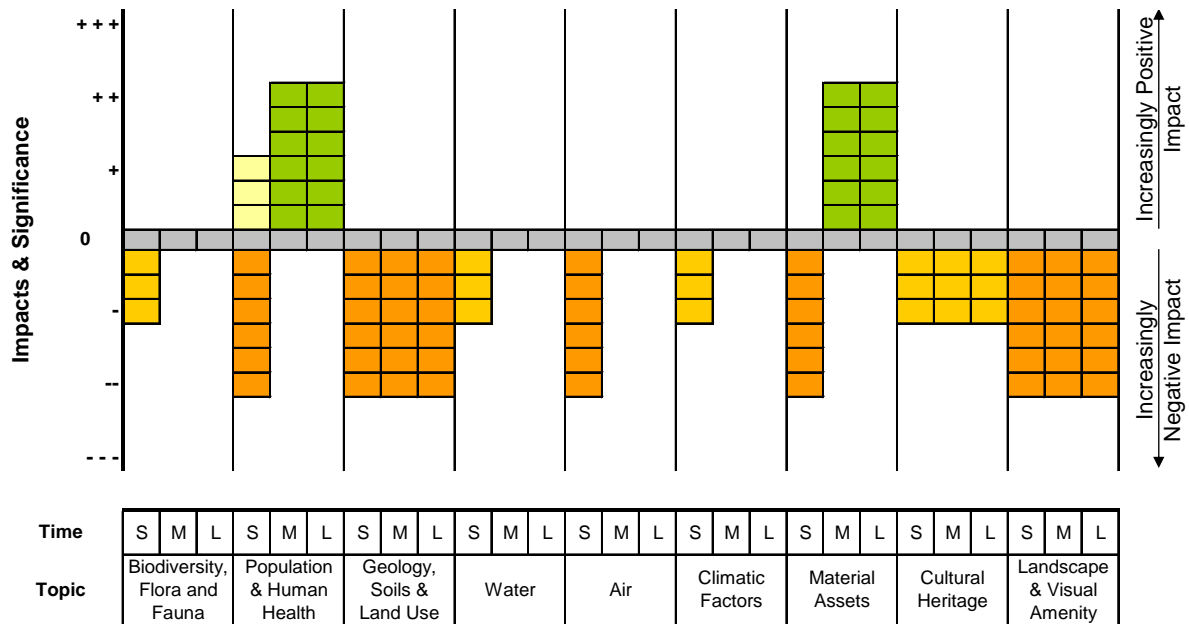
The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on ten European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 27. Drumnakelly and Armagh Development Plan

Development of a new substation and transmission line, within 1% of the best environmental line, has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbances, such as power supply disruptions, to transport networks, during construction works. Following the construction of the new substation and transmission line, if they are developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on geology, soils and land use, cultural heritage, and landscape and visual amenity. These moderate negative impacts include the permanent loss of pasture land and permanent impacts on the setting of cultural heritage sites. If a new substation and transmission line are developed within 1% of the best environmental line, there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable electricity into the future.

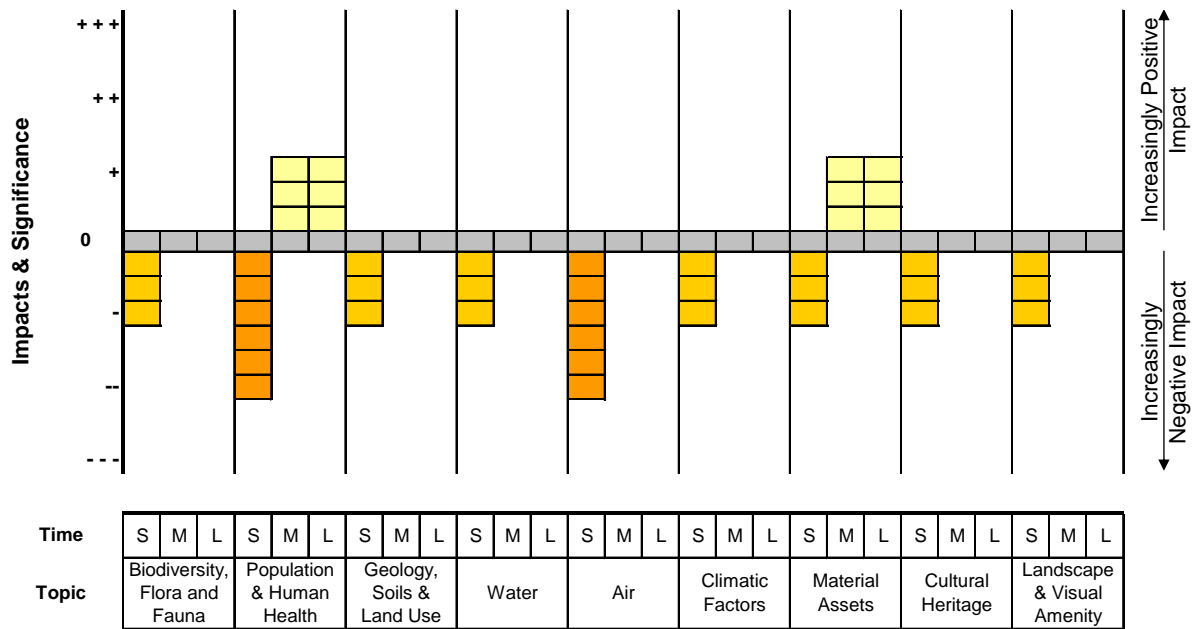
The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### 28. Castlereaugh – Knock 110 kV Cables Uprate

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include temporary increases in local air emissions and a reduction in local air quality in an AQMA, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, and material assets, following the restrung of the transmission line.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on seven European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



### MITIGATION AND MONITORING

Mitigation measures have been recommended where potential negative impacts on environmental topic areas have been identified from developing the alternative options. These mitigation measures aim to prevent, reduce and as fully as possible offset any significant adverse effects on the environment due to implementation of the projects within the TDPNI.

**Table 9.1** demonstrates environmental impact specific mitigation measures that should be adopted within the TDPNI to minimise the potential for any negative effects on the wider environment of developing any of the proposals assessed. These mitigation measures should be implemented and further developed at the next detailed design stage and project level study stage.

In addition to the proposed SEA mitigation **Table 9.2** demonstrates the HRA mitigation measures that should be adopted within the TDPNI to minimise the potential for any negative impacts on the European sites as arising from any of the potential projects. These mitigation measures have been adopted into Section 10 of the draft TDPNI and will be undertaken in the course of its adoption.

The SEA Directive requires that the significant environmental effects of the implementation of the TDPNI are monitored in order to identify, at an early stage, unforeseen adverse effects and in order to undertake appropriate remedial action. The proposed monitoring programme in **Table 9.3** is based on the Targets and Indicators established in the SEOs. This monitoring has been adopted into Section 10 of the draft TDPNI and should be undertaken in advance of development of the next cycle of the TDPNI, to enable the outcomes to influence the development of the Plan. Annual environmental review by SONI could also incorporate some or all of this monitoring.

## SUMMARY AND CONCLUSIONS

No significant negative impacts are being anticipated from development and operation of the transmission developments, yet several slight to moderate, negative impacts have been identified. However many of these can be avoided or mitigated for in the next detailed design and construction / environmental management planning stages. For transmission infrastructure upgrade developments, the negative impacts identified are mainly restricted to the construction phase, leaving no significant medium or long term footprint on the wider environment. However new transmission infrastructure developments have the potential for short, medium and long term, slight to moderate negative impacts due to their permanent physical and visual disturbance, during and following construction. Mitigation measures have been proposed that can minimise the potential for these negative impacts, if adopted in the detailed planning and design stage. Areas that may be more sensitive to these transmission developments have also been highlighted, to help inform SONI of the areas that should be avoided to minimise potential environmental impacts.

In the medium and long term the development of these transmission projects has the potential for slight to significant positive impacts, including the improved reliability of the grid network, support of economic growth, and facilitating the connection and supply of more renewable energy. These positive impacts in turn will help ensure that electricity supply is able to meet future demand, and that there is less reliance on fossil fuels into the future, resulting in better air quality and less GHG emissions. Furthermore, the projects in the TDPNI could play a key role in shaping a reliable and sustainable energy future for Northern Ireland and help achieve the 2020 renewable electricity target.

The HRA Screening of the 44 potential projects within the TDPNI identified that there is the potential for significant habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on European sites, in the development of 27 of the potential projects that could come forward during the Plan period. The possibility of these likely significant impacts cannot be discounted on these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects. Furthermore, where avoidance is not possible, mitigation measures have been identified to address potential adverse effects on the integrity of European sites from the development of projects within the TDPNI, which should be adopted in the design and planning stage of relevant projects.

Having conducted further investigation and analysis; and having applied measures appropriate at a plan level intended to avoid or reduce the harmful effects of the implementation of their plan on European sites; and taking into consideration the safeguarding regime of lower level screening for appropriate assessment or appropriate assessment as the case may be at a project level for each of the projects brought forward from the TDPNI prior to those projects being consented under the planning code; it is concluded that implementation of the TDPNI will not adversely affect the integrity of any European site.

While SONI is the competent authority for the purpose of preparing the TDPNI and associated SEA, all projects will likely require statutory consent under the provisions of the Planning Act (Northern Ireland) 2011, implemented by the relevant planning authority.

## NEXT STEPS

Consultations on the draft TDPNI, SEA Environmental Report and HRA are anticipated to commence in November 2018 and run for 9 weeks. Documents will be made available for viewing at the RPS offices (Elmwood House, 74 Boucher Road, Belfast, BT12 6RZ) and digitally via the SONI website – <http://www.soni.ltd.uk>.

Following completion of the consultation period, all comments will be collated and the TDPNI, SEA Environmental Report and HRA will be reviewed and revised as necessary. Provided there are no objections or comments that will significantly alter the TDPNI, the final version of the TDPNI can be drafted and adopted. This is anticipated to be in Q1 2019. Following release of the adopted TDPNI an SEA Statement will be drafted to summarise the process undertaken and identify how environmental considerations and consultations have been integrated into the final Plan.

The contact for any information regarding the SEA of the TDPNI is as follows:

<b>By post</b>	Richard Bingham RPS 74 Boucher Road Belfast BT12 6RZ Tel: +44 (0)28 90667914
<b>By email</b>	<a href="mailto:richard.bingham@rpsgroup.com">richard.bingham@rpsgroup.com</a>



# 1 INTRODUCTION

## 1.1 BACKGROUND

This Strategic Environmental Assessment (SEA) Environmental Report has been prepared in accordance with the European Communities Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive) and in accordance with the Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (S.R. 280/2004).

The purpose of this Environmental Report is to identify, describe and evaluate the likely significant effects on the environment arising from the adoption of the Transmission Development Plan for Northern Ireland (TDPNI) 2018 and reasonable alternatives, taking into account the objectives and the geographical scope of the Plan.

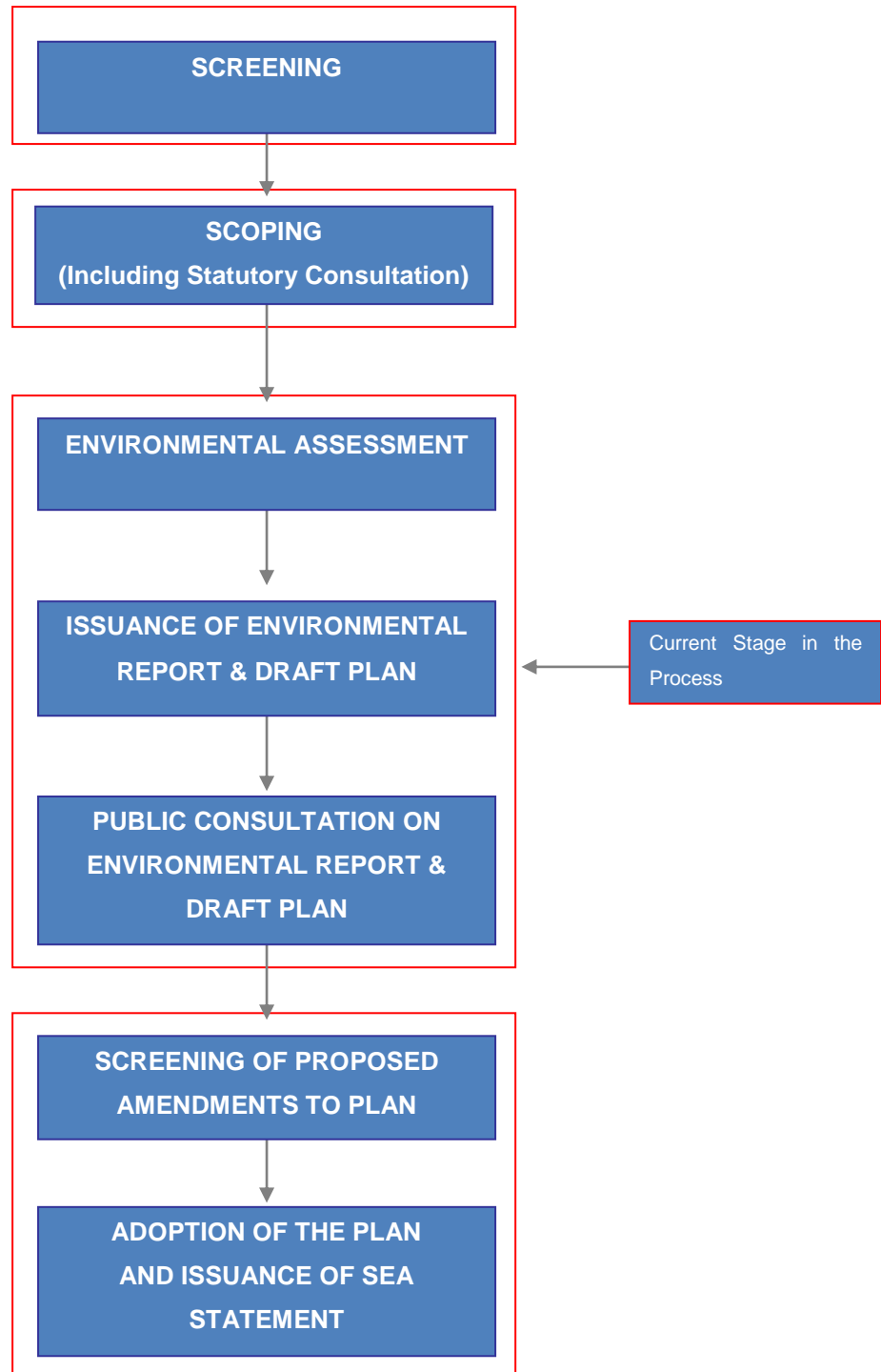
The TDPNI will present the potential projects required in Northern Ireland over the next 10 years (2018-2027) to reinforce the electrical transmission grid and meet the needs of generation and capacity for Northern Ireland.

## 1.2 STRATEGIC ENVIRONMENTAL ASSESSMENT

The SEA Directive requires that certain Plans and Programmes, prepared by statutory bodies, which are likely to have a significant impact on the environment, be subject to the SEA process. The SEA process is broadly comprised of the steps shown in **Figure 1.1**. These are given a summary description in **Table 1.1**.

**Table 1.1 Summary Descriptions of Main Stages in SEA Process**

Stage	Description	Status
Screening	Determines whether SEA is required for a Plan / Programme, in consultation with the designated statutory consultees.	Completed in February 2018
Scoping	Determines the scope and level of detail of the assessment for the SEA, in consultation with the designated statutory consultees.	Completed in April 2018
Environmental Assessment	Formal and transparent assessment of the likely significant impacts on the environment arising from the Plan / Programme, including all reasonable alternatives. The output from this is an Environmental Report which must go on public display along with the draft Plan.	Current Stage
SEA Statement	Summarises the process undertaken and identifies how environmental considerations and consultations have been integrated into the final Plan / Programme.	Anticipated Q1 2019



**Figure 1.1** Overview of SEA Process

### 1.3 RESPONSIBLE AUTHORITY

The Systems Operator for Northern Ireland (SONI) has been part of the EirGrid Group since 2009 and is responsible for the consistent and reliable transmission of electricity on the high-voltage grid, matching supply and demand for power across Northern Ireland.

SONI also operates the all-island wholesale electricity market with EirGrid through the Single Electricity Market Operator (SEMO) which has been in operation since November 2007.

SONI is responsible for operating and maintaining a safe, secure, economic and reliable electricity network. Working in co-operation with the system owner NIE Networks, SONI develops the electricity grid infrastructure for Northern Ireland. Investment in grid development is required to improve the grid for reliability, to support economic growth, to enable competition, and to connect more renewable energy.

RPS have been appointed on behalf of SONI to examine the TDPNI from an environmental perspective and to prepare any documents required as part of the SEA process, including Habitats Directive Assessment under the EU Habitats Directive (Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna).

### 1.4 STUDY TEAM

The study team that developed and created the TDPNI, the SEA of the TDPNI and the Appropriate Assessment (AA) of the TDPNI was made up of qualified and experienced engineers, scientists and planners. The SEA and AA professionals were involved throughout the TDPNI development process. This ensured that the wider environment was taken into consideration from the very earliest stages of the study, right the way through to the drafting of the TDPNI.

### 1.5 SCREENING FOR SEA

On behalf of SONI, RPS carried out an SEA Screening Assessment in February 2018 for the TDPNI and determined that an SEA of the TDPNI was required due to the following reasons:

- In line with its licence obligations as transmission system operator in Northern Ireland, SONI is obliged to draft a 10 year Transmission Development Plan outlining projects that are needed for the operation of the transmission system.
- The subject of the TDPNI is Electricity Transmission (Energy industry).
- The TDPNI will set the framework for development of future electricity transmission system developments, upgrades and maintenance throughout Northern Ireland over the next 10 years, from 2018 to 2027.
- The implementation of the TDPNI and the projects that will be developed from the Plan in Northern Ireland may have the potential to have significant impacts on the integrity of several Special Protection Areas (SPAs), Special Area of Conservation (SACs) and Ramsar wetland sites throughout Northern Ireland.

- Only the smaller asset replacement projects that are included in the Plan, which are often limited to refurbishment or replacement of assets within existing substation sites, are likely to determine the use of small areas at local level.
- A draft Grid Strategy called Network 25 was commenced in 2013 by Northern Ireland Electricity (NIE). Network 25 was intended to set out the scale and range of grid development needed to facilitate achievement of the Department of Enterprise Trade and Investment's Strategic Energy Framework target of 40% of electrical consumption from renewable energy by 2020. However, Network 25 did not progress beyond an outline preparation stage and while an SEA Scoping Report was published for consultation, neither a draft strategy nor an SEA Environmental Report were completed. The TDPNI is a fresh look at the electricity transmission requirements within Northern Ireland, instigated by the transfer of planning to SONI in May 2014 and the requirement to produce a plan incorporated into its licence late 2017.

Information on the Screening Consultation Phase can be found in **Section 3.5** of this report with screening responses from the NIEA, DAFM and EPA available in **Appendix A** of this report.

## 1.6 SCOPING FOR SEA

The SEA scoping phase for the TDPNI took place from April 2018 to June 2018. A SEA Scoping Report was produced as part of the scoping phase of the SEA for the TDPNI. The purpose of the Scoping Report was to provide sufficient information on the TDPNI to enable the consultees to form an opinion on the appropriateness of the scope, format, level of detail, methodology for assessment and the consultation period proposed for the Environmental Report. The SEA Scoping Report for the TDPNI was circulated in April 2018 to the statutory consultees listed in **Section 1.8**. As a result of potential transboundary effects from the implementation of the TDPNI, the Scoping Report was also circulated in April 2018 to the relevant authorities for SEA in the Republic of Ireland, as listed in **Section 1.8**. Information on the Scoping Consultation Phase can be found in **Section 3.5** of this report with Scoping responses available in **Appendix B** of this report.

## 1.7 SEA GUIDANCE

Key guidance documents that have been used in the SEA for the TDPNI are listed in **Appendix C** of this SEA Environmental Report.

## 1.8 STATUTORY CONSULTEEES FOR SEA

Under Article 6 of the SEA Directive the competent authority (in this case SONI) preparing the plan or programme is required to consult with specific "environmental authorities" (statutory consultees) on the scope and level of detail of the information to be included in the Environmental Report. As some projects and developments from the TDPNI may be close to the border with the Republic of Ireland and the potential cross-border nature of some of the SONI / Eirgrid projects, there is the potential for

transboundary impacts from implementation of the Plan. For this reason, there is a requirement to undertake transboundary consultations as part of this SEA process.

The statutory consultee established within the SEA legislation for Northern Ireland (S.R. 280/2004) is:

- Northern Ireland Environment Agency (NIEA).

The statutory consultees are established within the Irish national legislation, European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 [S.I. 435/2004] and the Planning and Development (Strategic Environmental Assessment) Regulations 2004 [S.I. 436/2004], and their recent amendments of European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 [S.I. 200/2011] and the Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011 [S.I. 201/2011], as being:

- Environmental Protection Agency (EPA);
- Department of Housing, Planning and Local Government (DHPLG);
- Department of Agriculture, Food and the Marine (DAFM);
- Department of Communications, Climate Action and the Environment (DCCA); and,
- Department of Culture, Heritage and Gaeltacht (DCHG).

## 1.9 APPROPRIATE ASSESSMENT

The Habitats Directive (Council Directive 92/43/EEC) on the conservation of natural habitats and of wild fauna and flora obliges member states to designate, protect and conserve habitats and species of importance in a European Union context. Article 6(3) of the Habitats Directive requires that “*Any plan or project not directly connected with or necessary to the conservation of a site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives.*” The Directive was transposed into Northern Ireland legislation through the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995.

Any proposed plan or project that has potential to result in a significant effect on a designated European site will require an AA. Case law has determined that the likelihood need not be great, merely possible, and that the precautionary principle must apply as set out in European Commission Guidance and as required by CJEU case law (i.e. C 127/02 ‘*Waddenzee*’).

AA for the TDPNI is being carried out in parallel with the SEA process. The findings of the AA will be used to guide the development of the alternatives to be considered as part of the SEA. The first stage of the AA process is Screening, which is to determine whether implementation of the TDPNI has the potential to have a significant effect on designated European sites. A Habitats Regulation Assessment (HRA) has been prepared to feed into the SEA process, this SEA Environmental Report and the TDPNI.

## **2 TRANSMISSION DEVELOPMENT PLAN FOR NORTHERN IRELAND 2018**

### **2.1 BACKGROUND**

SONI is the electricity Transmission System Operator (TSO) in Northern Ireland under a licence granted by the Northern Ireland Authority for Utility Regulation under Article 10(1)(b) of the Electricity (Northern Ireland) Order 1992 (the Order). SONI is responsible for operating and planning the development of a safe, secure, economic and reliable electricity system. Working in co-operation with the system owner NIE Networks, SONI plans the development of the electricity grid infrastructure for Northern Ireland. Investment in grid development is required to improve the grid for reliability, to support economic growth, to enable competition, and to connect more renewable energy.

In line with its licence obligations as TSO in Northern Ireland, SONI is obliged to draft a 10 year Transmission Development Plan outlining projects that are needed for the operation of the transmission system. Using the most up to date information on the current and projected future requirements for the operation of a secure, reliable grid, the Transmission Development Plan for Northern Ireland 2018-2027 is currently being compiled. In addition, future needs that may drive future potential projects will also be considered.

The TDPNI will present the potential projects required in Northern Ireland over the next 10 years (2018-2027) to reinforce the electrical transmission grid and ensure the connection of generation and demand for Northern Ireland.

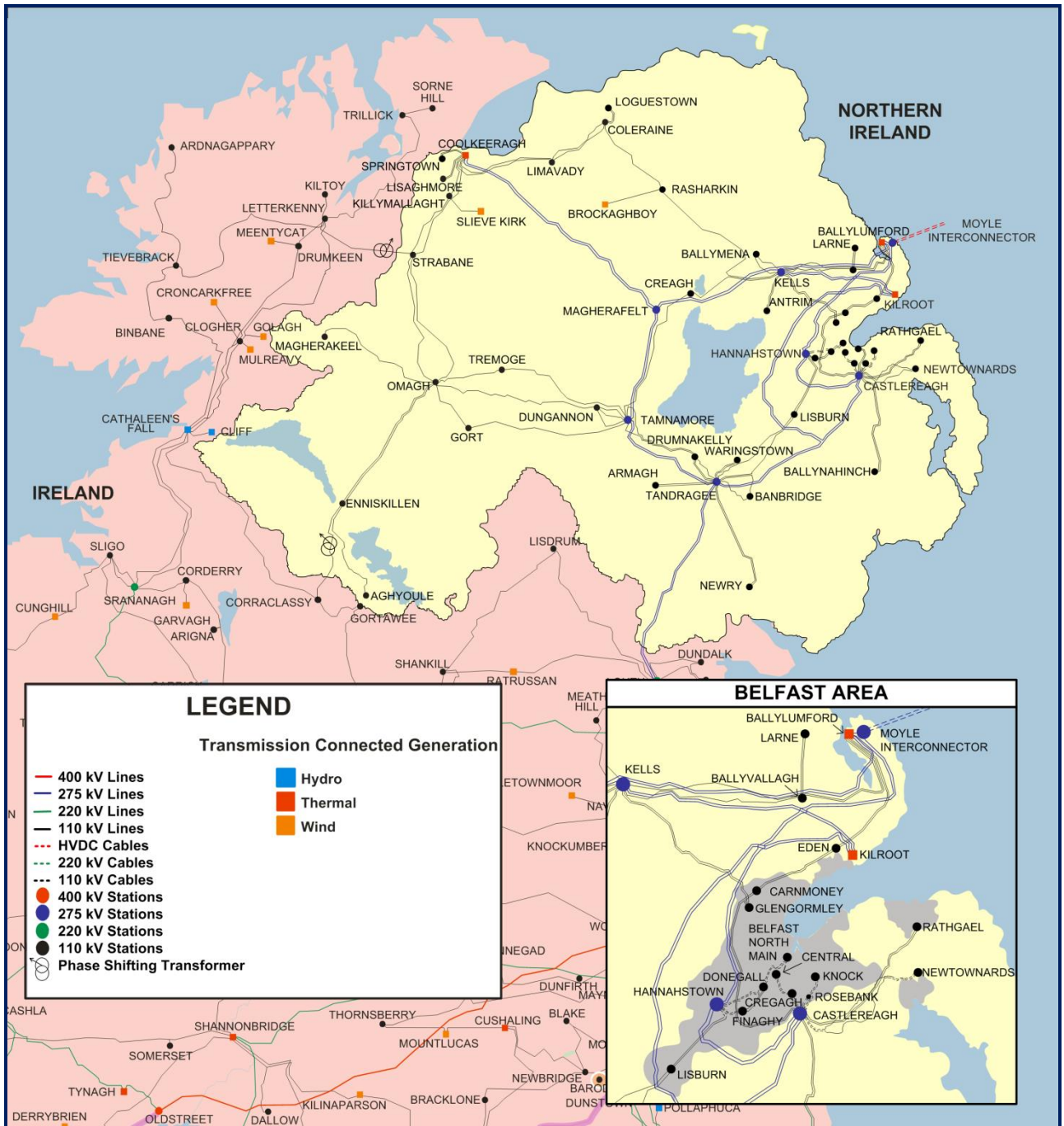
### **2.2 ELECTRICITY IN NORTHERN IRELAND**

The basic function of an electricity system is to connect the sources of energy (generators) with the ultimate users (demand) of that energy. The electricity network can be sub-divided into the transmission and distribution systems. The transmission system moves bulk electricity on high voltage lines or underground cables from where it is generated to bulk supply points. This can be likened to a motorway or high-capacity road which facilitates the bulk of vehicle movements. The separate distribution system, which operates at lower voltages, is like smaller lower-capacity roads, delivering electricity from these bulk supply points into homes and businesses.

The existing electricity transmission system in Northern Ireland was largely in place by the late 1960s, with an electrically strong transmission system having been developed to link major fossil fuelled power stations and to deliver bulk electricity to the more heavily populated areas. Northern Ireland has three large fossil fuel power stations; Ballylumford, Kilroot, and Coolkeeragh.

Voltages at or above 110 kV are used in the transmission system as they can deliver large quantities of power over long distances, very efficiently. The transmission system in Northern Ireland consists of approximately 400km of 275kV overhead line, almost all double circuit, developed between 1963 and 1978. The 110kV system consists of 924km of overhead line and 90km of cable, with the majority

installed between 1944 and 1958. **Figure 2.1** shows the existing Northern Ireland electrical transmission system. The distribution system operates at lower voltages of between 33kV and 230V and distributes electricity to customers' homes and business premises.



**Figure 2.1 Northern Ireland Transmission System**

The Northern Ireland electrical system is connected to the Scottish system via the Moyle Interconnector, which runs from Islandmagee to Ayrshire. Existing interconnection with the Republic of Ireland is principally achieved by a 275kV double circuit connection between Tandragee and Louth substations, and there are two smaller 110kV standby connections at Enniskillen and Strabane. A second North-South interconnector, operating at 400 kV has acquired statutory planning approval in both Ireland and Northern Ireland and is planned to be operational by winter 2021.

The transmission system is designed to certain standards known as the Transmission System Security and Planning Standards, approved by the Utility Regulator. These standards include among other things, a requirement that the system is designed, built and operated in such a way that if a single component fails (also known as a credible contingency) there will be an alternative available, and customer supplies will not be interrupted.

It is SONI's role to plan (including outline design and consents) an electrical system that will economically maintain compliance with the standards based on reasonable assumptions about the evolution of the generation, supply, consumption and exchanges with other countries. The type of generation technology deployed and the geographical location of that generation is a matter for developers and the planning process, and is not within SONI's remit. For both regulators and licensees this means a level of uncertainty in planning, delivering and funding system development. To reflect uncertainty SONI will perform sensitivity studies as appropriate.

Substantial system reinforcement is required to ensure that the transmission system continues to meet the planning standards as changes to the generation portfolio and demand occur over time including the connection of renewable generation. When considering system reinforcement SONI is obliged to balance the costs to the consumer, system security and its impact on the environment.

### **2.3 OBJECTIVES AND POLICIES OF THE TDPNI 2018**

The TDPNI is being prepared in accordance with Article 22 of European Directive 72/2009 concerning common rules for the internal market in electricity and Condition 40 of the SONI TSO Licence which requires SONI to prepare and publish a Plan. In accordance with the license condition the TDPNI has the following overarching objectives, which are the key drivers for the Plan:

- a) Indicate to market participants the main transmission infrastructure that needs to be built or upgraded over the next ten years;
- b) Contain all the investments already approved by the Utility Regulator and identify new investments which have to be executed in the next three years;
- c) Provide for a time frame and estimate of costs (where reasonable) for all investment projects;
- d) Contain such other matters as shall be specified in directions issued by the Utility Regulator from time to time for the purposes of the condition; and
- e) Contain a reasonable number of future scenarios, which reflect uncertainties and shall, as far as practicable, be consistent with scenarios that licensee uses in other relevant areas of work.

Within Section 4 of the TDPNI there are several sets of Policies and Objectives which are set out to assist in delivery of the grid strategy objectives in a sustainable manner.

Environmental policies (ENVP) have been compiled to ensure that SONI has due regard for existing environmental protection legislation and environmental best practice when developing projects. Environmental objectives (ENVO) have also been developed for a number of environmental topics.



These objectives ensure that legislative requirements and good environmental practice are integrated in the development of all Grid projects.

### General Environmental Policy

**ENVP1:** To promote best environmental practice in the design and appraisal of transmission development projects.

### Biodiversity Policy

**ENVP2:** To exercise its functions as a TSO in line with the Wildlife and Natural Environment Act (Northern Ireland) 2011 and the Northern Ireland Biodiversity Strategy (2015) to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions.

**ENVP3:** To avoid adverse effects on sites designated for nature conservation including, Special Conservation Areas, Special Protection Areas, RAMSAR Sites, Areas of Special Scientific Interest.

**ENVP4:** To protect NI priority species and habitats in the development of any transmission infrastructure.

### Biodiversity Objective

**ENVO1:** To prepare and utilise industry specific Ecology Guidelines for the development of Transmission projects. This will ensure a standard approach to ecological impact assessment for transmission projects.

### Climate Change Policy

**ENVP5:** To integrate measures related to climate change into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice.

### Noise Policy

**ENVP6:** To employ methods on transmission infrastructure which minimise noise emissions in line with best industry practice.

### Noise Objectives

**ENVO2:** To give careful consideration to the siting of transmission infrastructure so as to ensure that noise-sensitive receptors are protected from potential noise emissions.

**ENVO3:** To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation.

### Landscape Policy

**ENVP7:** To have regard to the Northern Ireland Landscape Character Assessment 2000 in the design and appraisal of its transmission development projects.

### Landscape Objective

**ENVO4:** To protect landscapes through the sustainable planning and design of transmission infrastructure.

### Cultural Heritage Policy

**ENVP8:** To take reasonable measures to ensure that the special interest of protected structures, including their curtilages and settings, are protected when considering site or route options for the planning of transmission infrastructure.

**ENVP9:** To protect archaeological material when planning transmission infrastructure, by avoidance or by best practice mitigation measures.

### Water Policy

**ENVP10:** That there is no increase in flood risk as a result of transmission development, and to ensure any flood risk to the development is appropriately managed.

**ENVP11:** To promote the use of sustainable urban drainage systems in any new developments where it is appropriate.

**ENVP12:** To have regard to Planning Policy Statements and Supplementary Planning Guidance: PPS 15 Planning and Flood Risk Development Control Considerations in the preparation of grid development strategies and plans.

### Water Objective

**ENVO5:** That all grid development proposals, and in particular, transmission substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current Guidelines, standards and best practice. The Flood Risk Assessment shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.

### Air Quality Policy

**ENVP13:** To preserve and maintain air quality in accordance with good practice and relevant legislation in the proposed construction of its transmission projects.

**ENVP14:** To ensure appropriate dust suppression during construction works.

### Tourism Policy

**ENVP15:** To consider the potential impact upon tourism in the planning of transmission projects.

## Tourism Objective

**ENVO6:** To identify the nature of tourism in a project area; to consider the cumulative / in combination impact on tourism of a project and to consider short term and long term impacts of grid development projects on tourism as appropriate.

## Technology Policy

**TP1:** To promote and facilitate the sustainable development of a high-quality transmission grid to serve the existing and future needs of the NI population.

**TP2:** To consider all practical technology options in the development of projects, including maximising use of existing transmission grid.

## Project Development Policy

**PDP1:** To develop projects in accordance with SONI's *Process for Developing the Grid in Northern Ireland*.

**PDP2:** To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental, social and deliverability goals and priorities in decision-making.

**PDP3:** To ensure that grid development is carried out in an economically efficient manner, and seek derogation from the Utility Regulator when this is not possible.

## Planning and Consenting Policy

**PCP1:** To have regard to relevant legislation and guidelines in respect of planning and consenting of transmission infrastructure development projects, and make provision for any policies for the provision of transmission infrastructure set out in these documents.

**PCP2:** To have regard to precedent arising from decisions of the Competent Authorities, and of the High Court in Judicial Review of decisions, relating to the planning and consenting of transmission infrastructure development projects.

**PCP3:** To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.

## Consultation and Engagement Policy

**CEP1:** To consult and engage with statutory and non-statutory stakeholders, including communities, landowners and the general public, at the earliest appropriate stage of a project's development.

**CEP2:** To recognise and develop the essential role that communities, landowners and other stakeholders play in transmission infrastructure development, and to engage with different stakeholders as appropriate during the life of a grid development project.

**CEP3:** To ensure consultation and engagement feedback is appropriately considered in decision making.

These Objectives and Policies that SONI work to in development and implementation of the TDPNI are tested against the SEA environmental objectives in **Section 3.2** of this report.

### 3 METHODOLOGY AND CONSULTATIONS

The TDPNI has been developed to ensure all future requirements of the electrical network in Northern Ireland will be met. This SEA Environmental Report has been produced to assess the environmental impacts of the various development options (alternatives) of the TDPNI and to provide the environmental guidance to help create a more sustainable TDPNI. In parallel to this, a Habitats Regulation Assessment (HRA) has been prepared to inform the decision making process, in terms of the potential for the development options to impact the integrity of any European sites in view of that sites conservation objectives. Both environmental assessments have been central to the development of the draft TDPNI.

#### 3.1 SEA ASSESSMENT

The various developments available to the TDPNI have been assessed in terms of their potential positive and negative impacts and the significance of these impacts on the environment against the SEA objectives. The purpose of this is to predict and evaluate, as far as possible, the environmental effects of the TDPNI, highlighting any significant environmental problems and / or benefits that are likely to arise from implementation of the TDPNI. Where possible, this assessment has been quantitative, with a graphical output to aid public appreciation and understanding of the implications of each development option in the TDPNI.

The TDPNI has been assessed via a Baseline Led Assessment. This method involves the assessment of each option available in the potential developments of the TDPNI against each of the following topics:

- Biodiversity, Flora & Fauna (BFF)
- Population & Human Health (PHH)
- Soils, Geology and Landuse (S)
- Water (W)
- Air (A)
- Climatic Factors (C)
- Material Assets & Infrastructure (MA)
- Cultural, Architectural & Archaeological Heritage (H)
- Landscape & Visual Amenity (L)

Each potential project in the TDPNI has been assessed in the short, medium and long term for likely effects, the significance of the effects, and whether they are positive or negative effects. Other impacts that have been assessed for significance are secondary effects, cumulative effects, synergistic effects,

temporary and permanent effects, and the inter-relationship of effects (Table 3.4 of the SEA Scoping Report which preceded this report demonstrated the Potential Inter-Relationships between SEA Topics, which will be carried forward within this assessment). The scenario of “The Evolution of the Environment without the Plan” has also been assessed in the same format. This will be considered the Do-Nothing Scenario.

All potential positive and negative impacts are presented individually, with a text description, and then a summary graphic. In addition, a summary of the overall balanced potential effect has been presented for each environmental issue area.

Where appropriate, a regional perspective of the potential main issues and impacts of each option has been detailed by environmental topic area. The purpose of this is to predict and evaluate, as far as possible, the environmental effects of the TDPNI, highlighting any environmental problems that are likely to arise from implementation of the TDPNI. Where possible this assessment will be quantitative, with a graphical output to aid public appreciation and understanding of the implications of each proposed option in the TDPNI.

The scores assigned to impacts range from +3 to -3 as demonstrated in **Table 3.1**. If a development option is thought to have the potential for unacceptable impacts a score of -999 has been assigned. The purpose of adding numerical scores is to assist in the ranking of options and for potential incorporation of the environmental and social criteria into future decision making by the TDPNI team, as this can easily be tied into a multi-criteria analysis of alternatives if desired. Like the assessment, the scores will demonstrate both the positives and the negatives, and will not be conveyed in terms of net benefit or net loss, which can sometimes be misleading. A scoring guideline was prepared to help calibrate and streamline the assessments, which is given in **Appendix E** of this report.

**Table 3.1 Description of SEA Environmental Impact Scores**

Score	Description
+ 3	Significant positive environmental impacts
+ 2	Moderate positive environmental impacts
+ 1	Slight positive environmental impacts
0	No environmental impacts
- 1	Slight negative environmental impacts
- 2	Moderate negative environmental impacts
- 3	Significant negative environmental impacts
- 999	Unacceptable impacts

Within the environmental assessment for each potential development, there is an initial geographical focus on an area. This sets the initial study area for each of these developments. This study area is large enough to include all the potential areas in which the proposed infrastructure may be developed. The study area for a new transmission line will therefore be much larger than the study area for a new substation. The aim of setting this study area is to focus the potential environmental issues and sensitivities that could be impacted upon by the development. For upgrading and asset replacement projects, the study area can be focused again, as these will be geographically limited to the existing infrastructure locations. The study area set around these potential upgrading and replacement projects is the starting area for examining potential impacts. The study areas for each project are set based on evidence and best practice for transmission infrastructure, having significant regard to the findings of the EirGrid Evidence Based Studies from 2016, which were literature reviews and evidence based field studies on the effects of development and operation of high voltage transmission lines on various environmental topics in Ireland. The EirGrid Guidelines for Electricity Transmission Projects (listed in **Appendix C**) have also been used to assist with this.

The HRA for the draft TDPNI investigates the potential impacts on the Natura 2000 Network of sites and may cover a much wider study area and zones of influence to address ex situ impacts to habitats.

It must be noted that the TDPNI is a Plan that prepares for future transmission infrastructure development; however SONI can only be reactive to the predicted supply and demand of electricity. While the developments that actually move on to the project level and construction are decided by SONI, funding for this work is assessed on a case by case basis by the Utility Regulator. Under SONI's licence, the Utility Regulator has the authority to direct derogation from the Transmission System Security and Planning Standards should it determine that any particular solution would not be economic for customers to fund through tariffs. Similarly this SEA Environmental Report will not identify preferred solutions for transmission infrastructure, however will provide SONI with very useful information for their future sustainable planning of grid reinforcement, should they decide that certain developments are required to move ahead to the project level to ensure continuing compliance with standards.

### 3.2 SEA OBJECTIVES

Each potential development has been assessed against the SEA Objectives to examine the likely significant environmental impacts of their implementation. These are referred to as the Strategic Environmental Objectives (SEOs), and have been developed by the SEA team in line with the environmental topics from the SEA Directive. This assessment is strategic, with the aim of reporting likely impacts at the regional level to reflect the scale at which the options are being planned. The SEOs, Sub-Objectives, Indicators and Targets used are given in **Table 3.2**. The scoring guidelines provided in **Appendix E** of this report are in line with these SEOs, Sub-Objectives, Indicators and Targets, and demonstrate how they go from being an Objective to being used to assess the potential for impacts on the wider environment.

**Table 3.2 Strategic Environmental Objectives**

Environmental Topic	Objective	Sub-Objective	Indicators	Targets
<b>Biodiversity, Flora &amp; Fauna</b>	<b>1</b> Avoid damage to, and where possible enhance, biodiversity, flora and fauna.	<b>A</b> Preserve, protect, maintain and where possible enhance internationally protected species and their key habitats.	Status, condition, area and number of internationally protected species and their key habitats. SACs, SPAs, Ramsar sites	Potential to maintain or enhance internationally protected species and their key habitats, in line with conservation objectives.
		<b>B</b> Preserve, protect, maintain and where possible enhance national and local nature conservation sites and protected species, or other know species of conservation concern.	Status, condition, area and number of ASSI, NHA, pNHA, SLNCI and local conservation designations and their species.	Potential to maintain or enhance national and local conservation sites, in line with conservation objectives.
<b>Population &amp; Human Health</b>	<b>2</b> Minimise the risk to and provide benefit for the community and human health.	<b>A</b> Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.	Population density within proximity to potential transmission system developments.	Minimal potential disruption to the local population in development and operation of infrastructure.
		<b>B</b> Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.	Perceived health of the local population within proximity to potential transmission system developments.  Socially sensitive areas within proximity to potential transmission system developments.	Minimal potential disruption to sensitive and deprived communities in development and operation of infrastructure.
<b>Soils, Geology and Landuse</b>	<b>3</b> Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<b>A</b> Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	Loss or damage to sensitive soils and land uses, e.g. peatlands, ancient woodland, commercial forestry, cultivated lands  Interactions with potentially	Minimal potential for disruption to and loss of sensitive soil and land resources.  Potential to avoid hazardous sites and topographically unsuitable areas



				<p>hazardous soils and activities, e.g. PPC sites, mines, quarries, historically contaminated sites</p> <p>Interactions with topographically difficult sites, e.g. steep slopes and uplands.</p>		
<b>Water</b>	<b>4</b>	Avoid impacts and interaction with water quality, quantity and resource.	<b>A</b>	<p>Avoid damage to or deterioration of water status, quality and resource.</p>	<p>WFD water status of surface, coastal, transitional and groundwater's within proximity to potential transmission system developments.</p> <p>Sensitive waterbodies, e.g. drinking and bathing waters within proximity to potential transmission system developments.</p>	Limited potential for deterioration of water status or quality, upstream or downstream, in development and operation of infrastructure.
			<b>B</b>	<p>Avoid interactions with coastal, pluvial or fluvial flood extents.</p>	<p>Medium probability flood extents - Pluvial and fluvial 100 year and coastal 200 year flood extents.</p>	<p>Minimal potential development within medium probability flood extents, unless resilient to flooding.</p>
<b>Air</b>	<b>5</b>	Minimise risk to local air quality and contribute to improving regional emissions	<b>A</b>	<p>Minimise risk to local air quality and contribute to improving regional emissions</p>	<p>Development in air quality sensitive areas.</p> <p>Enable increased renewable energy connection to reduce requirements for fossil fuel burning.</p>	<p>Minimal potential development within air quality sensitive areas.</p> <p>Potential to reduce requirement for fossil fuel power station activity and emissions.</p>

<b>Climatic Factors</b>	<b>6</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	<b>A</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	Medium probability climate change (cc) influenced flood extents - Pluvial and fluvial 100 year + cc and coastal 200 year +cc flood extents.  Enable increased renewable energy connection to reduce requirements for fossil fuel burning.	Minimal potential development within medium probability climate change flood extents, unless resilient to flooding.  Potential to reduce regional and national GHG emissions.
<b>Material Assets &amp; Infrastructure</b>	<b>7</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	<b>A</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	Transmission infrastructure developed or upgraded.  Potential for impacts on transport (road, rail, air) and energy infrastructure (gas).  Potential for loss of or impacts to agricultural land assets.	New and reinforced electricity grid infrastructure, with minimal potential disruption to other assets and infrastructure.
<b>Cultural, Architectural &amp; Archaeological Heritage</b>	<b>8</b>	Protect the historic environment and cultural heritage.	<b>A</b>	Protect the historic environment and cultural heritage.	Potential for impacts on, or the setting of, known archaeological heritage features.  Potential for impacts on, or the setting of, known architectural heritage features.	Minimal potential impacts on, or the setting of, known archaeological and architectural heritage features, in development and operation of infrastructure.
<b>Landscape &amp; Visual Amenity</b>	<b>9</b>	Minimise the potential for negative impacts on landscape and visual amenity.	<b>A</b>	Minimise the potential for negative impacts on landscape and visual amenity.	Landscape sensitivity to infrastructure development.  Potential for impacts on visually sensitive areas, such as AONBs and country parks.	Minimal potential impacts on sensitive landscapes and visual amenity, in development and operation of infrastructure.

An objective compatibility appraisal was conducted to test the compatibility of the TDPNI Objectives and Policies with the SEOs of this SEA Environmental Report. **Table 3.3** demonstrates this compatibility. The purpose of this appraisal is to demonstrate how the Objectives and Policies of the TDPNI incorporate and reflect environmental topics. Green boxes with a ✓ demonstrate where TDPNI and SEA Objectives are compatible, and the SEA Objective is incorporating the TDPNI Objective or Policy. Please note that Objectives / Policies not being compatible do not mean that they are in conflict, it only demonstrates where a TDPNI Objective and an SEA Objective are not similar. **Table 3.4** further demonstrates how TDPNI Objectives are encompassed with the SEOs.

**Table 3.3 Compatibility of Objectives**

TDPNI Objective / Policy	SEA Objective								
	BFF	PHH	S	W	A	C	MA	H	L
ENVP1	✓	✓	✓	✓	✓	✓	✓	✓	✓
ENVP2	✓					✓			
ENVP3	✓		✓			✓			
ENVP4	✓		✓			✓			
ENVO1	✓					✓			
ENVP5					✓	✓			
ENVP6		✓			✓				
ENVO2		✓			✓				
ENVO3		✓			✓				
ENVP7									✓
ENVO4									✓
ENVP8								✓	
ENVP9								✓	
ENVP10				✓		✓			
ENVP11				✓		✓			
ENVP12				✓		✓			
ENVO5		✓		✓		✓			
ENVP13		✓			✓				
ENVP14		✓			✓				
ENVP15		✓					✓		
ENVO6		✓					✓		
TP1		✓					✓		
TP2							✓		
PDP1							✓		
PDP2							✓		
PDP3							✓		
PCP1							✓		
PCP2							✓		
PCP3							✓		
CEP1		✓	✓						
CEP2		✓	✓						
CEP3		✓							

**Table 3.4 SEOs Encompassing the TDPNI Objectives**

Environmental Topic	Objective	Sub-Objective	Encompassed TDPNI Objectives
<b>Biodiversity, Flora &amp; Fauna</b>	<b>1</b> Avoid damage to, and where possible enhance, biodiversity, flora and fauna.	<b>A</b> Preserve, protect, maintain and where possible enhance internationally protected species and their key habitats.	ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP3 - To avoid adverse effects on sites designated for nature conservation including, Special Conservation Areas, Special Protection Areas, RAMSAR Sites, Areas of Special Scientific Interest. ENVP4 - To protect NI priority species and habitats in the development of any transmission infrastructure.
		<b>B</b> Preserve, protect, maintain and where possible enhance national and local nature conservation sites and protected species, or other know species of conservation concern.	ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP2 - To exercise its functions as a TSO in line with the Wildlife and Natural Environment Act (Northern Ireland) 2011 and the Northern Ireland Biodiversity Strategy (2015) to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions. ENVP3 - To avoid adverse effects on sites designated for nature conservation including, Special Conservation Areas, Special Protection Areas, RAMSAR Sites, Areas of Special Scientific Interest. ENVP4 - To protect NI priority species and habitats in the development of any transmission infrastructure. ENVO1 - To prepare and utilise industry specific Ecology Guidelines for the development of Transmission projects. This will ensure a standard approach to ecological impact assessment for transmission projects.
<b>Population &amp; Human Health</b>	<b>2</b> Minimise the risk to and provide benefit for the community and human health.	<b>A</b> Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.	ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP6 - To facilitate new technologies on transmission infrastructure which minimise noise emissions. ENVO2 - To give careful consideration to the siting of transmission infrastructure so as to ensure that noise-sensitive receptors are protected from potential noise emissions. ENVO3 - To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation. ENVP15 - To consider the potential impact upon tourism in the

				<p>planning of transmission projects.</p> <p>ENVO6 - To identify the nature of tourism in a project area; to consider the cumulative / in combination impact on tourism of a project and to consider short term and long term impacts of grid development projects on tourism as appropriate.</p> <p>TP1 - To promote and facilitate the sustainable development of a high-quality transmission grid to serve the existing and future needs of the NI population.</p> <p>CEP1 - To consult and engage with statutory and non-statutory stakeholders, including communities, landowners and the general public, at the earliest appropriate stage of a project's development.</p> <p>CEP2 - To recognise and develop the essential role that communities, landowners and other stakeholders play in transmission infrastructure development, and to engage with different stakeholders as appropriate during the life of a grid development project.</p>
			<b>B</b> Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.	<p>ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects.</p> <p>ENVO5 - That all grid development proposals, and in particular, transmission substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current Guidelines, standards and best practice. The Flood Risk Assessment shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.</p> <p>ENVP13 - To preserve and maintain air quality in accordance with good practice and relevant legislation in the proposed construction of its transmission projects.</p> <p>ENVP14 - To ensure appropriate dust suppression during construction works.</p>
<b>Soils, Geology and Landuse</b>	<b>3</b>	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<b>A</b> Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<p>ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects.</p> <p>ENVP3 - To avoid adverse effects on sites designated for nature conservation including, Special Conservation Areas, Special Protection Areas, RAMSAR Sites, Areas of Special Scientific Interest.</p> <p>ENVP4 - To protect NI priority species and habitats in the development of any transmission infrastructure.</p> <p>CEP1 - To consult and engage with statutory and non-statutory</p>

				stakeholders, including communities, landowners and the general public, at the earliest appropriate stage of a project's development. CEP2 - To recognise and develop the essential role that communities, landowners and other stakeholders play in transmission infrastructure development, and to engage with different stakeholders as appropriate during the life of a grid development project.
<b>Water</b>	<b>4</b>	Avoid impacts and interaction with water quality, quantity and resource.	<b>A</b>	Avoid damage to or deterioration of water status, quality and resource.  ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP11 - To promote the use of sustainable urban drainage systems in any new developments where it is appropriate.
			<b>B</b>	Avoid interactions with coastal, pluvial or fluvial flood extents.  ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP10 - That there is no increase in flood risk as a result of transmission development, and to ensure any flood risk to the development is appropriately managed. ENVP12 - To have regard to Planning Policy Statements and Supplementary Planning Guidance: PPS 15 Planning and Flood Risk Development Control Considerations in the preparation of grid development strategies and plans. ENVO5 - That all grid development proposals, and in particular, transmission substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current Guidelines, standards and best practice. The Flood Risk Assessment shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.
<b>Air</b>	<b>5</b>	Minimise risk to local air quality and contribute to improving regional emissions	<b>A</b>	Minimise risk to local air quality and contribute to improving regional emissions  ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP5 - To integrate measures related to climate change into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice. ENVP6 - To employ methods on transmission infrastructure which minimise noise emissions in line with best industry practice. ENVO2 - To give careful consideration to the siting of transmission infrastructure so as to ensure that noise-sensitive receptors are protected from potential noise emissions. ENVO3 - To seek to preserve and maintain noise quality in accordance with good practice and relevant legislation.

				<p>ENVP13 - To preserve and maintain air quality in accordance with good practice and relevant legislation in the proposed construction of its transmission projects.</p> <p>ENVP14 - To ensure appropriate dust suppression during construction works.</p>
<b>Climatic Factors</b>	<b>6</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	<b>A</b>	<p>Adaption of infrastructure to potential climatic change and reduced GHG emissions</p> <p>ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects.</p> <p>ENVP2 - To exercise its functions as a TSO in line with the Wildlife and Natural Environment Act (Northern Ireland) 2011 and the Northern Ireland Biodiversity Strategy (2015) to further the conservation of biodiversity so far as is consistent with the proper exercise of those functions.</p> <p>ENVP3 - To avoid adverse effects on sites designated for nature conservation including, Special Conservation Areas, Special Protection Areas, RAMSAR Sites, Areas of Special Scientific Interest.</p> <p>ENVP4 - To protect NI priority species and habitats in the development of any transmission infrastructure.</p> <p>ENVO1 - To prepare and utilise industry specific Ecology Guidelines for the development of Transmission projects. This will ensure a standard approach to ecological impact assessment for transmission projects.</p> <p>ENVP5 - To integrate measures to address climate change into grid development, by way of both effective mitigation and adaptation responses, in accordance with available guidance and best practice.</p> <p>ENVP10</p> <p>ENVP11 - To promote the use of sustainable urban drainage systems in any new developments where it is appropriate.</p> <p>ENVP12 - To have regard to Planning Policy Statements and Supplementary Planning Guidance: PPS 15 Planning and Flood Risk Development Control Considerations in the preparation of grid development strategies and plans.</p> <p>ENVO5 - That all grid development proposals, and in particular, transmission substation developments, shall carry out, to an appropriate level of detail, a site-specific Flood Risk Assessment that shall demonstrate compliance with all current Guidelines, standards and best practice. The Flood Risk Assessment shall pay particular emphasis to residual flood risks, site-specific mitigation measures, flood-resilient design and construction, and any necessary management measures.</p>

<b>Material Assets &amp; Infrastructure</b>	<b>7</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	<b>A</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	<p>ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects.</p> <p>ENVP15 - To consider the potential impact upon tourism in the planning of transmission projects.</p> <p>ENVO6 - To identify the nature of tourism in a project area; to consider the cumulative / in combination impact on tourism of a project and to consider short term and long term impacts of grid development projects on tourism as appropriate.</p> <p>TP1 - To promote and facilitate the sustainable development of a high-quality transmission grid to serve the existing and future needs of the NI population.</p> <p>TP2 - To consider all practical technology options in the development of projects, including maximising use of existing transmission grid.</p> <p>PDP1 - To develop projects in accordance with SONI's Process for Developing the Grid in Northern Ireland.</p> <p>PDP2 - To promote sustainable grid development by balancing complex and/or competing technical, economic, environmental, social and deliverability goals and priorities in decision-making.</p> <p>PDP3: To ensure that grid development is carried out in an economically efficient manner, and seek derogation from the Utility Regulator when this is not possible.</p> <p>PCP1 - To have regard to relevant legislation and guidelines in respect of planning and consenting of transmission infrastructure development projects, and make provision for any policies for the provision of transmission infrastructure set out in these documents.</p> <p>PCP2 - To have regard to precedent arising from decisions of the Competent Authorities, and of the High Court in Judicial Review of decisions, relating to the planning and consenting of transmission infrastructure development projects.</p> <p>PCP3 - To promote sustainable grid development by balancing complex and/or competing technical, economic and environmental goals and priorities in decision-making.</p>
<b>Cultural, Architectural &amp; Archaeological Heritage</b>	<b>8</b>	Protect the historic environment and cultural heritage.	<b>A</b>	Protect the historic environment and cultural heritage.	<p>ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects.</p> <p>ENVP8 - To take reasonable measures to ensure that the special interest of protected structures, including their curtilages and settings, are protected when considering site or route options for the planning of transmission infrastructure.</p> <p>ENVP9 - To protect archaeological material when planning</p>



				transmission infrastructure, by avoidance or by best practice mitigation measures.
<b>Landscape &amp; Visual Amenity</b>	<b>9</b>	Minimise the potential for negative impacts on landscape and visual amenity.	<b>A</b>	Minimise the potential for negative impacts on landscape and visual amenity.
				ENVP1 - To promote best environmental practice in the design and appraisal of transmission development projects. ENVP7 - To have regard to the Northern Ireland Landscape Character Assessment 2000 in the design and appraisal of its transmission development projects. ENVO4 - To protect landscapes through the sustainable planning and design of transmission infrastructure.

It would be recommended that these Objectives and Policies are regularly reviewed in line with the Plan review and where possible incorporate more environmental objectives and policies, to further demonstrate that sustainability is at the core of future planning for transmission development and operation in Northern Ireland.

### 3.3 ENVIRONMENTAL CONSTRAINTS MODELLING

The outputs of this Environmental Report demonstrate the high level potential impacts of developing each project, which are the alternatives available to the TDPNI to reinforce the electrical transmission grid and meet the needs of generation and capacity for Northern Ireland. A combined sensitivity baseline for use in this SEA has also been produced, in order to demonstrate the areas of higher or lower constraint to electricity transmission development in Northern Ireland. This is called constraint modelling and uses Geographical Information Systems (GIS) to add many layers of environmental sensitivities together to produce combined sensitivity or constraint maps. Avoidance of areas of high sensitivity and high constraint will help towards more sustainable planning by SONI in development of the transmission system. Constraint modelling for the TDPNI was developed bespoke for the study, however this practice of GIS modelling and sensitivity / constraint mapping is recommended in publications such as the GISEA Manual (EPA, 2016). The environmental indicators (sensitivities and constraints) that were used in this modelling, along with a brief description and their relative scoring are provided in **Table 3.5**. The relative constraint scores were developed between the environmental and transmission development professionals undertaking the study. The higher the relative constraints score the more important or sensitive the constraint to electricity transmission development. This modelling has been undertaken using ArcGIS Spatial Analyst. For each potential project the output constraints map demonstrates the overall sensitivity in that potential area for development of transmission infrastructure. Geographical buffers have been applied to the proposed data, based on the findings of the EirGrid Evidence Based Studies, to minimise risks to sensitive receptors.

**Table 3.5 Constraints Model Data and Relative Scores**

Data / Indicators	Description	Relative Constraints Score
<b>Special Areas of Conservation</b>	Areas designated under Habitats Directive (92/43/EEC), including in Ireland (transboundary)	10
<b>Special Protection Areas</b>	Areas designated under Birds Directive (EC/79/409), including in Ireland (transboundary)	10
<b>Ramsar Sites</b>	Areas designated under Ramsar convention, including in Ireland (transboundary)	10
<b>Areas of Special Scientific Interest</b>	Areas designated under the Environment (Northern Ireland) Order 2002	5
<b>Natural Heritage Areas (NHAs) (Ireland) and pNHA</b>	Areas designated under the Wildlife Act (1976 - 2000) in Ireland (transboundary)	5
<b>Sites of Local Natural Conservation Interest</b>	Local planning designations.	3
<b>Nature Reserves / National Nature Reserves</b>	Managed nature reserves.	3

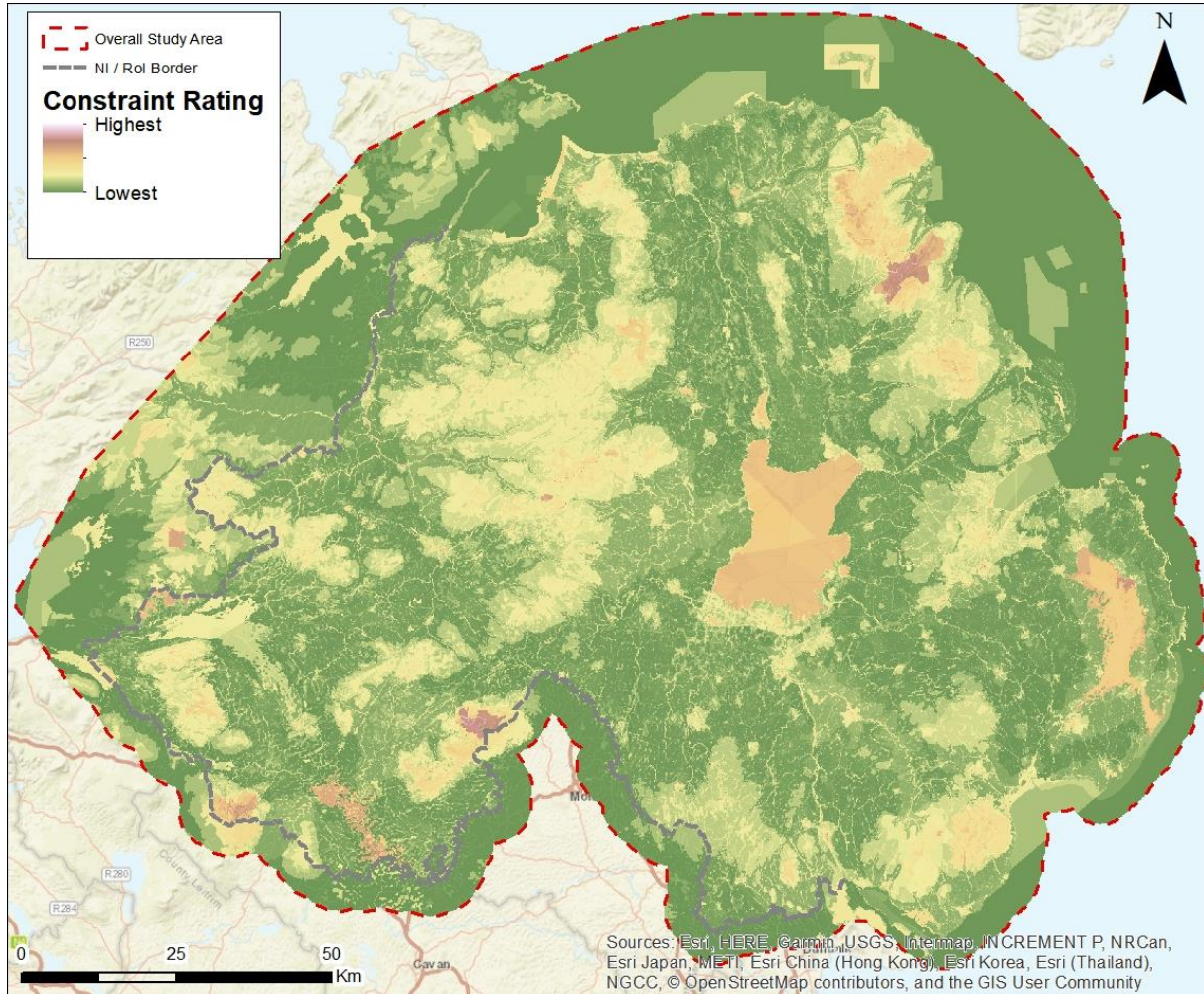
<b>Marine Conservation Zones</b>	Areas designated under the Marine Act (Northern Ireland) 2013	5
<b>Shellfish &amp; Aquaculture Areas</b>	Areas licenced for shellfish and aquaculture activity.	3
<b>RSPB Reserves</b>	Reserves for the Royal Society for the Protection of Birds	3
<b>Salmon Rivers / Lakes</b>	Rivers and lakes known to be important for salmonids.	5
<b>Freshwater Pearl Mussel (FPM) Catchments</b>	Catchments known to be inhabited by freshwater pearl mussels ( <i>Margaritifera margaritifera</i> )	5
<b>Population Density</b>	Number of people per km <sup>2</sup> , distributed across Northern Ireland. Quantile distribution. Calculated within NISRA small area outputs. Low score is low relative population density, high score is high relative population density	1 - 5
<b>Settlements</b>	Settlement areas – cities, towns, villages, hamlets	10
<b>Population Health</b>	Perceived health of the population. Areas of lower perceived health is high score, areas of better perceived health is low score.	1 - 3
<b>Neighbourhood Renewal Areas</b>	Neighbourhoods in Northern Ireland identified as experiencing the most severe multiple deprivation and have been chosen to receive support under the Department of Social Development People and Place strategy for Neighbourhood Renewal.	3
<b>Peace lines</b>	Northern Ireland Office (NIO) peace lines, as of October 2006.	3
<b>Peat / Bogs</b>	Areas of peat and bog	5
<b>Quarries / Mines / Unstable Ground / Landslides/</b>	Quarries and mines, known mines, unstable ground, and landslides.	5
<b>Cultivated Lands</b>	Cultivated lands – orchards (LPSNI)	5
<b>Forest Service Lands</b>	Forest service lands	5
<b>Ancient Woodland</b>	Ancient woodland	5
<b>Historic Land Use</b>	Potential historically contaminated land	5
<b>PPC Sites</b>	Pollution Prevention and Control (PPC) sites	10
<b>Upland areas</b>	Lands greater than 150m elevation – Upland	10
<b>Steep slopes</b>	Slopes greater than 30 degrees	10
<b>WFD Rivers</b>	WFD Rivers	3
<b>WFD Lakes</b>	WFD Lakes	5
<b>Drinking Water Rivers / Lakes</b>	Rivers and lakes used for drinking water abstraction	5
<b>Bathing Waters</b>	Designated bathing waters	5
<b>Flood Extents 100 year</b>	Fluvial, Pluvial and Coastal flood extents for the current day scenario 100 or 200 year event.	5
<b>Flood Extents 100 year + Climate Change</b>	Fluvial, Pluvial and Coastal flood extents for the climate change scenario 100 or 200 year event.	2
<b>Gas Pipelines</b>	Gas transmission lines	5
<b>Roads</b>	Major roads (dual, A-Roads and motorways)	3
<b>Railways</b>	Railway lines	3
<b>Airports</b>	Airport lands	10
<b>Sites and Monuments (SMR)</b>	Archaeological monuments recorded in the Northern Ireland Sites and Monuments Record	5
<b>Scheduled Zones</b>	Zones scheduled for protection under Article 3 of The Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995	10
<b>Listed Buildings</b>	Listed Buildings within Northern Ireland	5
<b>Industrial Heritage Sites</b>	Industrial Heritage Sites	5
<b>Defence Heritage Sites</b>	Defence Heritage Sites	5
<b>Areas of Significant Archaeological Interest</b>	Non-statutory designations that seek to identify distinctive areas of the historic landscape in Northern Ireland.	5

<b>Areas Archaeological Potential</b>	Areas within the historic cores of towns and villages, where, on the basis of current knowledge, it is likely that archaeological remains will be encountered in the course of continuing development and change.	3
<b>Historic Parks &amp; Gardens</b>	Boundaries of protected historic parks, gardens and demesnes in Northern Ireland. Northern Ireland Heritage Gardens Archive.	5
<b>World Heritage Site</b>	UNESCO designated world heritage site – Giants Causeway.	10
<b>Areas of Outstanding Natural Beauty</b>	Areas designated under the Amenity Lands Act (Northern Ireland) 1965 and the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.	5
<b>Sensitivity of Landscape to wind farm development</b>	NIEA guidance based on landscape character assessment. Four categories.	1 – 4
<b>Country Parks</b>	NIEA Country Parks	3
<b>National Trust Lands</b>	National Trust Lands	3

**Figure 3.1** demonstrates the output of the constraints model for Northern Ireland and the border region into the Republic of Ireland. It should be noted that SONI can only develop grid infrastructure within Northern Ireland, therefore the majority of the constraints are Northern Ireland based. The only receptors included from the Republic of Ireland side are Special Areas of Conservation, Special Protection Areas, Ramsar Sites, Natural Heritage Areas (NHAs) and proposed NHAs (pNHA), for potential transboundary impacts from the SONI development in Northern Ireland.

The constraint map is often called a “heat map”, demonstrating areas of higher and lower sensitivity / constraint to electrical transmission development, relative to one another. This map also sets the sensitivity basis for least cost environmental corridor modelling, which will demonstrate the least environmentally sensitive corridor between two substations. The more constraints within an area the more difficult it is to cross in the model, replicating how it will be more difficult to plan and construct a line or substation through or within highly constrained areas. The constraint model is a cost raster (not financial) that identifies the relative cost of travelling through each cell (120m x 120m area) in the model, which is to represent the ease or difficulty in developing a transmission line across a given area in the real world. An area of higher environmental sensitivity will “cost” the model more to cross than an area of lower environmental sensitivity. The model tries to cross between two points in the least overall “cost”. To create this raster, the relative cost (constraint value) of constructing a transmission line through each cell is determined (from **Table 3.4**). For the purposes of the environmental assessment, as there are currently no specific routes for the proposed TDPNI developments, route swathes were generated for the proposed new circuit developments to demonstrate the potential route corridors within 1% of the least cost line, i.e. corridors of low social and environmental constraints. In line with the SONI planning framework, at the next stages of detailed feasibility, SONI will look to use these corridors, along with technical and economic criteria, to determine the most sustainable routes to be taken. For new substations the area of lower constraint within the study area has been used as the area for assessment. This is the area with the lower half of the scores within the study area, while the areas with the higher half of constraint scores, the higher constraint scores are proposed to be avoided. For line and substation upgrades, extensions and restrings, the constraints at the existing infrastructure have been assessed, i.e. the infrastructure is not proposed to move.

These route corridors and lower constraint areas can be used as a guide by SONI in their transmission development planning. These would be the general areas recommended to be developed in, should a project be required to go ahead. However, following this strategic planning stage there is further technical, economic, environmental and social assessments to be undertaken on potential route corridors at more detailed stages of feasibility.



**Figure 3.1 SONI TDPNI Constraints Model Output**

### 3.4 DIFFICULTIES AND DATA GAPS

As with any national scale assessment difficulties were encountered due to the large scale of the TDPNI and the many projects proposed. The large area covered by all the proposed study areas leads to issues finding and using consistent and reliable information that is replicable across all proposed developments.

The drivers for and governance of transmission planning in Northern Ireland also led to issues with the SEA. This is discussed previously in **Section 3.1** of this SEA Environmental Report, whereas the developments from the TDPNI that actually move on to the project level and construction are decided by SONI, funding for this work is assessed on a case by case basis by the Utility Regulator. Under SONI's licence, the Utility Regulator has the authority to direct derogation from the Transmission

System Security and Planning Standards should it determine that any particular solution would not be economic for customers to fund through tariffs. Similarly this SEA Environmental Report will not identify preferred solutions for transmission infrastructure, however will provide SONI with very useful information for their future sustainable planning of grid reinforcement, should they decide that certain developments are required to move ahead to the project level to ensure continuing compliance with standards.

### 3.5 CONSULTATIONS

The SEA Screening Report was produced in February 2018 and was sent to the statutory authorities listed in **Section 1.8**. Responses were received from DAERA, the EPA and DAFM, and can be found in **Appendix A** of this Environmental Report.

An SEA Scoping Report for the TDPNI was circulated in April 2018 to both the Northern Ireland and Republic of Ireland statutory consultees listed in **Section 1.8**. Non-statutory stakeholders were also provided with the SEA Scoping Report and all information was made publically available on the SONI website in April 2018. The list of non-statutory stakeholders that were provided the SEA Scoping Report for comment was as follows:

- NIE Networks;
- Department for the Economy, and
- Utility Regulator

Responses to the Scoping Report were received from DAERA, the EPA and NIE Networks, all of which can be found in **Appendix B** of this SEA Environmental Report. All responses received from this consultation have been incorporated into the environmental assessments where feasible.

#### 3.5.1 Proposed Consultation on Draft TDPNI and SEA Environmental Report

Consultations on the draft TDPNI, SEA Environmental Report and HRA will commence in November 2018 and will run for 9 weeks. Documents will be made available for viewing at the RPS offices (Elmwood House, 74 Boucher Road, Belfast, BT12 6RZ) and digitally via the SONI website – <http://www.soni.ltd.uk..>



## 4 DESCRIPTION OF THE TRANSMISSION DEVELOPMENT PLAN FOR NORTHERN IRELAND 2018

### 4.1 INTRODUCTION

**Table 4.1** below sets out the elements of the TDPNI and identifies those assessed as part of the SEA and why.

**Table 4.1** Outline of the draft TDPNI and aspects to be assessed as part of the SEA

Section	TDPNI Section	Assessed in the SEA?
1	<b>Introduction</b>	<b>No</b> – This is an introduction to the TDPNI
2	<b>Strategy for Developing the Grid</b> - Describes SONI's approach to grid development	<b>No</b> – This is a description of the approach to grid development.
3	<b>General Approach to Developing the Grid</b> - Describes SONI's approach to scenario planning, planning standards, the Framework for Developing the Grid, and public planning and environmental considerations	<b>No</b> – This is a description of the approach to planning for grid development.
4	<b>Implementation</b> - Describes SONI's approach to the environment, project development, planning and consenting of projects, and consultation and engagement	<b>Yes</b> – These objectives and policies are assessed for compatibility with the SEOs.
5	<b>Investment Needs</b> - Describes the policy and technical drivers of network development	<b>No</b> – This is a description of the drivers for grid development.
6	<b>Planned Network Developments</b> - An overview of planned NI transmission projects	<b>Yes</b> – This outlines the potential upcoming transmission projects.
7	<b>Project Descriptions</b> - Descriptions of individual projects	<b>Yes</b> – This describes the potential upcoming transmission projects.
8	<b>Summary of Strategic Environmental Assessment</b> - Included mitigation and monitoring proposals.	<b>No</b> – This is a summary of the SEA process and how it has influenced the TDPNI

### 4.2 GEOGRAPHIC SCOPE

The TDPNI is a national level Plan that will cover the electricity transmission system in Northern Ireland and will link into the transmission systems of Great Britain and the Republic of Ireland. While the TDPNI is primarily concerned with grid development projects in Northern Ireland, the draft TDPNI and associated environmental documents will have careful regard to any likely significant environmental effects of a transboundary nature. **Figure 2.1** demonstrates the geographical extent of

the existing SONI electricity transmission system within Northern Ireland. The geographical scope of the SEA (i.e. the area with a potential to be impacted by the developments of the TDPNI) will be mainly within Northern Ireland, within the vicinity of proposed developments, however transboundary impacts to receptors in the Republic of Ireland will also be considered on a case by case basis. It is unlikely that the upgrading and development of the electricity transmission system in Northern Ireland will have any significant transboundary impacts upon Great Britain. Areas offshore of Northern Ireland may need to be taken into consideration in the environmental assessment of some of the proposed developments which have a potential for marine cabling and / or marine impacts. The study areas covered by the potential developments (alternatives) of the TDPNI are discussed further in **Section 6**.

### **4.3 TEMPORAL SCOPE**

The SONI TDPNI is proposed to cover the period from 2018 to 2027. Projects from the TDPNI that are likely to be progressed over the next 10 years will be detailed within the Plan. The TDPNI will be a rolling plan, which is updated annually as per licence requirements set out by the Utility Regulator. Separately, the SEA environmental reporting for the TDPNI will have a nominal life span of five years. While this is not a statutory obligation, every five years the relevant annual TDPNI will be reviewed for the purpose of undertaking a new SEA, if required. Each annual TDPNI subsequent to the 2018 Plan will contain an Environmental Appraisal to monitor the impacts of the TDPNI, in line with the adopted environmental monitoring from the SEA.

As the timeframes for all the potential developments in the TDPNI are currently not defined the SEA will assess these options for potential impacts in the short term - construction phase, the medium term – re-establishment and initial operational phase (0-5 years post construction) and the long term – operational phase (5 years onwards). There is no discussion provided on the decommissioning of any of the proposed developments, unless this is specifically part of the proposal. For note, for new lines and substations it would be assumed that any decommissioning of infrastructure, in line with all best practices and competent working, would have similar impacts to the short term construction phase impacts assessed in this report, and would look to provide no long term or permanent residual impact on a site.



## 5 BASELINE AND RELEVANT ENVIRONMENTAL ISSUES

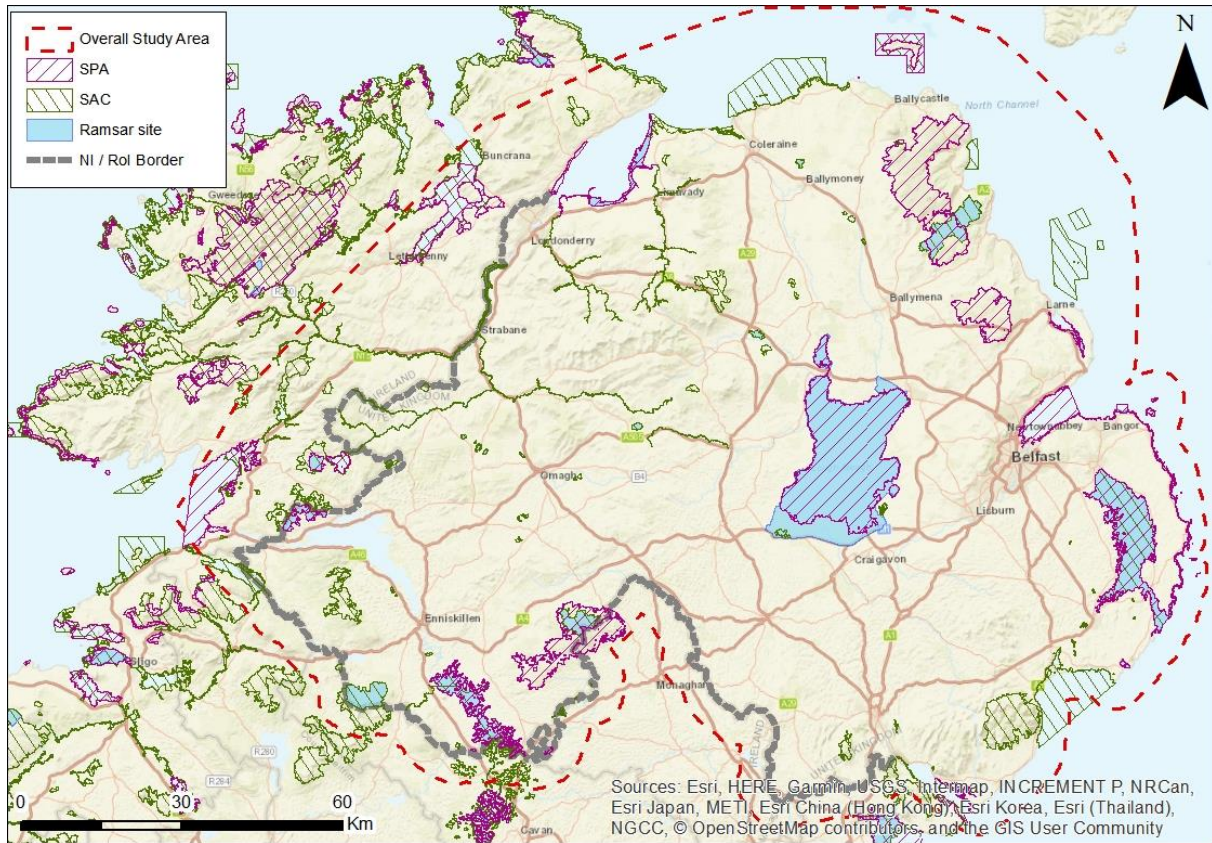
### 5.1 INTRODUCTION

Included in the following section is a discussion of the environmental baseline for the TDPNI study area. The baseline has been divided by environmental topic into the issues requiring assessment under the SEA legislation. The purpose of this section is to demonstrate the level of baseline environmental information used in the assessment of potential impacts of the development options. This baseline information will form the indicators which the development options will have the potential to impact upon. Future variation in these indicators due to the TDPNI will be monitored as part of the TDPNI and SEA review. Unless otherwise stated, the environmental issues discussed in the following section are within Northern Ireland.

### 5.2 BIODIVERSITY, FLORA & FAUNA

There are a wide variety of natural habitats and species within the overall study area, protected by a range of designations. There are 56 Special Areas of Conservation (SACs) within Northern Ireland, which are all designated in accordance with the Habitats Directive (92/43/EEC) for the conservation of certain habitats and species. Special Protection Areas (SPAs) are designated under The EU Directive on the Conservation of Wild Birds (EC/79/409), "The Birds Directive", as areas that are important for rare and vulnerable bird species as they use them for breeding, feeding, wintering or migration. There are 16 SPAs within Northern Ireland. Together these European sites form part of the Natura 2000 Network. Any development with the potential to impact upon a Natura 2000 designated site (SACs or SPAs) is likely to require a HRA under the Habitats Directive 92/43/EEC. These sites are protected by the Conservation (Natural Habitats) Regulations (Northern Ireland) 1995 (SR No. 380 of 1995) and amendments in Northern Ireland, and the European Communities (Birds and Natural Habitats) Regulations 2011 in Republic of Ireland. There is the potential for transboundary impacts on Natura 2000 sites within the Republic of Ireland, particularly those which are located in close vicinity to the border between Northern Ireland and the Republic of Ireland.

The Convention on Wetlands in Ramsar, Iran (1971), called the "Ramsar Convention", is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance. These designations are known as Ramsar sites. There are 21 Ramsar sites within Northern Ireland. The International and European designated sites within the overall study area are illustrated in **Figure 5.1**.

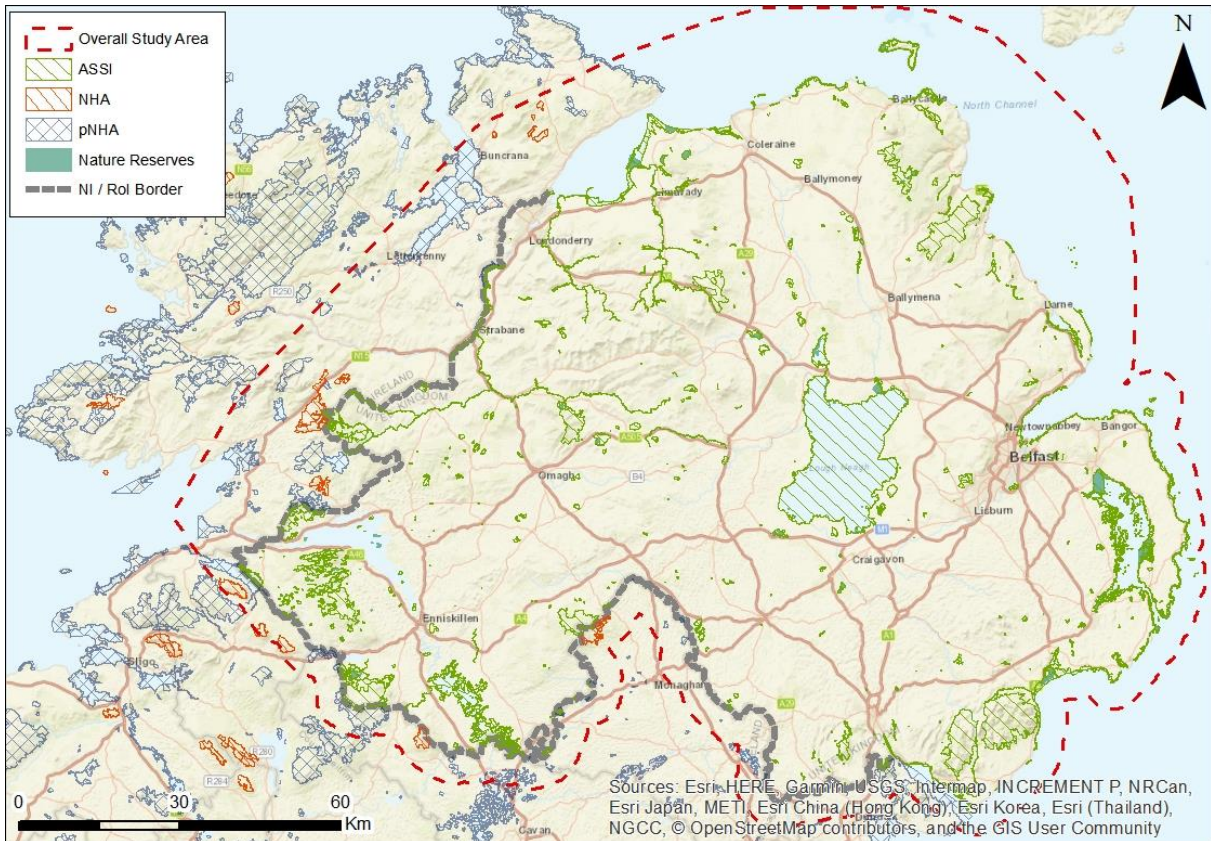


**Figure 5.1 International Environmental Designations**

Areas of Special Scientific Interest (ASSI) are protected under the Environment (Northern Ireland) Order 2002, and the NIEA must, as required by the Order, declare land as an ASSI if it is of special scientific interest because of the flora or fauna that is found on it, or because of its geological features. There are 392 ASSIs within Northern Ireland. Natural Heritage Areas (NHAs) are areas within the Republic of Ireland which are designated under the Wildlife (Amendment) Act 2000 so as to provide for the protection of the species, communities or habitats, including the diversity of its natural attributes and/or the landforms or geological or geomorphological features, which they contain. Along the border area between Northern Ireland and the Republic of Ireland are 13 NHAs and one proposed NHA (pNHA). These are particularly vulnerable to disturbance insofar as they are mainly raised or blanket bogs and thus depend on specific hydrological conditions, which are susceptible to being locally destabilised during pole and tower construction, conductor stringing and line maintenance work. Vehicular movements, storage of materials and trampling by people can also cause physical damage to specialised plants and disruption to the upper surface soil layers through compaction and erosion. The national designated sites within the study area are illustrated in **Figure 5.2**.

There are no national parks within Northern Ireland. National Nature Reserves (NNRs) are areas of importance for flora, fauna, geological or other special feature for conservation purposes; and they provide the opportunity for research. There are 50 NNRs within Northern Ireland; designated under the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.

Within Northern Ireland there are five designated Marine Conservation Zones (MCZs), which are designated to safeguard vulnerable or unique marine species and habitats under the Marine Act (Northern Ireland) 2013. In addition to these marine designated areas, other prominent surface waterbodies include the 413 rivers and 20 lakes which contain salmonid species, along with the seven Fresh Water Pearl Mussel catchments in Northern Ireland.



**Figure 5.2 National Environmental Designations**

The Water Framework Directive (2000/60/EC), as amended by Directives 2008/105/EC, 2013/39/EU and 2014/101/EU was transposed in Northern Ireland through the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2017. These regulations provide for the protection of shellfish growth and production through the designation of areas pertinent to this objective. There are seven such designated areas within Northern Ireland; three of which are situated within Strangford Lough. The implementation of transmission infrastructure has the potential to result in localised impacts to water quality and the aquatic environment during construction, maintenance and decommissioning periods.

In addition to these designated areas there are also sensitive and valued habitats and species which are reported by each council area in their Local Biodiversity Action Plans (LBAPs). These Plans establish the natural heritage value for the area and guide where development should be allowed to happen and what enhancement works could be undertaken to improve biodiversity. There are 728 Sites of Local Nature Conservation Importance (SLNCI) within Northern Ireland; along with six RSPB



Nature Reserves and 18 Ulster Wildlife Nature Reserves. There are also over 100km<sup>2</sup> of ancient woodlands within Northern Ireland.

Non-native, invasive species can be a threat to the native flora and fauna within Northern Ireland. For example, habitat removal, through the construction of road or utility corridor, can encourage the spread of invasive species through the creation of edge effects and the direct introduction of non-native plant species by transfer of vector material on construction vehicles or equipment.

Any linear construction project, such as the construction of transmission infrastructure, has the potential for direct and indirect impacts on international, national and local designated sites, habitats or species. Such impacts include habitat loss, damage or fragmentation as well as change in hydrology of wetland habitats, hazards to birds through collision and/or electrocution and loss of species. The introduction of more people to rural and natural areas during construction, maintenance or decommission phases, has the potential for increased disturbance to local habitats and species, as well as introducing new vectors for the spread of alien and invasive species. The construction and use of such infrastructure can increase the risk of fire within the vicinity of the transmission corridor.

Biodiversity, Flora and Fauna data used within the constraints model for the TDPNI includes SACs, SPAs, Ramsar Sites, ASSIs, NHAs, pNHAs, NNRs, MCZs, SLNCIs, Shellfish and Aquaculture Sites, Salmon River and Lakes, RSPB Reserves and Freshwater Pearl Mussel Catchments.

### 5.3 POPULATION & HUMAN HEALTH

According to the 2011 census, there are over 1,810,800 people living in Northern Ireland. This was an increase of 7.5 per cent (125,600) from the 2001 census. The share of the population represented by children aged under 16 years fell from 24 per cent in 2001 to 21 per cent in 2011, while the proportion of people aged 65 years and over rose from 13 per cent to 15 per cent over the same period. **Figure 5.3** demonstrates the population density per km<sup>2</sup> in Northern Ireland, based on 2011 census data. As would be expected the higher density population areas are located within cities and towns across Northern Ireland, mainly Belfast, Derry / Londonderry and Lisburn.

With regards to immigration, 23,800 people chose to move to Northern Ireland in the year ending mid-2016, representing a 1% increase on the previous year. Of these people, 13,000 (54%) were from outside of the UK; with 64% these people being aged 16 to 39. Of the remaining 45% of immigrants coming from elsewhere in the UK; 61% of these were aged between 16 and 39. The three most common countries of previous residence for international migrants to Northern Ireland were Poland, the Republic of Ireland and Romania.

With regards to emigration in the same year, 22,300 people chose to leave Northern Ireland to live elsewhere. This represents an increase of almost 4% on the previous year. Of these, 52% (11,500 people) chose to live outside of the UK. This is an increase of 12% on the previous year. Of these people, 69% per cent were between the ages of 16 to 39. Of those who chose to remain in other parts

of the UK, 75% were between the ages of 16 to 39. Taking into account these figures, in the year ending in mid-2016, there was a net inward migration of 1,500 people.

In the NI census in 2011 four-fifths (80%) of Northern Ireland residents reported themselves to be of good or very good general health. Just over one in five of the resident population (21%) had a long-term health problem or disability, which limited their day-to-day activities. The most common long-term conditions among the resident population were a mobility or dexterity problem (11%) and long-term pain or discomfort (10%).

Evidence based studies<sup>1</sup> have been completed that measured the electromagnetic field (EMF) generated by single and double circuit overhead 110 kV, 220 kV and 400 kV lines, transformer substations, and also underground cables at 110 kV and 220 kV, in the Republic of Ireland. Results were compared to health protection guidelines for public exposure to EMF developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). From these studies it was found that the maximum magnetic field strength, measured at all lines and substation perimeters, was well below the ICNIRP public exposure reference level, set to protect public health. Within Northern Ireland there are no transmission lines being proposed by the TDPNI above 275 kV. Therefore, there is unlikely to be any risk to public health from EMF as a result of the proposed TDPNI projects. For this reason EMF is not considered further in the assessment of potential impacts on population and human health.

Two-thirds of all residents in Northern Ireland aged 16 to 74 years were economically active in the 2011 census. These were primarily composed of full-time employees (36%), part-time employees (13%), self-employed (9%) and unemployed people (5%); with the remaining 4% being economically active full-time students.

Within Northern Ireland there are several areas which would be considered socially sensitive. There are 22 peace lines constructed as barriers separating neighbourhoods from one another, which have been built at urban interface areas in Belfast (16), Derry/Londonderry (3), Portadown (2) and Lurgan (1). There are 36 Neighbourhood Renewal Areas in Northern Ireland, which have been identified as being deprived areas. Neighbourhood Renewal Partnerships have been key to creating local plans to improve everyday life for people in those areas. These areas are found throughout Northern Ireland, although higher densities are found in Belfast and Derry/Londonderry.

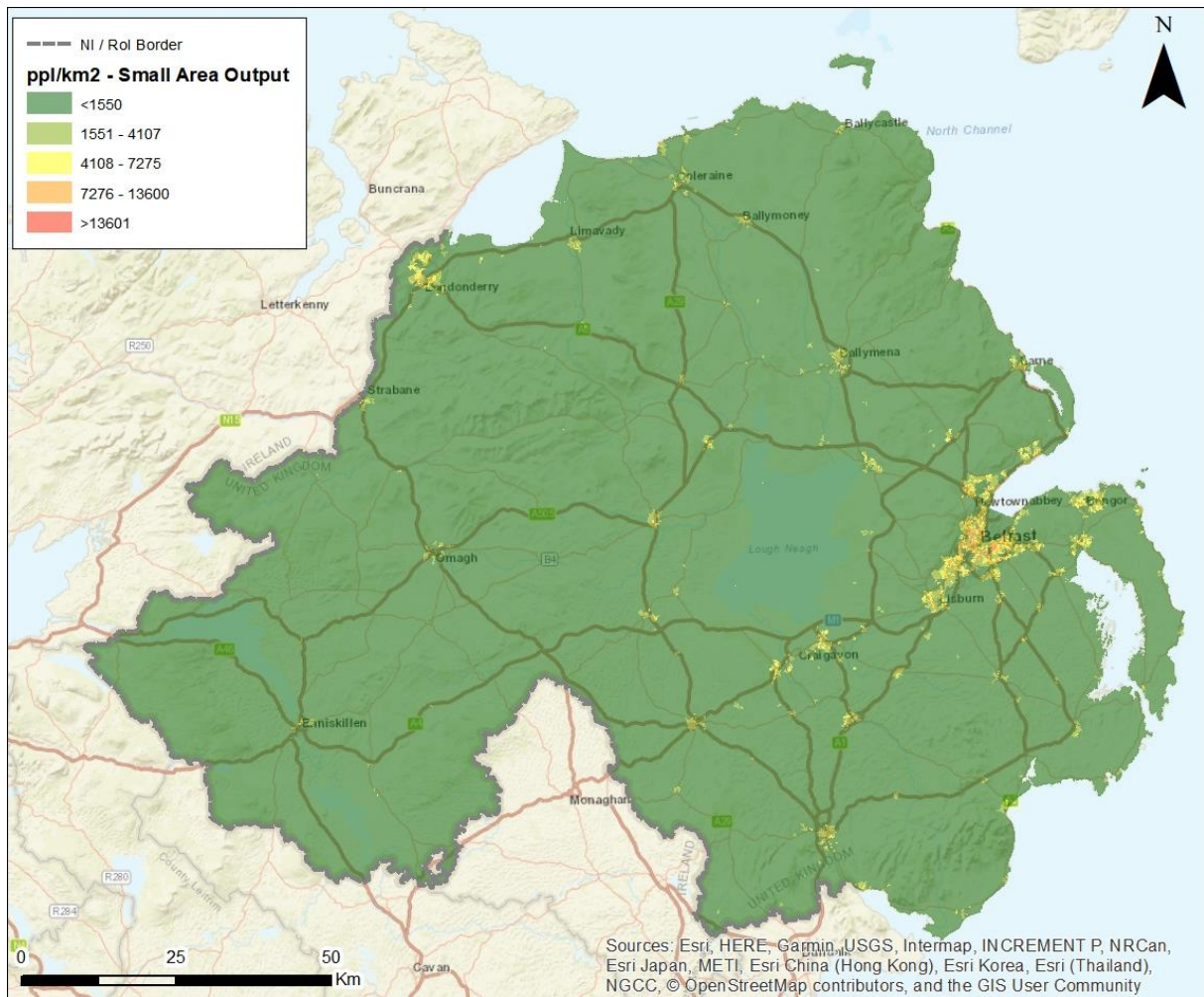
Construction activities associated with the development of the transmission infrastructure may lead to short term disturbances to the local communities. Construction of permanent structures such as transmission lines and substations could have cumulative negative impacts on already deprived and socially sensitive areas. With that being said, there is the potential for increased employment as a

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<sup>1</sup> RPS Group 2014. EirGrid Evidence Based Environmental Studies Study 1: EMF. Literature review of electromagnetic fields (EMF) and human health, and an evidence base of EMF measurements from the Irish Transmission System.

result of construction and maintenance activities and indirectly through impacts upon the supply chain. Furthermore, the provision of electricity to meet future needs within Northern Ireland will ensure the population receive secure and reliable electricity into the future.

Population and Human Health data used within the constraints model for the TDPNI includes Population Density (People/km<sup>2</sup> by census small area), Settlements, Population Health, Neighbourhood Renewal Areas and Peacelines.



**Figure 5.3 Population per km<sup>2</sup> by Census Small Areas**

## 5.4 GEOLOGY, SOILS & LANDUSE

The basement rock of Northern Ireland is largely made up of remnants of three major terranes. From north to south these are; the Central Highlands (Grampian) Terrane, the Midland Valley Terrane and the Southern Uplands-Down-Longford Terrane. These are overlain in the north by palaeogenic deposits of mafic lava and intercalated sedimentary rock of the Antrim Lava Group. To the south-west, bedrock deposits are comprised of mixed sequence basal clastics, marine limestones and shale/mudstones of the carboniferous period. To the south-east, deposits are largely of wacke sandstone, siltstone and mudstone, in variable proportions, from the rhuddanian/telychian age. Throughout Northern Ireland, superficial deposits are made up largely of peat, alluvium (clay, silt and sandstone) and till. There are 148 ASSIs in Northern Ireland that are designated for, or partially for, their Earth Science interest, and may be considered as geological heritage. The one UNESCO world heritage site in Northern Ireland, the Giant's Causeway, is designated for its unique geological heritage.

The topography of Northern Ireland is such that the lower areas are predominantly located within the centre of the where the largest lake in the British Isles, Lough Neagh, is situated. In all directions from this point, the land generally becomes steeper, culminating in highland regions on all sides. In the north and east, there are the Antrim Hills, which reach a height of over 550m at Trostan. In the south east, the rounded landscape of drumlin hills is punctuated by Slieve Croob in County Down; a designated Area of Outstanding Natural Beauty, and culminates in the Mourne Mountain range which rises to its highest point at Slieve Donard at over 850m in elevation.

The land use within Northern Ireland is predominantly improved grassland, which makes up approximately over 57% of total land cover; this is followed by arable land which makes up almost 7%. Urban and suburban areas make up a much smaller proportion of Landcover of only around 4% of the total. The land coverage types in Northern Ireland, along with their percentage of the total coverage are provided in **Table 5.1**.

**Table 5.1: Percentage landcover by type within Northern Ireland**

Land Cover Class	Percentage
Improved grassland	57
Arable Lands	7
Bogs	7
Coniferous woodlands	5
Heather grasslands	4
Freshwater	4
Suburban Areas	4
Broadleaved woodlands	3
Neutral grasslands	3
Acid grasslands	3
Heather	2
Urban Areas	<1

Areas of sensitive land use and soils for transmission infrastructure development in Northern Ireland have been identified as cultivated lands, peatlands, ancient woodland and commercial forestry. There is over 10,000 km<sup>2</sup> of agricultural land in Northern Ireland; comprised of pastures, complex cultivation patterns, land principally occupied by agriculture, non-irrigated arable land and annual crops associated with permanent crops. There is over 1,300 km<sup>2</sup> of peatland in Northern Ireland, most of which is in the western and northern areas of Northern Ireland. There is over 750 km<sup>2</sup> of forestry lands and over 100 km<sup>2</sup> of ancient woodland within Northern Ireland.

Additional land types and land uses that may be constraints to transmission development include quarries, mines, landslide areas, unstable grounds, and potentially contaminated sites. There are over 230 active quarries within Northern Ireland, the majority of which extract sand and gravel, along with mines which extract limestone, basalt and igneous rock, and clay and shale. There are also 660 known historic mines within Northern Ireland. Landslides and unstable ground materials are present throughout the country and may provide unsuitable areas for stable foundations of infrastructure. Potentially contaminated sites include those from historic industrial operations and existing Pollution Prevention and Control (PPC) sites. There are over 14,500 potentially contaminated sites from historic operations and over 480 PPC sites within Northern Ireland. Development of infrastructure through or on these sites has the potential for mobilising contaminants to other areas, including into water bodies.

The development of transmission infrastructure is all within shallow workings and is unlikely to have any impacts on geology or geological heritage within Northern Ireland; however it is still best if the more sensitive areas can be avoided. Construction activities associated with the development of the transmission infrastructure may lead to soil movement, which may result in sedimentation and siltation to nearby watercourses, impacting on water quality. This can have medium to long term impacts in some cases, dependent upon the soil and geology of the area, as erosion can continue after construction has been completed. Unstable lands and previous landslide areas would be avoided where possible to prevent the construction of infrastructure on unsound material, likewise the development of infrastructure at higher elevations and on steep slopes can provide significant technical issues. Transmission infrastructure development may also lead to the contamination of soils or geological features by cement or fuel spills during this construction phase, or the accidental transfer of materials along a construction corridor from contaminated sites. With regard to landuse, it is unlikely that there will be significant impacts arising from the construction or existence of transmission infrastructure in terms of patterns of settlement and landuse. With that being said, transmission infrastructure can be a local physical constraint upon development insofar as proposed developments may be influenced by the presence of transmission infrastructure and/or refused permission by reason of proximity to infrastructure.

Soils, Geology and Landuse data used within the constraints model for the TDPNI includes Peatland / Bogs, Quarries / Mines, Cultivated Lands, Forest Service Lands, Ancient Woodlands, Historic Land Uses, PPC sites, Upland Areas (>150m elevation) and Steep Slopes (>30°).



## 5.5 WATER

In 2015 the second set of River Basin Management Plans (RBMPs) for the three River Basin Districts (RBDs) (Neagh Bann, North Eastern and North Western) in Northern Ireland were published to satisfy the requirements of the Water Framework Directive (WFD). These plans classify all waterbodies according to their chemical, biological and hydromorphological statuses, with the overall status of each surface waterbody identified as high, good, moderate, poor or bad, and with the overall status of each groundwater body identified as good or poor. The RBMPs aim to prevent the deterioration of water bodies and to protect, enhance and restore them with the aim of achieving at least good status, and to achieve compliance with the requirements for designated protected areas.

There are 496 surface water bodies within Northern Ireland – 450 rivers, 21 lakes and 25 marine. Of the 471 river and lake water bodies, 152 (32%) were classed as good or better in 2015, with 54% moderate, 10% poor, 3% bad and 1% not designated. Of the 25 marine water bodies, nine (36%) were classed as good or better in 2015, with 14 (56%) moderate and two (8%) poor. It is an objective of the WFD to have 350 (71%) surface water bodies at good or better status, 134 (27%) at moderate, 11 (2%) as poor and one not designated by 2021.

Of the surface water bodies in Northern Ireland, 56 rivers, collectively measuring 2,050 km in length, are designated drinking waters; as are 11 lakes which make up an area of over 370km<sup>2</sup>. In addition, there are 16 designated bathing water which collectively span an area of 6km<sup>2</sup>.

Northern Ireland has a total of 75 groundwater bodies – 66 bedrock and nine superficial. The 2015 classification results indicate that 49 (65%) are at good status and 26 (35%) are at poor status. It is an objective of the WFD to maintain the 2015 status by 2021 and to have 100% of groundwater bodies at good status by 2027, based on groundwater status recovery time.

Owing to the large number of rivers within Northern Ireland, there is a significant degree of fluvial flood risk, particularly in relation to large rivers such as that of the River Foyle and those which feed Lough Neagh such as the River Bann. The impact of fluvial flooding is significantly greater within urban and suburban areas, such as in Belfast, Portadown, Derry/Londonderry and Strabane. This is, in part, due to the density of receptors and the impact of landuse upon drainage patterns. Significant risk of surface water (pluvial) and coastal flooding also exists throughout Northern Ireland. Consideration needs to be given to such flood risks in planning for transmission infrastructure to avoid the poor siting of facilities risk of inundation or to cause knock on flooding to local receptors or material assets.

In addition, consideration should be given to the potential impact of transmission infrastructure upon the water environment. Impacts might include changes to waterbody morphology (with the potential to impact upon issues such as bank stability and vegetation, the riparian buffer zone and infiltration of riverbed substrate with silt and fines), water quality (and thus aquatic ecology), water flows and levels and the presence of invasive species. The sensitivity of waterbodies will dictate the significance of impacts upon the water environment.

Water data used within the constraints model for the TDPNI includes Designated Drinking Water Rivers and Lakes, Designated Bathing waters, Flood Extents (Fluvial 100 year event, Pluvial 200 year event and Coastal 200 year event)

## 5.6 AIR

Local Air Quality Management (LAQM) provides the framework under the Environment Order (NI) 2002 within which air quality is managed by Northern Ireland's local authorities (District Councils). LAQM requires the District Councils to review and assess a range of air pollutants against the objectives set by the Air Quality Strategy, using a range of monitoring, modelling, and other methods. For locations where objectives are not expected to be met by the relevant target date, District Councils are required to declare an Air Quality Management Area (AQMA), and to develop an Action Plan to address the problem. There are 24 active AQMAs in Northern Ireland.

Each year, the Department of Agriculture, Environment and Rural Affairs (DAERA) publishes a report on air pollution in Northern Ireland. The most recent of these was published in 2016 (DAERA, 2016). The report aims to provide the public, and the wider air quality community, with user-friendly information on local air quality monitoring. It contains key results of monitoring throughout Northern Ireland during 2016. There were 21 automatic air quality monitoring stations that operated for part or all of 2016 in Northern Ireland, with each equipped with continuous monitoring equipment for one or more of the following pollutants: carbon monoxide (CO), oxides of nitrogen (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), Particulate Matter (PM) 10 and 2.5, and Ozone (O<sub>3</sub>). Non-automatic techniques were used for benzene, metallic pollutants, black carbon and Polycyclic Aromatic Hydrocarbons (PAHs). Levels of carbon monoxide, benzene, metallic and other polluting elements, and sulphur dioxide were within their respective EU limit values and Air Quality Strategy (AQS) objectives, as relevant. All sites met the PM<sub>10</sub> limit value and objective for annual mean PM<sub>10</sub>, and no sites exceeded the daily mean limit value and objective on more than the maximum permitted 35 occasions during the year. All sites met the PM<sub>2.5</sub> EU Stage 1 and 2 limit values. Four sites (out of a total of 15) exceeded the AQS objective for annual mean NO<sub>2</sub> concentration. No sites exceeded the hourly mean limit value. None of the three sites monitoring ozone exceeded the EU target value or AQS objective, although all of the sites had at least one exceedance day during 2016. Three sites monitored PAHs; one of which exceeded the EU target value, following three years in which no sites in Northern Ireland exceeded.

Construction and maintenance activities associated with the development of the transmission infrastructure may lead to temporary, localised increases in air pollution, including ambient PM<sub>10</sub> and nitrogen dioxide emissions, resulting in both short term negative impacts upon air quality, climatic factors, human health and biodiversity. Further to this, there is the potential for localised disturbance impacts, such as dust deposition and visible plumes, as a result of ground movement and weather conditions.

With that being said, the potential for connecting new renewable energy generators such as wind and tidal turbines to the national grid is likely to result in a reduced dependence upon fossil fuels. This will

have a positive impact upon air quality insofar as it will result in a net reduction of the number of pollutants released into the atmosphere in the medium and long term. This could have far-reaching positive consequences upon other factors such as biodiversity, climate, human health and population.

## 5.7 CLIMATIC FACTORS

The climate of Northern Ireland is characterised by equability, a consequence of the moderating effects of the Atlantic Ocean - bringing relatively mild winters and cool summers. However, the indented shape of the coastline and the presence of high ground introduce localised differences in temperature, cloud and precipitation. The mean annual temperature at low altitudes in Northern Ireland varies from about 8.5 °C to 10.0 °C, with the higher values occurring around or near to the coasts. Rainfall in Northern Ireland varies widely, with the wettest places being in the Sperrin, Antrim and Mourne Mountains. The highest areas have average annual totals of about 1600mm. The wettest places are in the upland areas around Killeter Forest in the extreme west of County Tyrone, where the annual average reaches about 2000mm. The driest places are further east - around Strangford Lough and close to the east coast, and near to the southern and eastern shores of Lough Neagh - where the annual totals are less than 800mm<sup>2</sup>.

According to the United Nations Intergovernmental Panel on Climate Change (2007) there is “unequivocal” evidence of climate change and furthermore:

*"most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."* (Climate Change 2007, IPCC, Fourth Assessment Report AR4).

Climate change could have considerable impacts on riparian and coastal developments on the island of Ireland from increases in flood risk, with sea level rise already being observed and wetter winters being anticipated across the island. These potential impacts could have serious consequences where all of the main cities are on the coast and many of the main towns are on large rivers. This could also have significant consequences for transmission infrastructure that are proposed to cross and/or run parallel to natural and artificial waterbodies.

The predicted impacts of climate change are likely to include increases in the frequency and intensity of rainfall, the increases in peak flows in rivers, a rise in sea levels and increased storminess. These effects of climate change are likely to increase pluvial, fluvial and coastal flooding and will require future development to be adaptable or resilient to future climatic changes and its associated impacts.

Activities associated with the development of the transmission infrastructure, including manufacturing, transportation, construction, maintenance and decommissioning, may lead to the increased emission

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<sup>2</sup> <https://www.metoffice.gov.uk/climate/uk/regional-climates/ni#rainfall>.

of pollutants into the atmosphere, thus contributing towards anthropogenic climate change as detailed above. Having said that, the government has set a green energy target in Northern Ireland for 40% electricity consumption from renewables by 2020. Progress has been made towards this target over the last decade, with more than 1.2 gigawatts of renewable energy now connected to the electricity network. This is equivalent to a quarter of the total energy consumed being from renewables, mainly wind and solar. Continued progress in this way, through the ongoing connection of renewable energy generators to the national grid, is likely to result in a reduced dependency upon fossil fuels, a net reduction in the emission of pollutants into the atmosphere, and thus the reduced onset, and indeed offset, of anthropogenic climate change.

Climatic Factor data used within the constraints model for the TDPNI includes climate change influenced fluvial (100 year + climate change), pluvial (200 year + climate change) and coastal flood extents (200 year + climate change).

## **5.8 MATERIAL ASSETS**

Given the geographic scope and large scale nature of proposed alternatives there is the potential for transmission infrastructure development and operation to impact upon, or be impacted by existing material assets. Such assets include Northern Ireland's road networks which intersect both urban and rural areas in the form of motorways, A roads, B roads and local roads, which together make up approximately 25,000km of public road. Associated with this network of roads, there are approximately 9,000 km of footways, 5,800 bridges and 261,000 street lights. In addition to this, Northern Ireland has six designated railway routes covering a total distance of 329,855km. All of these, with the exception of the Portrush-Coleraine line, serve the city of Belfast at some point.

With regard to existing electricity transmission infrastructure, there is already 400km of 275 kV overhead line, 924km of 110kV overhead line, 90km of 110 kV cable and 8,427 substations within Northern Ireland. There are four existing gas transmission lines within Northern Ireland, which are the South-North gas transmission pipeline, the North-West gas transmission pipeline, the Scotland to Northern Ireland Pipeline (SNIP) and the Belfast Gas Transmission Line (BGTL). A south west gas transmission pipeline is currently being constructed by SGN Natural Gas Ltd. to take gas from the Portadown / Armagh area to Fermanagh. At present, work is also being undertaken by Firmus Energy to further develop the natural gas market outside of Greater Belfast along the North-West gas transmission pipeline. This will involve expanding the gas distribution network to include Derry-Londonderry, Limavady, Ballymena, Ballymoney, Coleraine, Newry, Craigavon, Antrim, Banbridge and Armagh.

In relation to air-travel infrastructure, there are three main commercial airports within Northern Ireland, being Belfast International Airport, City of Derry Airport and George Best Belfast City Airport. In addition to these, there are 23 smaller commercial, private and military airfields also throughout Northern Ireland. These include; St Angelo Airport in Enniskillen and Newtownards Airport.

There is the potential for short term, temporary disruption to material assets such as existing electricity infrastructure (and thus power supply) as a result of the construction of new transmission infrastructure. There is also potential for short term negative impacts upon transport infrastructure (roads and rail) as a result of power-supply disruptions and increased construction related traffic.

Material Assets and Infrastructure data used within the constraints model for the TDPNI includes Gas Transmission Lines, Roads, Railways and Airports.

## 5.9 CULTURAL, ARCHAEOLOGICAL & ARCHITECTURAL HERITAGE

Northern Ireland is rich in cultural, archaeological and architectural heritage, with many important archaeological sites, monuments and heritage buildings. These include the 16,572 features which are registered on the Site and Monuments Record. Some of these include Scheduled Zones, of which there are 1,981 within Northern Ireland, and Listed Buildings, of which there are 10,229 buildings, including houses, churches, bridges and canal structures. In addition to these, there are 9,636 industrial heritage features and 738 defence heritage features, the latter including airfields, strongpoints and military pillboxes.

There are 10 Areas of Significant Archaeological Interest in Northern Ireland, including Devenish in Fermanagh and Dunluce in Coleraine. Further to this, Holywood in North Down and Scotch Street in Craigavon are but two of Northern Ireland's 117 Areas of Archaeological Potential; whilst Mourne Park and Tyrella House make up two of Northern Ireland's 242 Historic Parks and Gardens. There is one UNESCO world heritage site in Northern Ireland; being the Giant's Causeway, designated for its unique geological heritage.

The potential impact of the construction of transmission infrastructure (overhead lines and infrastructure) has the potential for limited impact upon cultural heritage features owing to the limited extent to which excavation takes place in order to construct poles or pylons, and thus such sites may be easily avoided. The potential impact of underground cables is significantly higher as a result of the need to excavate deep, long and linear trenches. The same can be said in relation to the construction of sub-stations; though anecdotal evidence of this having occurred is limited. This is due to such factors as good routing practices, well designed EIA processes, greater statutory protection and better engagement with regulatory authorities<sup>3</sup>.

Cultural, Archaeological and Architectural Heritage data used within the constraints model for the TDPNI includes the Sites and Monuments Record, Scheduled Zones, Listed Buildings, Industrial Heritage Sites, Defence Heritage Sites, Areas of Significant Archaeological Interest, Areas of Archaeological Potential, Historic Parks and Gardens, and World Heritage Sites.

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<sup>3</sup> EirGrid Evidence Based Environmental Studies Study 2 Cultural Heritage. (November 2015).

## 5.10 LANDSCAPE & VISUAL AMENITY

Northern Ireland comprises a wide variety of different landscapes, including river valleys, drumlin hills, lakelands, raised bogs and rolling farmlands, to name a few. Many of these are recognised as being distinctive owing to their intrinsic character and natural or man-made beauty. The value of Northern Ireland landscape is recognised through the designation of eight areas as Areas of Outstanding Natural Beauty (AONB), making up 22% of its total land area. These include Strangford Lough, the Antrim Coast and Glens, the Causeway Coast and Ring of Gullion. There are currently no National Parks in Northern Ireland, though there are seven NIEA Country Parks and 56 National Trust Sites; the latter including Slieve Donard, Castle Coole and Rathlin Island.

In Northern Ireland the landscape has been designated in 130 Landscape Character Areas and into 24 Seascape Character Areas. The NIEA has undertaken an assessment of the sensitivity of these landscape character areas to windfarm development (NIEA, 2010<sup>4</sup>), which is used within this assessment process as a proxy for sensitivity to transmission infrastructure development. The Northern Ireland Landscape Character Assessment 2000 identifies six distinctive landscapes, being the Antrim Plateau, the North West, Fermanagh, the Lough Neagh basin, the Mourne and south Armagh, and Down. Within these areas, and throughout Northern Ireland, there are a wide variety of Tourism Conservation Zones, Local Landscape Policy Areas and Areas of Village Character.

The construction of transmission infrastructure has the potential to have significant impact upon a wide range of landscapes throughout Northern Ireland; including rural lowland and upland areas, urban centres and coastal landscapes. This is particularly the case within 400m of both tower and substation developments.

Landscape and Visual data used within the constraints model for the TDPNI includes the AONBs, Sensitivity of Landscape to Wind Farm Development, NIEA Country Parks and National Trust Lands.

## 5.11 EVOLUTION OF THE ENVIRONMENT IN THE ABSENCE OF THE TRANSMISSION DEVELOPMENT PLAN FOR NORTHERN IRELAND 2018

In the absence of the TDPNI, i.e. the Do Nothing Scenario, there would be no overarching strategic planning of transmission infrastructure, and therefore the construction and maintenance of transmission infrastructure will take place in a more ad hoc manner. There is likely to be less transmission development and maintenance under the Do Nothing scenario. The projects that go ahead may not strategically be the best projects to be pursued, and may not be the most sustainable.

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<sup>4</sup> Northern Ireland Environment Agency (2010), Wind Energy Development in Northern Ireland's Landscapes: Supplementary Planning Guidance to accompany Planning Policy Statement 18 'Renewable Energy'. NIEA Research and Development Series No 10/01, Belfast.

In the absence of the Plan there are unlikely to be any short, medium or long term changes to biodiversity, flora or fauna in Northern Ireland, such as increased risk to or loss of species or habitat. Biodiversity, flora and fauna will continue to be impacted upon by developments, human activity and population growth; however this will not be the result of the absence of the Plan.

In absence of the plan, construction and maintenance works to the electricity transmission infrastructure in Northern Ireland will be less structured and this may lead to negative impacts on population and human health. With projected population growth, in the medium and long term this approach may result in an unreliable supply of electricity in some areas due to lack of planning and insufficient development of infrastructure. Disruptions of supply could result in detrimental impacts upon the delivery of essential services which in turn could have economic and social consequences. In absence of the Plan there is also the potential for an ongoing reliance upon fossil fuels due to a lack of collaborative energy planning, reducing the potential for connection of renewable energy sources to the supply network. In the medium and long term this is likely to result in ongoing detrimental impacts on human health, which will worsen going forward from the medium to the long term.

There are unlikely to be any short, medium or long term changes to geology, soil or land use within Northern Ireland in absence of the Plan. There may be pockets of improvement of soil and land for agricultural purposes and therefore loss of more natural land, and also the loss of natural and agricultural lands to urban creep; however these would not be due to the absence of the Plan.

There are unlikely to be any short, medium or long term changes to the water environment in absence of the plan. There are unlikely to be any short, medium or long term changes to flood risk in Northern Ireland due to of absence of the Plan, which is likely to increase to increase as a result of rising sea-levels and wetter conditions brought about by climate change.

In absence of the Plan, there is the potential for medium and long term detrimental impacts upon air quality within Northern Ireland, because an ad hoc approach may result in less potential for connection of renewable energy sources to the electricity supply network. This is likely to result in the continued reliance upon finite fossil fuels and thus the ongoing, long term emissions of pollutants into the atmosphere. With population growth and therefore increased electricity demand expected into the future the severity of these impacts is likely to increase with time, in absence of the Plan

As a result of greenhouse gas emissions, climate change is predicted to occur; resulting in, inter alia, sea level rise, changes in rainfall patterns and temperatures, and changes in the frequency of droughts and extreme weather events. In the absence of the Plan the population of Northern Ireland is likely to continue to rely upon finite fossil fuels to provide its electricity as a lack of structured development may hinder the potential for connection of renewable sources to the electricity network. As a consequence of this the contributions towards the emission of anthropogenic greenhouse gas emissions will be ongoing, thus resulting in the potential further acceleration of climate change and the exacerbation of the impacts of climate change.

In absence of the Plan there is the potential for electricity supply shortages in parts of Northern Ireland. A lack of strategic and collaborative planning of the future electricity transmission network may leave some areas unable to meet increased demand resulting from economic and population growth. There is also the potential for secondary impacts on other material assets such as rail and road, and also gas and water supply networks by way of disruption to services. These impacts have the potential to worsen going forward from the medium to the long term if demand continues to surpass supply in some underdeveloped areas

Cultural, architectural and archaeological heritage features are unlikely to be significantly impacted upon as a result of the absence of the Plan. Also in the absence of the Plan, the landscape value of Northern Ireland is unlikely to change significantly. There is the potential for loss of landscape value outwith designated areas as a result of human activity and development, though this would not be the result of the absence of the Plan.



## 6 REVIEW OF RELEVANT, PLANS, PROGRAMMES AND POLICIES

### 6.1 INTERACTION WITH OTHER RELEVANT PLANS AND PROGRAMMES

As part of the SEA process the context of the TDPNI must be established with regard to other Plans and Programmes that have been adopted at International, European and National levels. In particular the interaction of the environmental protection objectives and standards included within these Plans and Programmes with the TDPNI requires consideration.

**Table 6.1** identifies the main significant environmental plans, programmes and legislation, adopted at International, European Community or Member State level, which would be expected to influence, or be influenced by the TDPNI. While it is recognised that there are many Plans, Programmes and legislation that could relate to the TDPNI it is considered appropriate to only deal with those significant texts, to keep the assessment at a strategic level. More information on these Plans, Programmes and legislation, along with their potential interaction with the TDPNI is given in **Appendix D**.

**Table 6.1 Summary of Key Plans and Programmes Relevant to the TDPNI**

Level	Plan / Programme / Legislation
<b>International / EU Level</b>	<ul style="list-style-type: none"> <li>• The Ambient Air Quality and Cleaner Air for Europe Directive (2008/50/EC)</li> <li>• Bathing Water Directive (2006/7/EC)</li> <li>• Birds Directive [2009/147/EC]</li> <li>• Bonn Convention [L210, 19/07/1982 (1983)]</li> <li>• Drinking Water Directive (98/83/EC)</li> <li>• EIA Directive [85/337/EEC] [2014/52/EU]</li> <li>• Energy Efficiency Directive (2012/27/EU)</li> <li>• Environmental Liability Directive [2004/35/EC]</li> <li>• Environmental Quality Standards Directive (Directive 2008/105/EC)</li> <li>• Espoo Convention (2017)</li> <li>• EU Biodiversity Strategy to 2020 [COM(2011)244]</li> <li>• EU Climate and Energy Package</li> <li>• EU Green Infrastructure Strategy (COM(2013) 249 final)</li> <li>• EU Habitats Directive [92/43/EEC]</li> <li>• EU Shellfish Directive (2006/ 113 / EC)</li> <li>• EU Strategy on Adaptation to Climate Change</li> <li>• European Landscape Convention [ETS No. 176]</li> <li>• Floods Directive (2007/60/EC)</li> <li>• Groundwater Directive [80/68/EEC] and Daughter Directive [2006/118/EC]</li> <li>• National Emission Ceilings for Certain Atmospheric Pollutants (2001/81/EC)</li> <li>• Marine Strategy Framework Directive (2008/56/EC).</li> <li>• Pan-European Biological and Landscape Diversity Strategy</li> <li>• Renewable Energy Directive (2009/28/EC)</li> <li>• Roadmap to a Resource Efficient Europe (COM(2011) 571)</li> </ul>

	<ul style="list-style-type: none"> <li>• SEA Directive [2001/42/EC]</li> <li>• Second European Climate Change Programme (ECCP II) 2005.</li> <li>• United Nations Framework Convention on Climate Change (UNFCCC)</li> <li>• Waste Electrical and Electronic Equipment Directive (2002/96/EC), as recast by 2012/19/EU</li> <li>• Waste Framework Directive [2008/98/EC]</li> <li>• Water Framework Directive [2000/60/EC]</li> <li>• World Heritage Convention [WHC-2005/WS/02]</li> </ul>
<b>National Level</b>	<ul style="list-style-type: none"> <li>• A Green Future: Our 25 Year Plan to Improve the Environment, 2018</li> <li>• Biodiversity Strategy for Northern Ireland to 2020</li> <li>• Grid 25 Implementation Plan 2011-2016 (EIRGRID, 2010)</li> <li>• Draft Grid Implementation Plan 2017-2022 (EIRGRID, 2018)</li> <li>• Marine and Coastal Access Act (2009)</li> <li>• Draft National Biodiversity Action Plan (Ireland) 2017-2021</li> <li>• National Landscape Strategy 2015-2025</li> <li>• National Policy Framework for Alternative Fuels Infrastructure for Transport 2017 to 2030</li> <li>• NIEA Strategic Priorities 2012 – 2022</li> <li>• Northern Ireland Climate Change Adaption Programme, 2014</li> <li>• Northern Ireland Executive Programme for Government 2011-2015</li> <li>• Northern Ireland Executive Sustainable Development Strategy 2010</li> <li>• Northern Ireland Marine Position Paper, 2012</li> <li>• Northern Ireland Strategic Energy Framework ,2010</li> <li>• Northern Ireland Waste Management Strategy, 2012</li> <li>• Offshore Renewable Energy Development Plan (DCENR, 2014)</li> <li>• Offshore Renewable Energy Strategic Action Plan 2012-2020</li> <li>• PPS 1 – 23 (As appropriate)</li> <li>• Draft 2<sup>nd</sup> River Basin Management Plan 2018-2021 (2017)</li> <li>• Strategic Planning Policy Statement for Northern Ireland 2015</li> <li>• Sustainable Energy Action Plan, 2012-2015</li> <li>• The Northern Ireland Climate Change Adaptation Programme 2014</li> <li>• The Regional Development Strategy 2035 – Shaping Our Future</li> <li>• UK Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2011</li> <li>• UK Biodiversity Action Plan</li> <li>• UK Climate Change Act 2008</li> <li>• UK Climate Change Risk Assessment Programme 2017</li> <li>• UK Marine Policy Statement</li> <li>• UK National Ecosystem Assessment (2011)</li> <li>• UK Sustainable Development Strategy</li> <li>• Waste Management Plan 2013 – 2020</li> </ul>
<b>Regional Level</b>	<ul style="list-style-type: none"> <li>• Local Biodiversity Action Plans (LBAPs)</li> <li>• Regional Development Strategy for Northern Ireland 2025</li> <li>• A Planning Strategy for Rural Northern Ireland</li> </ul>

<p><b>Sub-Regional</b></p>	<ul style="list-style-type: none"> <li>• A Community Plan for Newry, Mourne and Down to 2030</li> <li>• Antrim, Ballymena and Larne Plan 2016 – Issues Paper</li> <li>• Antrim Area Plan 1984 – 2001</li> <li>• Ards and Down Area Plan 2015</li> <li>• Armagh Area Plan 2004</li> <li>• Armagh Area Plan 2018 – Issues Paper</li> <li>• Ballymena Area Plan 1986-2001</li> <li>• Banbridge Rural Area Plan 1986 – 1998</li> <li>• Banbridge, Newry and Mourne Area Plan 2015</li> <li>• Belfast Urban Area Plan 2001</li> <li>• Belfast Metropolitan Area Plan 2015</li> <li>• Cookstown Area Plan 2010</li> <li>• Craigavon Area Plan 2010</li> <li>• Derry Area Plan 2011</li> <li>• Dungannon &amp; South Tyrone Area Plan 2010</li> <li>• Fermanagh Area Plan 2007</li> <li>• Larne Area Plan 2010</li> <li>• Magherafelt Area Plan 2015</li> <li>• Newry and Mourne Rural Area Subject Plan 1986 – 1999</li> <li>• Northern Area Plan 2016 (Ballymoney, Coleraine, Limavady &amp; Moyle)</li> <li>• Omagh Area Plan 1987 – 2002</li> <li>• Strabane Area Plan 1986 – 2001</li> <li>• West Tyrone Area Plan 2019 Issues Paper</li> <li>• North Western River Basin Management Plan</li> <li>• Neagh Bann River Basin Management Plan</li> <li>• North Eastern River Basin Management Plan</li> <li>• River Basin – Local Management Area Action Plans</li> </ul>
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## 7 PROPOSED PLAN OPTION DETAILS

The draft TDPNI has defined a list of the potential projects that could be developed within the Plan period up to 2027, which are summarised in **Table 7.1**. A number of these potential projects were screened out of requiring assessment as the works are of such a scale as not to be considered significant and / or are localised to within existing electrical transmission sites / substations, or as the proposals have gone beyond strategic planning to the detailed planning stage and so will only be considered for cumulative and in-combination impacts. The outcomes of this screening from the SEA Scoping Report are also given in **Table 7.1**. Many of these proposals that have been screened in may require future environmental studies at the project level, such as Environmental Impact Assessment under the Environmental Impact Assessment (EIA) Directive 85/337/EEC as transposed by The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 1999 and recent amendment The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. These projects listed are the options available to the Plan that could be developed within the Plan period. These projects however will only be developed on an as required basis, i.e. if there is the development of an electricity generator that needs to transmit energy to the users, or if there is the requirement for significant upgrading to cope with demands.

**Table 7.1** Projects listed on the TDPNI 2018-2027- Screening for the need for inclusion in the SEA

Project	Description	Screened In / Out of Assessment
<b>Asset Replacement Projects</b>		
<b>Donegall Main (North) Transformer Replacement</b>	The 60 MVA transformer TxB at Donegall North is to be replaced by a new 90 MVA unit. Completion date: summer 2018.	<b>Out.</b> Very localised impacts only within existing sites.
<b>Coolkeeragh - Magherafelt 275 kV Circuits Restrung</b>	It is planned to replace the conductor on the existing double circuit tower line. The rating of the replacement conductor will be defined as part of the redesign of the circuit. Completion date: winter 2021.	<b>In Potential for impacts</b>
<b>Ballylumford Switchgear Replacement</b>	The existing 110 kV switchgear at Ballylumford is to be replaced with a new 110 kV GIS double busbar and the 110 kV circuits diverted accordingly. Completion date: winter 2020.	<b>Out.</b> Very localised impacts only within existing sites.
<b>Castlereagh Inter-bus Transformer Replacement 1</b>	The 275/110kV 240MVA interbus transformer IBTX 1 is to be replaced. Completion date: winter 2018	<b>Out.</b> Very localised impacts only within existing sites.
<b>Hannahstown Inter-bus transformer 1 and 2 replacement</b>	The 275/110 kV 240 MVA interbus transformer IBTX 1 and 2 are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.

<b>Tandragee Transformer 1 and 2 replacement</b>	<b>Inter-bus 1 and 2</b>	The 275/110 kV 240 MVA interbus transformers IBTX 1 and 2 are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Kells Transformer 1 and 2 Replacement</b>	<b>Inter-bus 1 and 2</b>	The 275/110 kV 240 MVA interbus transformers IBTX 1 and 2 are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Ballylumford transformer 1 and 2 Replacement</b>	<b>Inter-bus 1 and 2</b>	The 275/110 kV 240 MVA interbus transformers IBTX 1 and 2 are to be replaced. Completion date: TBA	<b>Out</b> Very localised impacts only within existing site.
<b>Ballymena Transformer 3 and 4 Replacement</b>	<b>Main 3 and 4</b>	The 110/33 kV transformers TX 3 and 4 at Ballymena Main are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Enniskillen transformer 1 and 2 replacement</b>	<b>Main 1 and 2</b>	The 110/33 kV transformers TX 1 and 1 at are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Banbridge transformer 1, 2, 3 and 4 replacement</b>	<b>Main 1, 2, 3 and 4</b>	The 110/33 kV transformers TX 1-4 at are to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Glengormley Main Tx B</b>		The 110/33 kV transformer Tx B is to be replaced. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Shunt Reactors</b>		The TR1 and TR2 reactors at Kells and Tandragee 275 kV substations (respectively) are to be replaced by 2027. Completion date: 2027	<b>Out.</b> Very localised impacts only within existing sites.
<b>Strabane Main 110kV refurbishment</b>	<b>Main 110kV</b>	The 110 kV mesh is to be refurbished. Consideration will also be given to the installation of a GIS switchboard at the alternative site. Completion date: TBA	<b>Out.</b> Very localised impacts only within or nearby existing site.
<b>Limavady Main 110kV refurbishment</b>	<b>Main 110kV</b>	The 110 kV mesh at Limavady Main is to be refurbished. Consideration will also be given to the installation of a GIS switchboard at the alternative site. Completion date: TBA	<b>Out.</b> Very localised impacts only within or nearby existing site.
<b>Renewable Generation Cluster Substations and New Connections</b>			
<b>Curraghmulkin Cluster (formerly Drumquin)</b>	<b>110/33kV (formerly Drumquin)</b>	It is planned to establish a new 110/33 kV cluster substation close to Drumquin village. The Curraghmulkin cluster is to be connected to the existing Enniskillen - Omagh 110 kV circuits by means of a new switching station (Omagh South) north of Dromore village. A single portal overhead line will be built from the new station to the cluster site. Completion date: Summer 2018.	<b>Out.</b> Beyond strategic planning Cumulative / in-combination impacts only.
<b>Agivey 110/33 kV Cluster Substation</b>		It is planned to establish a 110/33 kV cluster substation near Garvagh, connected to the	<b>In Potential for</b>

	proposed Rasharkin cluster via a portal overhead line. Completion date: Winter 2019.	<b>impacts</b>
<b>Kells Wind 110/33 kV Cluster substation</b>	It is planned to establish a 110/33 kV cluster substation near to Kells, connected to the existing Kells station via an overhead line. Completion date: winter 2020.	<b>In Potential for impacts</b>
<b>Fair Head / Torr Head Tidal Scheme connection (approval pending)</b>	Developers are planning to establish two 100MW tidal generation schemes off the County Antrim coast close to Torr Head and Fair Head. A connection has not yet been formally offered but is assumed to involve a connection into Kells Main and construction of either a 275 kV circuit or 110 kV single or double circuit line. Completion date: TBA	<b>In Potential for impacts.</b>
<b>Belfast Power Station</b>	Evermore Energy are proposing a new 480 MW CCGT, to be located in Belfast Harbour Estate. The project is in the early stages of development, and no connection application has been received. Completion date: TBA	<b>In Potential for impacts</b>
<b>Compressed Air Energy Storage Scheme connection (on hold)</b>	A developer has planned the construction of a Compressed Air Energy Storage facility close to Ballylumford Power station in Islandmagee. They had been offered a connection into Ballylumford at 275 kV but this offer has expired. It does, however, have PCI status. Completion date: TBA	<b>In Potential for impacts</b>
<b>Renewable Integration Developments</b>		
<b>Omagh Main – Omagh South Uprate</b>	With the connection of Curraghmulkin cluster substation to Omagh South it will be necessary to restrung the Omagh Main – Omagh South tower line with high temperature conductor. Completion date: summer 2019.	<b>In Potential for impacts</b>
<b>Omagh Reactive Compensation</b>	It is planned to install reactive compensation equipment at Omagh Main. The reactive support will be connected to the 110 kV bus. Completion date: 2021.	<b>In Potential for impacts with substation expansion</b>
<b>Tamnamore Reactive Compensation</b>	It is planned to install reactive compensation equipment at Tamnamore. The reactive support will be connected to the 110 kV bus. Completion date: 2021.	<b>In Potential for impacts with substation expansion</b>
<b>Coleraine Reactive Compensation</b>	It is planned to install reactive support at Tamnamore. The reactive support will be connected to the 110 kV busbar. The existing 36 Mvar capacitor will be recovered. Completion date: 2021.	<b>In Potential for impacts with substation expansion</b>
<b>Kells/Creagh -Rasharkin New 110kV Circuit</b>	As a result of increasing growth in renewable generation there will be a need to construct a second 110 kV circuit between either Creagh or Kells, and Rasharkin 110 / 33 kV cluster substation. Completion date: winter 2024.	<b>In Potential for impacts</b>
<b>Tamnamore – Turleenan Uprate</b>	Pending the establishment of Turleenan substation it is planned to uprate the conductors between Turleenan and Tamnamore 275kV substation. Completion date: winter 2022.	<b>In Potential for impacts</b>
<b>Coolkeeragh – Trillick new 110 kV line (on hold)</b>	A need has been identified to strengthen the electricity network on both sides of the border in the north-west to assist in the integration of renewable power sources. This project is on hold and may be replaced by the North West Reinforcement but still	<b>In Potential for impacts</b>

	has Project of Common interest (PCI) status. Completion date: TBA	
<b>Turleenan- Omagh South – Co. Donegal new 275 kV line (on hold)</b>	A need has been identified to strengthen the electricity network on both sides of the border in the north-west to assist in the integration of renewable power sources. This project is on hold and may be replaced by the North West Reinforcement but still has Project of Common interest (PCI) Completion date: TBA	<b>In Potential for impacts</b>
<b>North West of Northern Ireland Reinforcement</b>	As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110 kV system electrically close to Coolkeeragh. A long list of options shall be narrowed down to a short list. The long list of main and supporting options at present includes the following: <ul style="list-style-type: none"> <li>• HVDC (subsea) link from Kilroot to Coolkeeragh;</li> <li>• New 275 kV or 110 kV circuit from Magherafelt to Coolkeeragh;</li> <li>• New 275 kV or 110 kV circuit from Magherafelt to Strabane (new substation);</li> <li>• 110 kV circuit from Agivey cluster – Limavady</li> <li>• Strabane – Omagh 110 kV Uprate</li> <li>• Coolkeeragh – Strabane 110 kV Uprate</li> <li>• Coolkeeragh – Killymallaght 110 kV Uprate</li> <li>• Coolkeeragh – Limavady 110 kV Uprate</li> <li>• Killymallaght – Strabane 110 kV Uprate</li> </ul> Completion date: TBA	<b>In Potential for impacts</b>
<b>Load Related and Security of Supply</b>		
<b>Sydenham Road Main (new station)</b>	It is planned to construct a new 110/33 kV substation in the Belfast Harbour Estate, close to the existing Airport Road 33/6.6kV substation. The substation will be connected to the existing Rosebank substation via the existing 110 kV tower line (currently operated at 33kV) from Rosebank to Sydenham Road. Completion date: winter 2022.	<b>In Potential for impacts</b>
<b>Ballylumford-Castlereagh 110 kV Circuit restring</b>	The conductor on the existing tower line will be replaced and uprated. Completion date: winter 2020.	<b>In Potential for impacts</b>
<b>Drumnakelly and Armagh Development Plan</b>	There is a need to reinforce the distribution system supplying Armagh city and the surrounding area. There is also a need to upgrade capacity at the existing Drumnakelly 110/33 kV substation. Options being considered include: <ul style="list-style-type: none"> <li>• Establishing a new 110/33 kV substation adjacent to the existing Drumnakelly Main along with associated 33 kV reinforcements to the Armagh area;</li> <li>• Establishing a new 110/33 kV substation at Armagh with new 110 kV circuits from Tandragee or Drumnakelly.</li> </ul> Completion date: TBA	<b>In Potential for impacts</b>
<b>Castlereagh 275 kV new no. 4 inter-bus transformer (Capital approval pending)</b>	There is a need to provide additional capacity at Castlereagh to meet expected demand growth. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.



<b>Coolkeeragh Transformer uprate</b>	<b>T1 cabling</b>	This project is to uprate the 110 kV cabling associated with Tx 1. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Tandragee 110 kV 275 kV second busbar coupler</b>		This project is to install a second busbar coupler onto the existing 275 kV double busbar. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Kells Remote Control</b>		This project is to replace the existing line end disconnectors with remote control motorised disconnectors. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>North West Special Protection upgrade</b>	<b>Special Scheme</b>	This project is to replace and upgrade the existing special protection scheme. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Enhancement to the low frequency disconnection scheme</b>	<b>load</b>	It is planned to modify existing under-frequency automatic load shedding schemes. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Augmentation of capacity at Transmission / Distribution interface</b>		It is planned to increase 110/33 kV transformer capacity at four substations; Coleraine, Strabane, Limavady and Omagh. This capacity will be increased either by uprating transformers or by the installation of an additional transformer. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Fault Level Replacements</b>			
<b>Castlereagh and Tandragee 110 kV Switchgear replacement</b>		Due to increasing fault levels it is planned to replace 110 kV circuit breakers and current transformers at Castlereagh and Tandragee. Completion date: winter 2021.	<b>Out.</b> Very localised impacts only within existing sites.
<b>Castlereagh – Knock 110kV cables uprate</b>		The protection on this circuit will be replaced and uprated as well as the cable sealing ends and a section of cabling. Completion date: TBA	<b>In Potential for impacts</b>
<b>Cregagh Transformer switchgear replacement</b>	<b>B</b>	It is planned to replace a set of disconnectors and earth switches. Completion date: TBA	<b>Out.</b> Very localised impacts only within existing site.
<b>Interconnection</b>			
<b>North-South Interconnector</b>		New 400 kV circuit from existing Woodland 400 kV station in County Meath (RoI) to a proposed 400/275 kV station at Turleenan in County Tyrone (NI). Completion date: winter 2020.	<b>Out.</b> Planning Approved. Cumulative / in-combination impacts only.

The projects that were screened for environmental assessment as part of the SEA are presented in **Table 7.2**. These projects can be summarised by the four general development types that have been identified:



1. New transmission lines
2. Transmission Line Restrung or Uprate
3. New Substation
4. Substation Extension or Upgrade

**Table 7.2 Projects Screened *In* and Assessed as part of the SEA**

Project ID	Project Name	Development Type
1	Coolkeeragh – Magherafelt 275 kV Circuits Restrung	Transmission Line Restrung / Uprate
2	Agivey 110/33 kV Cluster	New Substation and Transmission Line
3	Kells Wind 110/33 kV Cluster	New Substation and Transmission Line
4	Fair Head / Torr Head Tidal Scheme connection	New Transmission Line
5	Belfast Power Station	New Transmission Line
6	Compressed Air Energy Storage Scheme connection	New Transmission Line
7	Omagh Main – Omagh South Uprate	Transmission Line Restrung
8	Omagh Reactive Compensation	Substation Extension or Upgrade
9	Tamnamore Reactive Compensation	Substation Extension or Upgrade
10	Coleraine Reactive Compensation	Substation Extension or Upgrade
11	Kells/Creagh – Rasharkin New 110 kV Circuit	New Transmission Line
12	Tamnamore – Turleenan Uprate	Transmission Line Restrung
13	Coolkeeragh – Trillick new 110 kV Line	New Transmission Line
14	Turleenan – Omagh South – Co. Donegal new 275 kV Line	New Transmission Line
15	<i>North West of Northern Ireland Reinforcement</i> Kilroot – Coolkeeragh HVDC Link	New Transmission Line (Subsea)
16	<i>North West of Northern Ireland Reinforcement</i> Magherafelt – Coolkeeragh new 275 kV or 110 kV Circuit	New Transmission Line
17	<i>North West of Northern Ireland Reinforcement</i> Magherafelt – Strabane (new substation) new 275 kV or 110 kV Circuit	New Transmission Line
18	<i>North West of Northern Ireland Reinforcement</i> Agivey Cluster – Limavady new 110 kV Circuit	New Transmission Line and New Substation
19	<i>North West of Northern Ireland Reinforcement</i> Strabane – Omagh 110 kV Uprate	Transmission Line Restrung / Uprate
20	<i>North West of Northern Ireland Reinforcement</i> Coolkeeragh – Strabane 110 kV Uprate	Transmission Line Restrung / Uprate
21	<i>North West of Northern Ireland Reinforcement</i>	Transmission Line Restrung / Uprate

	Coolkeeragh – Killymallaght 110 kV Uprate	
22	North West of Northern Ireland Reinforcement Coolkeeragh – Limavady 110 kV Uprate	Transmission Line Restrung / Uprate
23	North West of Northern Ireland Reinforcement – Killymallaght – Strabane 110 kV Uprate	Transmission Line Restrung / Uprate
24	Sydenham Road Main (new station)	New Substation
25	Ballylumford – Castlereagh 110 kV Circuit Restrung	Transmission Line Restrung
26	Drumnakelly and Armagh Development Plan – new 110/33 kV substation adjacent to Drumnakelly Main and 33 kV reinforcements to Armagh area	New Substation and Transmission Line
27	Drumnakelly and Armagh Development Plan – 110/33 kV substation at Armagh and 110 kV circuits from Tandragee or Drumnakelly	New Substation and Transmission Line
28	Castlereagh – Knock 110 kV Cables Uprate	Transmission Line Restrung / Uprate

The development and maintenance works involved in these project types are summarised in the following sections 7.1 to 7.3.

## 7.1 OVERHEAD TRANSMISSION LINES

Overhead transmission lines comprise a *conductor* (aluminium or steel strand), suspended at a defined clearance height between a series of supporting structures; insulators prevent the current from crossing between the conductor and the structure.

Overhead lines can be constructed in *single circuit* or *double circuit* formations. The three phases of single circuit overhead lines are carried in the horizontal plane. Double circuits (wherein two separate circuits are supported on a single structure) generally only occur where two single circuit lines are in close proximity or where a route corridor is very constrained. The three phases of double circuit overhead lines are carried in the vertical plane. Additional earth (shield) wires may also be incorporated above the conductors in order to protect the overhead line from lightning strikes. Optical fibre may also be wrapped around the shield wire; this is used for communication purposes including controlling the power system.

### 7.1.1 Structures

Conductors are typically supported on steel lattice towers or wooden pole sets. *Intermediate towers* occur along straight sections of an overhead line. *Angle towers* are used where a line changes direction and conductors must be held under tension. *Terminal towers* are generally constructed where an overhead line enters a substation but may also be used where there is an interface between an overhead line and an underground cable.

The design of structures required along an overhead line vary according to the voltage and can be dependent on the local environment in which they are situated as a result of variable terrain, ground

conditions, required clearance from other infrastructure and other constraints. **Table 7.3** summarises the various structure types utilised in the transmission network on the island of Ireland.

**Table 7.3 Transmission Structures Information**

Structure	Material & dimensions	Foundation	Spacing
<b>400 kV</b>	Lattice steel structures, concreted into the ground. Height typically ranges from 20m to 48m.	Four foundation blocks are excavated, each block ranging in diameter from 2.8m to 5.3m depending on the tower design (single or double circuit angle tower or double circuit intermediate tower).	Average span is 350m depending on local landscape features and topography.
<b>275 kV</b>	Lattice steel towers are also used to support 275 kV conductors in Northern Ireland and are built to the same standard as the 400 kV infrastructure described above.		
<b>220 kV</b>	Lattice steel structures, concreted into the ground. Height typically ranges from 27m to 37m.	Four foundation blocks are excavated, ranging in width from 1.4m to 3.9m depending on the tower design (single or double circuit angle tower or double circuit intermediate tower).	Average span is 320 m depending on local landscape features and topography.
<b>110 kV pole set</b>	<p>Wooden pole sets consisting of two wooden poles, 5m apart and connected near the top with a rolled steel channel.</p> <p>The wooden poles are typically between 16m and 23m in height.</p> <p>Where an OHL angle less than 20 degrees is required, a braced pole set may be erected. These comprise a modified version of a standard pole set wherein the space between the poles is reinforced with steel members.</p> <p>Three-pole intermediate pole sets may also be erected in certain cases, comprising a 5m spacing between poles.</p>	<p>A minimum of 2.3m of pole is buried underground; no concreting around the base of the poles is carried out under normal ground conditions.</p> <p>Wooden sleepers are affixed to the bases of the pole sets in a narrow (0.8m) excavation perpendicular with the overhead line alignment; this delivers improved stability.</p> <p>Where ground conditions dictate, stay wires from the pole sets may also be required. This generally involves excavation of four trenches (approximately 2m x 2m x 1.8m – 2m deep) at a distance of at least 10m from the pole set, though this distance can often be larger.</p> <p>Pre-cast concrete stay blocks or wooden sleepers are placed at the base of these excavations and stay wires are affixed to them before the excavation is reinstated.</p>	Span between 110 kV structures ranges between 180 and 300m, depending on local landscape features and topography.
<b>110 kV</b>	Where a change in conductor	Concrete foundations are	

<b>angle mast</b>	direction of more than 20 degrees is required, steel lattice towers are used. These are typically smaller in scale than the higher voltage versions and range in height, typically starting at 15m and increasing in increments of 3m extensions, depending on topography (smaller 12m masts can also be erected in some circumstances).	required for all steel towers, and pile foundations may be required in unstable ground.  The average foundation block size for each tower leg used in the 110 kV towers is 4m x 4m x 3m.	
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For all transmission lines with earth (shield) wires, there is a requirement to install an earth ring or mat at the base of the structure to ground the structure for safety reasons. The ground around the base of the structure is excavated while the respective tower or pole set is being erected and the earth ring is subsequently installed before completion of works at the site.

### 7.1.2 Construction Methods

Transmission line construction, maintenance and decommissioning usually follow a standard sequence of activities. The duration of these activities for 110 kV transmission lines (wood pole support structures) is normally less than for higher voltage lines requiring lattice steel towers. The construction of high voltage transmission lines typically entails the following sequence of events:

1. Preliminary procedures including verification that planning conditions have been satisfied; pre-construction site investigations including an access review and assessment of ground conditions; delineation of on-site working area;
2. Establishment of temporary access routes and laydown/storage areas where necessary;
3. Setting out of tower foundations or pole excavations;
4. Installation of foundations as appropriate;
5. Erection of towers or pole sets;
6. Stringing of conductors and commissioning;
7. Reinstate land; and
8. Remove temporary access

#### 7.1.2.1 Construction Access

To minimise environmental disturbance, access to individual structure locations is generally along the local public road network, with subsequent works access to private land using existing farm entrances and tracks wherever possible. Access routes are typically marked or fenced on site to keep disturbance to a minimum. Specific planning conditions relating to access routes may also apply.

Off-road access is assessed prior to works. In peatland areas, access is achieved by using wide tracked low ground pressure vehicles to minimise damage to ground, and in sensitive areas may be

combined with bog mats made from timber (or other preformed matting such as aluminium or Ethylene Propylene Diene Monomer (EPDM) sheets). Where very soft ground is encountered, temporary access tracks may need to be constructed. Generally, temporary roads are constructed using stone; however in certain sensitive situations aluminium road panels may be used.

Stone road construction involves the stripping and preservation of surface turves followed by excavation of the topsoil and storage of this to one side of the track. Geotextile reinforcement is placed on the subsoil surface and approximately 200 mm of stone placed on top and compacted to form the track. Alternatively, in soft bog, a stone or panel road as described above may not be appropriate and in this case timber sleepers can be used.

Where extremely sensitive habitats occur or where access is particularly challenging, materials can be airlifted to the respective work site(s) using a helicopter.

### **7.1.3 Refurbishment and Uprating**

Transmission lines are generally low maintenance utility infrastructure. Refurbishment works are generally required for transmission lines that have been in place for over 20 years. Refurbishment works may consist of a major overhaul of equipment, to rebuild or replace parts or components of a transmission asset to restore it to a required functional condition and extend its life. Refurbishment comprises the replacement of individual towers, pole sets, insulators or hardware at selected locations and the replacement or strengthening of selected angle tower foundations.

Existing transmission lines can also be uprated to increase capacity or strengthen electrical resilience in the system. Uprating involves the replacement of the overhead line / conductor with a more efficient conductor of the same voltage and usually involves the replacement of a significant number of support structures as the new conductor may be heavier than the original.

In general, the work associated with refurbishment and uprating of transmission lines can include some or all of the following:

1. Fittings replacement – this involves removal of existing fittings, followed by installation of new fittings. These include smaller scale items such as brackets, insulators and clamps.
2. Replacement of crossarm and fittings – this involves removal of crossarm and fittings, followed by installation of new crossarm and fittings (110 kV only).
3. Replacement of intermediate pole set structures - this involves removing all associated fittings, stays (where present), cutting and removal of the poles, followed by installation of new poles, stays, crossarm and fittings.
4. Replacement of steel towers - this involves the removal of the existing structure and all associated fittings, and the removal of the existing foundations, followed by the installation of new foundations and construction of new structure and installation of fittings.

5. Replacing the conductor - this involves re-stringing by pulling the conductor between the angle masts, with the main element of this work carried out at angle masts, with some work also carried out at strain and semi-strain locations during conductor stringing (uprating).
6. Other ancillary works - such as guard posts for road crossings, diversions of lower voltage lines, erection of temporary structures etc.

In some instances, intrusive site investigation works are required to determine the level of work required as part of an uprate or a line refurbishment. The foundations of existing towers often require assessment. This is typically undertaken using *dynamic probing*, which is a penetration test which provides information on the geo-technical properties of the ground around a structure. In addition, a partial excavation of one or more tower legs may be required to determine the suitability of the existing tower.

#### 7.1.4 Construction Resources

**Table 7.4** outlines the types of structures and equipment typically used during the construction, uprating or refurbishment of overhead transmission lines.

**Table 7.4 Summary of works and resources involved in the construction, uprating and refurbishment of overhead line infrastructure**

	Works	Summary	Plant required for construction
Construction	275 kV tower construction	<p>Design: The height range of towers is generally between 20 m and 52 m depending on topography. The maximum width of the towers at ground level ranges from 7 m to 12 m. The average span between towers is on average approximately 350 m, dependent on local topography.</p> <p>Foundation: There are 4 concrete foundations installed per steel structure. Foundation size and type is dependent on ground conditions and tower type, but is typically 2.8 to 5.3 m in width for each foundation pad. The base installation time is approximately one week. A larger footing may be required in the case of weak soils, while pile foundations can be used in the case of deep peat. In the case of rock being encountered at shallow depths, reduced footing size foundations may be required. Shear blocks (i.e. a protective concrete neck around the base of tower legs) are poured once the main foundations are in-situ.</p> <p>Erection: Towers are generally constructed using a 'derrick pole' or a mobile crane. The derrick pole methodology is a simple system wherein small sections of steel are lifted into place using the derrick pole and a winch. The derrick pole</p>	<p>Transit van 4x4 vehicle Winch tractor Tractor and trailer Crane/Derrick pole Teleporter Chains and other small tools Concrete vibrator Water pump Wheeled/ track dumper Excavator Concrete trucks</p>

	<p>consists of either a solid or lattice aluminium or steel pole which is held in position using guy ropes anchored to the ground. The crane-based procedure entails the tower being completed in separate sections due to the weight of the differing components. Tower sections are assembled on the ground and subsequently lifted into place.</p>	
<b>220 kV tower construction</b>	<p>Design: The height range of towers is generally between 20 m and 40 m depending on topography. The maximum width of the towers at ground level ranges from 6 m to 12 m. The average span between towers is on average approximately 320 m, dependent on local topography.</p> <p>Foundation &amp; Erection: Broadly similar to 400 kV specifications and construction method. There are 4 concrete foundations installed per steel structure. Foundation size and type is dependent on ground conditions and tower type, but is typically 1.4 m to 3.8 m in width for each foundation pad.</p>	As for 400 kV
<b>110 kV pole set construction</b>	<p>Design: The height range of pole sets is generally between 16 m and 23 m depending on topography. The maximum width of the pole sets at ground level ranges from 4 m to 9.8 m. The span between pole sets can range from 180 m to 300 m, dependent on local topography.</p> <p>Installation: An excavation of a minimum of 2.3 m for each pole will be carried out using a wheeled or tracked excavator. Each of the two poles are lined up with the excavated holes and the machine operator then drives forward pushing the pole up until the pole is in an almost vertical position. The pole is supported at all times and the holes manually backfilled to a minimum depth of 1 m. After excavation and erection of the pole set, a further excavation 0.8 m deep is necessary. This is a linear excavation perpendicular to the line necessary to install wooden sleepers. These sleepers add additional stability to the pole set and are attached to the pole set using a u-bolt.</p>	<p>Transit van Excavator Winch tractor/pole erector Chains and other small tools</p>
<b>110 kV pole set stays</b>	<p>Under certain ground conditions, stay wires may be required at some pole set locations to provide stability to the structure. These wires add stability to the pole and are supported by means of stay blocks and/or timber sleepers. The stay blocks are made of concrete and are buried underground, as are the timber sleepers should they be employed. Stay foundations are installed at a distance of at least 10 m from the pole set,</p>	As for 110 kV pole set construction

		though this distance can often be larger.	
	<b>110 kV angle tower construction</b>	Refer to 220 kV; towers are smaller in scale, with a height range of 18 m to 24 m.	As for 400 kV tower construction
<b>Refurbishment / Uprating</b>	<b>Replace fittings</b>	Fittings, insulators (where required) and equipment can be transported to site without the use of heavy equipment.	(Tracked) Quad bike and / or buggies Chains and other associated tools
	<b>Replace crossarm and fittings</b>	Crossarms link the wooden pole sets and the fittings and conductor are attached to the crossarm. They are long heavy metal structures and their removal requires a mobile elevated work platform (MEWP) and tracked excavator to provide a safe working platform.	4 x 4 vehicle (not used within sensitive areas) Mobile elevated work platform (MEWP) (Tracked) quad bike / buggy Tracked excavator (also used to carry in/out new/old crossarm) Chains and other associated tools.
	<b>Replace intermediate pole set structures</b>	The replacement of wooden pole sets is undertaken in situ with the replacement structures erected immediately adjacent to the original structure. Once the conductor has been removed from the old pole set and moved on the new support, the two original wood poles are cut at ground level and removed from site. Alternatively, the old poles may be fully removed from the ground with the new poles being installed in the same position.	2 no. 360° tracked excavator Winch Tractor Quad bike
	<b>Replace angle mast structures</b>	Requires temporary installation of wooden pole sets to accommodate conductor (see above). Excavation and replacement of lattice tower and foundations then proceeds (refer to 400 kV construction).	Refer to 400 kV
	<b>Replacing the conductor</b>	Stringing of the conductor is undertaken in sections between end mast and angle mast or between angle masts. Stringing normally requires the placement of puller tensioners outside the span of the line section. A variation of this can occur when the location of the puller tensioner is constrained by environmental or ground conditions. In such cases back stringing is utilised. This is where one puller tensioner is located in the span area rather than outside it. The methodology involves connecting the new conductor to the existing conductor using stringing stockings and pulling out through the section in question. The methodology involves the pulling of a light pilot line (nylon rope) which is normally carried by hand into the stringing wheels. This in turn is	4x4 vehicles Puller - tensioner X 2 Teleporter X 2 Drum stands X 2 Drum carriers X 2 Stringing wheels Conductor drums Compressor & head Transit vans Chains and other small tools Conflict guardings



		<p>used to pull a heavier pilot line (steel rope) which is subsequently used to pull in the conductors from drum stands using specifically designed 'puller-tensioner' machines. The temporary working areas utilised for the stringing equipment are generally 20 m x 20 m.</p> <p>Once the conductor has been pulled into position, one end of the straight is terminated on the appropriate tension fittings and insulator assemblies. The free end of the straight is then placed in temporary clamps (referred to as 'come-alongs') which take the conductor tension. The conductor is then cut from the puller-tensioner and the conductor is sagged using a chain hoist.</p> <p>The conductor is kept clear of all obstacles along the straight by applying sufficient tension. Certain obstacles along a straight have to be guarded such as road/railway crossings and other transmission or distribution lines. Before removal in such cases, the conductor must be terminated at each end before being clamped in on either side of the obstacle crossing.</p> <p>Once the conductor is connected to the angle masts the temporary poles are then removed.</p>	
Access to works Areas	<p><b>Tower &amp; pole set construction</b></p>	<p>Excavators are generally tracked to reduce likely damage to and compaction of the ground. In addition a temporary hard standing may be required for machinery and this may require the removal of topsoil.</p> <p>Bog mats, either of timber, aluminium or rubber construction are used to access structures in poor ground conditions or in ecologically sensitive areas.</p> <p>At some locations, temporary roads with stone or wooden sleepers may need to be constructed. This involves the excavation of the topsoil and storage of this to one side of the track; surface turves are preserved for later reinstatement. A geotextile reinforcement is placed on the subsoil surface and stone placed on top and compacted to form the track. All material for temporary tracks is removed following completion of works.</p> <p>Materials required for construction are transported around the site by general purpose cross country vehicles with a lifting device.</p>	
	<p><b>Refurbishment &amp; uprating</b></p>	<p>Machinery access protocol as for construction above.</p> <p>In the case of replacement of fittings, where no specific machinery is required, works crews access site on quad bikes (tracked on soft ground) or on foot.</p>	

An illustrative guide to the construction of 400 / 275 / 220 kV towers is presented in **Figure 7.1**.

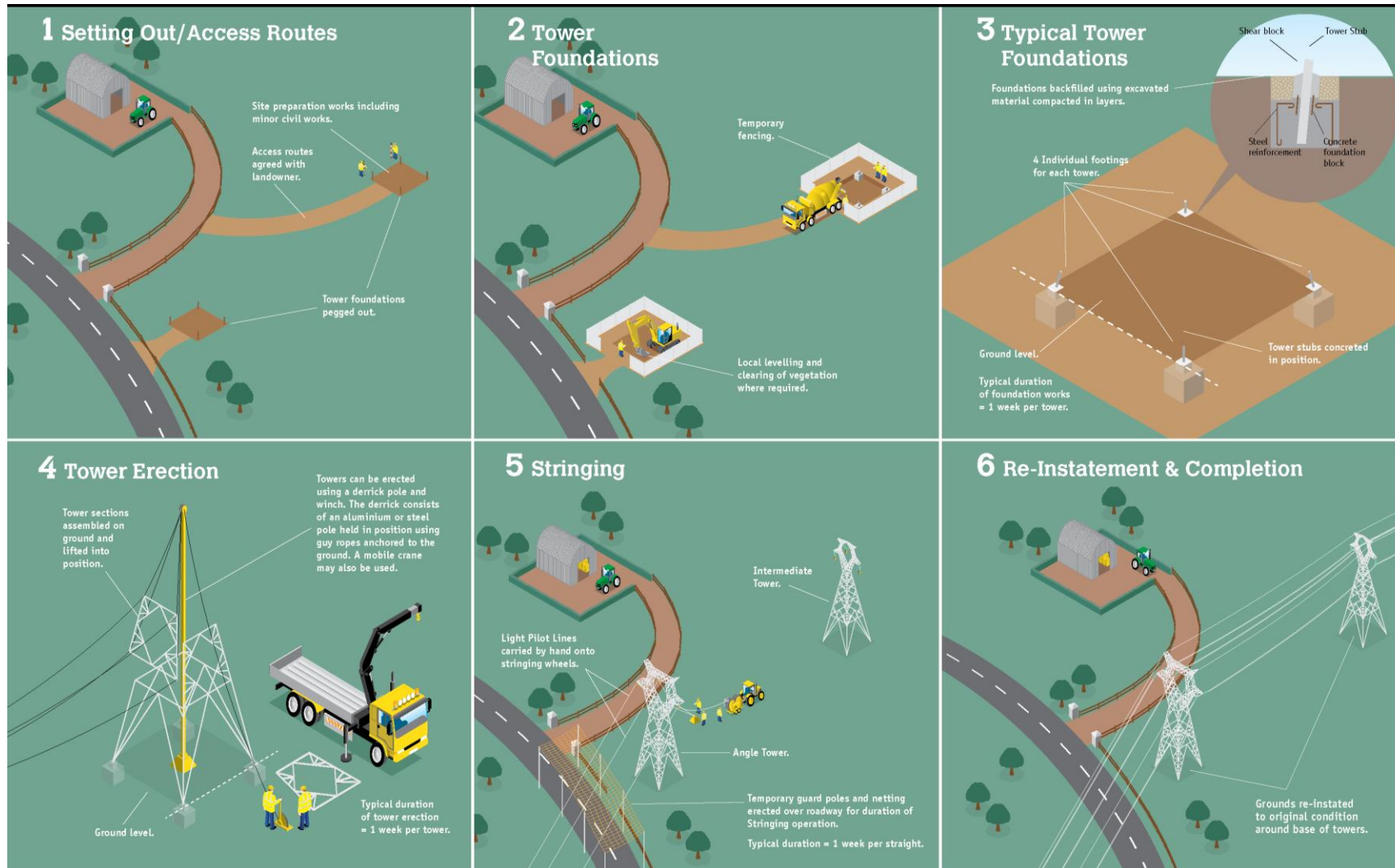


Figure 7.1 Graphic Guide to Transmission Tower Construction

## 7.2 UNDERGROUND CABLES

### 7.2.1 Construction methods

High voltage (HV) circuits can only be laid underground using special HV cables designed specifically for underground use. The conductors in underground HV cables must be heavily insulated to avoid a short circuit between the conductor and the ground around the cable.

Cables are installed directly into the ground in an excavated trench. Typically, high voltage cable routes are located along public roads and open spaces. In some instances a cable route may be required to cross private open ground.

Transmission cable routes comprise sections of cable that are connected using a cable joint. Cable joints are installed in *joint bays* which are typically concrete structures buried underground, occurring generally every 500 - 700 m along an alignment, and ranging in size up to 6 m long, 2.5 m wide and 1.8 m deep.

Once installed, the road surface is reinstated. Where a cable route is in an open area, it is returned to agricultural/grassland use. Where a cable passes through forested land the route is not replanted with trees to prevent any damage to the cable by tree root growth.

### 7.2.2 Watercourse crossings

Where cable routes transect watercourses, specific crossing methods require implementation. In cases where the cable is being trenched along the public road and there is adequate overburden in the deck of the bridge at the point of crossing, it is generally feasible to continue the cable over the bridge without any need for off-road or in-stream works.

Where the above approach cannot be facilitated, the remaining options are *open-cut* trenching across the bed of the river or trenchless technology wherein a cable duct is installed at a defined depth under the river bed without any requirement for disturbance to the water column or bed substrate.

Open cut crossings are typically achieved by damming and pumping/fluming of the water flow around the trench excavation. As this work involves direct in-stream works, it should be scheduled for the period of July - September, in line with the relevant fisheries guidelines.

Open cut trenching requires a temporary dewatering of a section of the watercourse via upstream and downstream damming of a defined stretch with sandbags so as to ensure that all works are undertaken 'in the dry'; this should be carried out in line with the relevant fisheries guidelines. It may be necessary to temporarily remove fish from the reaches involved, using electrofishing equipment which should only be undertaken by relevant fisheries staff or qualified aquatic ecologists.

Water is diverted from upstream to downstream of the cable crossing location by means of a secure open flume arrangement, or through piping, or in limited circumstances, by means of over pumping. Screening to prevent aquatic organisms entering pumps is a requirement in the case of the latter

option. Where concrete ballast is used to prevent cable ducts rising as a result of buoyancy, these should comprise precast concrete. Following the completion of backfilling, river bed and banks shall be reinstated to match their original profile and substrate material. These works are temporary in nature and are typically limited to 1-2 days.

Horizontal Directional Drilling (HDD) is a trenchless technology, which can be undertaken in a relatively confined area, such as on or adjacent to a public road or parallel to a bridge, therefore minimising the degree of off-road works required at watercourse crossings. Additionally, works do not have to be restricted to the July - September window which applies to the open cut method.

A drilling rig is established at a 'launch pit' on one side of a watercourse, from where it drills along a curved profile under the bed of the watercourse, and subsequently to a 'reception pit' on the far side. A reaming head and toe clamp is then attached to the leading drill rod, which then returns to the drilling rig, widening the bore and pulling the cable duct along in the process. The launch pit for the drilling rig typically requires the temporary installation of a level hardstanding area on a geotextile base; the footprint of this working area can vary from site to site but on average is typically 10 m x 10 m. Silt fences are erected between the launch and reception pits and the watercourse. During drilling, lubricant fluid is pumped into the bore from a bowser/mixing unit which is typically retained within a vehicle on the public road or on level ground set back from the watercourse. Specific non-toxic drilling lubricants are available for use under watercourses.

### **7.3 SUBSTATIONS**

Substations connect two or more transmission lines; they take the electricity from the transmission lines and transform higher to lower voltage, or vice versa. They contain various electrical equipment, including voltage switches, transformers, protection equipment, and associated lines and cabling.

The siting of a substation depends on topography; the ground must be suitable to meet technical standards. With regard to earthing requirements and soil stability, substations are usually constructed on reasonably level ground, in areas that are not liable to flooding or crossed by significant watercourses.

An Air Insulated Switchgear (AIS) substation is where the electrical equipment infrastructure is primarily installed outdoors, with the use of natural air as an insulation between circuits. This option requires a relatively large compound footprint (e.g. a typical 400 kV AIS substation compound may occupy up to 4-5 hectares, excluding surrounding access and landscaping).

A Gas Insulated Switchgear (GIS) substation, is where gas (Sulphur Hexafluoride – SF<sub>6</sub>) is used as the insulation between circuits. This requires the electrical equipment to be contained internally, in buildings typically 11m – 13m in height above ground. This allows for a significantly smaller substation footprint (e.g. a GIS substation with the same capacity as the 400 kV AIS substation above would occupy approximately 1 hectare, excluding surrounding access and landscaping). Both options require the associated provision of access roads off and onto the public road network and the provision of associated electrical equipment and infrastructure (including underground cables). Surface water

drainage infrastructure from buildings and other substation elements is also installed. In the case of oil-filled transformers, these are constructed on bunded plinths comprising water pumps with oil sensors which deactivate pumping when oil is detected.

Ancillary waste water treatment facilities, palisade fencing around boundaries and other site development and landscaping works also occur during the development of substations. These should therefore be considered significant civil engineering projects.

## 7.4 PROJECT STUDY AREAS

Study areas have been developed for each potential project to be assessed. This study area is large enough to include all the potential areas in which the proposed infrastructure may be developed. The study area for a new transmission line is therefore much larger than the study area for a new substation. The aim of setting this study area is to focus on the potential environmental issues and sensitivities that could be impacted upon by the development. For upgrading and asset replacement projects, the study area can be further refined as these will be geographically limited to the existing infrastructure locations/ line corridor. The study area set around these upgrading and replacement projects will be the starting area for examining potential impacts. The study area for each project is based on evidence and best practice for transmission infrastructure, having significant regard to the findings of the EirGrid Evidence Based Studies from 2016, which were literature reviews and evidence based field studies on the effects of development and operation of high voltage transmission lines on various environmental topics in Ireland. While these studies were undertaken for EirGrid, the results are equally applicable to SONI projects in Northern Ireland. The EirGrid Guidelines for Electricity Transmission Projects (listed in **Appendix C**) have also been used to assist with this. **Figure 7.2** demonstrates the study areas used for the assessments of the potential projects.

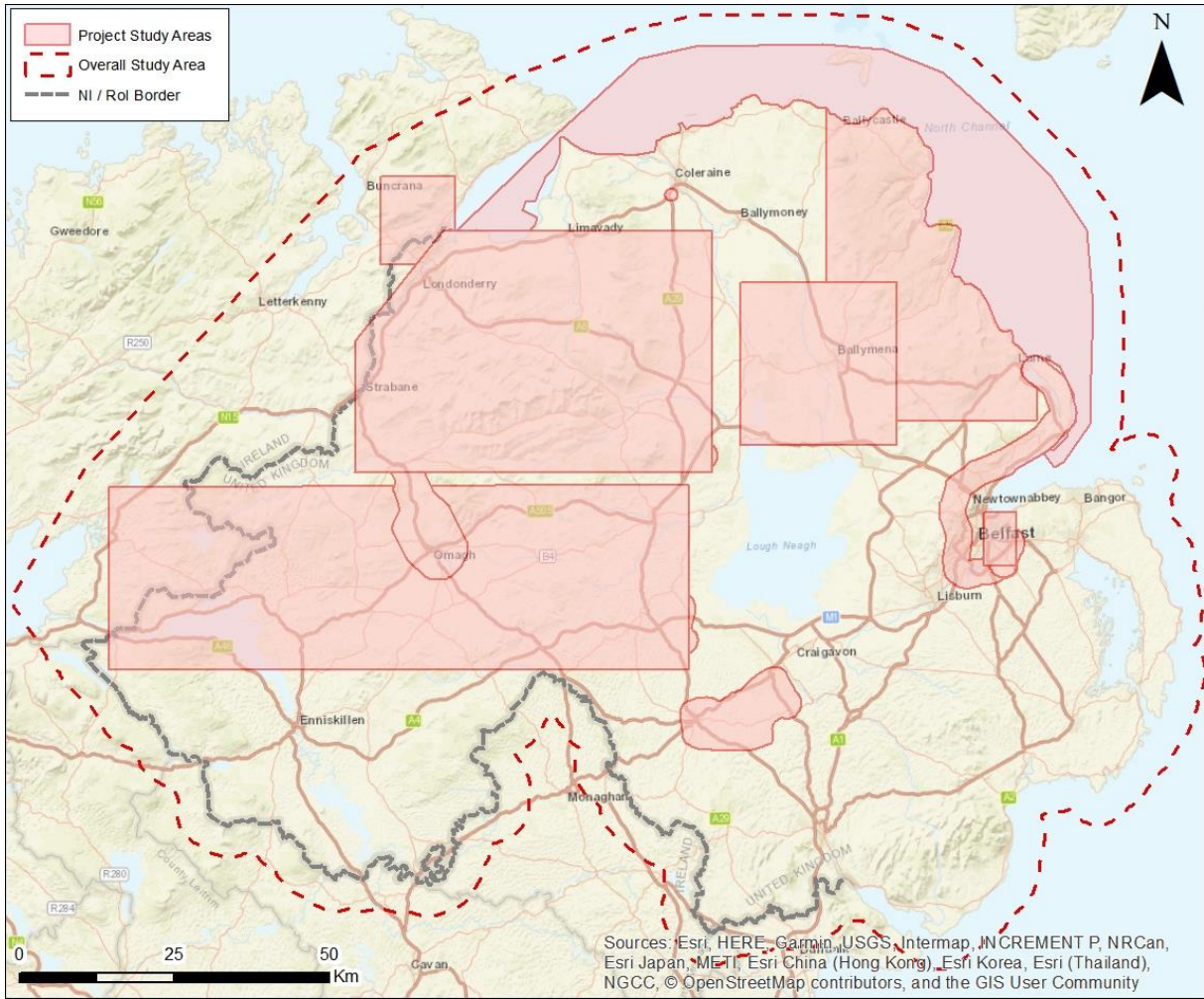


Figure 7.2 TDPNI Assessment Study Areas



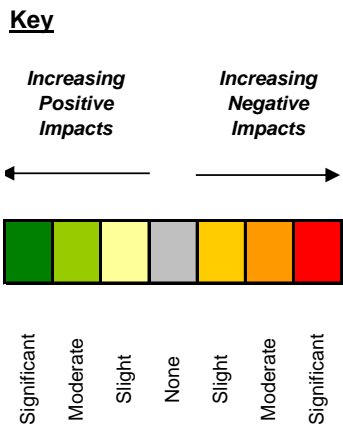
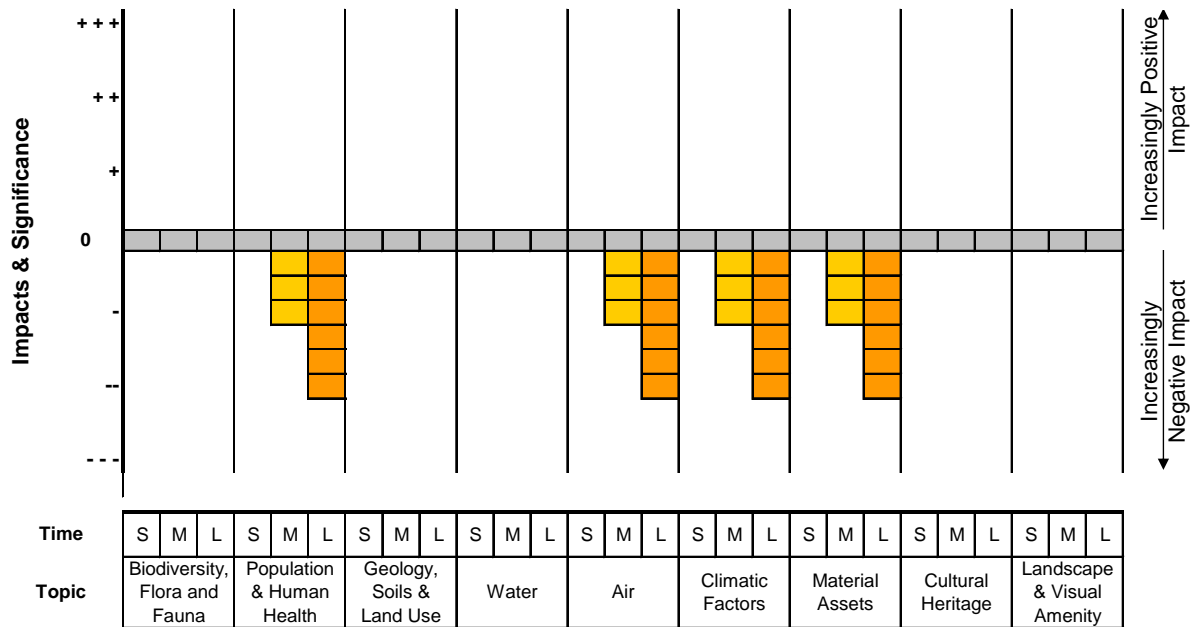
## 8 ASSESSMENT

The following section provides a quantitative and qualitative assessment of the proposed options / alternatives available to the TDPNI. The development options are scored against the SEOs given in **Table 3.2**. The scoring guidelines used for this assessment can be found in **Appendix E** of this report. Following scoring of the option against these SEOs there is a wider commentary on potential impacts by environmental topic area, which is included as **Appendix F** of this report.

### 8.1 DO NOTHING SCENARIO

Do Nothing Scenario			
In the absence of the TDPNI, i.e. the Do Nothing Scenario, there would be no overarching strategic planning of transmission infrastructure, and therefore the construction and maintenance of transmission infrastructure will take place in a more ad hoc manner. There is likely to be less transmission development and maintenance under the Do Nothing scenario. The projects that go ahead may not strategically be the best projects to be pursued, and may not be the most sustainable.			
Environmental Baseline			
Environmental Baseline for Northern Ireland is provided in Section 5 of this report.			
Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	0	-1	-2
Soils, Geology and Land use (S)	0	0	0
Water (W)	0	0	0
Air (A)	0	-1	-2
Climatic Factors (C)	-0	-1	-2
Material Assets & Infrastructure (MA)	0	-1	-2
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	0	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

In the absence of the Plan there would likely be more ad hoc development of electrical transmission infrastructure without a strategic structure. It is likely that projects will be developed and maintenance would be scheduled as needs arise. However, this approach has the potential to negatively impact population and human health, air, climatic factors and material assets and infrastructure in the medium and long term. This is the case as a lack of structured development may result in some areas having insufficient infrastructure and electricity supply to meet increased future demands. Unstructured development and maintenance of electricity transmission infrastructure may also hinder the potential connection of renewable energy sources to the electricity supply network. This in turn would result in the continued reliance upon finite fossil fuels and ongoing, long term emissions of pollutants into the atmosphere. Not implementing the TDPNI is unlikely to have any impacts on designated European sites.



## 8.2 COOLKEERAGH – MAGHERAFELT 275 KV CIRCUITS RESTRING

### Coolkeeragh – Magherafelt 275 kV Circuits Restrung

It is planned to replace the conductor on the existing double circuit tower line. The rating of the replacement conductor will be defined as part of the redesign of the circuit.

The initial study area for this restrung has been set as 2km either side of the existing line.

### Environmental Baseline

Environmental baseline information relevant to this study area is given below, ordered by SEA environmental topic. These sensitivities and indicators have the potential to be impacted by and impact upon the development and / or operation of transmission infrastructure.

**Biodiversity, Flora & Fauna** – The study area crosses three SACs, namely Banagher Glen, River Faughan and Tributaries, and River Roe and Tributaries. The study area crosses Lough Foyle SPA and Ramsar site. The study area will cross five ASSIs, namely Lough Foyle, Banagher Glen, River Roe and Tributaries, River Faughan and Tributaries and Drumbally Hill. A total of 27 SLNCIs are crossed by the study area. Ballinderry Freshwater Pearl Mussel Catchment and Banagher Glen Nature Reserve are within the study area. A total of 22 Salmonid Rivers and 26 Local Wildlife Sites are crossed by the study area.

**Population & Human Health** – There are six main settlements within the study area, namely Srathfoyle, Eglinton, Draperstown, Magherafelt, Derry and Culmore. The two largest settlements are Derry and Magherafelt respectively. The mean population density of this study area is in the medium range compared to other study areas, at 960 people/km<sup>2</sup>. There are no peace lines or Neighbourhood Renewal Areas within the study area. There are several areas of lower perceived health within the study area, namely the Strathfoyle, Lisnahawley, Killywool, Loughermore, Munreey and Meenotammy areas.

**Soils, Geology and Land use** – The study area covers over 240km<sup>2</sup> and is composed mainly of pastures (49%), peat bogs (16%), coniferous forest (7%), non-irrigated arable land (6%), complex cultivation patterns (6%) and natural grassland (5%). The study area encompasses four ASSI sites of geological heritage, namely Lough Foyle ASSI, Banagher Glen ASSI, River Faughan and Tributaries ASSI and Drumbally Hill ASSI. Within the study area there are 16 mine shafts, two active quarries and seven areas of orchards. There are 15 unstable ground areas identified within the study area, mainly found in the vicinity of Brackagh Mountains and Muldonagh Hill, and within the Sperrin Mountains region. There are 100 ancient and long-established woodland areas in the study area, along with seven Forest Service sites. Within the study area there are 11 PPC sites and over 300 historical sites which have the potential of being contaminated land, including; two airports, 73 manufacturing works, 20 waste treatment works, 47 mineral works, 33 railway land and 16 road vehicle refuelling sites. The study area includes several upland and steep slope areas within the Sperrin Mountains region.

**Water** – Within the study area there are 25 river water bodies, of which 12 are of good or high ecological status, and 13 are of less than good ecological status. There are 115 sections of river that transect the study area. There are two transitional water bodies within the study area, both of which are less than good water status. Within the study area there are three drinking water rivers, namely the Owenrigh River, White Water (Co. Tyrone) and River Faughan. There is a significant area of 1% AEP fluvial flood risk within one region of the study area that is crossed by the existing line, namely in the vicinity of Draperstown. There are several areas with significant 0.5% AEP pluvial flood risk within the study area that are crossed by the existing line, including the Edenreagh, Strawmore, Brackaghleslea, Longfield and Annakeeragh areas. These flood risk areas could become inundated and lead to difficult working conditions during the restrung.

**Air** – There are no AQMAs or other known significant air quality issues within the study area.

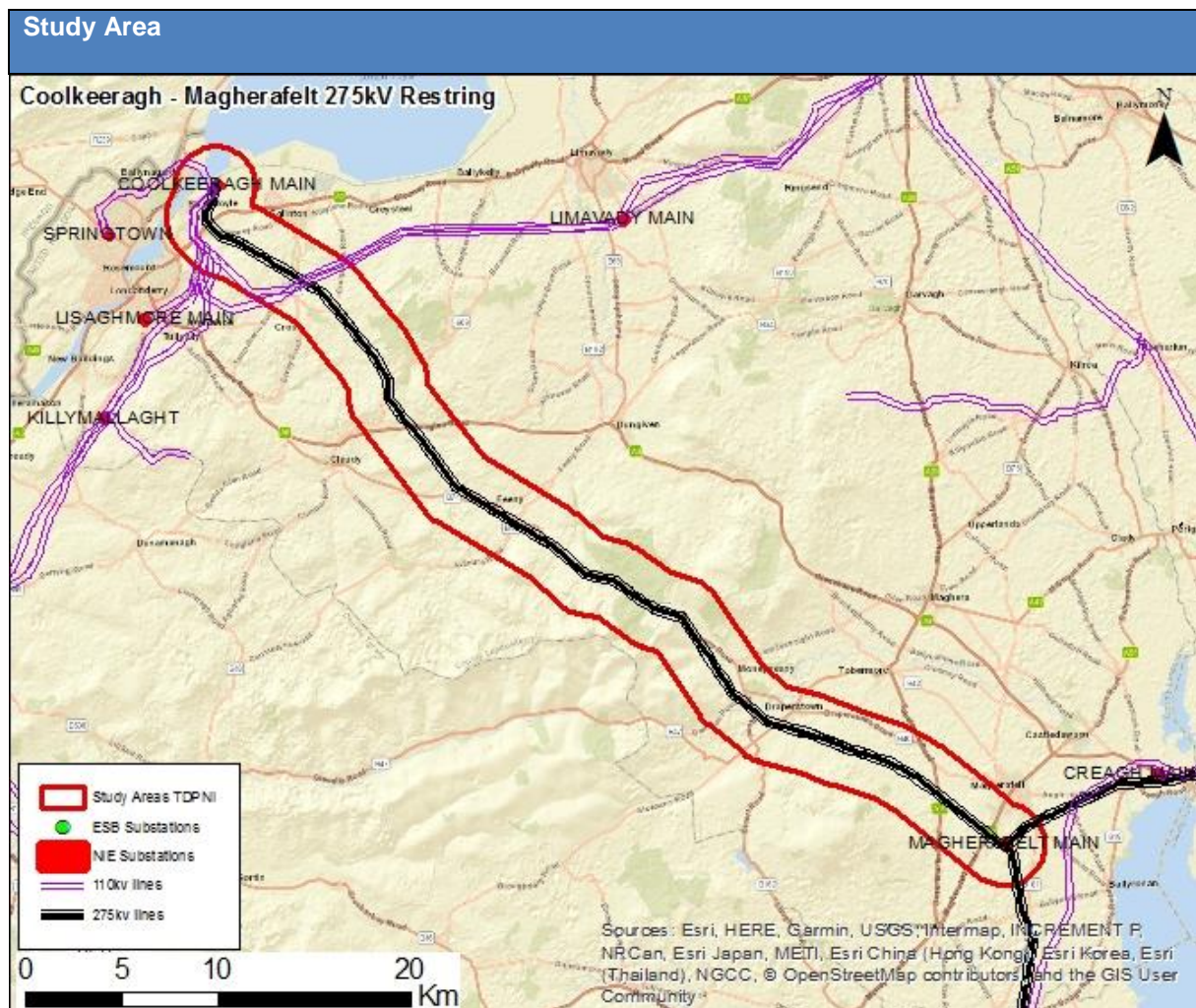
**Climatic Factors** – There is a significant 1% AEP climate change fluvial flood risk within one region of the study area that is crossed by the existing line, namely in the vicinity of Draperstown. Within the study area there are several areas with significant 0.5% AEP climate change pluvial flood risk that are crossed by the existing line, including the Edenreagh, Strawmore, Brackaghleslea, Longfield

and Annakeeragh areas.

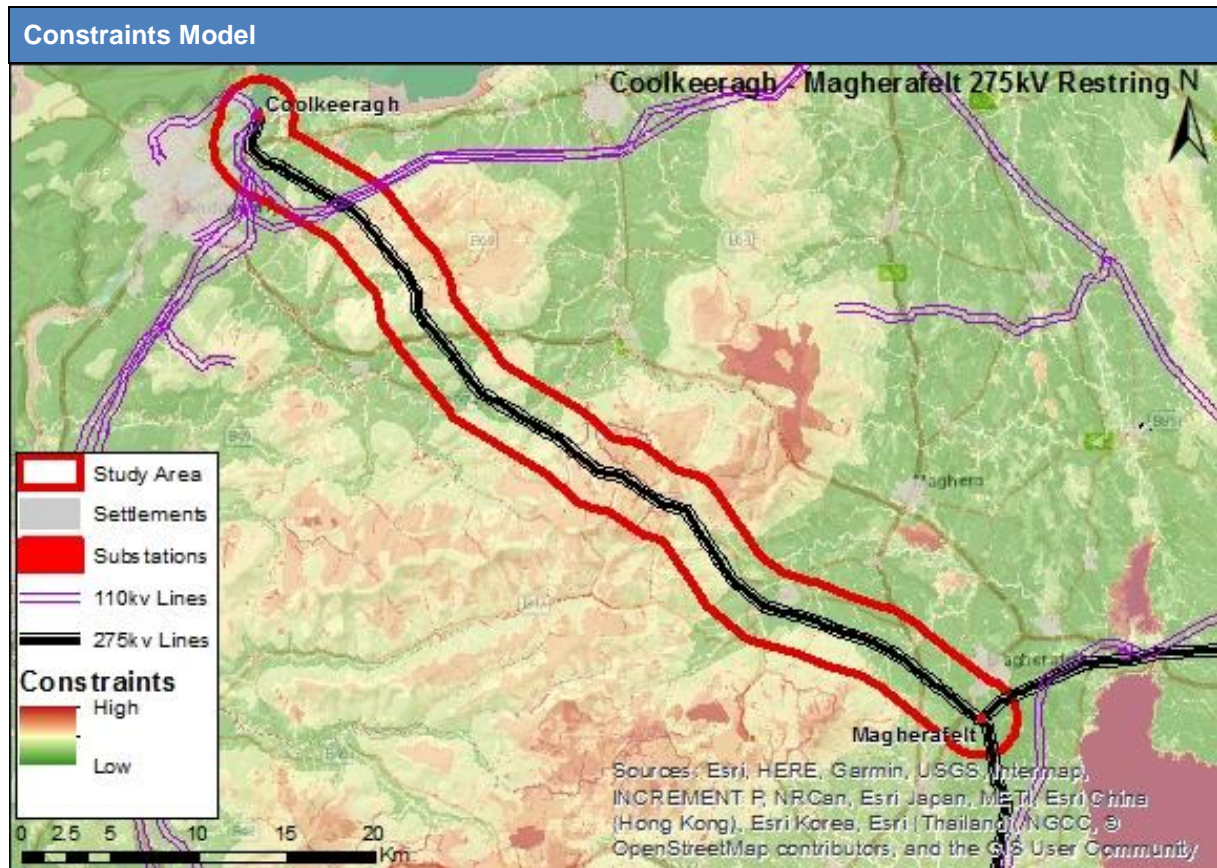
**Material Assets & Infrastructure** - Within the study area there is 34km of A roads, and 39km of the railway line between Derry/Londonderry and Coleraine. The North-West Gas Pipeline also runs through the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 15km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 200 SMR sites and 30 scheduled zones.

**Landscape & Visual Amenity** - The study area crosses 13 Landscape Character Areas, with two of the LCAs being designated as Highly Sensitive Landscapes to Development, namely the Sperrin Mountains and the Sperrin Foothills. The Sperrins have also been designated as an Area of Outstanding Natural Beauty (AONB) and the study area cuts through the designated site.

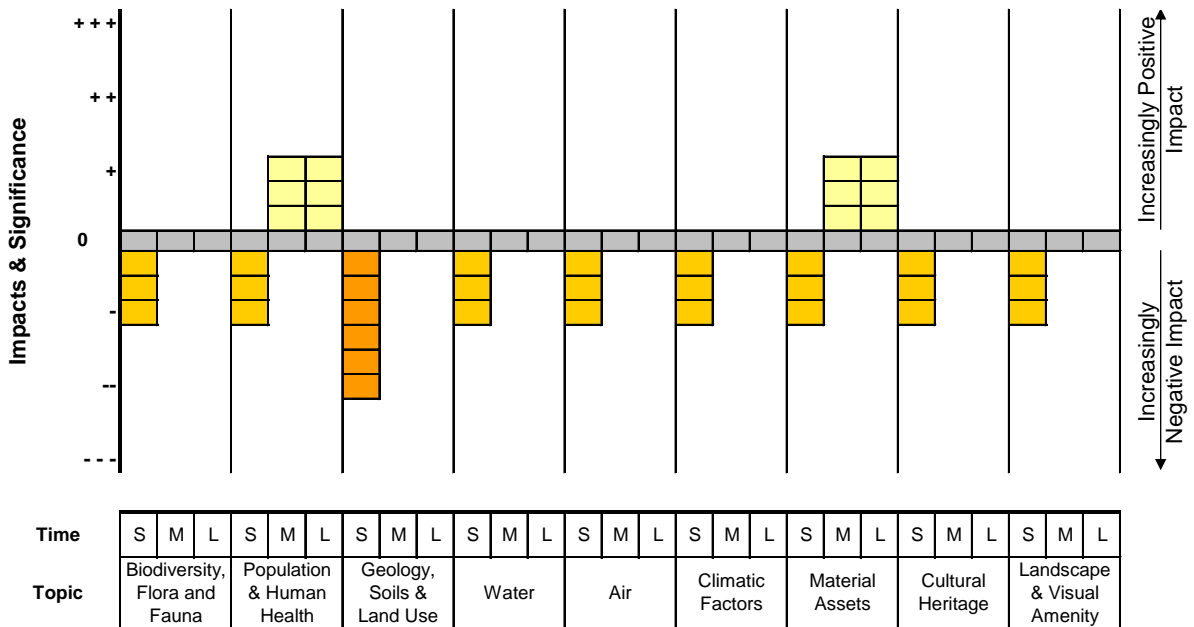






Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	1	1
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	0	0
Climatic Factors (C)	-1	0	0
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the 275kV restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog during the restrung. There are unlikely to be any further medium or long term negative impacts following the restrung of the 275 kV line. Development of the 275kV restrung has the potential for medium and long term, slight improvements to existing transmission infrastructure, having positive impacts on population and human health, along with material assets.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on seven European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.3 AGIVEY 110/33 KV CLUSTER**

**Agivey 110/33 kV Cluster**

It is planned to establish a 110/33 kV cluster substation near Garvagh, connected to the proposed Rasharkin cluster via a portal overhead line.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – There are three SLNCIs and Local Wildlife Sites present within the study area, namely Brockaboy, Dunnavenny Bridge Bog and Glenullin Bog. The study area encompasses two Salmonid Rivers, namely Agivey River Upper and Brocklagh Water.

**Population & Human Health** – There are no main settlements within the study area. The maximum population density of this study area is low compared to other study areas, at 36 people/km<sup>2</sup>. Within the study area there are no peace lines, Neighbourhood Renewal Areas or areas of lower perceived health.

**Soils, Geology and Land use** – The study area covers over 11km<sup>2</sup> and is composed of pastures (41%), natural grassland (26%), land principally occupied by agriculture (17%), peat bogs (12%) and moors and heathland (4%). There is one area of unstable ground identified in Brockagh, which is in the north-west of study area. There are six historical sites within the study area which have the potential of being contaminated land, being one manufacturing works, three mineral works and two waste treatment works. There is one upland area in the study area, Moneyoran Hill.

**Water** – Within the study area there are four river water bodies, which are all of good or high ecological status. There are five sections of river that transect the study area. There are several areas with significant 1% AEP fluvial flood risk in the north-west region of the study area, specifically in the vicinity of Glen Ullin and Brockaghboy. There are several areas with significant 0.5% AEP pluvial flood risk in the study area, including the Glen Ullin, Lagdavy, Carrowcladagh, Dunnavenny Bridge and Pollnabrock areas. These flood risk areas could become inundated and lead to difficult working conditions during construction works along with potential flooding of the new substation.

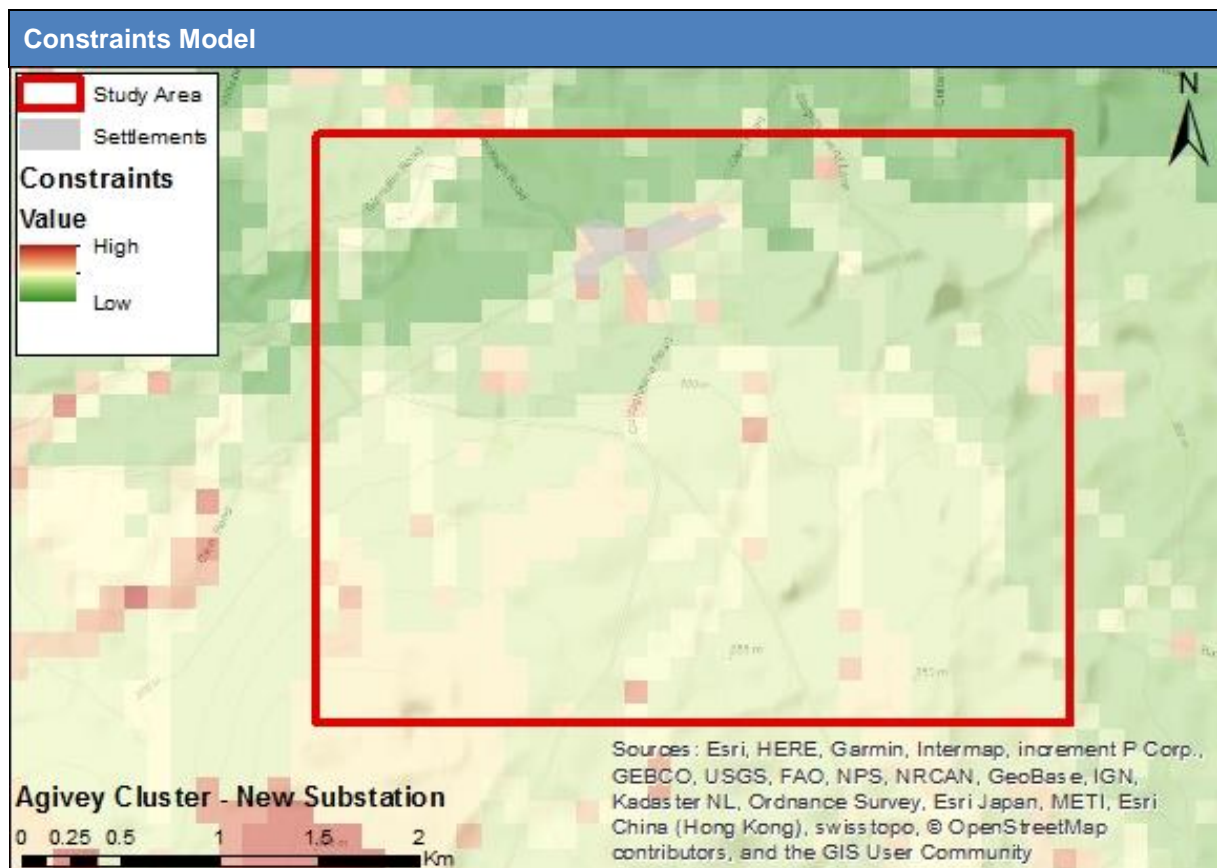
**Air** – There are no AQMAs or other known significant air quality issues within the study area.

**Climatic Factors** - There are several areas with significant 1% AEP climate change fluvial flood risk in the north-west region of the study area, specifically in the vicinity of Glen Ullin and Brockaghboy. There are several areas with significant 0.5% AEP climate change pluvial flood risk in the study area, including the Glen Ullin, Lagdavy, Carrowcladagh, Dunnavenny Bridge and Pollnabrock areas.

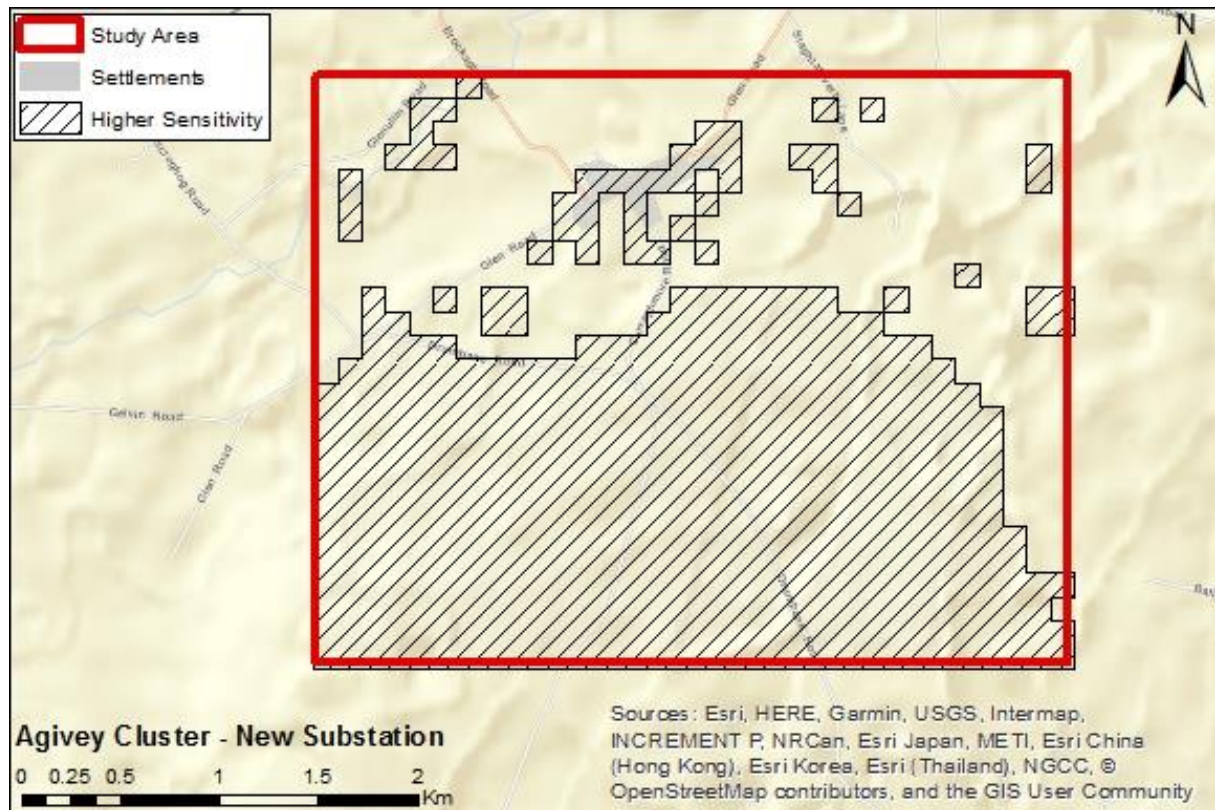
**Material Assets & Infrastructure** – There is one existing 110 kV line in that crosses the south of the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 7km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 24 SMR sites and five scheduled zones. There are three listed buildings within the study area, being St Joseph's Roman Catholic Church and two houses on the Glen Road. Within the study area there are three industrial heritage sites, including two bridges in the Brockaghboy area.

**Landscape & Visual Amenity** - The study area crosses two Landscape Character Areas – the Glenshane Slopes are designated as a Highly Sensitive Landscape Area, while Eastern Binevenagh Slopes are designated as High-Medium Sensitive Landscape Areas. The Sperrins have also been designated as an Area of Outstanding Natural Beauty (AONB) and the study area cuts through the designated site.

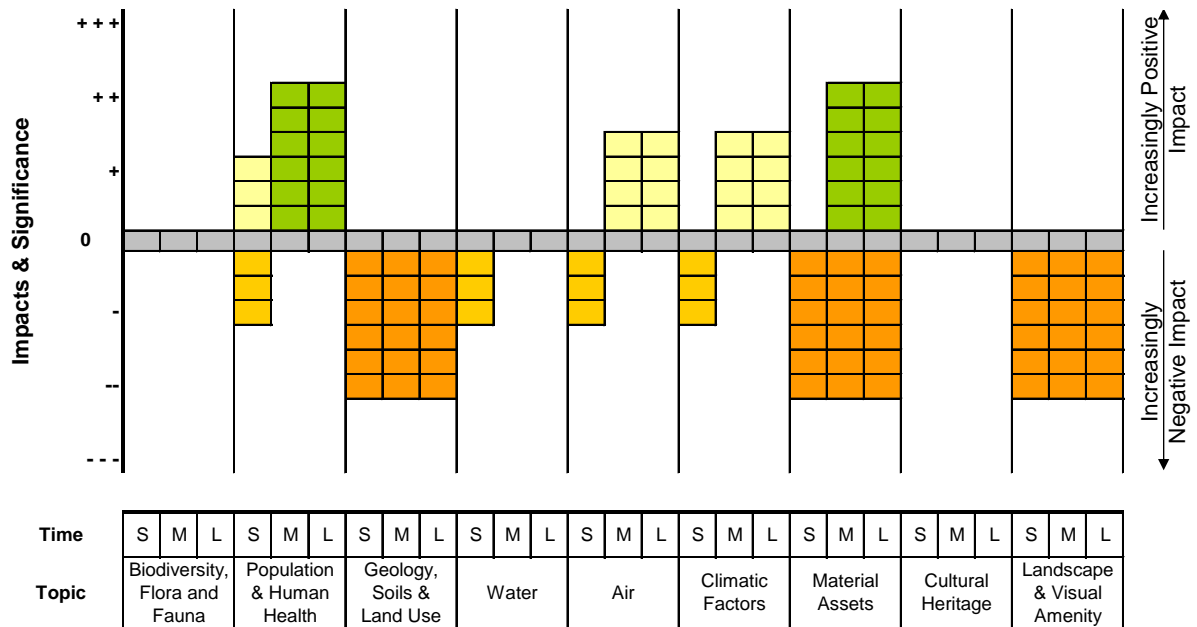






Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-2	-2/2	-2/2
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-2	-2	--2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new substation is developed within the lower sensitivity area there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There is the potential for medium and long term, permanent, moderate negative impacts on geology, soils and land use, material assets and landscape and visual amenity, following the construction of the new substation, if it is developed within the lower sensitivity area. These moderate negative impacts include the permanent loss of agricultural land and permanent negative landscape effects on areas sensitive to development. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale local development of new electricity grid infrastructure and therefore the provision of secure and reliable electricity, to meet future needs.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.4 KELLS WIND 110/33 KV CLUSTER

### Kells Wind 110 kV Cluster

It is planned to establish a 110/33 kV cluster substation near to Kells, connected to the existing Kells station via an overhead line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – There are no International, National or locally designated sites and species within the study area.

**Population & Human Health** – There are no main settlements within the study area. The maximum population density of this study area is low compared to other study areas, at 38 people/km<sup>2</sup>. There are no peace lines, Neighbourhood Renewal Areas or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 3km<sup>2</sup> and is composed of pastures (98.5%), land principally occupied by agriculture (1.3%) and natural grassland (0.2%). Within the study area there are two historical sites which have the potential of being contaminated land, being one power station and one textile works. The study area includes two upland and steep slope areas within Tardree Mountain, namely Forthill and Slemish View.

**Water** – Within the study area there are three river water bodies, of which one is of high ecological status and two are of less than good ecological status. There are five sections of river that transect the study area. There are no significant fluvial, coastal or pluvial flood risk areas within the study area.

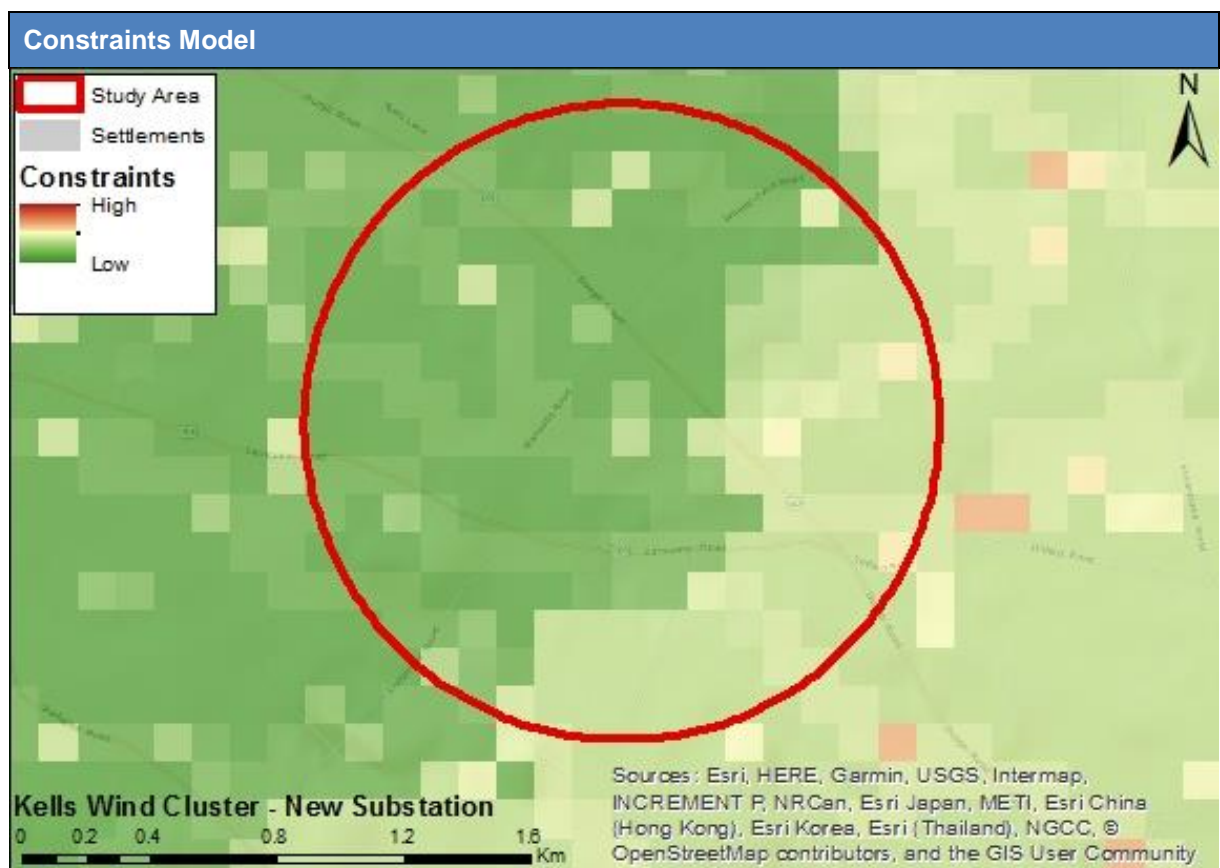
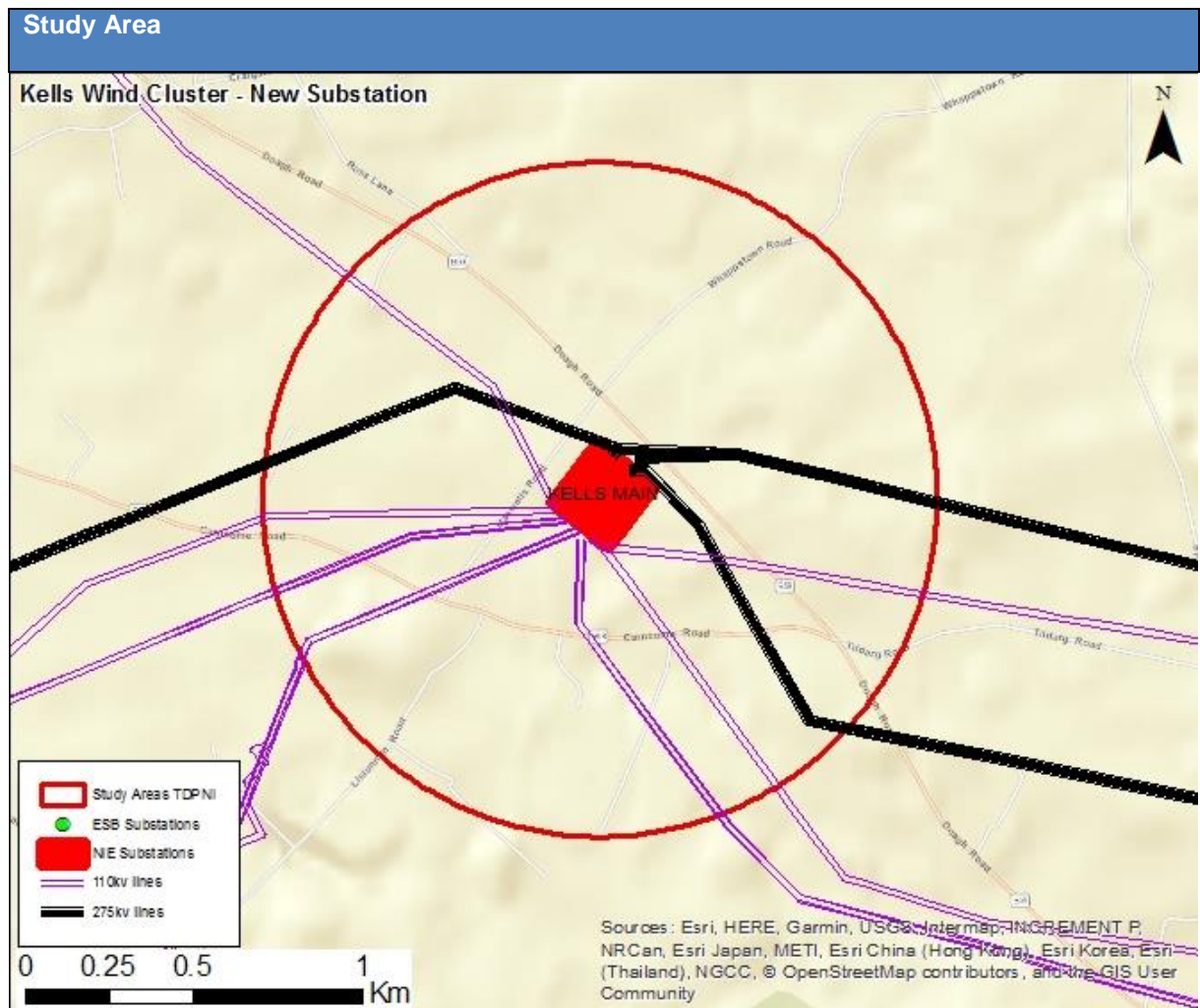
**Air** – There are no AQMAs or other known air quality issues within the study area.

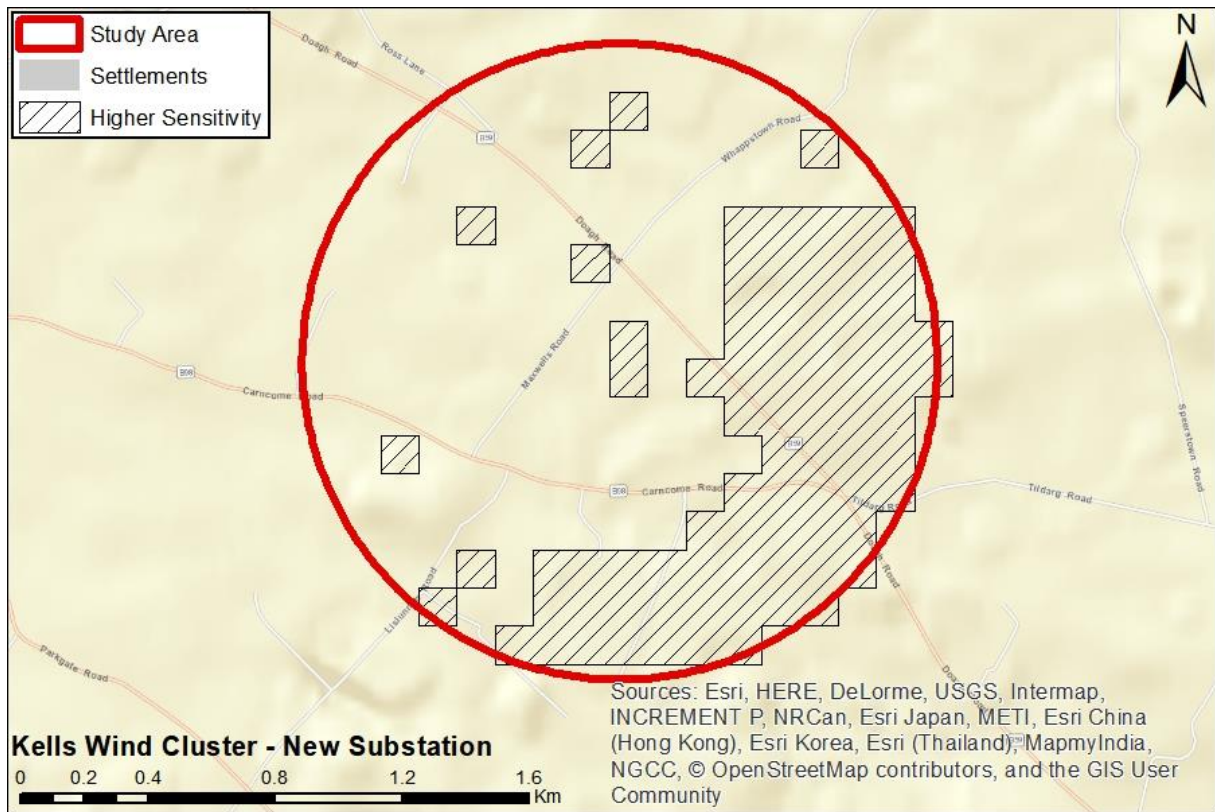
**Climatic Factors** – There are no significant climate change fluvial, coastal or pluvial flood risk areas within the study area.

**Material Assets & Infrastructure** – There are several 110 kV lines that are connected to the existing Kells station within the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 3km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – There are two SMR sites, namely Forthill and Maxwells Walls, within the study area, along with one industrial heritage site, being the Flax Mills Site.

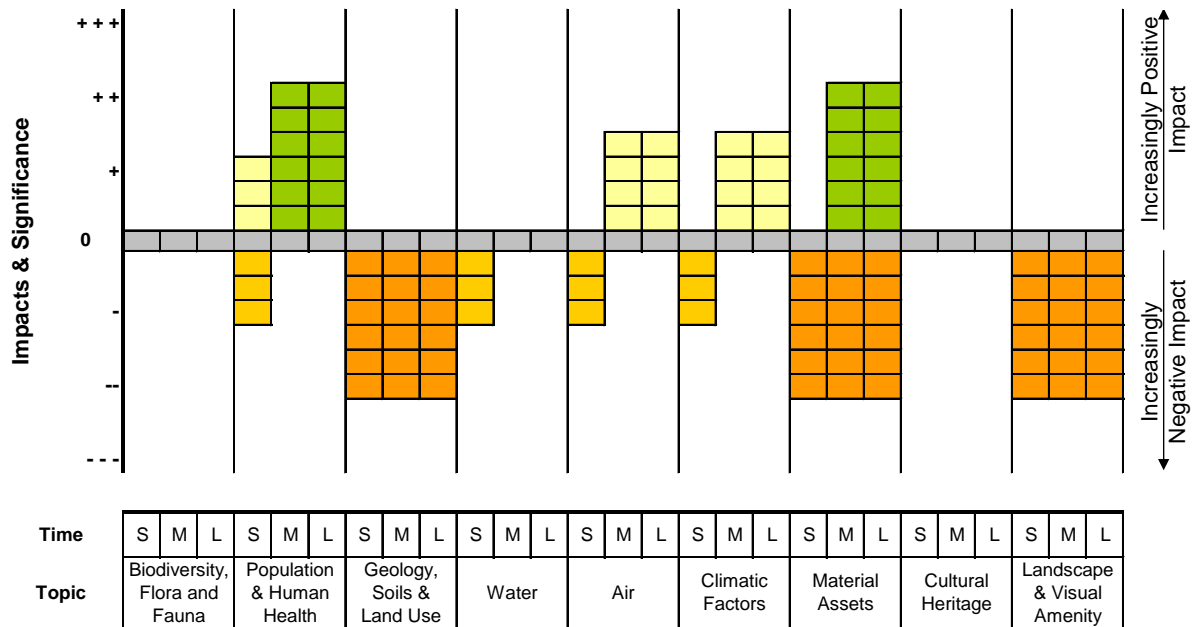
**Landscape & Visual Amenity** - The study area crosses two Landscape Character Areas – the Tardree and Six Mile Water Slopes are designated as a Highly Sensitive Landscape Area, while Tardree Upland Pastures are designated as Medium Sensitive Landscape Areas.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-2	-2/2	-2/2
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new substation is developed within the lower sensitivity area there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There is the potential for medium and long term, moderate negative impacts on geology, soils and land use, material assets and landscape and visual amenity, following the construction of the new substation, if it is developed within the lower sensitivity area. These moderate negative impacts include the permanent loss of agricultural land and permanent negative landscape effects on areas sensitive to development. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These positive impacts include the moderate scale local development of new electricity grid infrastructure and therefore the provision of secure and reliable electricity to meet future needs.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.5 FAIR HEAD / TORR HEAD TIDAL SCHEME CONNECTION

### Fair head / Torr Head Tidal Scheme connection

Developers are planning to establish two 100MW tidal generation schemes off the County Antrim coast close to Torr Head and Fair Head. A connection has not yet been formally offered but will involve connection into Kells Main and construction of either a 275 kV circuit or 110 kV single or double circuit line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** –The study area encompasses three SACs, namely Breen Wood, Garron Plateau and Red Bay. There are two SPAs within the study area, namely Larne Lough and Antrim Hills, along with one Marine Proposed SPA, being East Coast Marine Proposed SPA. There are two Ramsar Sites within the study area, namely Garron Plateau and Larne Lough. A total of 40 ASSIs and 76 SLNCIs are encompassed by the study area. Bush Freshwater Pearl Mussel Catchment and Larne Lough Islands RSPB Reserve are within the study area. Five Nature Reserves are within the study area, namely Glenariff Waterfalls, Straidkilly, Breen Oakwood, Slievanorra Forest and Swan Island. The study area encompasses part of Mourne Lough Salmonid Lake and a total of 51 Salmonid Rivers. There is one Marine Nature reserve within the study area, namely Waterfoot Marine Conservation Zone. The study area encompasses over 190 Local Wildlife Sites. There are nursery grounds for several species along the coastline within the study area, including Anglerfish *Lophius piscatorius*, Cod *Gadus morhua* and Herring *Clupea harengus*. There are spawning grounds for several species along the coastline within the study area, including Cod *Gadus morhua*, Mackerel *Scomber scombrus* and Whiting *Merlangius merlangus*. There are several cetacean species which have been known to use marine areas within the study area, including the Bottlenose Dolphin *Tursiops truncatus*, Minke Whale *Balaenoptera acutorostrata*, Harbour Porpoise *Phocoenidae phocoena* and Basking Shark *Cetorhinus maximus*.

**Population & Human Health** – There are seven main settlements within the study area, namely Connor (Kells), Broughshane, Ballymena, Cushendall, Ballycastle, Larne and Carnlough. The two largest settlements are Ballymena and Larne respectively. The mean population density of this study area is in the mean range compared to other study areas, at 1,865 people/km<sup>2</sup>. There is one Neighbourhood Renewal Area in Ballymena, which is a socially sensitive area. There are no peace lines within the study area. There are several areas of lower perceived health within the study area, namely the Ballymena, Larne, Carnfunnock, Millbrook, Connor (Kells), Knocknacorry and Ballycastle areas.

**Soils, Geology and Land use** – The study area covers over 1,140km<sup>2</sup> and is composed mainly of pastures (45%), peat bogs (23%), natural grassland (13%), land principally occupied by agriculture (7%) and coniferous forest (6%). The study area encompasses 19 ASSI sites of geological heritage. There are two coastal areas with high marine transport densities within the study area, being in the vicinity of Rathlin Island and Larne Lough. Within the study area there are 875 mine shafts, 46 historical mines and 10 areas of orchards. There are 62 areas of unstable ground identified, which are mainly found in the northern upland areas of the study area. There are eight landslide deposit areas identified in the study area, which cover approximately 7km<sup>2</sup> and are mainly found in coastal areas. There are over 260 ancient and long-established woodland areas in the study area, along with 52 forest service sites. Within the study area there are 33 PPC sites and over 1,000 historical sites which have the potential of being contaminated land, including; 234 mineral works, 147 textile works, 25 waste treatment works and 18 coal mining works. The study area includes 12 upland steep slope areas, including; Agnew's Hill, Brunt Hill, Kanesh Hill and Racavan Hill.

**Water** – Within the study area there are 51 river water bodies, of which 27 are of good or high ecological status and 24 are of less than good ecological status. There are over 580 sections of river that transect the study area. The northern periphery of Lough Mourne lake water body is within the study area. Within the study area there are four coastal water bodies, of which three are of good ecological status, namely the North Coast, North Channel and Larne Lough Middle, and one is of good ecological potential, namely Larne Lough North. There is one bathing water area in Ballycastle, which is in the north of the study area. There are nine drinking water rivers within the study area, along with one drinking water lake, namely Lough Mourne. There are several regions with significant areas of 1% AEP fluvial flood risk within the study area, including the Ballymena, Dunlopstown, Glenariff, Cushendall, Cushendun, Ballycastlem Glenshesk, Stewartstown and

Glenford areas. Within the study area there is one significant area of 0.5% AEP coastal flood risk within the vicinity of Larne. There are several areas with significant 0.5% AEP pluvial flood risk within the study area, including the Larne, Stewartstown, Millbrook, Broughshane, Tullynewy, Glenariff, Cushendun and Glenshesk areas. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

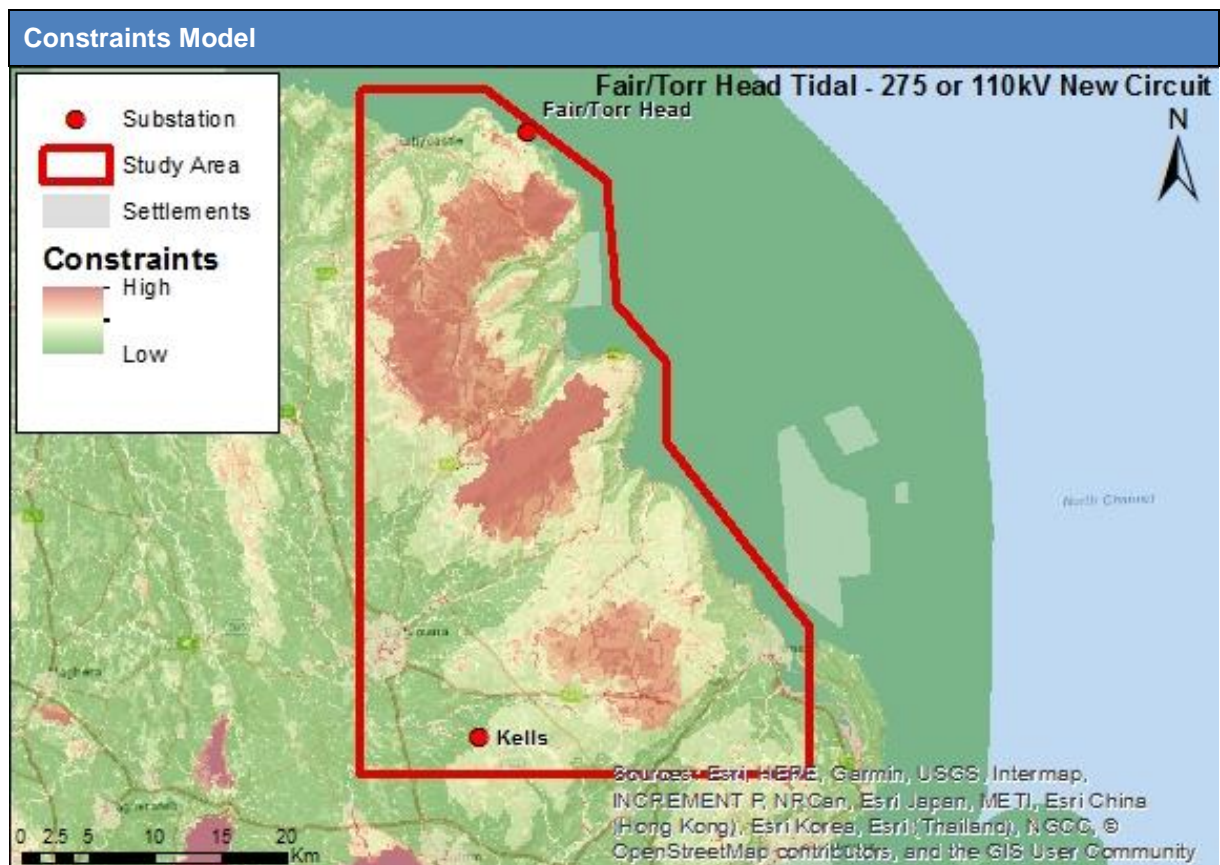
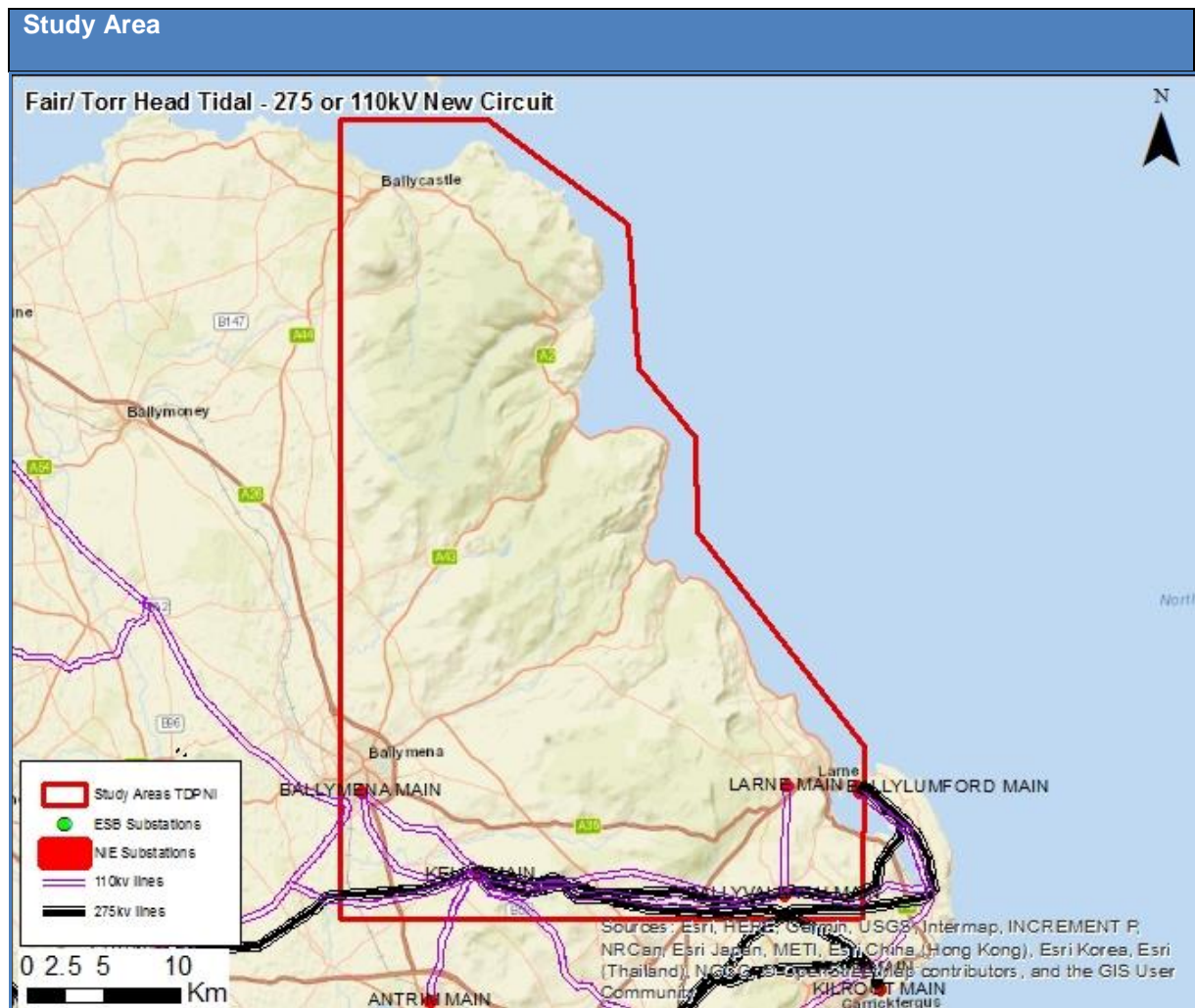
**Air** – There are two AQMAs within the study area, namely Ballykeel AQMA, which was declared due to high levels of Particulate Matter PM<sub>10</sub>, and Linenhall Street (Ballymena) AQMA, which was declared due to high levels of Nitrogen Dioxide. There are no other known significant air quality issues within the study area.

**Climatic Factors** – There are several regions with significant areas of 1% AEP climate change fluvial flood risk within the study area, including the Ballymena, Dunlopstown, Glenariff, Cushendall, Cushendun, Ballycastle Glenshesk, Stewartstown and Glenford areas. Within the study area there is one significant area of 0.5% AEP climate change coastal flood risk within the vicinity of Larne. There are several areas with significant 0.5% AEP climate change pluvial flood risk within the study area, including the Larne, Stewartstown, Millbrook, Broughshane, Tullynewy, Glenariff, Cushendun and Glenshesk areas. There are several areas of GHG sequestering natural cover within the study area, with large areas of GHG sequestering natural cover in the vicinity of Ballyboley Forest, Capanagh Wood, Glenariff Forest, Slieveanorra Forest and Ballypatrick Forest.

**Material Assets & Infrastructure** - Within the study area there is 220km of A Roads, and 17km of motorway. There is 22km of the railway line in the study area, forming part of the line between Belfast and Coleraine. The North-West Gas Pipeline, the South-North Pipeline, and the Phoenix Natural Gas Transmission line all run through the study area. The southern coastal region of the study area encompasses a section of the Scotland to Northern Ireland subsea telecommunications cable, and to the north of the study area there is a subsea power line that runs from Ballycastle towards Rathlin Island. The study area encompasses a section of the supply pipeline that runs from Larne towards Ballylumford. There is one significant harbour area within the study area, being the port of Larne. There are several Seaside Award beaches within the study area, including Carlough, Waterfoot, Ballygally and Ballycastle beaches. Within the study area there are two sailing/yacht clubs, two marinas and one dive site. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 600km<sup>2</sup>. There are two Atlantic Salmon aquaculture sites within the study area, being off the coast of the Glenarm and Knockore regions. Within the study area there is one existing tidal energy resource zone, which surrounds Rathlin Island and extends down the coastline to Cushendun. There is one gas storage lease and supply pipeline within the Larne Lough region of the study area.

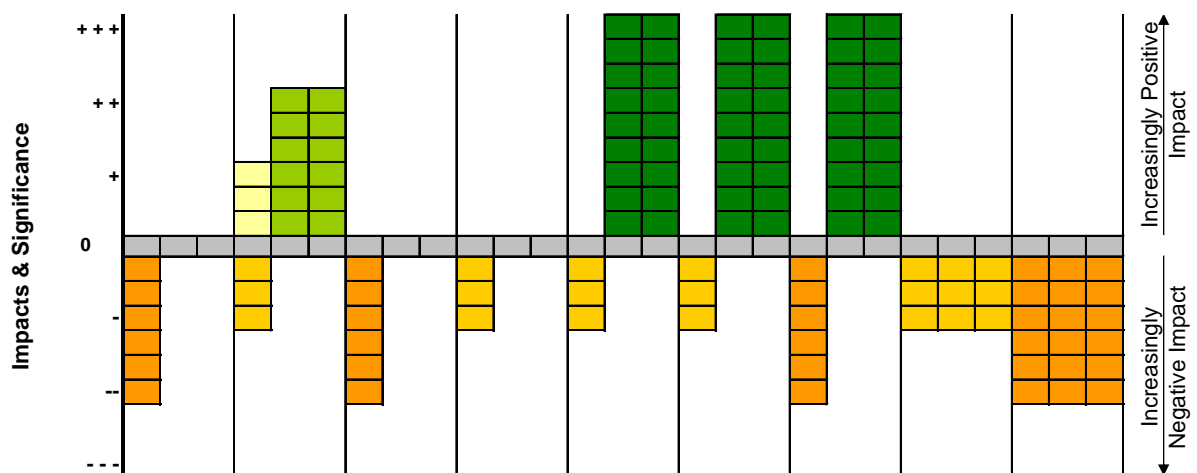
**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 1,600 SMR sites and over 170 scheduled zones. There are over 600 listed buildings within the study area, along with over 900 industrial heritage sites and 53 defence heritage sites. There is one Area of Significant Archaeological Interest within the study area, namely Knockdhu. Within the study area there are four Areas of Archaeological Potential, being Ballyeaston, Waterfoot, Cushendall and Ballycastle. There are 14 listed parks, gardens and demesnes within the study area, including Chaine park, Glenarm Castle and Peoples Park (Ballymena). There are several historic wrecks present within the study area, with clustering of historic wrecks in the vicinity of Rathlin Island, Runabay Head and Larne Lough.

**Landscape & Visual Amenity** - The study area crosses 20 Landscape Character Areas, including nine areas that are deemed Highly Sensitive to Development, namely Ballycastle Glens, Causeway Coast and Rathlin Island, Central Ballymena Glens, Fair Head, Islandmagee, Larne Coast, Larne Glens, Moyle Glens, and Tardree and Six Mile Water Slopes. Two Areas of Outstanding Natural Beauty are within the study area. These are the Causeway Coast AONB and Antrim Coast and Glens AONB. There are six National Trust Lands identified within the study area, including: Glenoe, Cushendun, Cushleake Mountain, Fairhead and Murlough Bay, Layde, and Loughan Bay and Portaleen Bay. The study area crosses six Seascape Character Areas, namely, Larne Lough, Torr Head Coast, Northern Glens Coast, Southern Glens Coast, Ballycastle Coast, and The Gobbins.



Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	3	3
Climatic Factors (C)	-1	3	3
Material Assets & Infrastructure (MA)	-2	3	3
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenities (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



Time	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L			
Topic	Biodiversity, Flora and Fauna			Population & Human Health			Geology, Soils & Land Use			Water			Air			Climatic Factors			Material Assets			Cultural Heritage			Landscape & Visual Amenities		

**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include construction phase disturbance and sedimentation impacts on SAC and Ramsar sites, and associated species. There is the potential for medium and long term,



slight to moderate negative impacts on cultural heritage, and landscape and visual amenity, following the construction of the new transmission line if it is developed within 1% of the best environmental line. These moderate negative impacts include visual and landscape effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to significant positive impacts on population and human health, air, climatic factors and material assets. These significant positive impacts include permanent reductions in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on ten European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

## 8.6 BELFAST POWER STATION

### Belfast Power Station

Evermore Energy are proposing a new 480 MW CCGT, to be located in Belfast Harbour Estate. The project is in the early stages of development, and no connection application has been received.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses Belfast Lough SPA, Ramsar site, and RSPB Reserve, as well as Belfast Lough Open Water SPA. There are two ASSIs within the study area, namely Inner Belfast Lough and Belvoir. A total of 18 SLNCIs and 18 Local Wildlife Sites are within by the study area.

**Population & Human Health** – There are three main settlements within the study area, namely Belfast Urban Area, Castlereagh Urban Area and Holywood Urban Area, of which Belfast Urban Area is the largest. The mean population density of this study area is high compared to other study areas, at 6,450 people/km<sup>2</sup>. Several socially sensitive areas have been identified within the study area, namely the Short Strand peace line area and three Neighbourhood Renewal Areas, being Inner South Belfast, Inner North Belfast and Inner East Belfast. There are several areas of lower perceived health within the study area, namely the Cregagh, Orangefield, Ballymacarrett, Willowfield, Sydenham, Knocknagoney and Holywood areas.

**Soils, Geology and Land use** – The study area covers over 40km<sup>2</sup> and is composed mainly of discontinuous urban fabric (37%), industrial or commercial units (14%), continuous urban fabric (13%), pastures (12%) and port areas (7%). Within the study area there are five areas of orchards and 25 long-established woodland areas. On the eastern periphery of the study area, in the Stormont region, one area of unstable ground has been identified. Within the study area there are 15 PPC sites and over 350 historical sites which could have potential land contamination, including; 74 manufacturing works, 28 engineering works, four power stations and two airports. The study area includes one upland area, namely Braniel Hill.

**Water** – Within the study area there are four river water bodies, of which one is of less than good ecological status and three are of less than good ecological potential. There are seven sections of river that transect the study area. There is one transitional water body within the study, namely the Lagan Estuary, which is of bad ecological potential. Within the study area there are two coastal water bodies, being Belfast Lough Inner, which is of moderate ecological status, and Belfast Harbour, which is of bad ecological potential. There are several areas of significant 1% AEP fluvial flood risk within the study area, including the Cregagh, Orangefield and Ballymacarrett areas. There is an area of significant 0.5% AEP coastal flood risk in the north-west of the study area, in the vicinity of Queen's Island and Sydenham. Within the study area there are several significant areas of 0.5% AEP pluvial flood risk, including the Orangefield, North Sydenham and Fortwilliam areas. These flood risk areas could become inundated and lead to difficult working conditions during the construction of the new line.

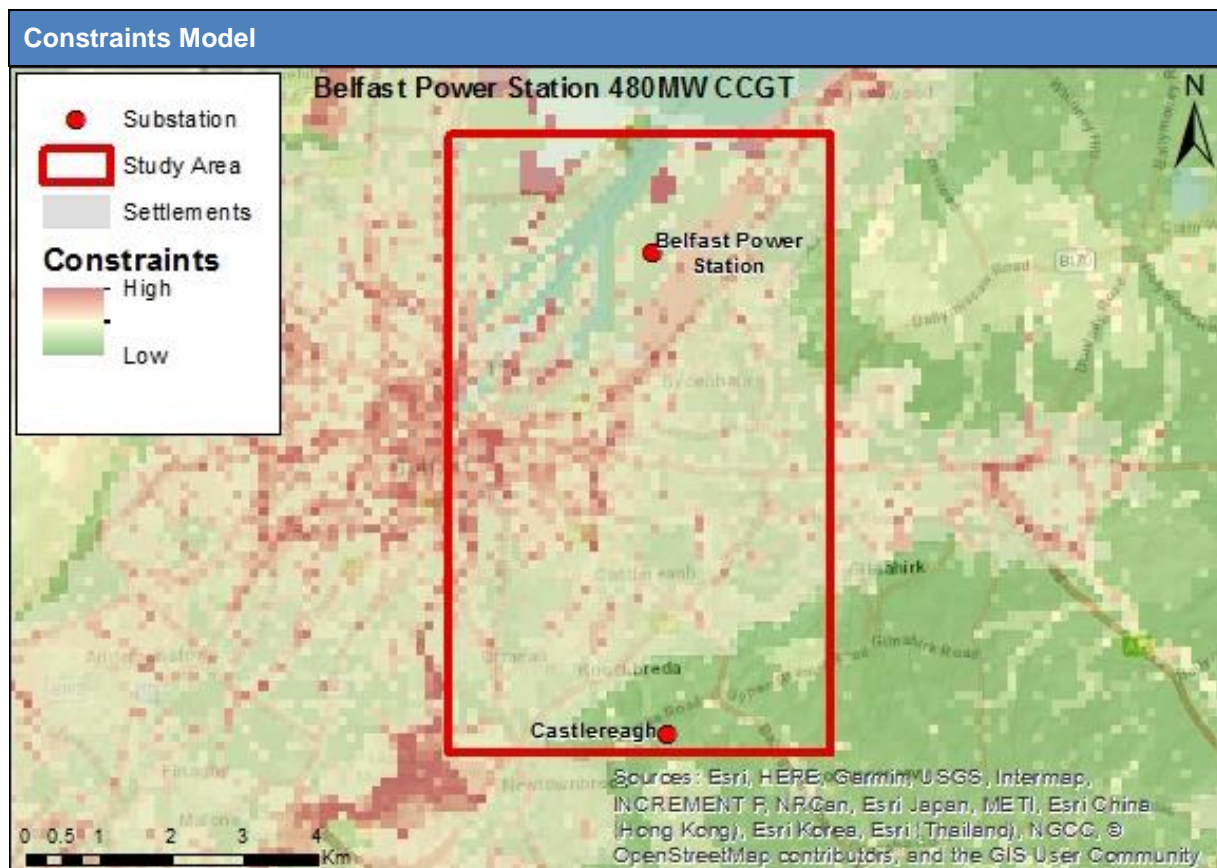
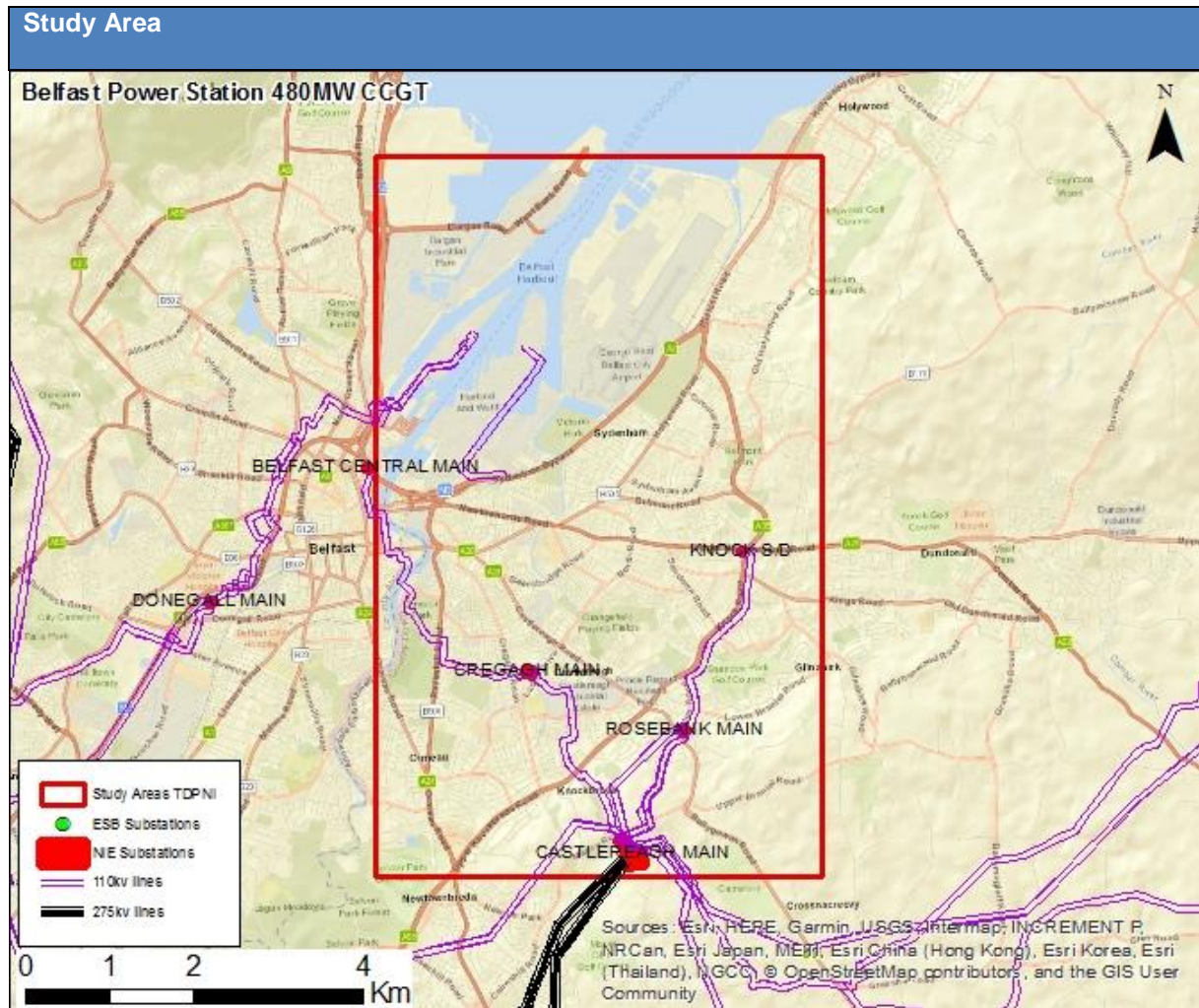
**Air** – There are three AQMAs within the study area, located in the vicinity of Cromac Street, the Ormeau Road and the Upper Newtownards Road. The Ormeau Road AQMA and Upper Newtownards Road AQMA have both been declared due to high levels of Nitrogen Dioxide in these areas. Cromac Street AQMA was declared due to high levels of Nitrogen Dioxide and Particulate Matter (PM<sub>10</sub>) in this area. There Belfast docks and industrial areas would also generally have higher levels of industrial emissions.

**Climatic Factors** – There are several areas of significant 1% AEP climate change fluvial flood risk within the study area, including the Cregagh, Orangefield and Ballymacarrett areas. There is an area of significant 0.5% AEP climate change coastal flood risk in the north-west of the study area, in the vicinity of Queen's Island and Sydenham. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk, including the Orangefield, North Sydenham and Fortwilliam areas. There are no significant areas of GHG sequestering natural cover within the study area.

**Material Assets & Infrastructure** - Within the study area, there is 59km of A roads and 13km of motorway. There is also 14km of railway line in the study area, forming part of the connection between Belfast and Bangor. The Phoenix Natural Gas Transmission line is present in the north-east of study area, between Holywood and Belfast. Belfast City Airport is found within the study area. There is significant infrastructure of all types within the study area, with Belfast City being the most developed area of Northern Ireland. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 5km<sup>2</sup>.

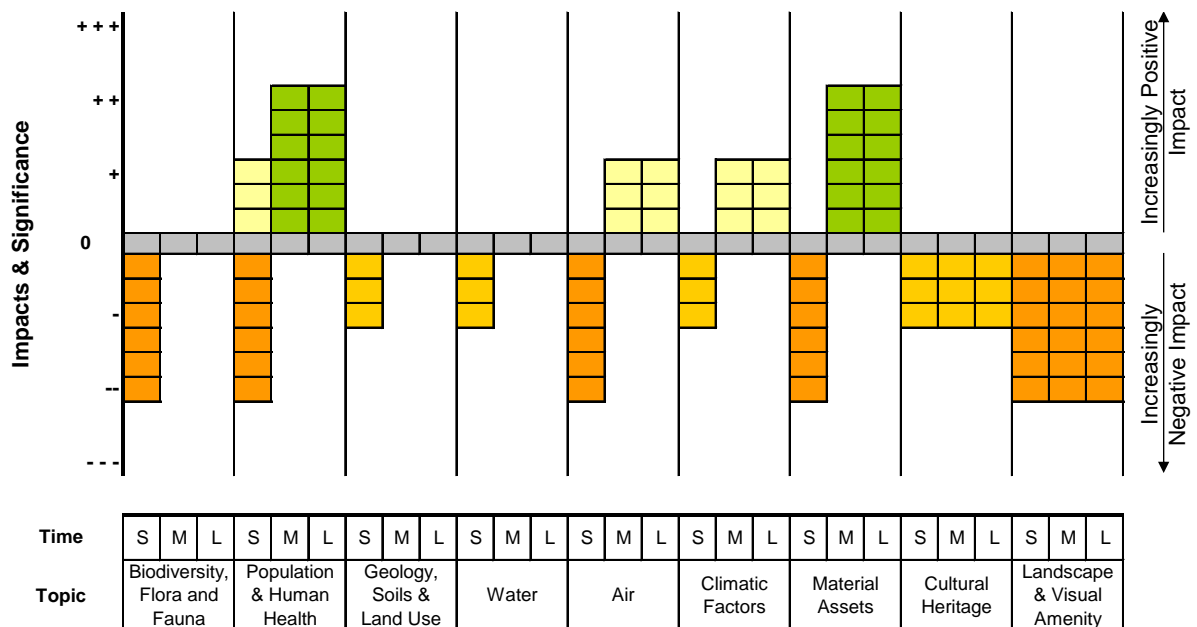
**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 39 SMR sites and 12 scheduled zones. There are over 300 listed buildings within the study area, along with over 250 industrial heritage sites and 21 defence heritage sites. There is one Area of Archaeological Potential within the study area, being Belfast itself. Within the study area there are two listed parks, gardens and demesnes, namely Ormeau Park and Stormont Castle, along with two historic ship wrecks in the Victoria Channel.

**Landscape & Visual Amenity** - The study area encompasses six Landscape Character Areas. Bangor Coastline, Craigantlett Escarpment, Castlereagh Slopes and Lagan Parkland, are deemed Highly Sensitive to Development Landscape Areas, while Belfast/Lisburn and Castlereagh Plateau are considered High-Medium Sensitive to Development Landscape Areas. Lagan Valley Area of Outstanding Natural Beauty is the sole AONB within the study area. Two country parks designated by NIEA fall within the study area, namely Redburn Country Park and Lagan Valley Regional Park.



Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-2	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**





**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage and landscape and visual amenity. These moderate negative impacts include disturbance impacts to people in high density settlements, during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium to long term, slight to moderate negative impacts on cultural heritage and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on a highly sensitive Landscape Character Area. There is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets in the development of the new transmission line, if it is developed within 1% of the best environmental line. These moderate positive impacts include the moderate local scale development of new electricity grid infrastructure, providing a supply of secure and reliable electricity.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration, along with disturbance and displacement impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.7 COMPRESSED AIR ENERGY STORAGE SCHEME CONNECTION****Compressed Air Energy Storage Scheme Connection**

A developer has planned the construction of a Compressed Air Energy Storage facility close to Ballylumford Power station in Islandmagee. They had been offered a connection into Ballylumford at 275 kV but this offer has expired. It does, however, have PCI status.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – The study area encompasses part of Larne Lough SPA, Ramsar site and ASSI.

**Population & Human Health** – There are no main settlements within the study area. The mean population density of this study area is low compared to other study areas, at 51 people/km<sup>2</sup>. There are no Peace Lines, Neighbourhood Renewal Areas or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 0.5km<sup>2</sup> and is composed of industrial or commercial units (85%) and pastures (15%). Within the study area there is one mine shaft, namely Ballylumford Opencast. There is one PPC site within the study area, along with four historical sites, being one dockyard, two mineral works and one power station, which have the potential of being contaminated land.

**Water** – There are two sections of river that transect the study area. Within the study area there are two coastal water bodies, being Larne Lough Middle, which is of good ecological status, and Larne Lough North, which is of good ecological potential. There is a significant area of 1% AEP fluvial flood risk in the north-east of the study area, in the vicinity of Ballycronan. In the Ballylumford and eastern Ballycronan areas there are significant areas of 0.5% pluvial flood risk. These flood risk areas could become inundated and lead to difficult working conditions during the construction of the new line.

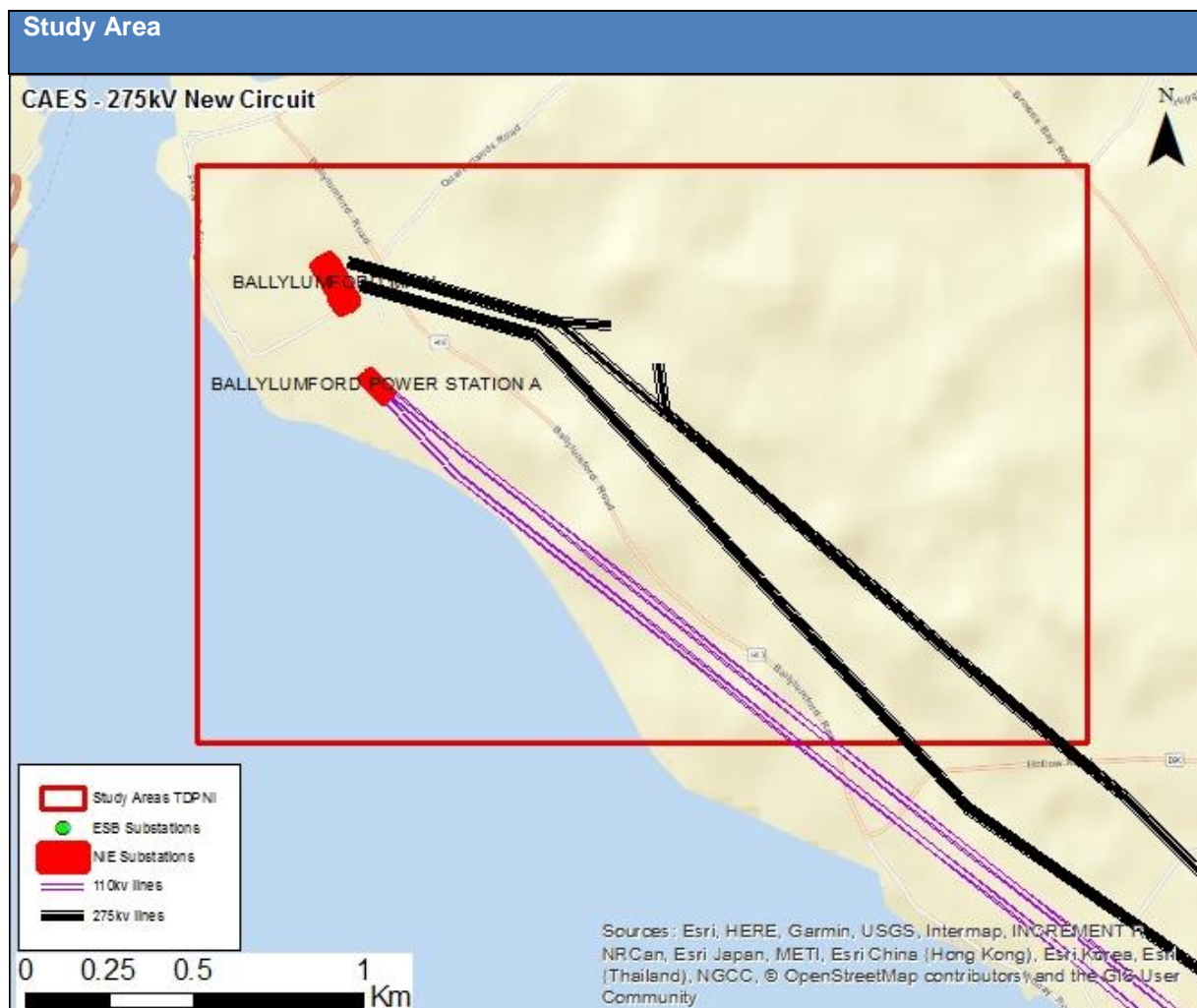
**Air** – There are no AQMAs within the study area, however Ballylumford power station would contribute significantly to national air emissions. There are no other known air quality issues within the study area.

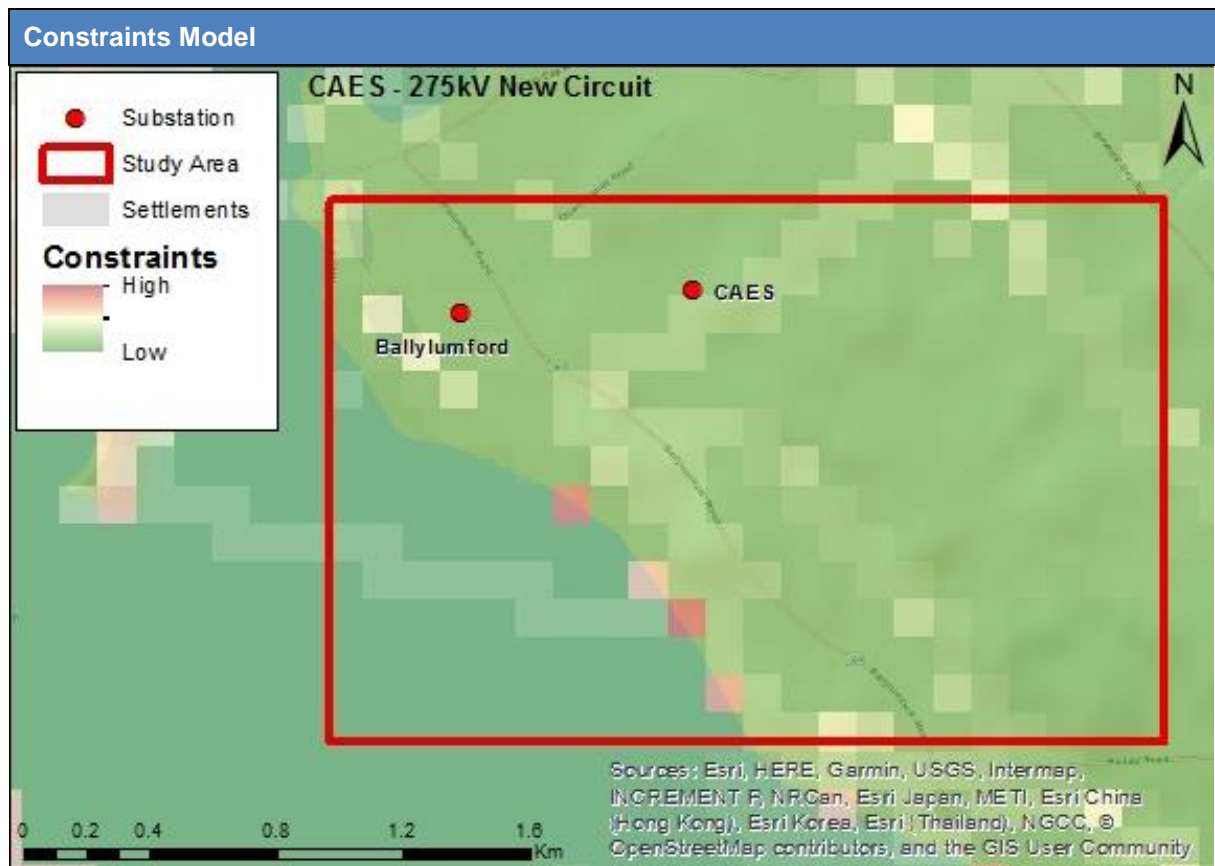
**Climatic Factors** – There is a significant area of 1% AEP climate change fluvial flood risk in the north-east of the study area, in the vicinity of Ballycronan. In the Ballylumford and eastern Ballycronan areas within the study area there are significant areas of 0.5% climate change pluvial flood risk. There is one area of GHG sequestering natural cover within the study area, located in Ballylumford.

**Material Assets & Infrastructure** – There are existing 110 kV and 275 kV circuits within the study area. The Phoenix Natural Gas Transmission line runs through the study area. The agricultural land within the study area is all classified as pasture land, and extends over approximately 3km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 12 SMR sites and one scheduled zone. There is one listed building in the study area, namely Druid’s Cottage on the Ballylumford Road, along with two industrial heritage sites, being one landing place and one pier. There is one historic wreck present in the south-west of the study area.

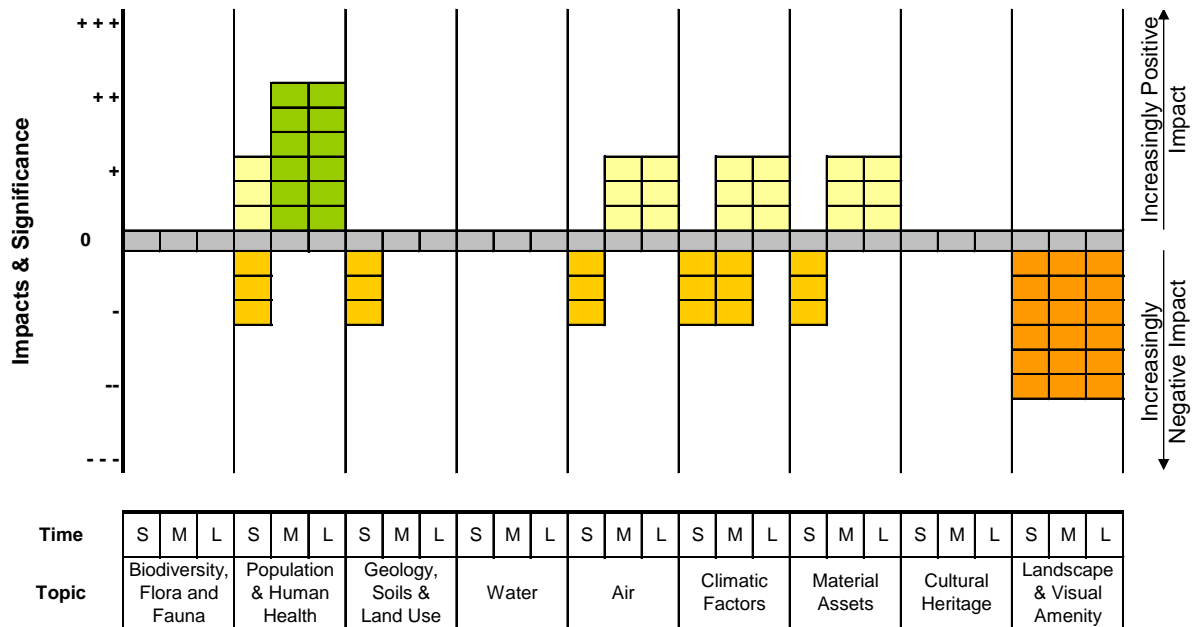
**Landscape & Visual Amenity** - The study area encompasses the Highly Sensitive to Development Landscape Character Area of Islandmagee.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-1	0	0
Water (W)	0	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	-1/1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the new transmission line there is the potential for medium and long term, slight to moderate negative impacts on climatic factors and landscape and visual amenity, if it is developed within 1% of the best environmental line. These moderate negative impacts include landscape and visual effects on a highly sensitive Landscape Character Area. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium to long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of new transmission infrastructure, providing a secure and reliable electricity supply to meet future needs.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on five European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.8 OMAGH MAIN – OMAGH SOUTH UPRATE

### Omagh Main – Omagh South Uprate

With the connection of Curraghmulkin cluster substation to Omagh South it will be necessary to restring the Omagh main – Omagh South tower line with high temperature conductor.

The initial study area for this restring has been set as 2km either side of the existing line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area intersects Cranny Bogs SAC and ASSI. There are six Salmonid Rivers and two Local Wildlife Sites, namely Tattykeel and Clarks Hill, within the study area.

**Population & Human Health** – The study area encompasses part of one main settlement, namely Omagh. The mean population density of this study area is in the medium range compared to other study areas, at 1,185 people/km<sup>2</sup>. There are no peace lines in the study area. There is one Neighbourhood Renewal Area within Omagh, which is a socially sensitive area. There are two areas of lower perceived health within the study area, both within the south-west Omagh area.

**Soils, Geology and Land use** – The study area covers over 50km<sup>2</sup> and is composed of pastures (77.6%), land principally occupied by agriculture (15.5%), peat bogs (2.9%), discontinuous urban fabric (2.3%), sport and leisure facilities (0.6%), industrial or commercial units (0.5%), non-irrigated arable land (0.3%) and continuous urban fabric (0.2%). Within the study area there are five areas of orchards and two long-established woodland areas. There are nine areas of unstable ground identified within the study area, found mainly in the region south of Omagh. Within the study area there are three PPC sites and 44 historical sites which have the potential of being contaminated land, including; 24 railway lands, ten manufacturing works, five mineral works, three textile works and two road vehicle fuelling sites.

**Water** – Within the study area there are nine river water bodies, of which seven are of less than good ecological status and two are of less than good ecological potential. There are 31 sections of river that transect the study area, along with one drinking water river, namely the Camowen River. There are several significant areas of 1% AEP fluvial flood risk within the study area that are crossed by the existing line, mainly in the Mullawinny, Tullycunny and Edenmount areas. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

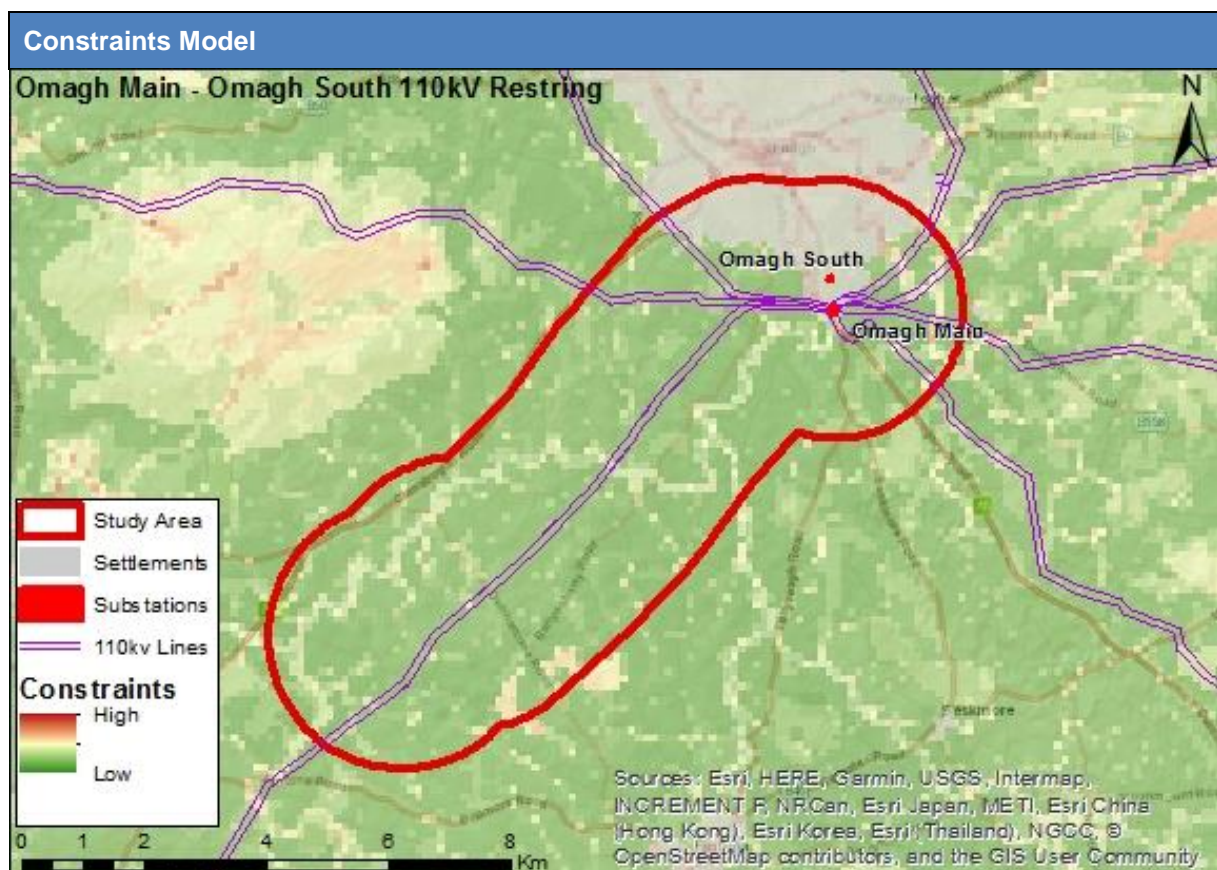
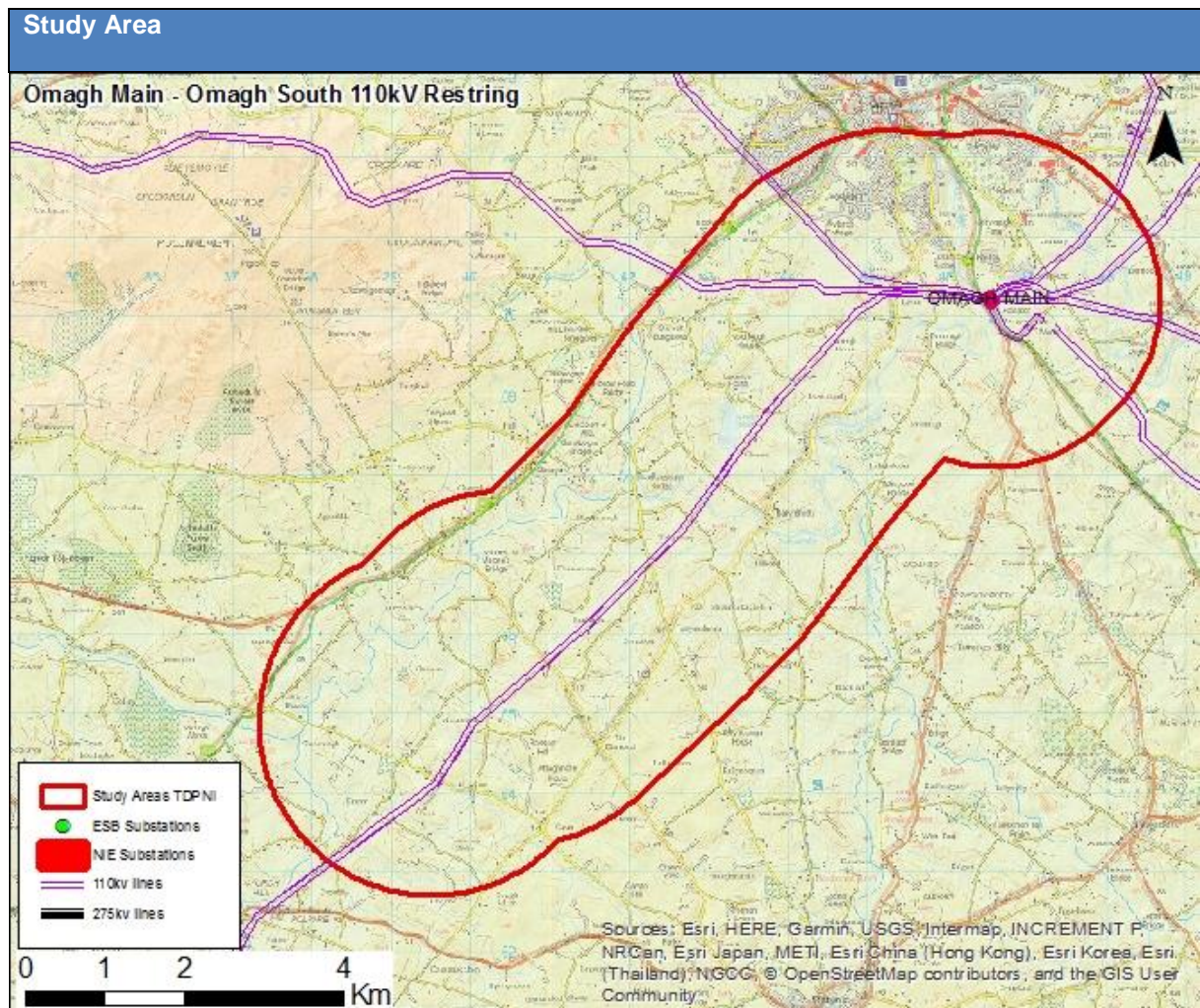
**Air** – There are no AQMAs or other known air quality issues within the study area.

**Climatic Factors** – There are several significant areas of 1% AEP climate change fluvial flood risk within the study area that are crossed by the existing line, mainly in the Mullawinny, Tullycunny and Edenmount areas.

**Material Assets & Infrastructure** - There is 17km of A roads within the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 49km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 32 SMR sites and three scheduled zones. There are 17 listed buildings within the study area, along with 43 industrial heritage sites. Within the study area there are two listed parks, gardens and demesnes, namely Creevenagh and Edenfel.

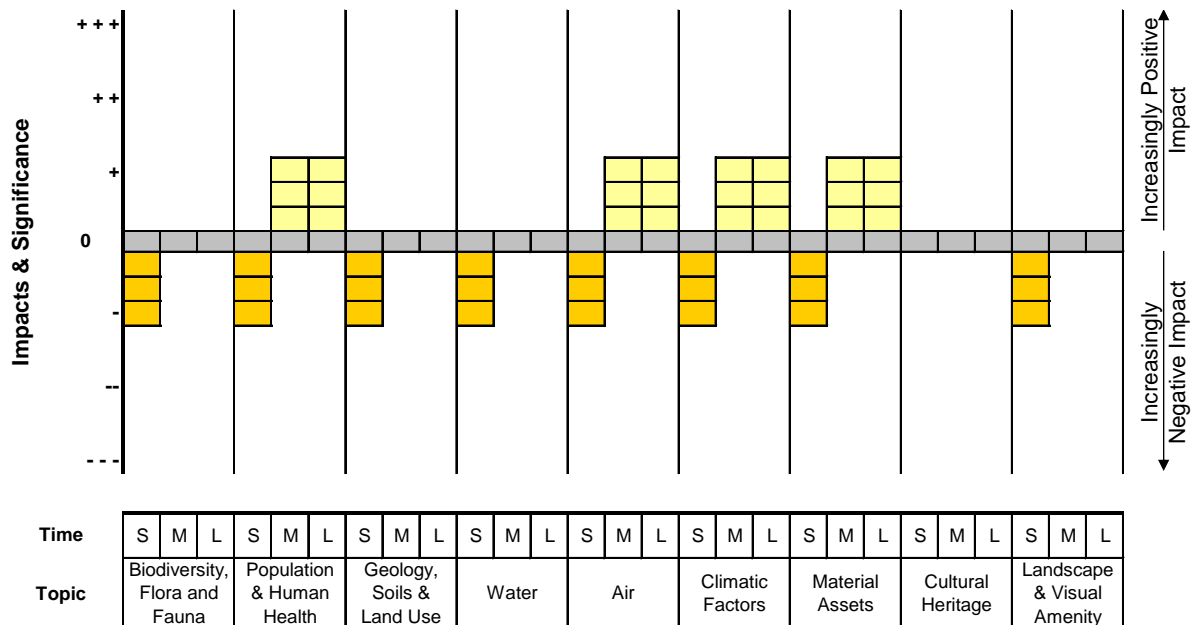
**Landscape & Visual Amenity** - The study area crosses two Landscape Character Areas, namely Irvinestown Farmland and Omagh Farmland. Both of these LCAs have been deemed High-Medium Sensitive Landscape Areas.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the restring has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restring of the transmission line.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on three European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.9 OMAGH REACTIVE COMPENSATION****Omagh Reactive Compensation**

It is planned to install reactive support at Omagh Main. Approximately 120 Mvar of reactive support will be installed, connected to the 110 kV bus.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – There are no International designated sites or species within the study area. Drumragh Salmonid River crosses the study area.

**Population & Human Health** – The study area encompasses part of one main settlement, namely Omagh. The mean population density of this study area is low compared to other study areas, at 329 people/km<sup>2</sup>. There are no peace lines, Neighbourhood Renewal Areas or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 3km<sup>2</sup> and is composed of pastures (99.2%), peat bogs (0.6%) and sport and leisure facilities (0.2%). There are two PPC sites within the study area.

**Water** – Within the study area there are two river water bodies, being the Drumragh River, which is of moderate ecological status, and the Camowen River (Omagh), which is of moderate ecological potential. There are three sections of river that transect the study area. There are significant areas of 1% AEP fluvial flood risk in the vicinity of the section of Drumragh River that intersects the study area. There is a significant area of 0.5% AEP pluvial flood risk within the study area, in the vicinity of Edenmount. These flood risk areas could become inundated and lead to difficult working conditions during construction works.

**Air** – There are no AQMAs or other known air quality issues within the study area.

**Climatic Factors** - There are significant areas of 1% AEP climate change fluvial flood risk in the vicinity of the section of Drumragh River that intersects the study area. There is a significant area of 0.5% AEP climate change pluvial flood risk within the study area, in the vicinity of Edenmount.

**Material Assets & Infrastructure** - There is 3km of A roads within the study area. There are several existing 110 kV lines within the study area. The majority of the study area is made up of agricultural land, specifically pasture land, with the total agricultural land identified as approximately 3km<sup>2</sup>.

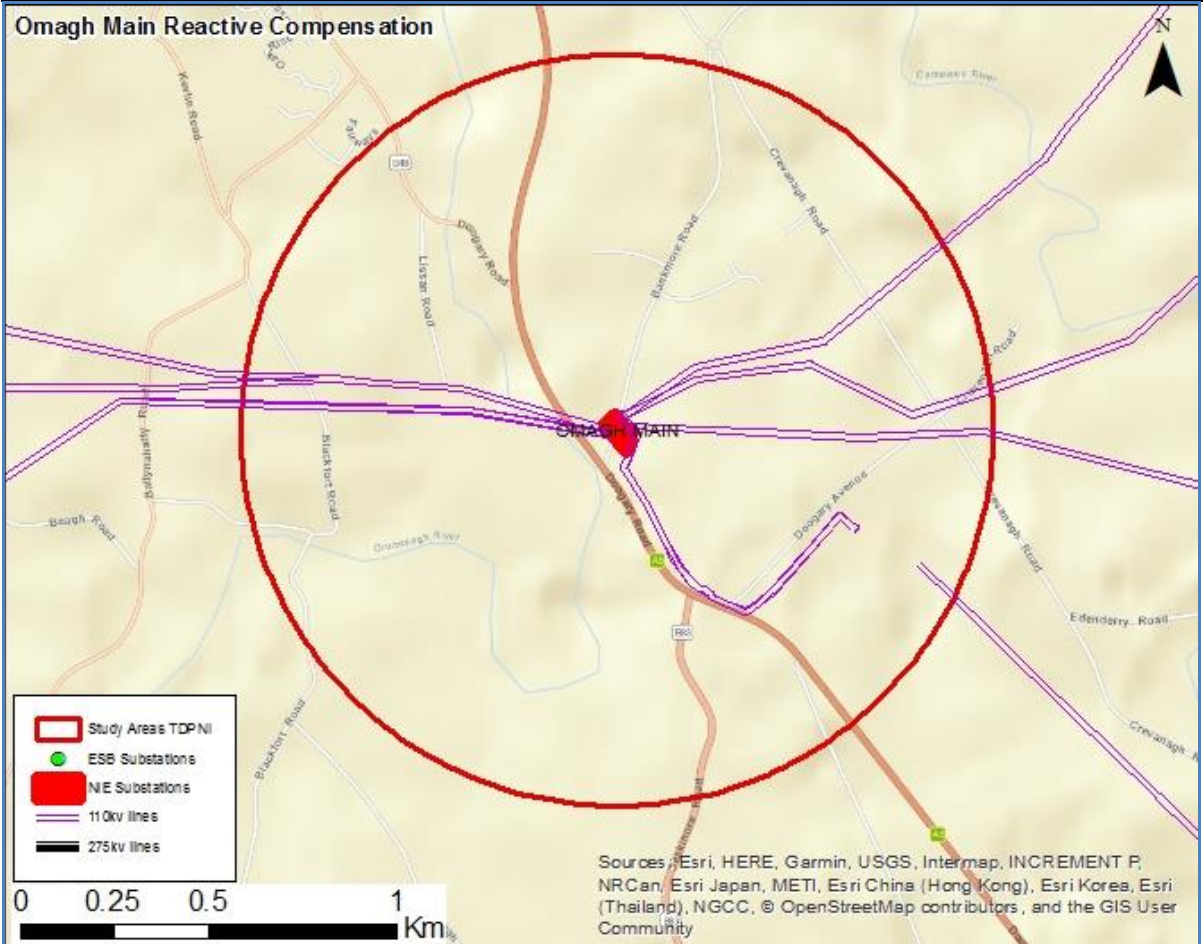
**Cultural, Architectural & Archaeological Heritage** – Within the study area there is one SMR site, being an ecclesiastical site in Drumragh. There is one scheduled zone within the study area, namely Drumragh Church. There are two listed buildings within the study area, namely Drumragh Bridge

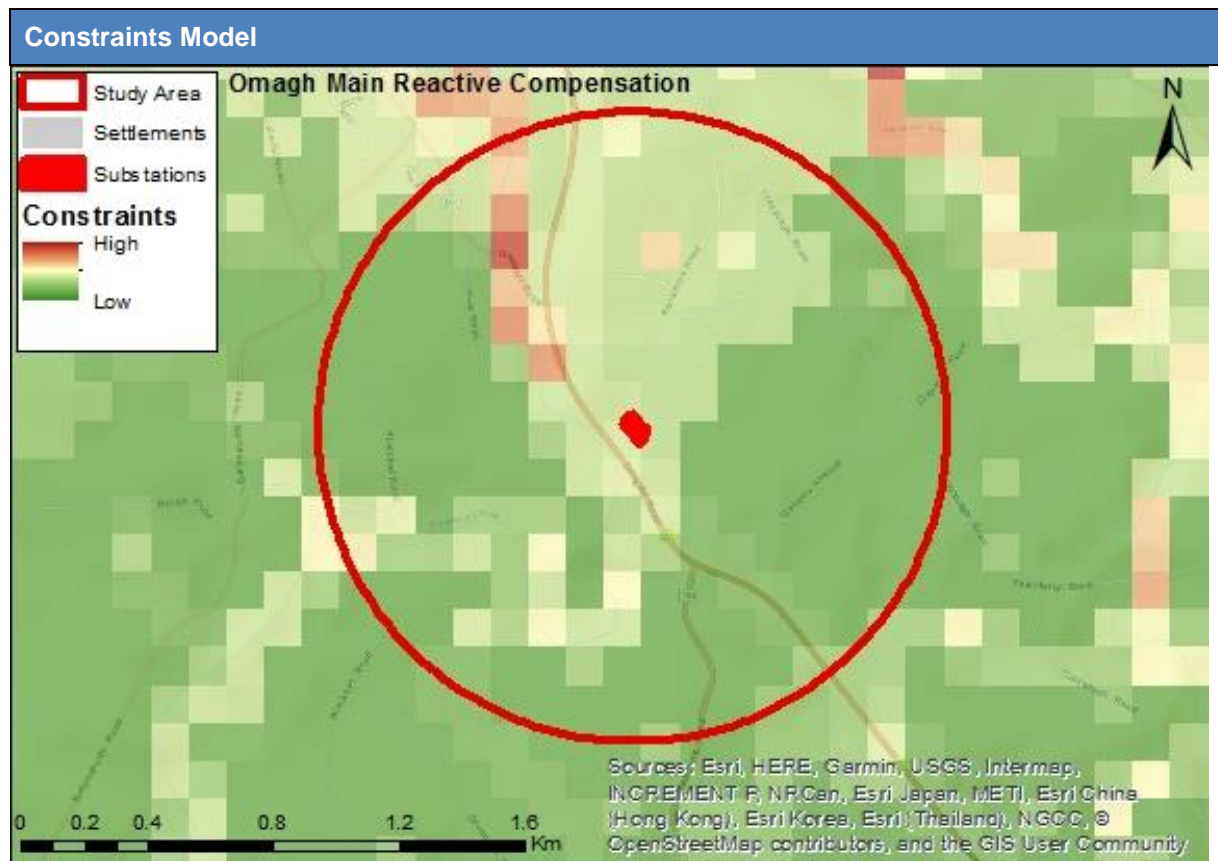
and Milligan Cross, along with two bridges which are industrial heritage sites.

**Landscape & Visual Amenity** - The study area sits firmly in the Omagh Farmland Landscape Character Area. The Omagh Farmland LCA has been designated as a High-Medium Sensitive to Development Landscape Area.

**Study Area**

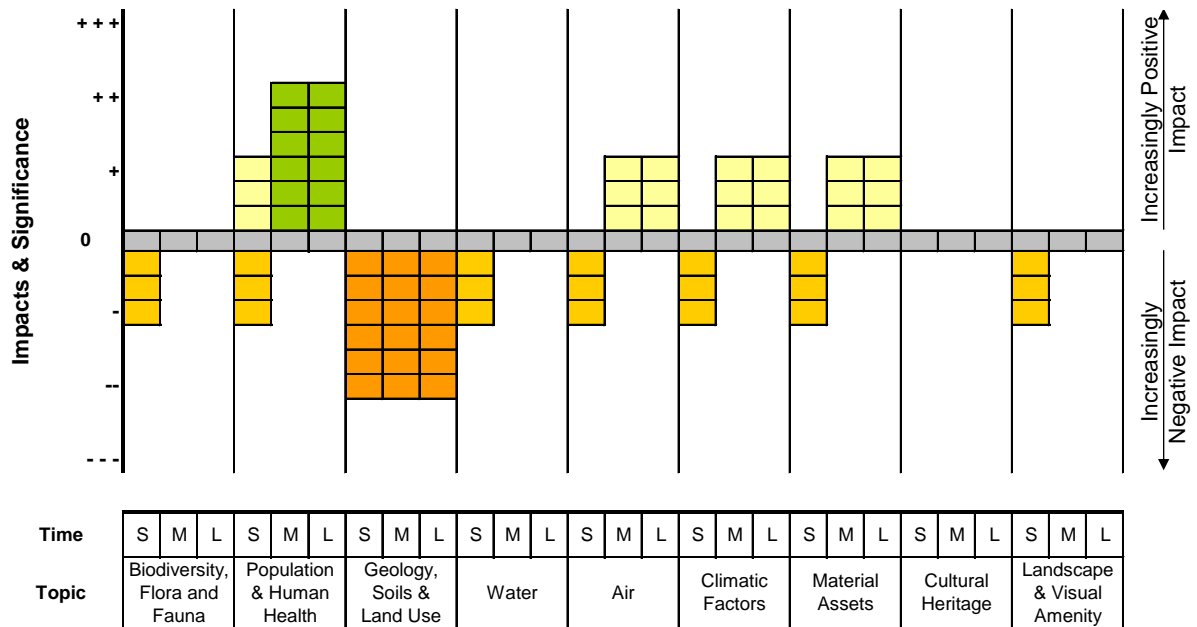
**Omagh Main Reactive Compensation**





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on three European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

## 8.10 TAMNAMORE REACTIVE COMPENSATION

### Tamnamore Reactive Compensation

It is planned to install reactive support at Tamnamore. Approximately 200 Mvar of reactive support will be installed, connected to the 110 kV bus.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – There are no International, National or locally designated sites and species within the study area.

**Population & Human Health** – There are no main settlements within the study area. The mean population density of this study area is low compared to other study areas at 95 people/km<sup>2</sup>. There are no peace lines, Neighbourhood Renewal Areas within the study area or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 3km<sup>2</sup> and is composed of pastures (>99.9%) and land principally occupied by agriculture (<0.01%). Within the study area there are five mine shafts, five historic mines and three areas of orchards. One area of unstable ground is present in the north-east periphery of the study area, namely in the Burnbrae area. Within the study area there are four historical sites which have the potential of being contaminated land, being three manufacturing works and one road vehicle refuelling site.

**Water** – Within the study area there are three river water bodies, namely the Lough Neagh Peripherals, Torrent River and Tamnamore Stream, which are all of less than good ecological status or potential. There is one section of river that transects the north-east of the study area. There are significant areas of 1% AEP fluvial and 0.5% AEP pluvial flood risk in the vicinity of the Burnbrae and Drumhorrik areas within the study area. These flood risk areas could become inundated and lead to difficult working conditions during construction works.

**Air** – There are no AQMAs or other known air quality issues within the study area.

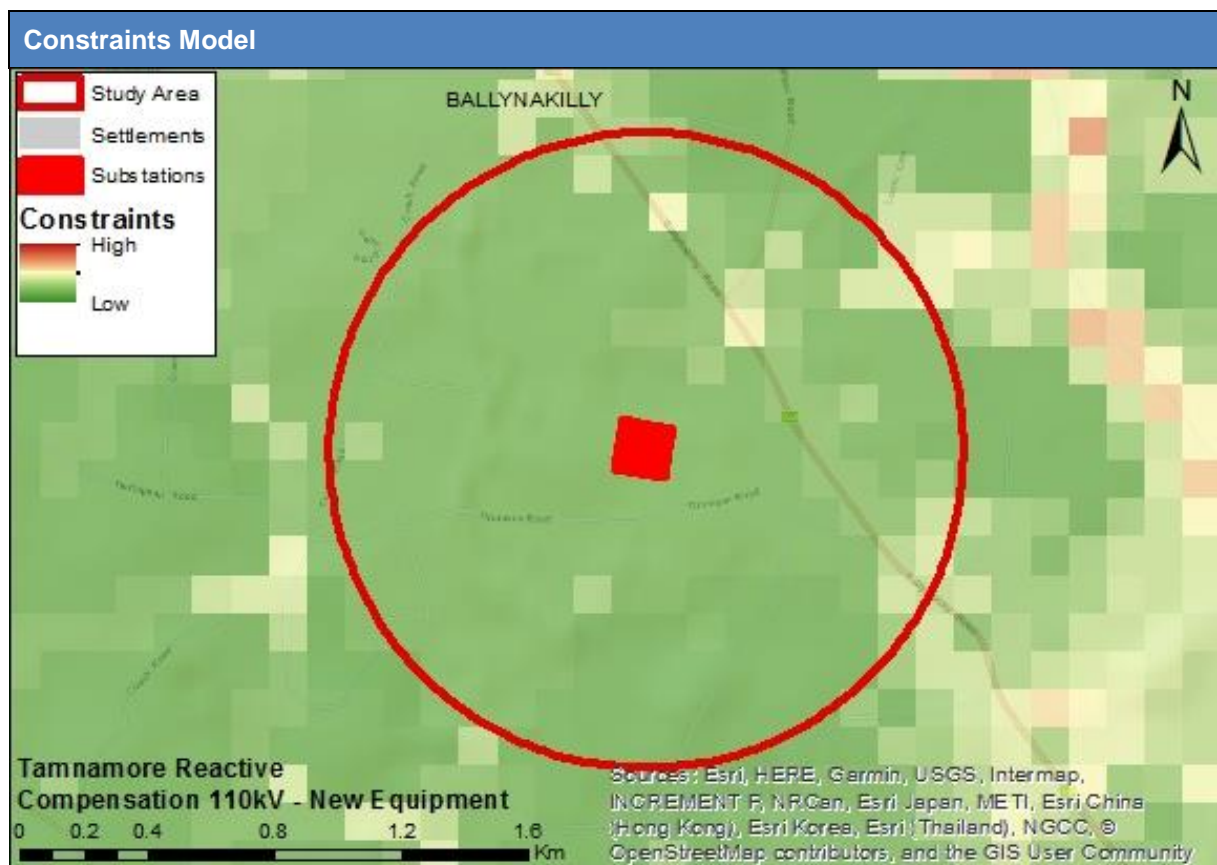
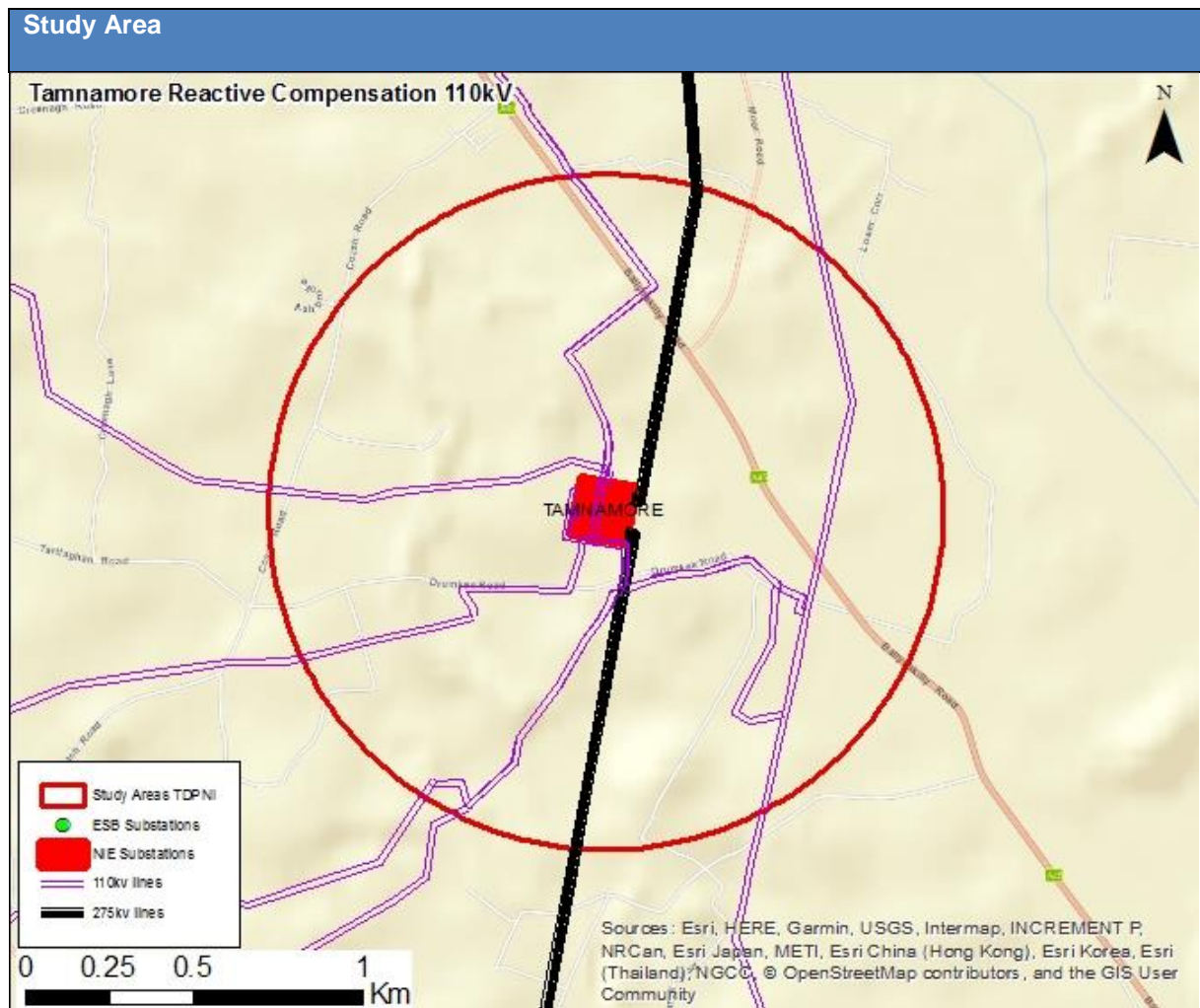
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk and 0.5% AEP climate change pluvial flood risk in the vicinity of the Burnbrae and Drumhorrik areas within the study area.

**Material Assets & Infrastructure** - There is 3km of A Roads within the study area. There are several existing 110 kV transmission lines, along with two 275 kV transmission lines within the study area. The entirety of the study area is made up of agricultural land, specifically pasture land, with the total agricultural land identified as approximately 3km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – There are not any known heritage features within the study area.

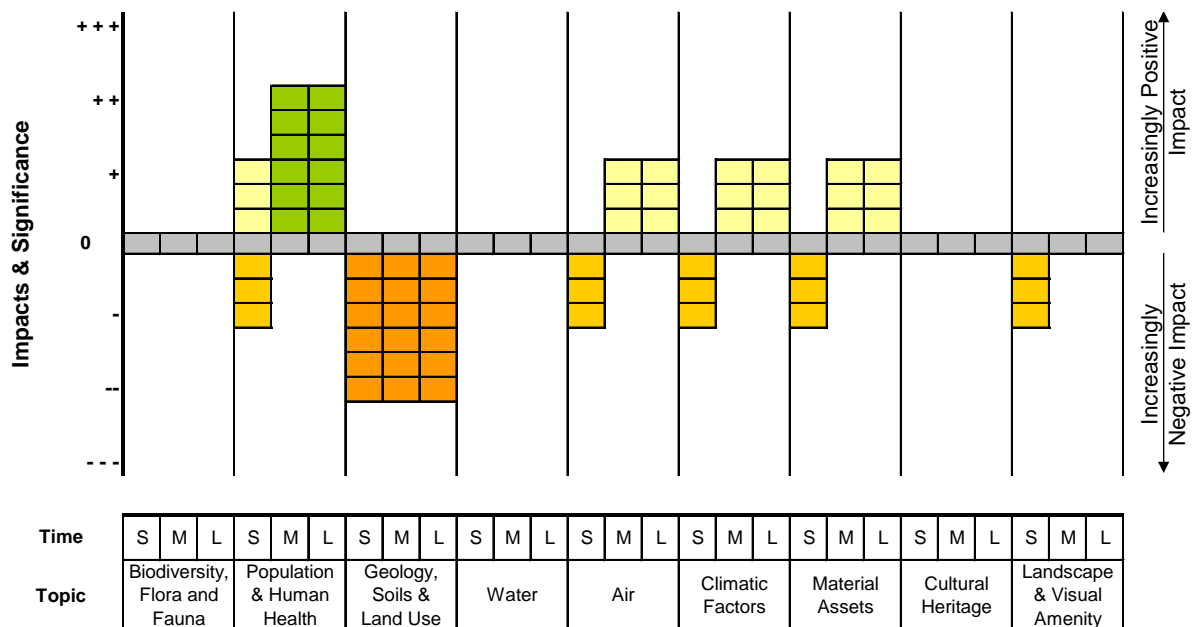
**Landscape & Visual Amenity** - The study area crosses three Landscape Character Areas, namely Dungannon Drumlins and Hills, Loughgall Orchard Belt, both deemed High-Medium Sensitive to Development LCAs, and Lough Neagh Peatlands which is designated as a Highly Sensitive to Development LCA.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	0	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.11 COLERAINE REACTIVE COMPENSATION****Coleraine Reactive Compensation**

It is planned to install reactive support at Tamnamore. Approximately 150 Mvar of reactive support will be installed, connected to the 110 kV bus from 2021. The existing 36 Mvar Capacitor at Coleraine is to be recovered.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – There are no International, National or locally designated sites and species within the study area.

**Population & Human Health** – The study area encompasses part of one main settlement, namely Coleraine. The mean population density of this study area is relatively low compared to other study areas at 599 people/km<sup>2</sup>. There are no peace lines, Neighbourhood Renewal Areas or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 3km<sup>2</sup> and is composed of pastures (62%), coniferous forest (24%), non-irrigated arable land (5%), discontinuous urban fabric (4%), land principally occupied by agriculture (4%) and complex cultivation patterns (1%). There is one area of unstable ground identified in the north-west of the study area. There are seven long-established woodland areas in the study area, along with one Forest Service site, namely Somerset. Within the study area there are three historical sites which have the potential of being contaminated land, being two mineral works and one road vehicle fuelling site.

**Water** – Within the study area there is one river water body, namely the Macosquin River, which is of moderate ecological status, along with two sections of river. There are significant areas of 1% AEP fluvial flood risk and 0.5% AEP pluvial flood risk in the vicinity of the Bushtown and Franlester areas within the study area. These flood risk areas could become inundated and lead to difficult working conditions during construction works.

**Air** – There are no AQMAs or other known air quality issues within the study area.

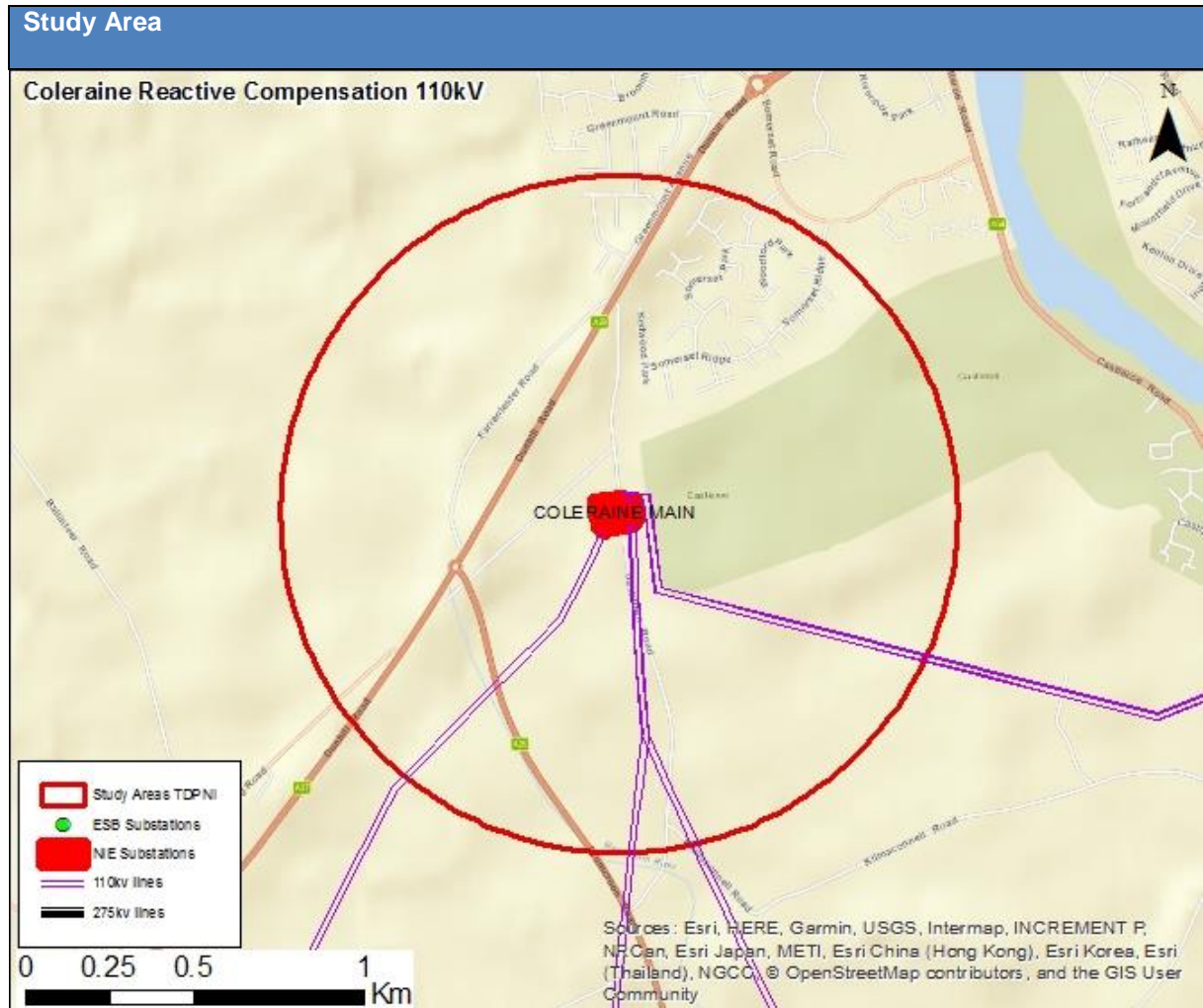
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk and 0.5% AEP climate change pluvial flood risk in the vicinity of the Bushtown and Franlester areas within the study area.

**Material Assets & Infrastructure** - There is 4km of A roads within the study area. There are

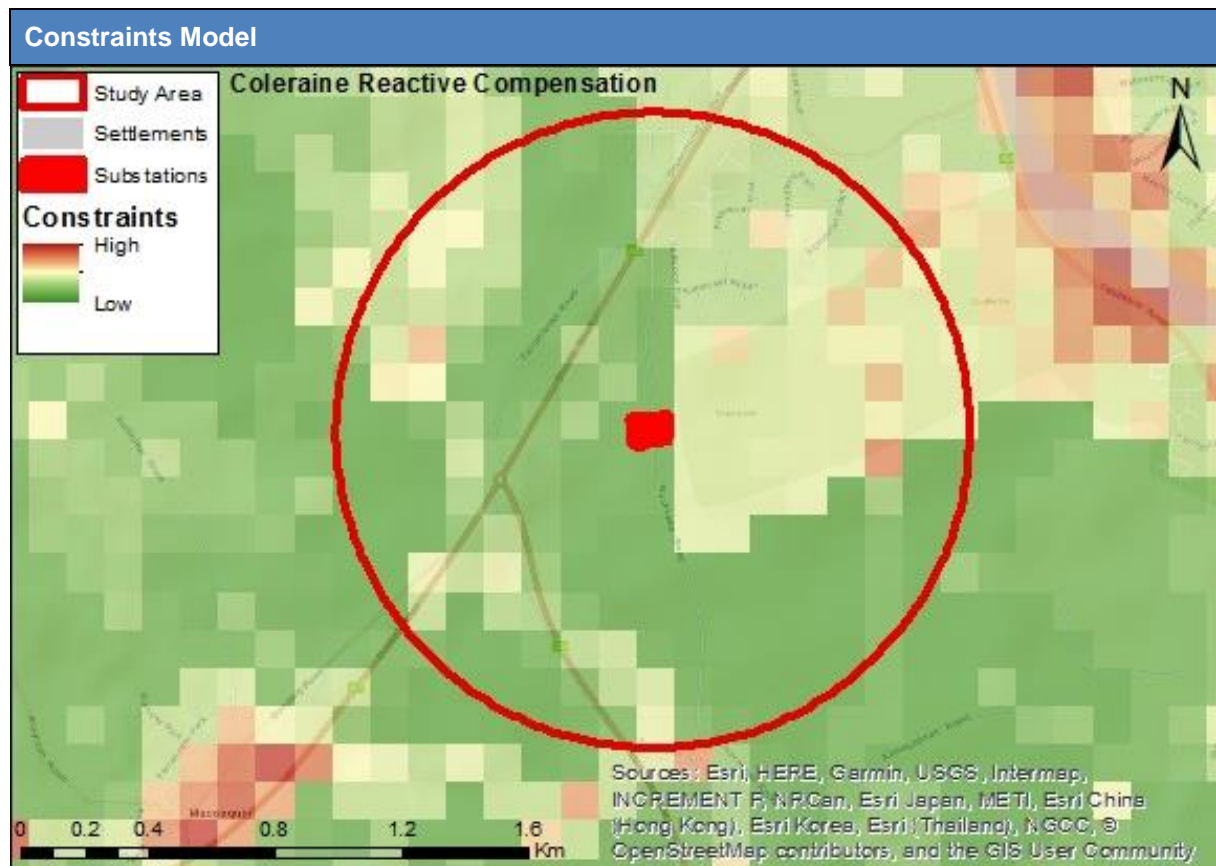
several existing 33 kV and 110 kV transmission lines within the study area. The majority of the study area is made up of agricultural land, including pasture land, with the total agricultural land identified as approximately 2km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are five SMR sites, three scheduled zones and one industrial heritage site.

**Landscape & Visual Amenity** - The study area crosses two Landscape Character Areas, namely Coleraine Farmland and Garvagh Farmland. Coleraine Farmland LCA has been deemed a Highly Sensitive to Development Landscape Area, while Garvagh Farmland is considered a High-Medium Sensitive to Development Landscape Area.

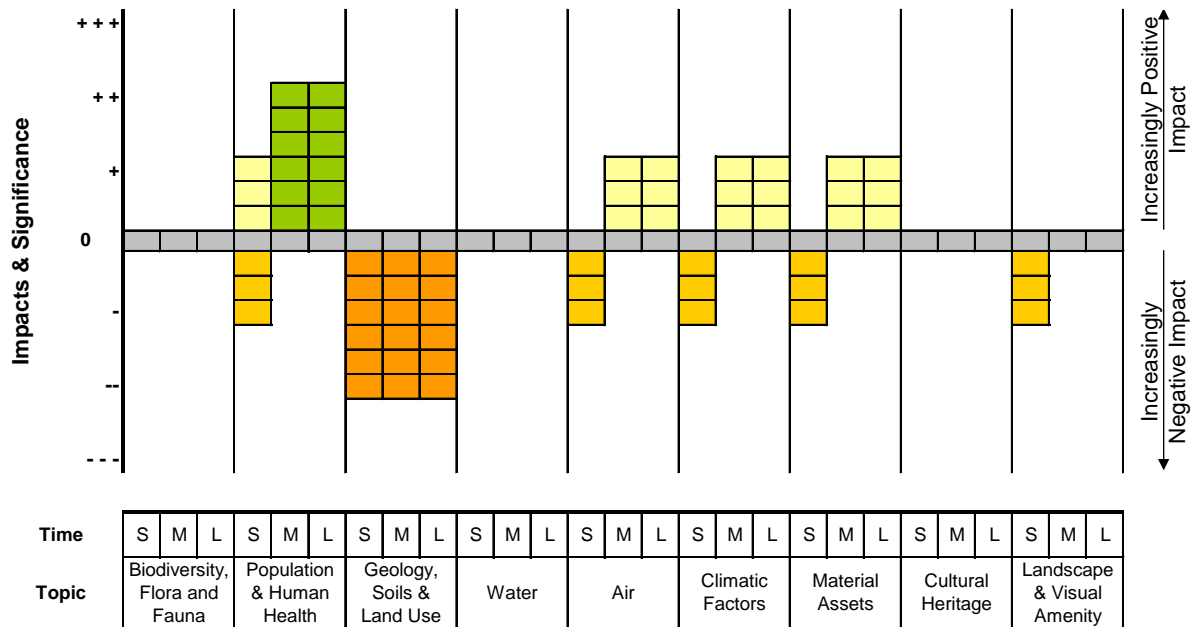






Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	0	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	0	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the substation extension within the lower sensitivity area has the potential for short term, temporary, construction phase, slight to moderate negative impacts on population and human health, geology, soils and land use, air, climatic factors, material assets and landscape and visual amenity. Following the development of the substation extension within the lower sensitivity area, there is the potential for medium and long term, moderate negative impacts on geology, soils and land use. These moderate negative impacts include the permanent loss of pastures in the development and operation of the substation extension. Development of the substation extension within the lower sensitivity area has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the provision of a secure and reliable electricity supply to meet future needs.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on one European Site, from this project. The possibility of likely significant effects cannot be discounted on this site at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on the European site, as necessary, will be required.

## 8.12 KELLS/CREAGH – RASHARKIN NEW 110 KV CIRCUIT

### Kells/Creagh - Rasharkin New 110 kV Circuit

As a result of increasing growth in renewable generation there will be a need to construct a second 110 kV circuit between either Creagh or Kells, and Rasharkin 110/33 kV cluster substation.

### Environmental Issues Within Area

**Biodiversity, Flora & Fauna** – The study area encompasses Garron Plateau SAC and Ramsar Site, Main Valley Bogs SAC, Lough Neagh and Lough Beg SPA and Ramsar Site, and Antrim Hills SPA. The study area encompasses 12 ASSIs, 15 SLNCIs, 28 Salmonid Rivers, Lough Beg Salmonid Lake and Nature Reserve, Lough Neagh Salmonid Lake and 72 Local Wildlife Sites.

**Population & Human Health** – There are eight main settlements within the study area, namely Ahoghill, Portglenone, Connor (Kells), Cullybackey, Broughshane, Ballymena, Randalstown and Bellaghy, of which Ballymena is the largest. The mean population density of this study area is in the medium range compared to other study areas, at 1,383 people/km<sup>2</sup>. There is one Neighbourhood Renewal Area in Ballymena, which is a socially sensitive area. There are no peace lines within the study area. There are several areas of lower perceived health within the study area, namely the Ballymena, Connor (Kells), Ahoghill and Portglenone areas.

**Soils, Geology and Land use** – The study area covers over 510km<sup>2</sup>, and is composed mainly of pastures (72.8%), complex cultivation patterns (6.9%), land principally occupied by agriculture (4.7%), peat bogs (4.3%) and natural grassland (3%). The study area encompasses six ASSI sites of geological heritage, namely Garron Plateau ASSI, Culnafay ASSI, Toome ASSI, Ballymacombs More ASSI, Tardree Quarry ASSI and Glarryford ASSI. Within the study area there are 36 mine shafts, four historic mines, two active quarries and 14 areas of orchards. There are 55 areas of unstable ground identified within the study area, with a large proportion occurring in the vicinity of Antrim and to the north of Randalstown. There are 124 ancient and long-established woodland areas in the study area, along with five Forest Service sites. Within the study area there are 24 PPC sites and over 640 historical sites which have the potential of being contaminated land, including; 151 textile works, 122 mineral works, 136 railway lands, 51 manufacturing works and 31 waste treatment works. The study area includes ten upland areas and steep slopes, including; Dogherty Bridge, Priest Hill, Hyndstown, Garvaghy Hill and Tobernavem Hill.

**Water** – Within the study area there are 37 river water bodies, of which 17 are of good or high ecological status, 15 are of less than good ecological status and five are of less than good ecological potential. There are 240 sections of river that transect the study area. There are two lake water bodies within the study area, being Lough Neagh, which is of bad ecological potential, and Lough Beg, which is of poor ecological status. Within the study area there are three drinking water rivers, namely the Braid River, Glenravel Water and Artoges River, along with one drinking water lake, being Lough Neagh (Antrim). There are several significant areas of 1% AEP fluvial flood risk within the study area, mainly in the Ballymena, Tullynewy, Toome, Castledawson, Glarryford, Portglenone and Newferry areas. There are several significant areas of 0.5% AEP pluvial flood risk within the study area, mainly in the Ballymena, Tullynewy, Springmount, Ferrystown, Portglenone, Drumraymond and Toome areas. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – Within the study area there are two AQMAs, being in Linenhall Street (Ballymena) and Ballykeel. Linenhall Street AQMA was declared due to high levels of Nitrogen dioxide, and Ballykeel AQMA was declared due to high levels of Particulate Matter (PM<sub>10</sub>). There are no other known air quality issues within the study area. The development of this new transmission aims to increase the connection of renewable energy within the study area.

**Climatic Factors** – There are several significant areas of 1% AEP climate change fluvial flood risk within the study area, mainly in the Ballymena, Toome, Castledawson, Glarryford, Portglenone and Newferry areas. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk, mainly in the Ballymena, Tullynewy, Springmount, Ferrystown, Portglenone, Drumraymond and Toome areas. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the

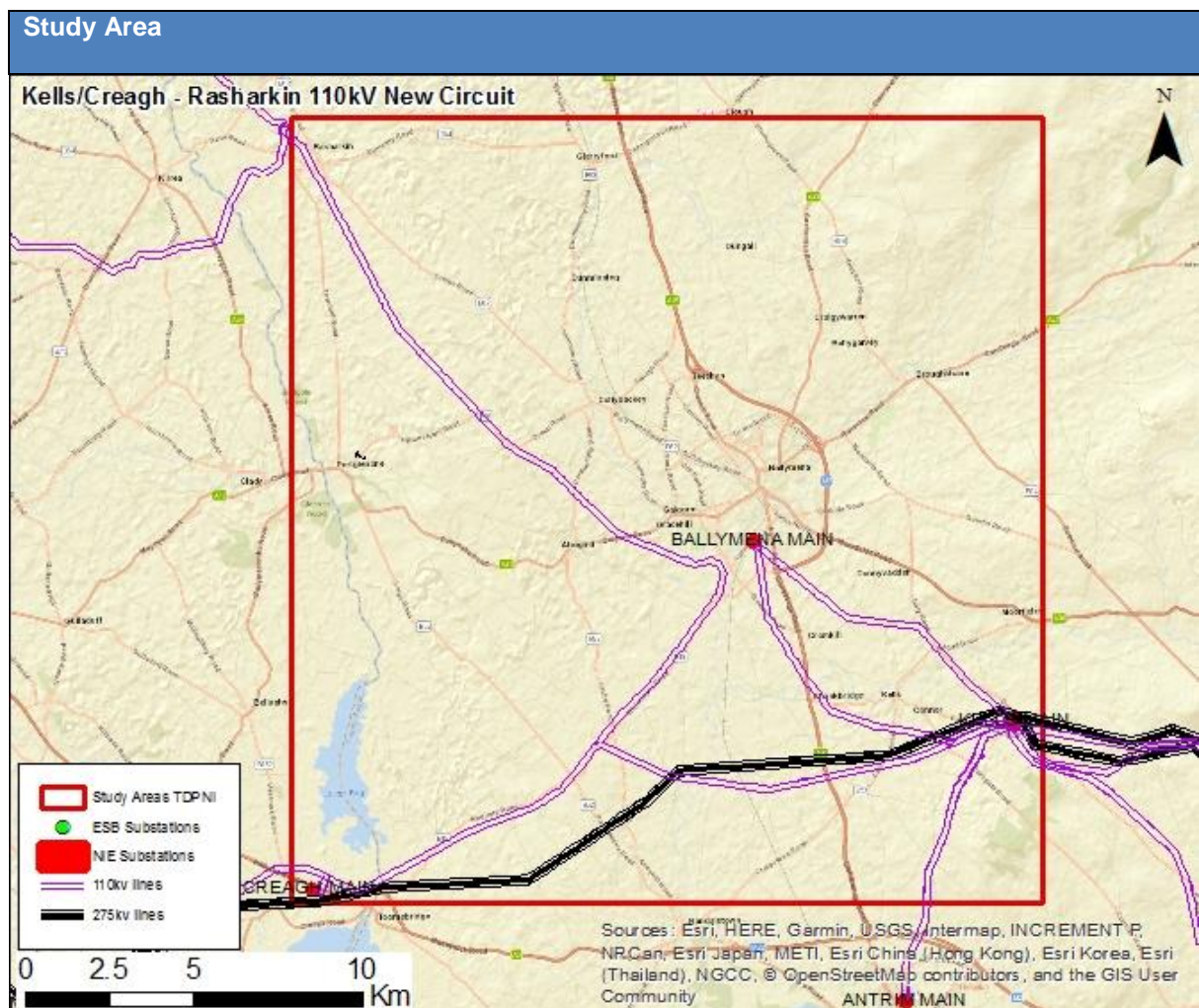


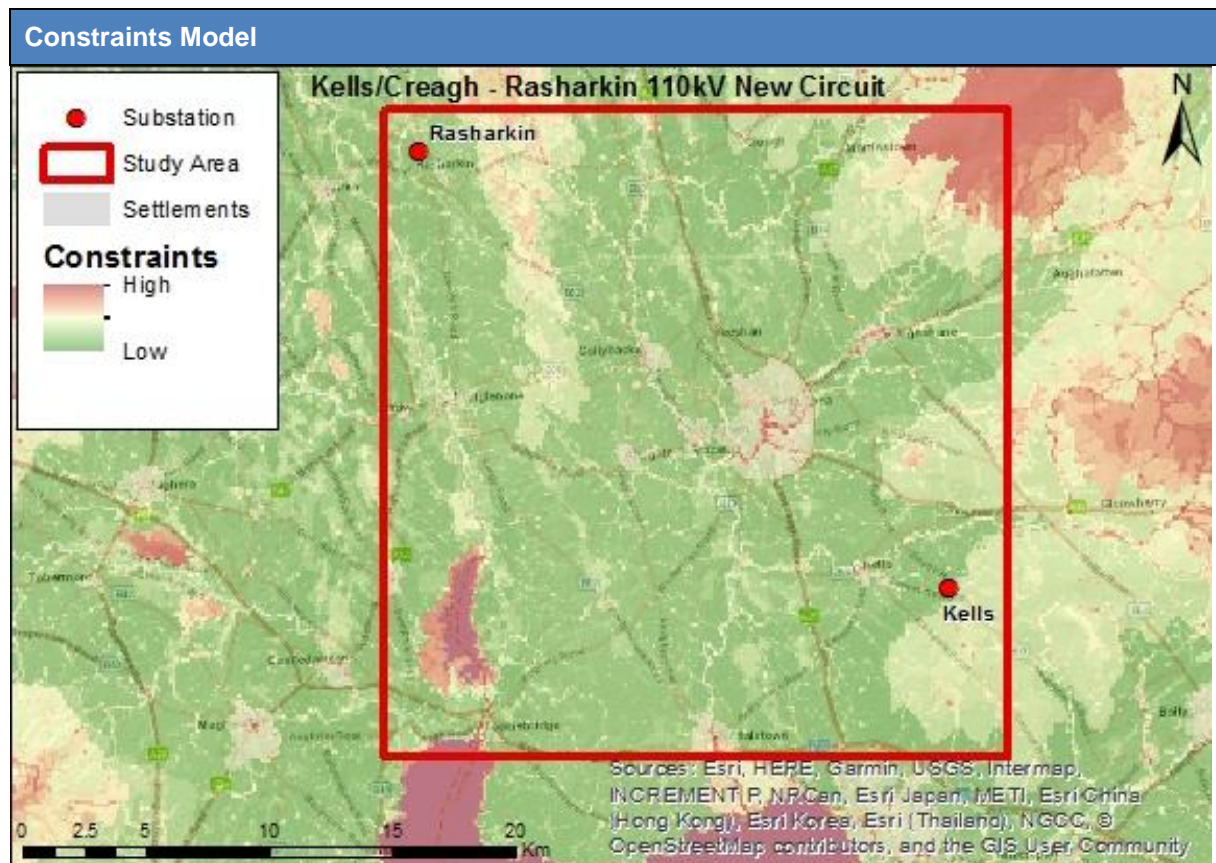
vicinity of Tardree Forest, Sluggan Moss, Lough Beg and Glenone Forest. The development of this new transmission aims to increase the connection of renewable energy within the study area.

**Material Assets & Infrastructure** - Within the study area there is 154km of A roads, and 46km of motorway. There is 43km of railway line in the study area, forming part of the line between Belfast and Coleraine. The North-West Gas Pipeline runs through the study area. There are several existing 33 kV, 110 kV and 275 kV transmission lines within the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 445km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 700 SMR sites, 68 scheduled zones, 370 listed buildings, over 600 industrial heritage sites and 28 defence heritage sites. There is one Area of Archaeological Potential within the study area, namely Bellaghy. Within the study area there are eight listed parks, gardens and demesnes, including Glebe House, Hill Mount and Shanes Castle.

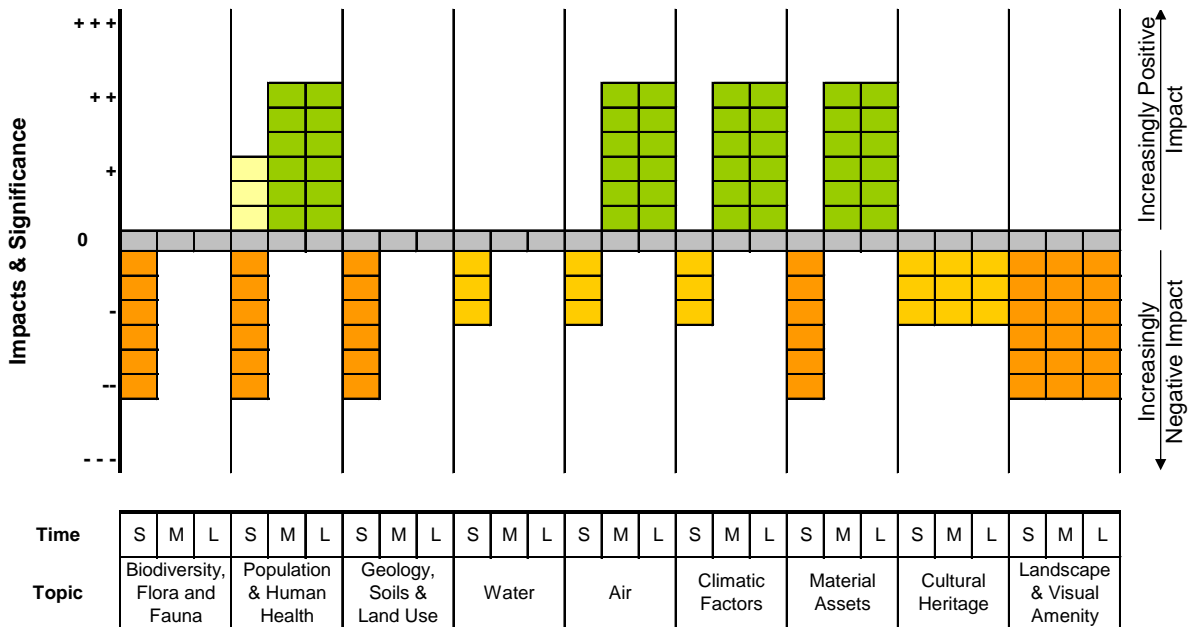
**Landscape & Visual Amenity** - The study area encompasses 11 Landscape Character Areas, with three LCAs designated as Highly Sensitive to Development, namely Central Ballymena Glens, Lower Bann Valley, and Tardree and Six Mile Water Slopes. The sole AONB within the study area is Antrim Coast and Glens Area of Outstanding Natural Beauty.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage and landscape and visual amenity. These moderate negative impacts include disturbances to several transport networks and power supply disruptions, during construction works. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.13 TAMNAMORE – TURLEENAN UPRATE

### Tamnamore - Turleenan Uprate

Pending the establishment of Turleenan substation it is planned to uprate the conductors between Turleenan and Tamnamore 275kV substation.

The initial study area for this restring has been set as 2km either side of the existing line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses Drumcrow ASSI and three SLNCIs, namely Argory Mosses, Annaghoboe and Torrent River. Three Salmonid Rivers are crossed by the study area, namely Callan River Lower, River Blackwater Lower and Torrent River Lower. The study area encompasses five Local Wildlife Sites.

**Population & Human Health** – There are two main settlements within the study area, namely Moy and Coalisland. The mean population density of this study area is low compared to other study areas, at 506 people/km<sup>2</sup>. There are no peace lines or Neighbourhood Renewal Areas within the study area. There are several areas of lower perceived health within the study area, namely in the Moy, Coalisland, and Ballynakilly areas.

**Soils, Geology and Land use** – The study area covers over 39km<sup>2</sup> and is composed of pastures (86.1%), complex cultivation patterns (7.1%), land principally occupied by agriculture (4.6%), road and rail networks (0.8%), discontinuous urban fabric (0.7%), water courses (0.5%), peat bogs (0.3%) and non-irrigated arable land (0.05%). Within the study area there are 16 mine shafts, three historic mines and 28 areas of orchards. There are 6 areas of unstable ground identified within the study area, mainly in southern region of Ballynakilly and in the vicinity of Clonteevy Bridge. There are 15 ancient and long established woodland areas in the study area. Within the study area there are four PPC sites and 53 historical sites which have the potential of being contaminated land, including; 14 manufacturing works, 12 railway lands, six textile works and five waste treatment works.

**Water** – Within the study area there are seven river water bodies, five of which are of less than good ecological status and two of which are of less than good ecological potential. There are 22 segments of river that transect the study area. There are several significant areas of 1% AEP fluvial flood risk study area that are crossed by the existing line, mainly in the vicinity of the Kilsally, Lettercleary, Clonoe, Rhone Hill and Clonbeg areas. There are several significant areas of 0.5% AEP pluvial flood risk in the study area that are crossed by existing line, mainly in the vicinity of the Rhone Hill, Clonoe, Lettercleary and Brigh areas. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

**Air** – The study area intersects part of the Moy AQMA, which was declared for Nitrogen dioxide due to high traffic levels. There are not any other known air quality issues within the study area.

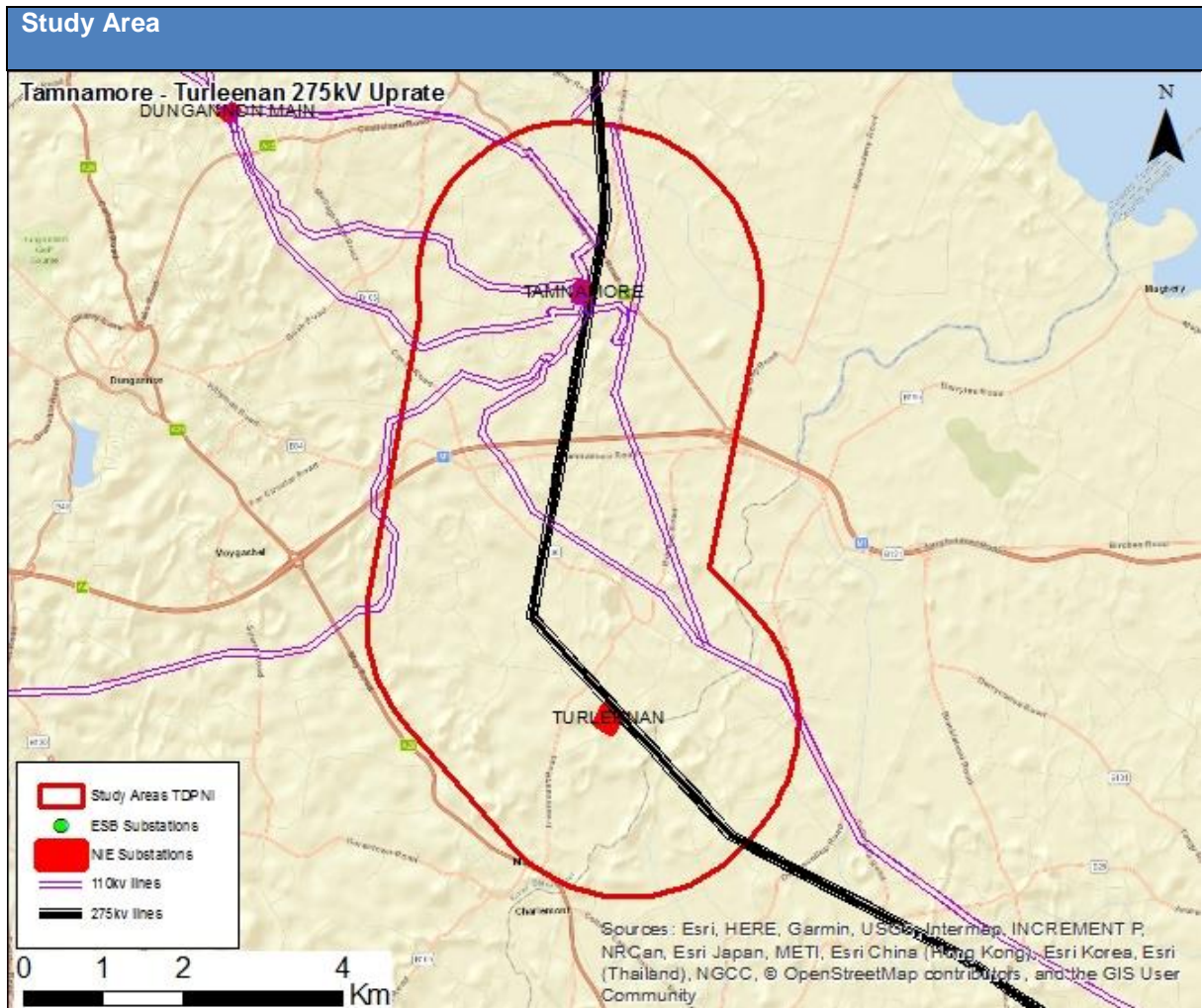
**Climatic Factors** – There are several significant areas of 1% AEP climate change fluvial flood risk study area that are crossed by the existing line, mainly in the vicinity of the Kilsally, Lettercleary, Clonoe, Rhone Hill and Clonbeg areas. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk that are crossed by the existing line, mainly in the vicinity of the Rhone Hill, Clonoe, Lettercleary and Brigh areas.

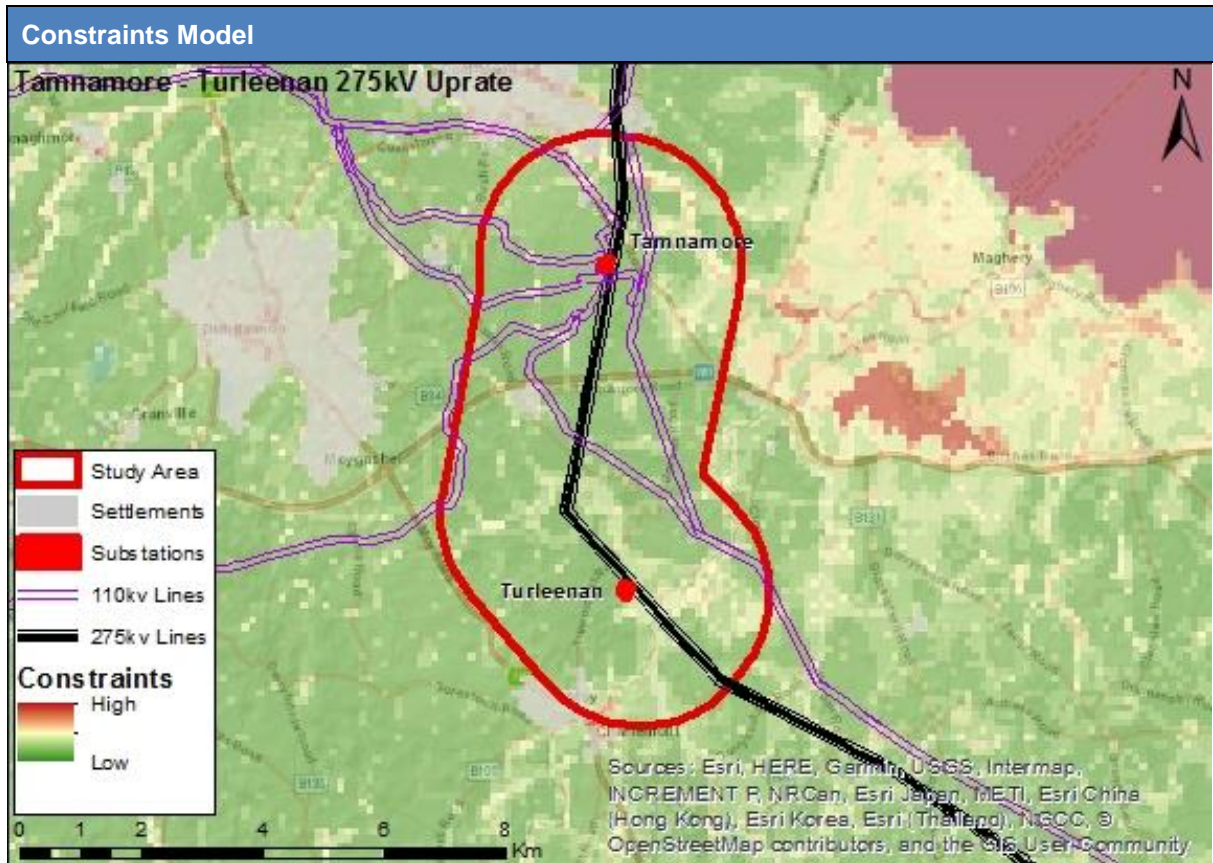
**Material Assets & Infrastructure** - Within the study area there is 6km of A roads, and 19km of motorway. The SGN High Pressure gas line runs through the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 38km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 11 SMR sites, six scheduled zones, 56 listed buildings, 40 industrial heritage sites and one listed park, garden and demesne, namely The Argory.

**Landscape & Visual Amenity** - The study area crosses three Landscape Character Areas, namely Dungannon Drumlins and Hills, Loughgall Orchard Belt, both deemed High-Medium Sensitive to

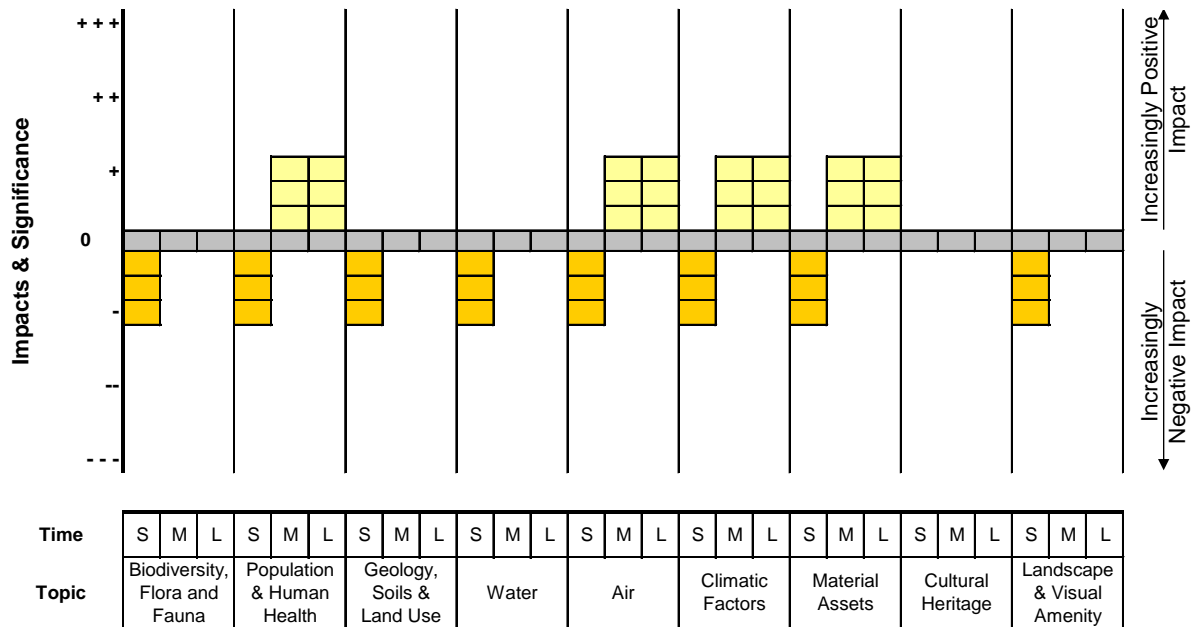
Development LCAs, and Lough Neagh Peatlands which is designated as a Highly Sensitive to Development LCA. The Argory is the only National Trust Land within the study area.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	0	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restring has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restring of the transmission line.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.14 COOLKEERAGH – TRILLICK NEW 110 KV LINE

### Coolkeeragh – Trillick new 110 kV Line

A need has been identified to strengthen the electricity network on both sides of the border in the north-west to assist in the integration of renewable power sources. This project is on hold and will most likely be replaced by the North West Reinforcement but still has Project of Common interest (PCI) status.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – River Faughan and Tributaries SAC and ASSI, Lough Foyle SPA, Ramsar Site and ASSI, and Lough Swilly SPA are all within the Northern Ireland section of the study area. Lough Swilly (including Big Isle, Blanket Nook and Inch Lake) pNHA is within the the Republic of Ireland section of the study area. There are four Salmonid Rivers within the Northern Ireland section of the study area, namely River Faughan Lower, Skeoge / Ballymagorty River Lower, Skeoge / Ballymagorty River Middle and Skeoge / Ballymagorty River Upper.

**Population & Human Health** – There are main three settlements within the Northern Ireland section of the study area, namely Strathfoyle, Derry and Culmore, of which Derry is the largest. The mean population density of the Northern Ireland section of this study area is relatively high compared to other study areas, at 3,297 people/km<sup>2</sup>. There are two Neighbourhood Renewal Areas within the Northern Ireland section of the study area, namely Outer West Derry and Outer North Derry, which are socially sensitive areas. There are no Peace Lines within the study area. There are several areas of lower perceived health within the Northern Ireland section of the study area, namely the Ballyarnet, Ballynagalliagh, Elagh More, Coshquin, Shantallow, Springtown Ward and Ballymagorty areas.

**Soils, Geology and Land use** – The study area covers over 160km<sup>2</sup> and is composed mainly of pastures (36%), peat bogs (19%), non-irrigated arable land (10%), moors and heathland (7%), natural grassland (6.8%) and coniferous forest (5%). The Northern Ireland section of the study area encompasses two ASSI sites of geological heritage, namely Lough Foyle ASSI and River Faughan and Tributaries ASSI. Within the Northern Ireland section of the study area there are six areas of orchards, along with 24 ancient and long-established woodland areas. There are seven PPC sites in the Northern Ireland section of the study area, along with 127 historical which have the potential of being contaminated land, including; 19 textile works, 17 manufacturing works, 16 waste treatment works, 13 railway lands and five sewage works. The Northern Ireland section of the study area includes several upland and steep slopes within the Eskaheen, Scalp and Greenan Mountains.

**Water** – Within the Northern Ireland section of the study area there are two river water bodies, namely the River Faughan (Carmoney), which is of moderate ecological potential, and the Skeoge River, which is of poor ecological potential. There are seven sections of river that transect the study area. There are two transitional water bodies within the Northern Ireland section of the study area, namely the Foyle Harbour and Faughan, which is of moderate ecological potential, and the Upper Foyle, which is of moderate ecological status. Within the Northern Ireland section of the study area there is one drinking water river, being the River Faughan. There are significant areas of 1% AEP fluvial flood risk in the south-east of the study area, in the vicinity of the Maydown and Mubuooy areas. There is significant area of 0.5% AEP coastal flood risk in the study area, in the eastern periphery of Muff. There are significant areas of 0.5% AEP pluvial flood risk in the south of the study area, mainly in the vicinity of the Spring Town area. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – The in one AQMA within the study area, namely the Buncrana Road/Racecourse Road AQMA, which is within Londonderry/Derry City. This AQMA was declared due to high levels of Nitrogen Dioxide, which can be attributed to high levels of traffic in this area. There are not any other known air quality issues within the study area.

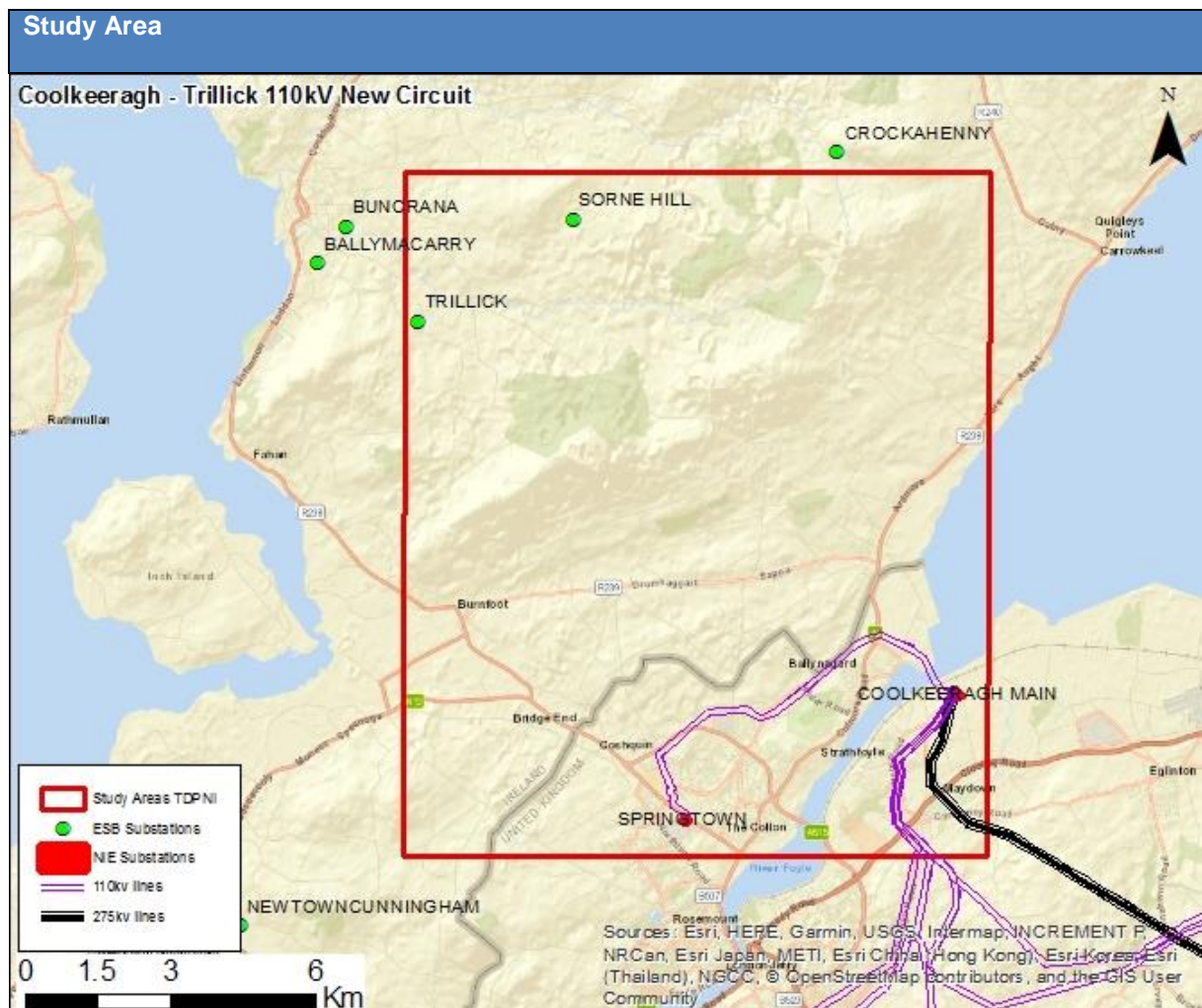
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in the south-east of the study area, in the vicinity of the Maydown and Mubuooy areas. Within the study area there is a significant area of 0.5% AEP climate change coastal flood risk, in the eastern periphery of Muff There are significant areas of 0.5% AEP climate change pluvial flood risk in the

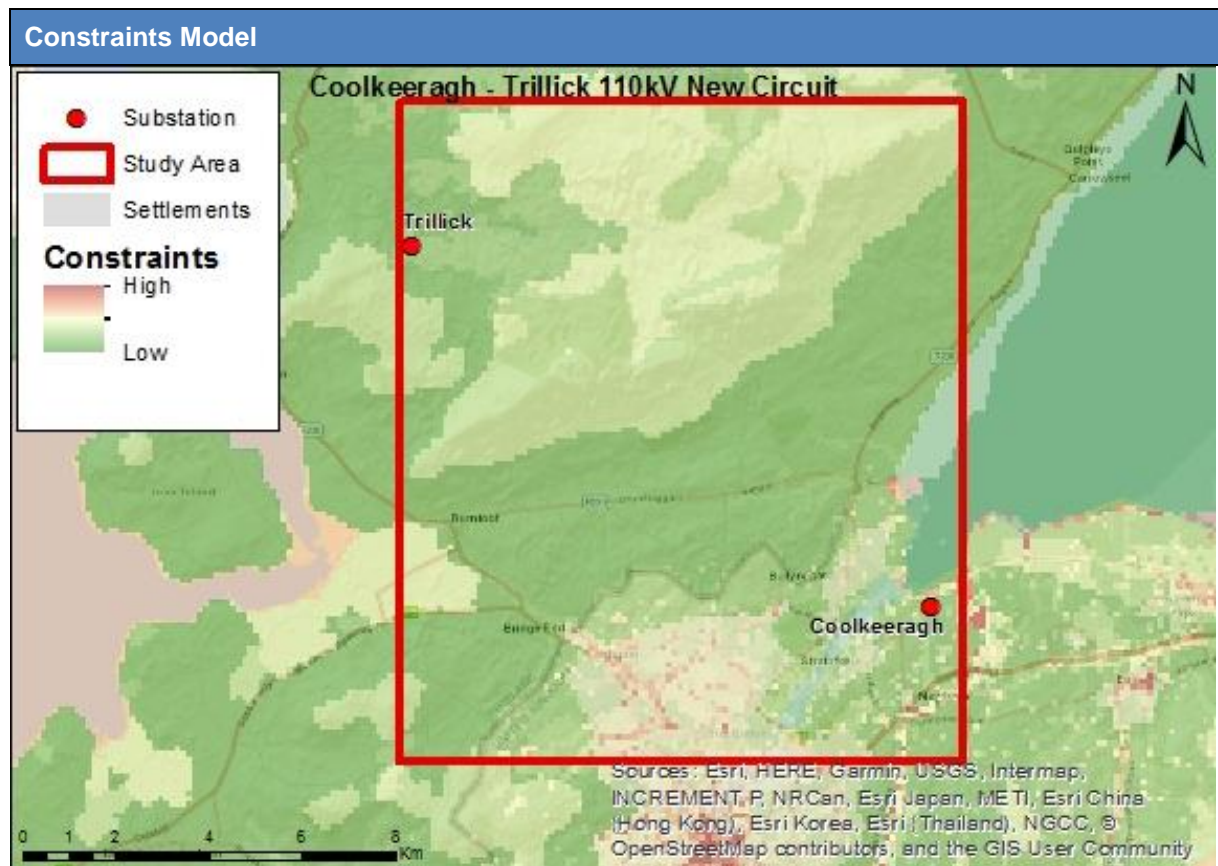
south of the study area, mainly in the vicinity of the Spring Town area. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the vicinity of Scalp Mountain, Elagh More and Mullanaghy.

**Material Assets & Infrastructure** - Within the study area there is 26km of A roads. There is also 43km of railway line in the study area, forming part of the connection between Coleraine and Derry/Londonderry. The North-West gas pipeline runs through the study area. There are several existing 33 kV, 110 kV and 275 kV transmission lines within the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 86km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 72 SMR sites, 11 scheduled zones, 40 listed buildings, 42 industrial heritage sites, nine defence heritage sites and seven listed parks, gardens or demesnes, including Belmont House, Brook Hall and Thornhill.

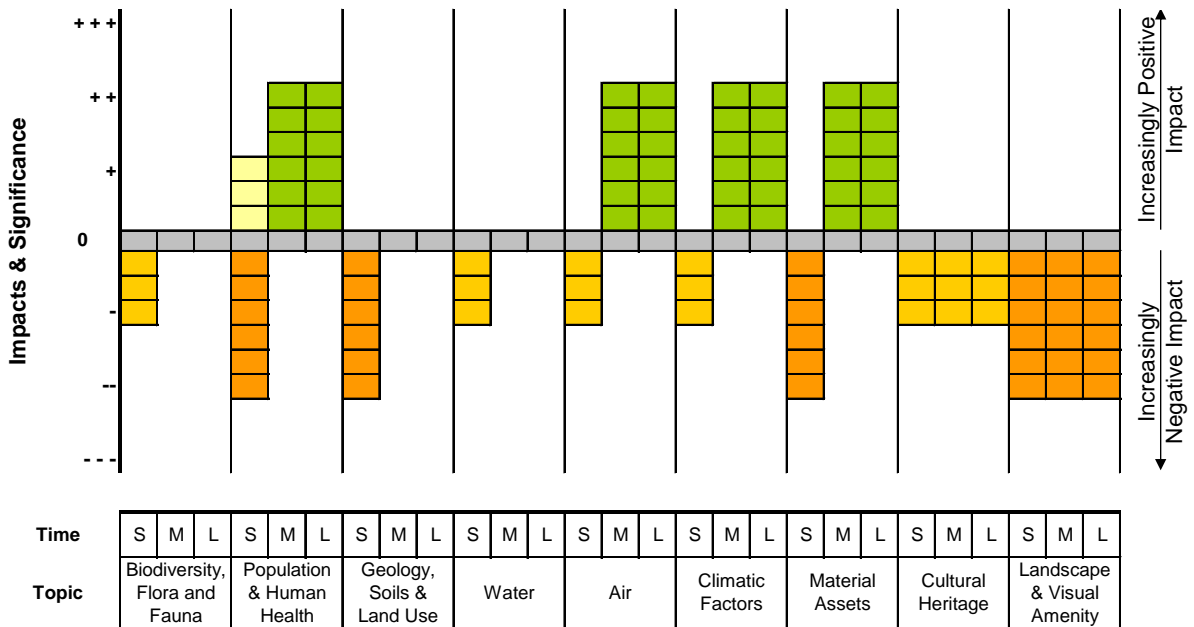
**Landscape & Visual Amenity** - The study area encompasses four Landscape Character Areas, namely Burgibbagh and Drumahoe, Derry Slopes, Foyle Valley, and Lough Foyle Alluvial Plain. All of these LCAs are designated as High-Medium sensitivity to development.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new 110 kV transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include compaction to several areas of sensitive peat bog, along with noise disturbance impacts to people in high density population areas, during the construction of the new line. Following the construction of the new line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual effects on highly sensitive Landscape Development Areas. If the new 110 kV transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure providing an increased supply of secure and reliable renewable energy into the future.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.



## 8.15 TURLEENAN – OMAGH SOUTH – COUNTY DONEGAL NEW 275 KV LINE

### Turleenan – Omagh South – County Donegal new 275 kV Line

A need has been identified to strengthen the electricity network on both sides of the border in the north-west to assist in the integration of renewable power sources. This project is on hold and will most likely be replaced by the North West Reinforcement but still has Project of Common interest (PCI) status.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses 25 SACs. There are four SPAs within the study area, namely Pittigoe Plateau, Lough Derg (Donegal), Pettigo Plateau Nature Reserve and Donegal Bay. The study area encompasses three Ramsar Sites, namely Black Bog, Fairy Water Bogs and Pettigoe Plateau. There are 68 ASSIs, nine NHAs and pNHAs, and 34 SLNCIs encompassed by the study area. There are four Freshwater Pearl Mussel Catchments within the study area, namely Waterfoot, Tempo, Colebrooke and Ballinderry. The study area encompasses seven Nature Reserves and Lower Lough Erne Islands RSPB Reserve. Within the study area there are 101 Salmonid Rivers and two Salmonid Lakes, namely Scolban Lough and Lower Lough Erne. The study area encompasses 297 Local Wildlife Sites.

**Population & Human Health** – There are ten main settlements within the study area, being Omagh, Dromore (Omagh), Fintona, Ballinamallard, Irvinestown, Dungannon, Coalisland, Moy, Cookstown and Moneymore. The largest settlements are Omagh, Dungannon and Cookstown respectively. The mean population density of this study area is in the medium range compared to other study areas, at 792 people/km<sup>2</sup>. There are three Neighbourhood Renewal Areas within the study area, namely Omagh, Dungannon and Coalisland, which are socially sensitive areas. There are no Peace Lines within the study area. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Omagh, Dungannon, and Creggan / Greencastle areas.

**Soils, Geology and Land use** – The study area covers over 2,700km<sup>2</sup> and is composed mainly of pastures (57.5%), peat bogs (15.9%), continuous urban fabric (10%), land principally occupied by agriculture (7.3%) and coniferous forest (5.9%). The study area encompasses 28 ASSI sites of geological heritage. Within the study area there are 633 mine shafts, 109 active quarries, 604 historic mines and several areas of orchards, with clustering of areas of orchards in the South Dungannon, Moy, Omagh, Dromore areas, and in the vicinity of Lough Erne. There are 270 areas of unstable ground identified within the study area, mainly found in the vicinity of Creggan, Drumkilly, Cloghfin, Drumskinny, Ederney, Ballyness Mountain and Lough Navar Forest. One landslide deposit area has been identified in the region of the Cliffs of Magho. There are 897 ancient and long-established woodland areas in the study area, along with 300 Forest Service sites. Within the study area there are 104 PPC sites and over 2,000 historical sites which have the potential of being contaminated land, including; 800 manufacturing works, 418 mineral works, 343 railway lands, 183 textile works and 58 waste treatment works. The study area includes nearly 100 upland and steep slope areas, mainly in the Creggan, Cloghfin, Garvaghy areas, and in the vicinity of Ballyness Mountain, Brougher Mountain and Lough Derg.

**Water** – Within the study area there are 107 river water bodies, of which 38 are of good ecological status and 69 are of less than good ecological status. There are over 800 sections of river that transect the study area. Within the study area there are three lake water bodies, namely Lough Scolban, which is of good ecological status, Lower Lough Erne (Devenish), which is of moderate ecological potential, and Lower Lough Erne (Kesh), which is of moderate ecological potential. There are 15 drinking water rivers within the study area, along with one drinking water lake, being Lower Lough Erne (Kesh). There are several significant areas of 1% AEP fluvial flood risk in the study area, mainly in the vicinity of Carrick Lough, Ederney, Clonelly, Eglis, Eskragh, Dromore, Omagh and Moy. There are significant areas of 0.5% AEP pluvial flood risk in the vicinity the following areas within the study area; Edenaclogh Wood, Pigeon Top Forest, Milltown, Drumquin, Dunnamore, Rhone Hill, Derryoghill, Ballygawley, Eskragh, Ederney and Irvinestown. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – There are two AQMAs within the study area, namely the Moy AQMA and the Newell Road (Dungannon) AQMA. Both of these AQMAs were declared due to high levels of Nitrogen Dioxide, which can be attributed to high levels of traffic in these areas. There are not any other known air quality issues within the study area.

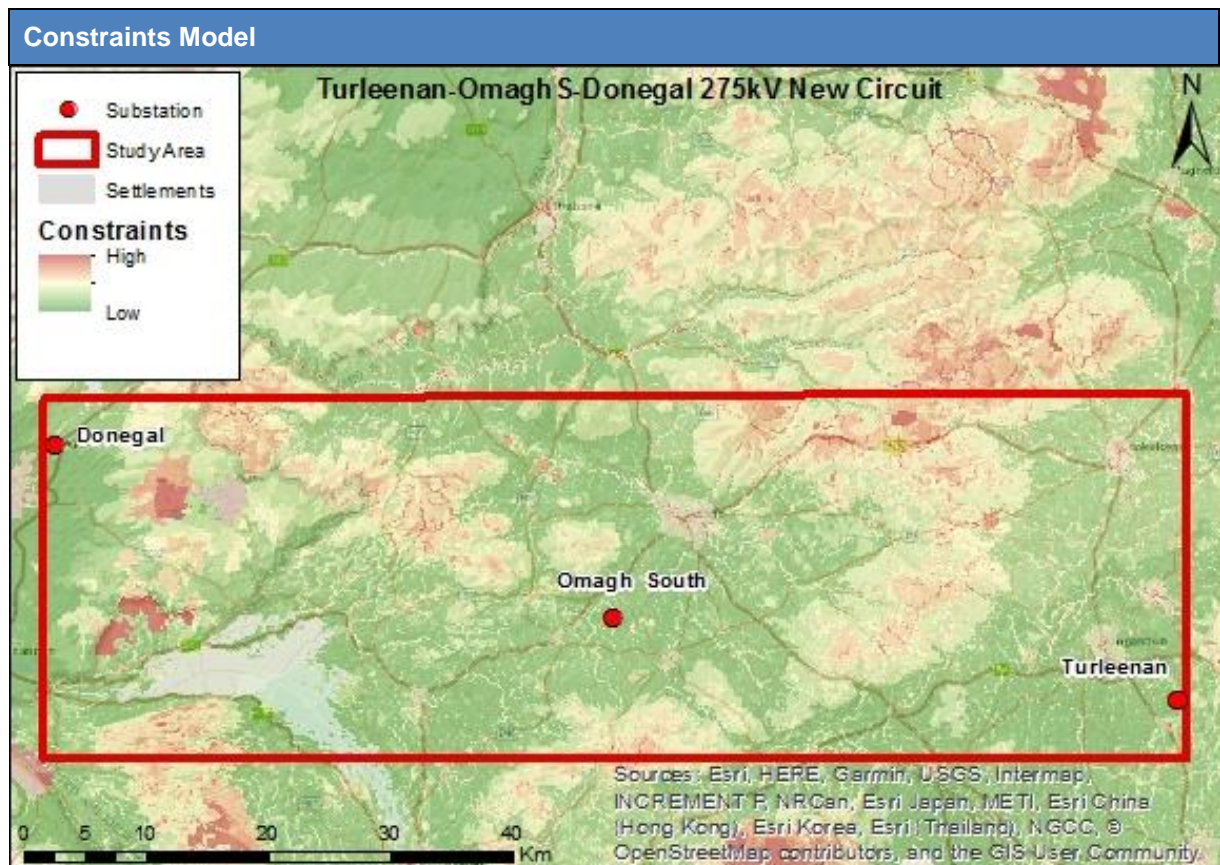
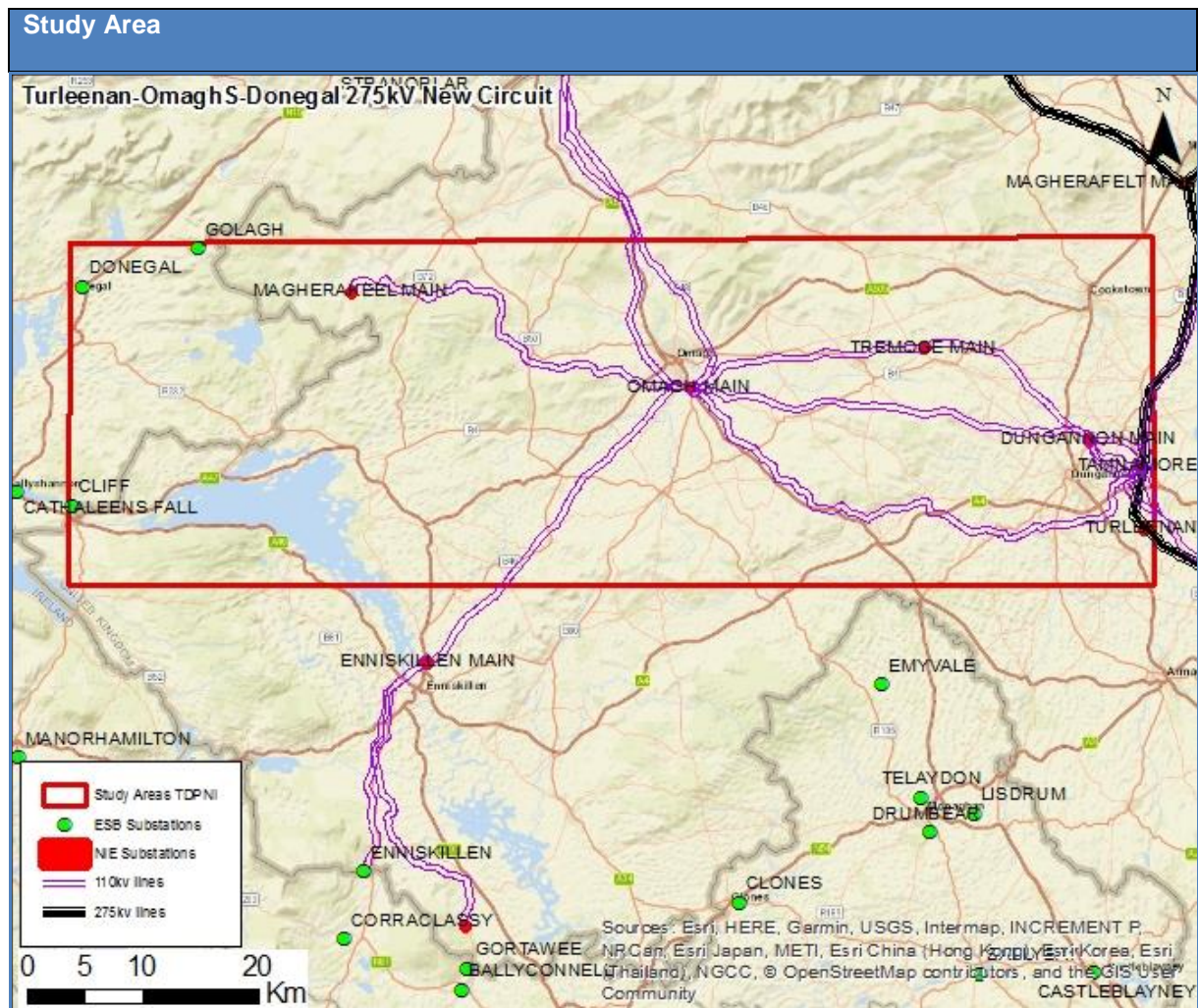
**Climatic Factors** - There are several significant areas of 1% AEP climate change fluvial flood risk in the study area, mainly in the vicinity of Carrick Lough, Ederney, Eskragh, Clonelly, Eglis, Dromore, Omagh and Moy. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in the vicinity the following areas; Edenaclogh Wood, Pigeon Top Forest, Milltown, Drumquin, Dunnamore, Rhone Hill, Derryoghill, Ballygawley, Eskragh, Ederney and Irvinestown. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the vicinity of Altmore Forest, Dunmoyle Forest, Todds Leap, Lough Bradan Forest, Grousehall Hill and Drumnacahan.

**Material Assets & Infrastructure** - Within the study area there is 331km of A roads, and 20km of motorway. The SGN high pressure gas line runs through the study area. There are several existing 33 kV and 110 kV transmission lines within the study area, along with one 275 kV transmission line in the eastern periphery of the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 1,860km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 1,800 SMR sites, over 280 scheduled zones, over 700 listed buildings, over 1,300 industrial heritage sites and 18 defence heritage sites. There is one Area of Significant Archaeological Interest within the study area, namely Beaghmore. Within the study area there are eight Areas of Archaeological Potential, being Cookstown, Newmills, Castlecaulfield, Ballygawley, Dungannon, Augher, Carneel and Donaghmore. There are 23 listed parks, gardens and demesnes within the study area, including Killymoon Castle, Termon and Barons Court.

**Landscape & Visual Amenity** - The study area crosses 28 Landscape Character Areas, including ten areas that are deemed Highly Sensitive to development landscape areas, namely Beaghmore Moors and Marsh, Bessy Bell and Gortin, Blackwater Valley, Clogher Valley Lowlands, Coragh and Garvary River, Enniskillen, Lough Neagh Peatlands, Lower Lough Erne, South Sperrin, and The Knockmore Scarpland. The Sperrin Area of Outstanding Natural Beauty is the sole AONB within the study area. Castle Archdale Country Park is designated by NIEA and is located in the south of the study area. There are two National Trust Lands identified within the study area, namely The Argory and Wellbrook.

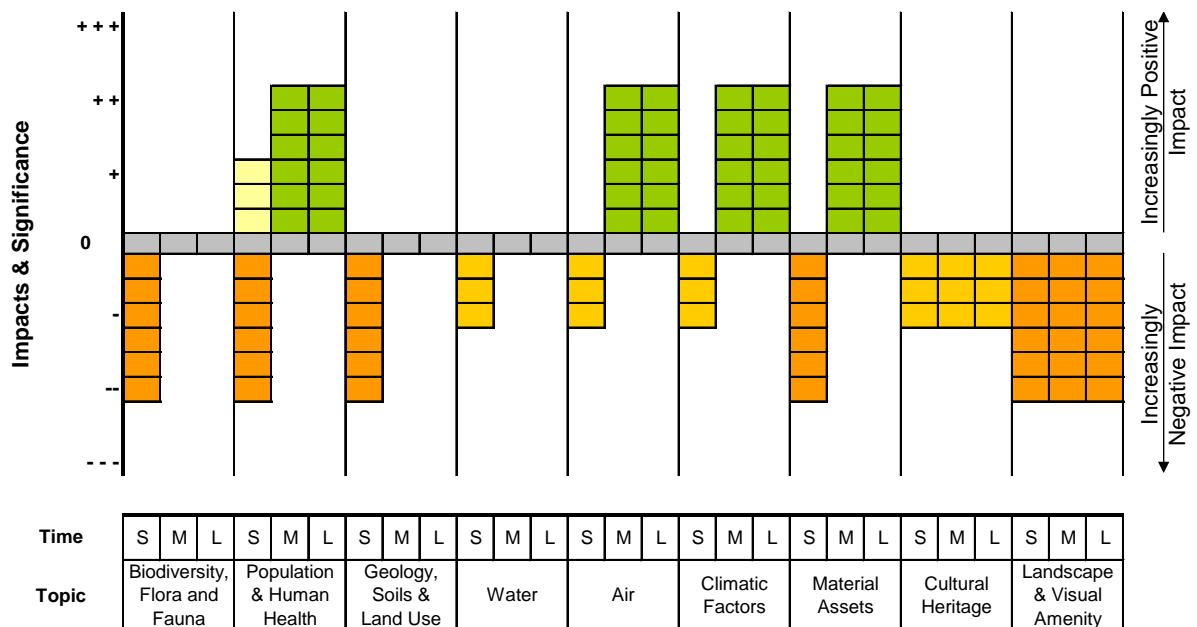






Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new 275 kV transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts to SAC sites and associated species, along with disturbances, such as power supply disruptions, to transport networks, during the construction of the new line. Following the construction of the new 275 kV transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long

term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent, negative, landscape and visual amenity impacts to highly sensitive Landscape Character Areas. Development of the new 275 kV transmission line has the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 14 European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

## 8.16 KILROOT - COOLKEERAGH HVDC LINK (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Kilroot - Coolkeeragh HVDC (subsea) link (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system electrically close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** - The study area encompasses seven SACs, namely Rathlin Island, North Antrim Coast, Magilligan, Bann Estuary, Red Bay, Skerries and Causeway, and The Maidens. The study area encompasses Sheep Island SPA, Rathlin Island SPA, and Lough Folye SPA and Ramsar Site. The study area intersects the northern periphery of the North Channel MPA (cSAC), which has been identified for the protection of Harbour Porpoise *Phocoena phocoena*. A total of 26 ASSIs and 22 SLNCIs are encompassed by the study area. Five Nature Reserves are within the study area, namely Giants Causeway, Portrush, Kebble, Roe Estuary and Magilligan Point. Rathlin and Lough Foyle RSPB Reserves are encompassed by the study area. Rathlin Island MCZ and Waterfoot MCZ are within the study area. A total of 32 Local Wildlife Sites are within the study area and two Shellfish Directive sites, namely Balls point and Longfield Bank. Within the study area there are nursery grounds for several species, including Cod *Gadus morhua* and Common Skate *Dipturus batis*, along with spawning grounds for several species, including Mackerel *Scomber scombrus* and Whiting *Merlangius merlangus*. There are several cetacean species which have been known to use marine areas within the study area, including the Bottlenose Dolphin *Tursiops truncatus*, Minke Whale *Balaenoptera acutorostrata*, Killer Whale *Orcinus orca* and Harbour Porpoise *Phocoenidae phocoena*.

**Population & Human Health** – There are six main settlements along the coastline of the study area, namely Carrickfergus, Ballycastle, Larne, Castlerock, Portrush and Portstewart. The two largest settlements are Carrickfergus and Larne respectively. The mean population density of this study area is low compared to other study areas, at 373 people/km<sup>2</sup>. There are no Neighbourhood Renewal Areas or peace lines along the coastline of the study area. There are several areas of lower perceived along the coastline of the study area, including Magilligan, Portstewart, Cushendun and Larne.

**Soils, Geology and Land use** – The study area covers over 25km<sup>2</sup> of coastline which is composed mainly of moors and heathland (30.5%), intertidal flats (23.9%), pastures (18.4%), natural grassland (15.3%) and land principally occupied by agriculture. The study area also encompasses part of the North Channel which borders part of the north and east of Northern Ireland. Within the coastal land of the study area there are 98 mine shafts and 15 historic mines. There are four landslide deposit areas identified in the study area, namely at White Park Bay, Straidkilly Point, Garron Point and Drumnageagh Port. Within the coastal land of the study area there are two ancient woodland areas. A total of 36 historical sites, which could have potential land contamination, are within the

study area, including; nine coal mines, four military installations, two mineral works and two textile works. The study area includes one steep slope, namely Grey Man's Path. There is one military practice area within the study area, namely Magilligan. There are several coastal areas with high marine traffic densities within the study area, including parts of Lough Foyle, Larne Lough and between Ballycastle and Rathlin Island.

**Water** – The study area encompasses part of the North Channel that borders to northern and eastern coastal areas of Northern Ireland. There are eight coastal water bodies within the study area, namely the Maiden Islands, North Coast, Lough Foyle, Rathlin Island, North Channel, Belfast Lough Outer, Portstewart bay and Larne Lough North. The study area encompasses five designated bathing water areas, being in Ballycastle, Castlerock, Magilligan, Portrush and Portstewart. There are two transitional water bodies within the study area, namely the Bann Estuary, and the Foyle Harbour and Faughan. The study area crosses four river water bodies, namely the Kilroot River, Dunseverick River, Rathlin Island Rivers and Copeland Water river water bodies.

**Air** – There are no AQMAs or other known air quality issues within the study area. The development of this new transmission aims to increase the connection of renewable energy within the study area.

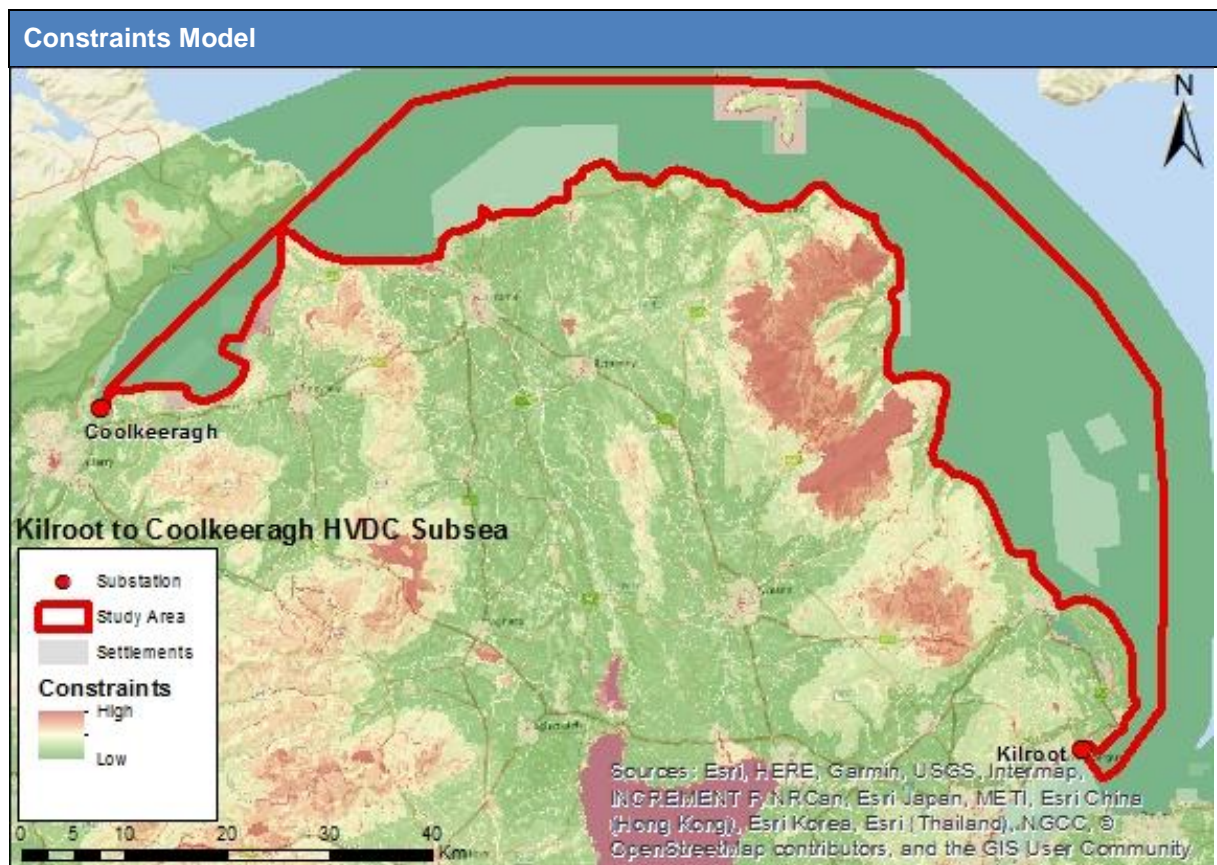
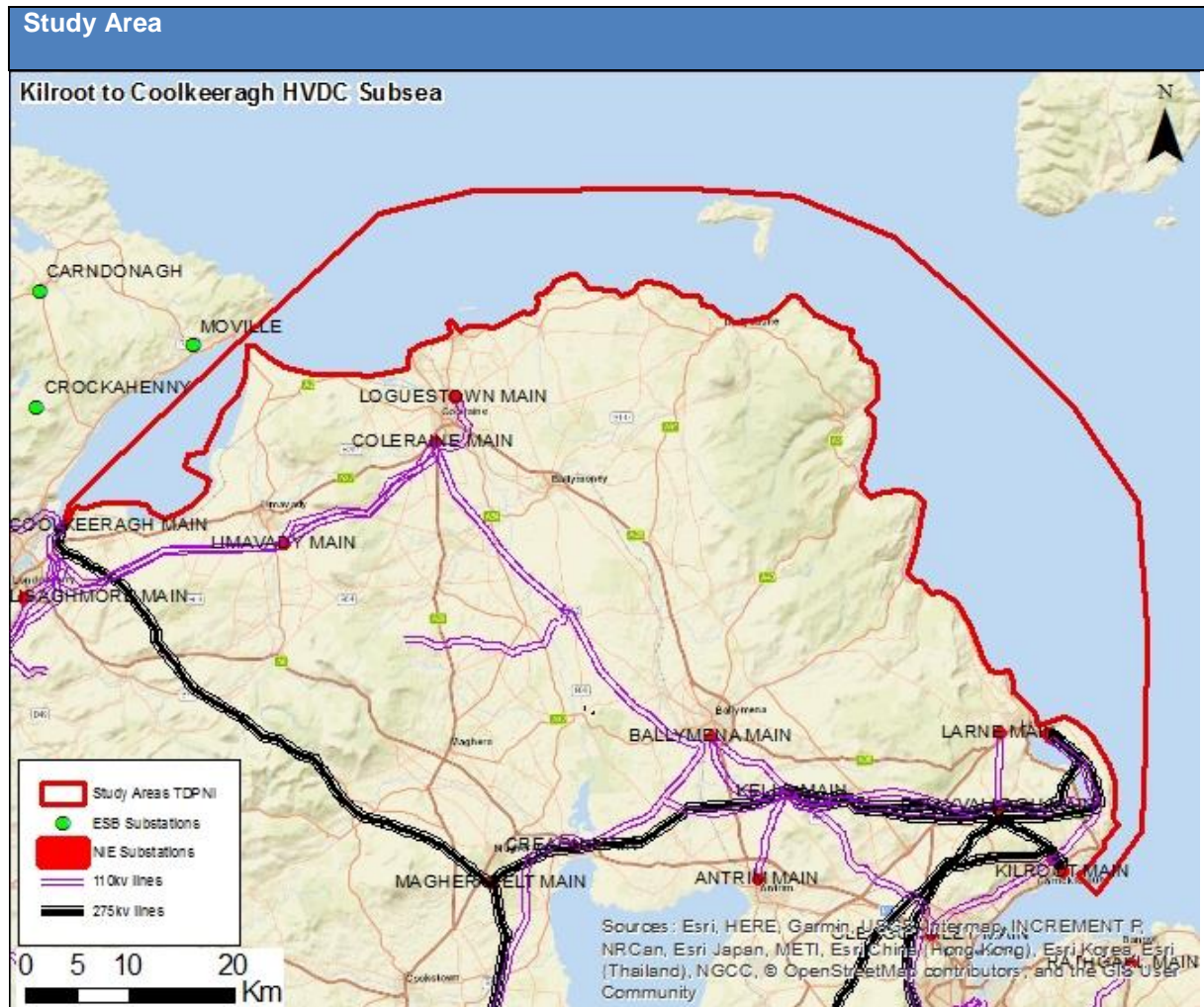
**Climatic Factors** – There are no significant areas of GHG sequestering natural cover within the study area.

**Material Assets & Infrastructure** – Within the study area there are two Atlantic Salmon aquaculture sites, one in the Knockore region and one in the vicinity of Glenarm. There are two harbour areas within the study area, namely the Londonderry Port and Inner Pilotage Area, and the Port of Larne, along with two commercial ports in Castlerock and Larne. The study area encompasses sections of the following submarine power lines; the Moyle Interconnector South, the Moyle Interconnector North and the submarine power line that runs between Ballycastle and Rathlin Island. Within the study area there are three subsea telecommunication cables. One of the cables runs from Portrush to the Northern periphery of the study area, two of the cables run from the vicinity of Larne towards the western vicinity of the study area. Within the study area there are several Blue Flag and Seaside Award beaches, including the beaches in Benome, Portrush West Strand, Waterfoot and Ballygally. Within the study area there are four marinas, six dive sites, four sailing/yacht clubs, several wildfowling areas in Lough Foyle and canoe trails along most of the coastline.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 340 SMR sites, mainly found on Rathlin Island and along the north coast. There are 28 scheduled zones within the study area, along with 28 listed buildings, 50 industrial heritage sites and four defence heritage sites. Within the study area there is one Area of Significant Archaeological Interest, namely Dunluce, and one Area of Archaeological Potential, namely Portrush. There is one UNESCO World Heritage Site within the study area, being the Giants Causeway. Within the study area there are three listed parks, gardens and demenses, namely Downhill, Dunluce Castle and The Manor House (Rathlin). There are several areas containing historic wrecks within the study area, with clustering of historic wrecks in the vicinity of Larne Lough, Rathlin Island, Portrush and Cushendun.

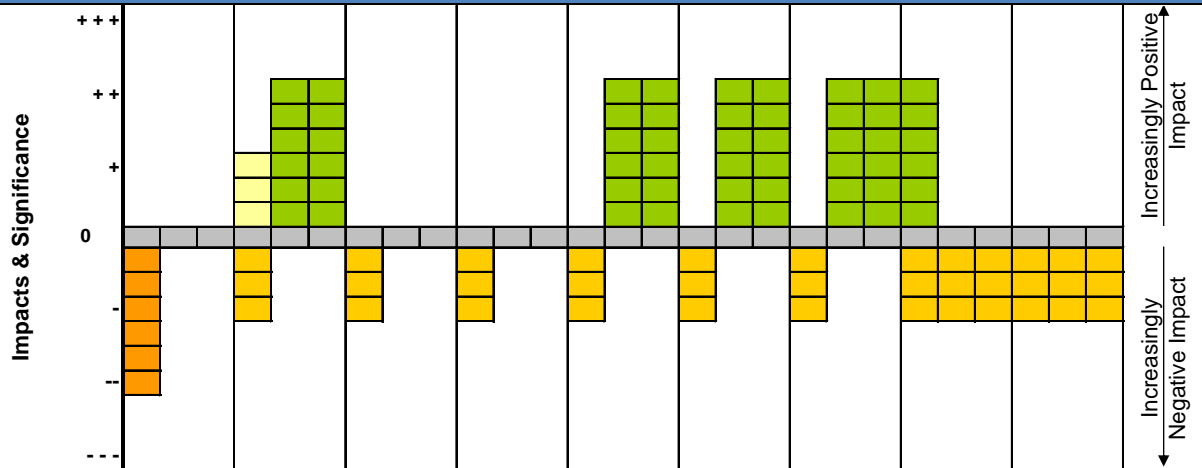
**Landscape & Visual Amenity** - There are 12 Landscape Character Areas within the study area, with nine LCAs deemed Highly Sensitive to development, namely, Ballycastle Glens, Causeway Coast and Rathlin Island, Coleraine Farmland, Fair Head, Islandmagee, Larne Coast, Larne Glens, Magilligan Lowlands, and Moyle Glens. Three Areas of Outstanding Natural Beauty intersect the study area, including Causeway Coast AONB, Antrim Coast and Glens AONB, and Binevenagh AONB. There are ten National Trust Lands within the study area, identified as Barmouth Grangemore and Portstewart, Carrick-a-Rede, Downhill, Dunseverik, Fairhead and Murlough Bay, Giant's Causeway, Islandmagee, Loughan Bay and Portaleen Bay, Rathlin Island, and Whitepark Bay. Within the study area, there are 12 Seascape Character Areas.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-1	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1/2	-1	-1
Landscape & Visual Amenity (L)	-1	-1	-1

**Summary Chart of Potential Impacts**



Time	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L						
Topic	Biodiversity, Flora and Fauna			Population & Human Health			Geology, Soils & Land Use			Water			Air			Climatic Factors			Material Assets			Cultural Heritage			Landscape & Visual Amenity		

**Key Conclusions:**

If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance and sedimentation impacts to SAC sites and associated species during the construction on the new line. Following the construction of the new subsea transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight negative impacts on cultural heritage, and landscape and visual amenity. If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate

positive impacts on population and human health, air, climatic factors, material assets and cultural heritage. These moderate positive impacts include permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.17 MAGHERAFELT - COOLKEERAGH 275 KV OR 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Magherafelt to Coolkeeragh 275 kV or 110 kV Circuit (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system electrically close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses nine SACs, namely Banagher Glen, Carn (Glenshane Pass), Ballynahone Bog, Teal Lough, Owenkillew River, Curran Bog, River Foyle and Tributaries, River Faughan and Tributaries, and River Roe and Tributaries. Lough Foyle SPA, Ramsar Site and RSPB Reserve are within the study area, along with Ballynahone Ramsar Site. The study area encompasses a total of 40 ASSIs and 128 SLNCIs. Ballinderry Freshwater Pearl Mussel Catchment and Longfield Bank Shellfish Directive area are both partially within the study area. There are four Nature Reserves, namely Ballynahone Bog, Ness and Ervy Wood, Banagher Glen and Boorin, within the study area, along with 235 Local Wildlife Sites, 91 Salmonid Rivers and one Salmonid Lake, namely Fea Lough.

**Population & Human Health** – There are 17 main settlements within the study area, of which Londonderry / Derry City and Strabane are the largest. The mean population density of this study area is high compared to other study areas, at 2,142 people/km<sup>2</sup>. Within the study area there are three Peace Lines, being Lower Tullyally, Dungiven Road and The Diamond. There are six Neighbourhood Renewal Areas within the study area, namely Waterside, Triax (Cityside), Strabane, Outer West Derry, Outer North Derry and Limavady. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Londonderry / Derry City, Limavady and Strabane areas.

**Soils, Geology and Land use** – The study area covers over 2,100km<sup>2</sup> and is composed mainly of pastures (47.3%), peat bogs (21%), natural grassland (7.9%), land principally occupied by agriculture (4.6%) and complex cultivation pattern areas (4%). The study area encompasses 14 ASSI sites of geological heritage. Within the study area there are 46 mine shafts, 68 active quarries, 42 historic mines and several areas of orchards, with clustering of areas of orchards in Magherafelt, Limavady, Londonderry / Derry City and Strabane. There are 141 areas of unstable ground identified within the study area, mainly found in the vicinity of the Maghera, Garvagh, Slievekirk and Loughermore areas, as well as in the Sperrin Mountains region. There are 666 ancient and long-established woodland areas in the study area, along with 102 Forest Service sites. Within the study area there are 39 PPC sites and over 2,500 historical sites which have the potential of being contaminated land, including; 950 manufacturing works, 453 mineral works, 372 textile works, 78 sewage works and 66 military installations. The study area includes several upland and steep slope areas, mainly in the Loughermore, Slievekirk and Sperrin Mountains areas.

**Water** – Within the study area there are 86 river water bodies, of which 41 are of good or high ecological status and 45 are of less than good ecological status. There are over 800 sections of



river that transect the study area. There are two transitional water bodies within the study area, namely the Foyle Harbour and Faughan, which is of moderate ecological potential, and the Upper Foyle, which is of moderate ecological status. There is one lake water body, being Lough Fea, which is of good ecological potential, within the study area, along with one coastal water body, namely Lough Foyle, which is of good ecological status. Within the study area there are nine drinking water rivers and one drinking water lake, namely Lough Fea. There are significant areas of 1% AEP fluvial flood risk in the vicinity the following areas within the study area; Newtownstewart, Gortin, Straw, Draperstown, Knockcloghrim, Tobermore, Maghera, Dungiven, Ballymagorry, Strabane and Limavady. There are several significant areas of 0.5% AEP coastal flood risk within the study area, mainly in the vicinity of the Bready, Magheramason, Culmore, Campsey, Eglinton, Greysteel and Ballykelly areas. Within the study area there are significant areas of 0.5% AEP pluvial flood risk in the vicinity of the following areas; Ballykelly, Greysteel, Ringsend, Garvagh, Culnady, Desertmartin, Ballymagory and Bready. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – There are seven AQMAs within the study area, namely in Dale's Corner, Bancrana Road/Racecourse Road, Creggan Road/Infirmary Road, Dungiven, Spencer Road, Strand Road and Magherafelt. These AQMAs have been declared due to high levels of Nitrogen Dioxide within these areas. There are no other known air quality issues within the study area.

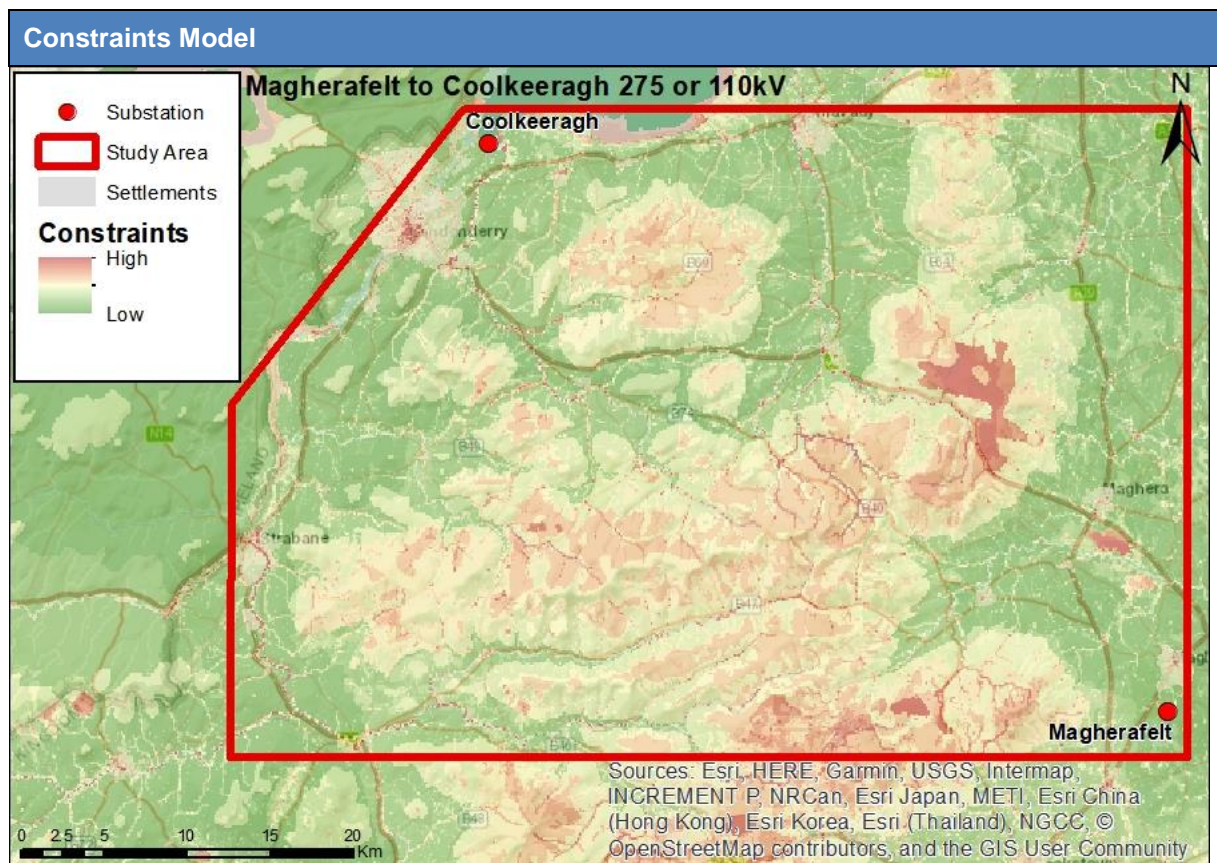
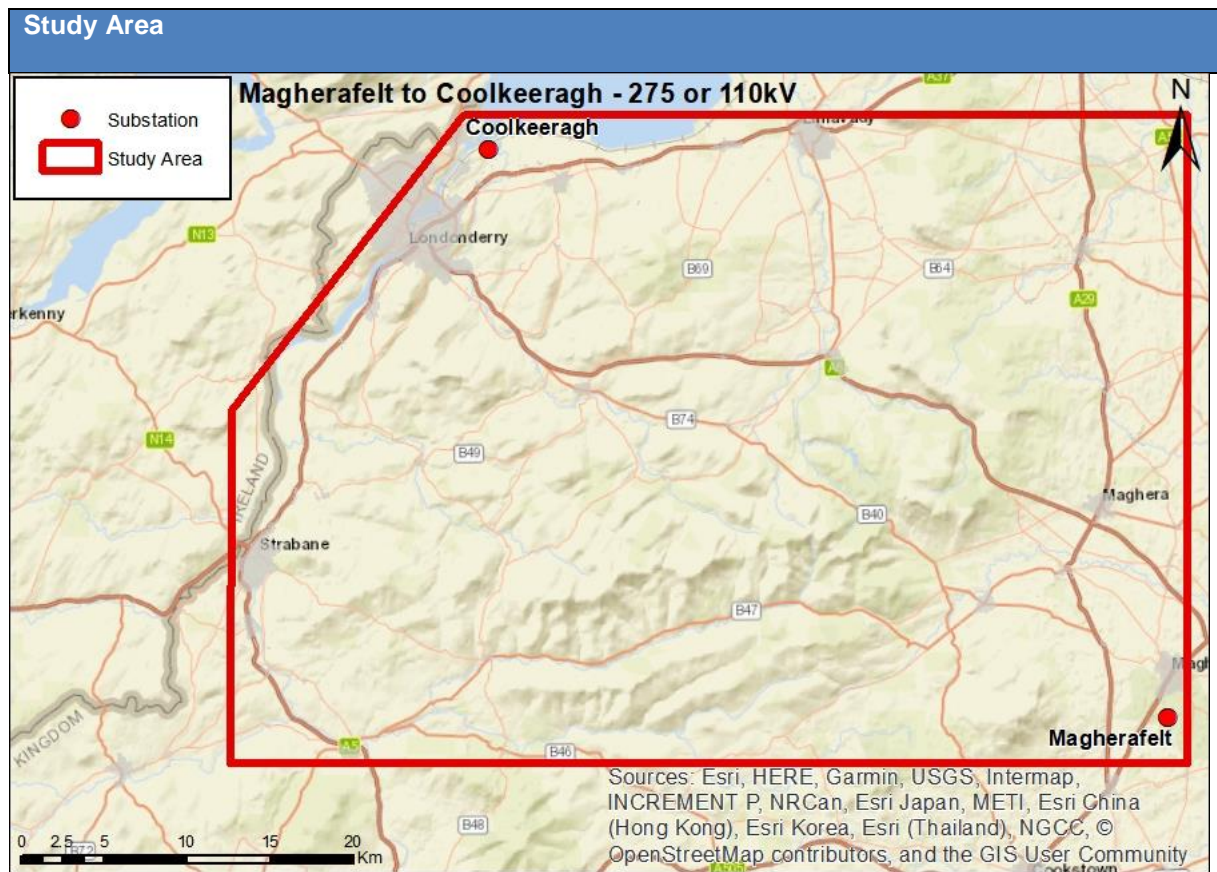
**Climatic Factors** - There are significant areas of 1% AEP climate change fluvial flood risk in the vicinity the following areas within the study area; Newtownstewart, Gortin, Straw, Draperstown, Knockcloghrim, Tobermore, Maghera, Dungiven, Ballymagorry, Strabane and Limavady. There are several significant areas of 0.5% AEP climate change coastal flood risk within the study area, mainly in the vicinity of the Bready, Magheramason, Culmore, Campsey, Eglinton, Greysteel and Ballykelly areas. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in the vicinity of the following areas; Ballykelly, Greysteel, Ringsend, Garvagh, Culnady, Desertmartin, Ballymagory and Bready. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the vicinity of Davagh Forest, Glenlark Forest, Goles Forest, Cam Forest, Gortnamoyagh Forest and Loughermore.

**Material Assets & Infrastructure** – Within the study area there is 250km of A roads, and 43km of railway line between Londonderry / Derry and Limavady. The North-West gas pipeline also runs through the study area. There are several existing 33 kV, 110 kV and 275 kV transmission lines throughout the study area, with clustering of existing transmission lines in the vicinity of Londonderry / Derry, Strabane and Magherafelt. There is one airport within the study area, namely the City of Derry Airport. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 1,270km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 1,700 SMR sites, over 200 scheduled zones, over 1,000 listed buildings, over 1,300 industrial heritage sites and 97 defence heritage sites. There is one Area of Significant Archaeological Interest within the study area, namely Beachmore, along with 14 Areas of Archaeological Potential. Within the study area there are 30 listed parks, gardens and demesnes, with clustering of these sites in the vicinity of Londonderry / Derry City.

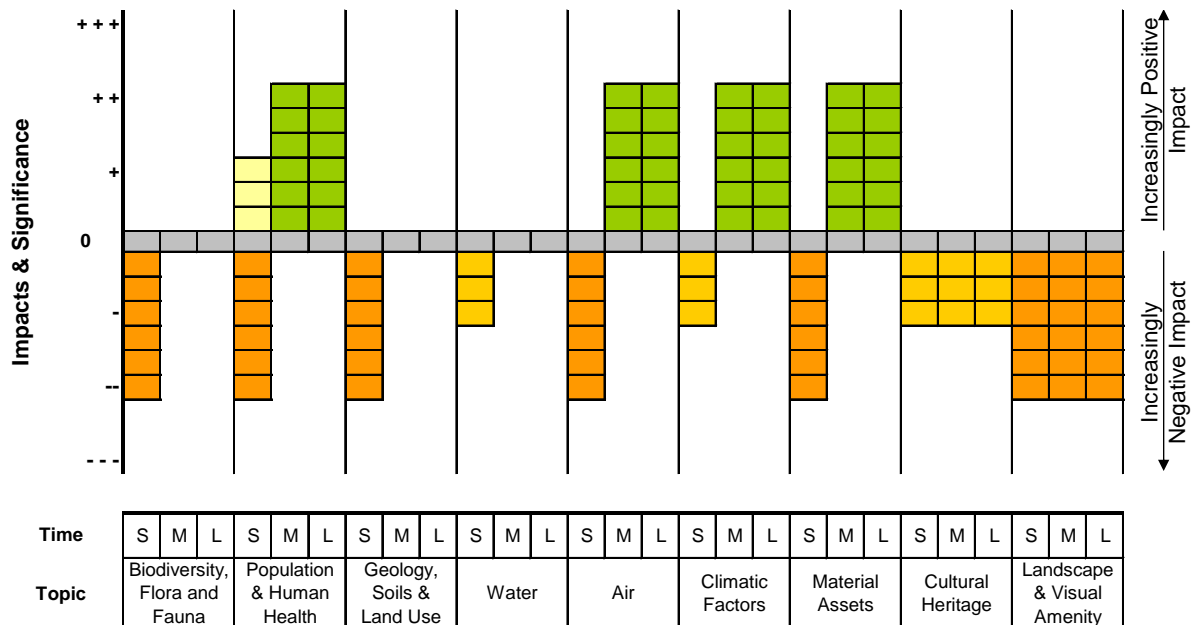
**Landscape & Visual Amenity** - There are 24 Landscape Character Areas within the study area, including ten Highly Sensitive to Development LCAs, namely Beaghmore Moors and Marsh, Bessy Bell and Gortin, Coleraine Farmland, Glenelly Valley, Glenshane Slopes, Lower Bann Floodplain, Lower Bann Valley, South Sperrin, Sperrin Foothills, and Sperrin Mountains. Two Areas of Outstanding Natural Beauty are present in the study area. These are Sperrin AONB and Binevenagh AONB. Country Parks are designated by NIEA and two are found within the study area, namely Ness Wood Country Park and Roe Valley Country Park. There are two National Trust Lands present in the study area, specifically Gray's Printing Press and Rough Fort.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-2	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include temporary increases in local air emissions and reduction in local quality in an AQMA, during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural

heritage, and landscape and visual amenity. These moderate negative impacts include landscape and visual effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable renewable energy into the future.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.18 MAGHERAFELT – STRABANE 275 KV OR 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Magherafelt - Strabane 275 kV or 110 kV Circuit (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system electrically close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses 10 SACs, 28 ASSIs and 74 SLNCIs. Ballynahone Ramsar Site and Ballinderry Freshwater Pearl Mussel Catchment are within the study area. Three Nature Reserves are encompassed by the study area, namely Ballynahone Bog, Banagher Glen and Boorin. There are 58 Salmonid Rivers and one Salmonid Lake, namely Fee Lough, and 175 Local Wildlife Sites within the study area.

**Population & Human Health** – There are six main settlements within the study area, namely Maghera, Draperstown, Magherafelt, Strabane, Newtown Stewart and Sion Mills. The two largest settlements are Strabane and Magherafelt respectively. The mean population density of this study area is in the medium range compared to other study areas, at 1,108 people/km<sup>2</sup>. There are no peace lines in the study area. There is one Neighbourhood Renewal Area in Strabane, which is a socially sensitive area. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Strabane, Sion Mills, Magherafelt and Maghera areas.

**Soils, Geology and Land use** – The study area covers over 1,200km<sup>2</sup> and is composed mainly of pastures (44.5%), peat bogs (27%), natural grassland (10%), land principally occupied by agriculture (5.6%) and coniferous forest (3.3%). The study area encompasses 10 ASSI sites of geological heritage. Within the study area there are 46 mine shafts, 66 active quarries, 42 historic mines and nine areas of orchards. There are 77 areas of unstable ground identified within the study area, with most found in the Sperrin Mountains region. There are two landslide deposit areas within the study area, with both occurring in the Slieve Gallion area. There are 395 ancient and long-established woodland areas in the study area, along with 58 Forest Service sites. Within the study area there are 16 PPC sites and over 1,300 historical sites which have the potential of being contaminated land, including; 665 manufacturing works, 245 mineral works, 169 railways lands and 155 textile works. The study area includes several upland areas and steep slopes, mostly within the Sperrin Mountains.

**Water** – Within the study area there are 57 river water bodies, of which 28 are of good or high ecological status and 29 are of less than good ecological status. There are over 500 sections of river that transect the study area. Within the study area there is one transitional water body, namely the Upper Foyle, which is of moderate ecological status. There is one lake water body within the

study area, namely Lough Fea, which is of good ecological potential. Within the study area there are seven drinking water rivers, namely the River Derg, Mourne River, Lissan Water, Owenrigh River, River Faughan, Cavanalee River and White Water (Co. Tyrone), along with one drinking water lake, being Lough Fea. There are several significant areas of 1% AEP fluvial flood risk within the study area, mainly in the vicinity of the Strabane, Ballymagorry, Cloghor, Gortin, Knockcloghrim, Curran, Tobermore, Maghera, Draperstown and Straw areas. There is a significant area of 0.5% AEP coastal flood risk in the north-west of the study area, in the vicinity of the Cloghor area. There are several significant areas of 0.5% AEP pluvial flood risk within the study area, mainly in the vicinity of the Ballymagory, Cloghor, Maghera, Desertmartin, Liscloon, Artigarvan, Craig and Tirkane areas. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – There are three AQMAs within the study area, located in Magherafelt, Newtownstewart and Strabane. Magherafelt AQMA was declared due to high levels of Nitrogen Dioxide, while Newtownstewart AQMA and Strabane AQMA were declared due to high levels of Particulate Matter (PM<sub>10</sub>). There are no other known air quality issues within the study area.

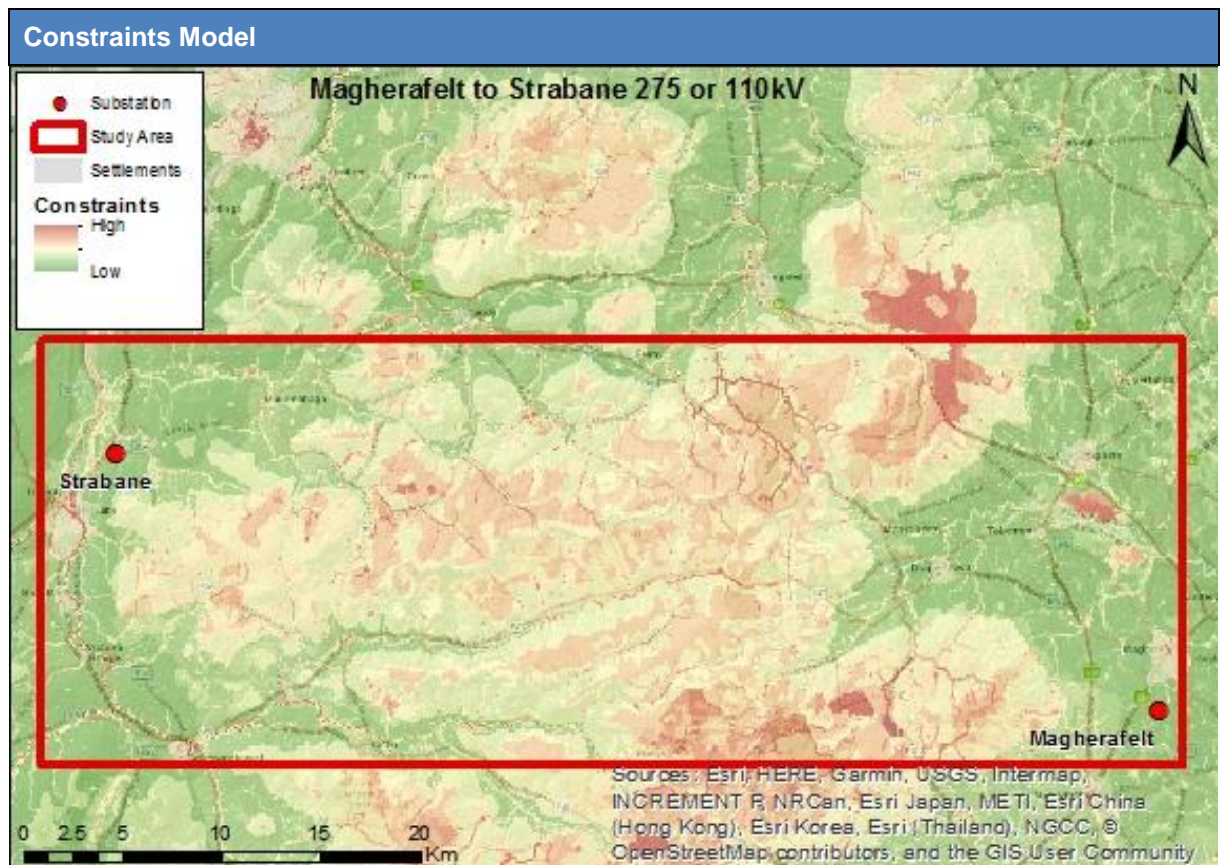
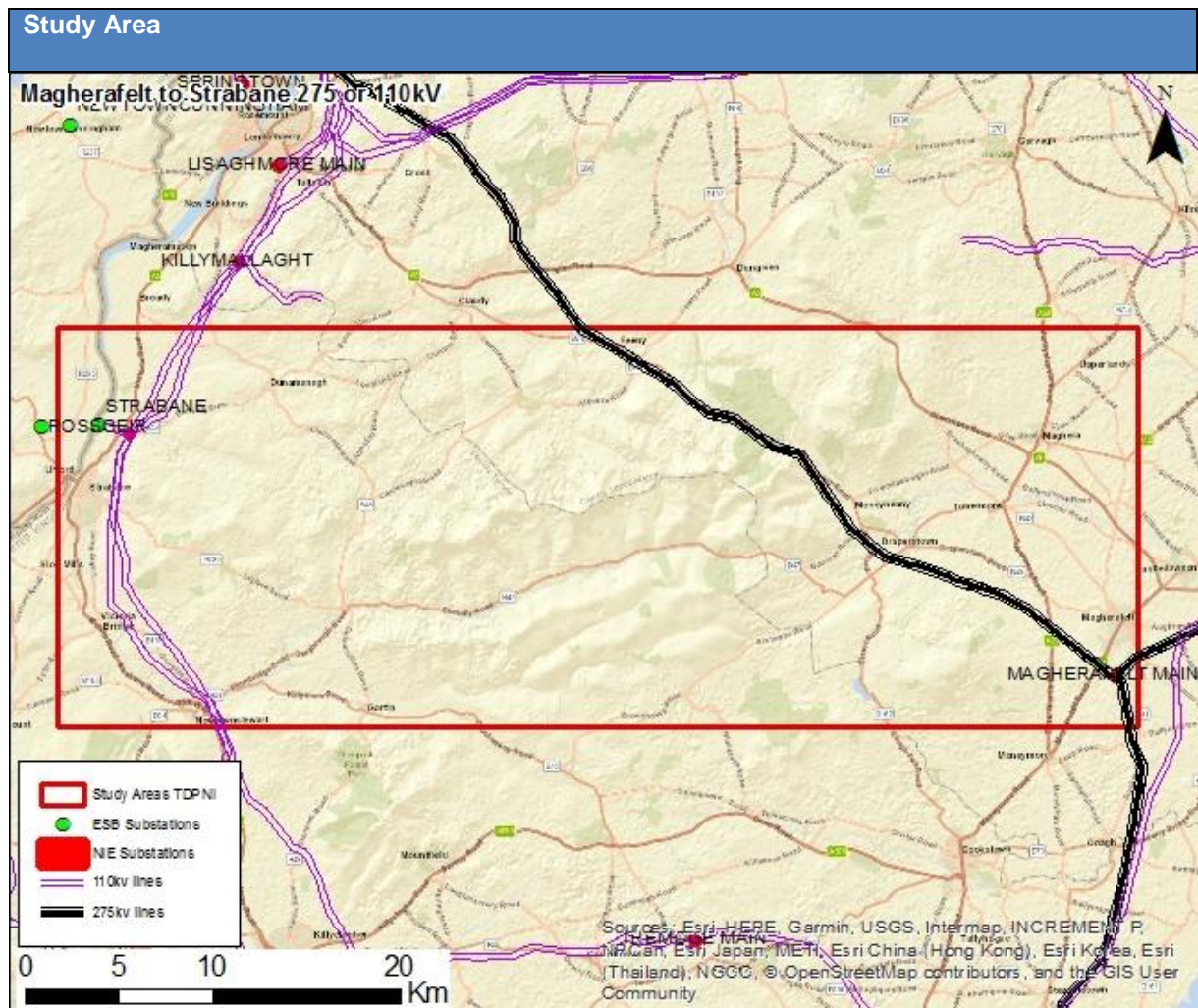
**Climatic Factors** – There are several significant areas of 1% AEP climate change fluvial flood risk within the study area, mainly in the vicinity of the Strabane, Ballymagorry, Cloghor, Gortin, Knockcloghrim, Curran, Tobermore, Maghera, Draperstown and Straw areas. There is a significant area of 0.5% AEP climate change coastal flood risk in the north-west of the study area, in the vicinity of the Cloghor area. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk, mainly in the vicinity of the Ballymagory, Cloghor, Maghera, Desertmartin, Liscloon, Artigarvan, Craig and Tirkane areas. There are several areas of GHG sequestering natural cover within the study area, with large areas of areas with GHG sequestering natural cover in the vicinity of Davagh Forest, Goles Forest, Glenark Forest and Banagher Forest. The development of this new transmission aims to increase the connection of renewable energy within the study area.

**Material Assets & Infrastructure** – Within the study area there is 91km of A roads. There are several existing 33 kV, 110 kV and 275 kV transmission lines within the study area, with clustering of existing transmission lines in Strabane and Magherafelt. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 674km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 870 SMR sites, 121 scheduled zones, over 300 listed buildings, over 700 industrial heritage sites and seven defence heritage sites. There are eight Areas of Archaeological Potential within the study area, namely Feeny, Desertmartin, Magherafelt, Maghera, Currna, Culnady, Gulladuff and Tobermore. Within the study area there are eight listed parks, gardens and demesnes, including Beltrim Castle, Rockwood and Barons Court.

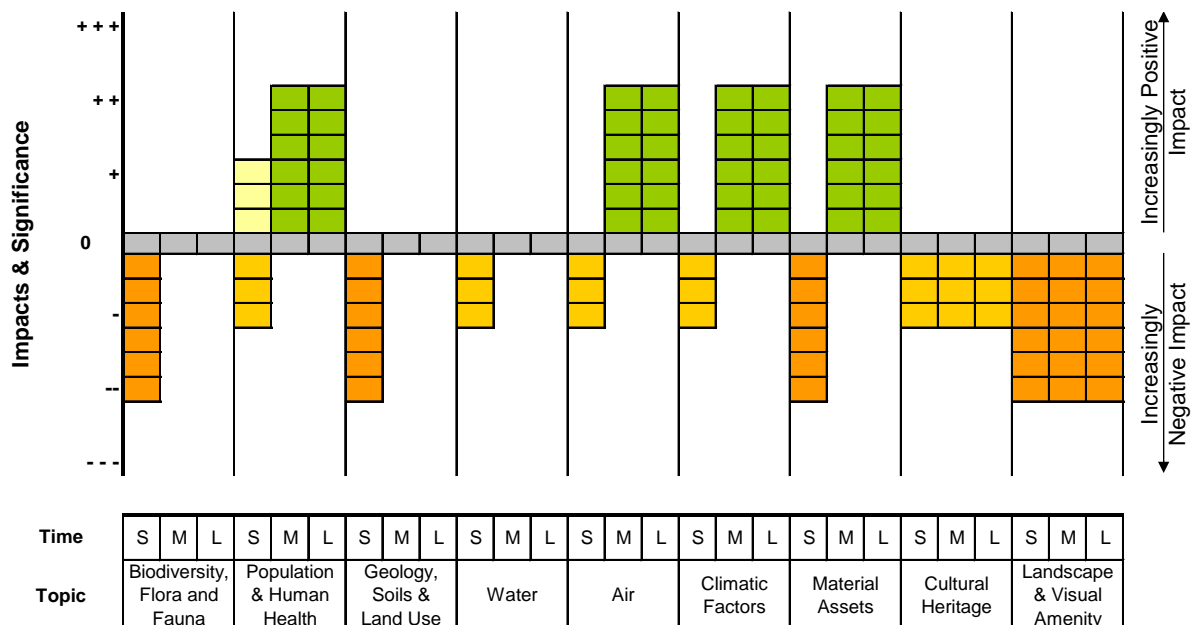
**Landscape & Visual Amenity** - There are 18 Landscape Character Areas encompassed in the study area, with eight deemed Highly Sensitive to development LCAs, namely Beaghmore Moors and Marsh, Bessy Bell and Gortin, Glenelly Valley, Glenshane Slopes, Lower Bann Valley, South Sperrin, Sperrin Foothills, and Sperrin Mountains. Sperrin Area of Outstanding Natural Beauty is the sole AONB within the study area. One National Trust Land is present in the study area and was identified as Gray's Printing Press.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog, along with disturbance to transport networks, such as power supply disruptions, during construction works. Following the development of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate



negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include landscape and visual amenity effects on highly sensitive Landscape Character Areas. If the new transmission line is developed within 1% of the best environmental line there is the potential for medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable renewable energy into the future.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.19 AGIVEY CLUSTER – LIMAVADY 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Agivey Cluster - Limavady 110 kV Circuit (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system electrically close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses River Roe and Tributaries SAC and ASSI. There are six other ASSIs are also within the study area, namely Smulgedon, Castle River Valley, Ballymacallion, Errigal Glen, Coolnasillagh and Brockagh Quarry. There are 19 SLNCIs, nine Salmonid Rivers and 19 Local Wildlife Sites within the study area.

**Population & Human Health** – There are no main settlements within the study area. The mean population density of this study area is low compared to other study areas, at 140 people/km<sup>2</sup>. There are no peace lines or Neighbourhood Renewal Areas in the study area. There is one area of lower perceived health within part of the Garvagh area that is within the study area.

**Soils, Geology and Land use** – The study area covers over 140km<sup>2</sup> and is composed mainly of pastures (45%), natural grassland (17%), peat bogs (11%), land principally occupied by agriculture (8%) and coniferous forest (8%). Within the study area there is one area of orchard. There are 20 areas of unstable ground identified within the study area, with most occurring in the Benbradagh, Craiggore, Brockagh and Killykergan areas. There are three landslide deposit areas within the Craiggore region of the study area. A total of 30 ancient and long-established woodland areas occur in the study area, along with 15 Forest Service sites. Within the study area there are two PPC sites and 108 historical sites which have the potential of being contaminated land, including; 36 mineral works, 30 manufacturing works, 20 railways lands and five waste treatment works. There are four upland and steep slope areas within the study area, including Benbradagh and Donalds Hill.

**Water** – Within the study area there are 11 river water bodies, of which seven are of good or high ecological status and four are of moderate ecological status. There are 72 sections of river that transect the study area. There are several significant areas of 1% AEP fluvial flood risk within the study area, mainly in the vicinity of the Bonnanaboigh, Brockagh, Drumsurn, Drumagosker, Ballyrogan, Garvagh Forest areas. There are several significant areas of 0.5% AEP pluvial flood risk within the study area, mainly in the vicinity of the Drumagosker, Ballyleagry, Drumsurn, Drumaduff, Brockagh, Ballyrogan and Boleran areas. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

**Air** – There are no AQMAs within the study area. Furthermore, there are no other known air quality issues within the study area.

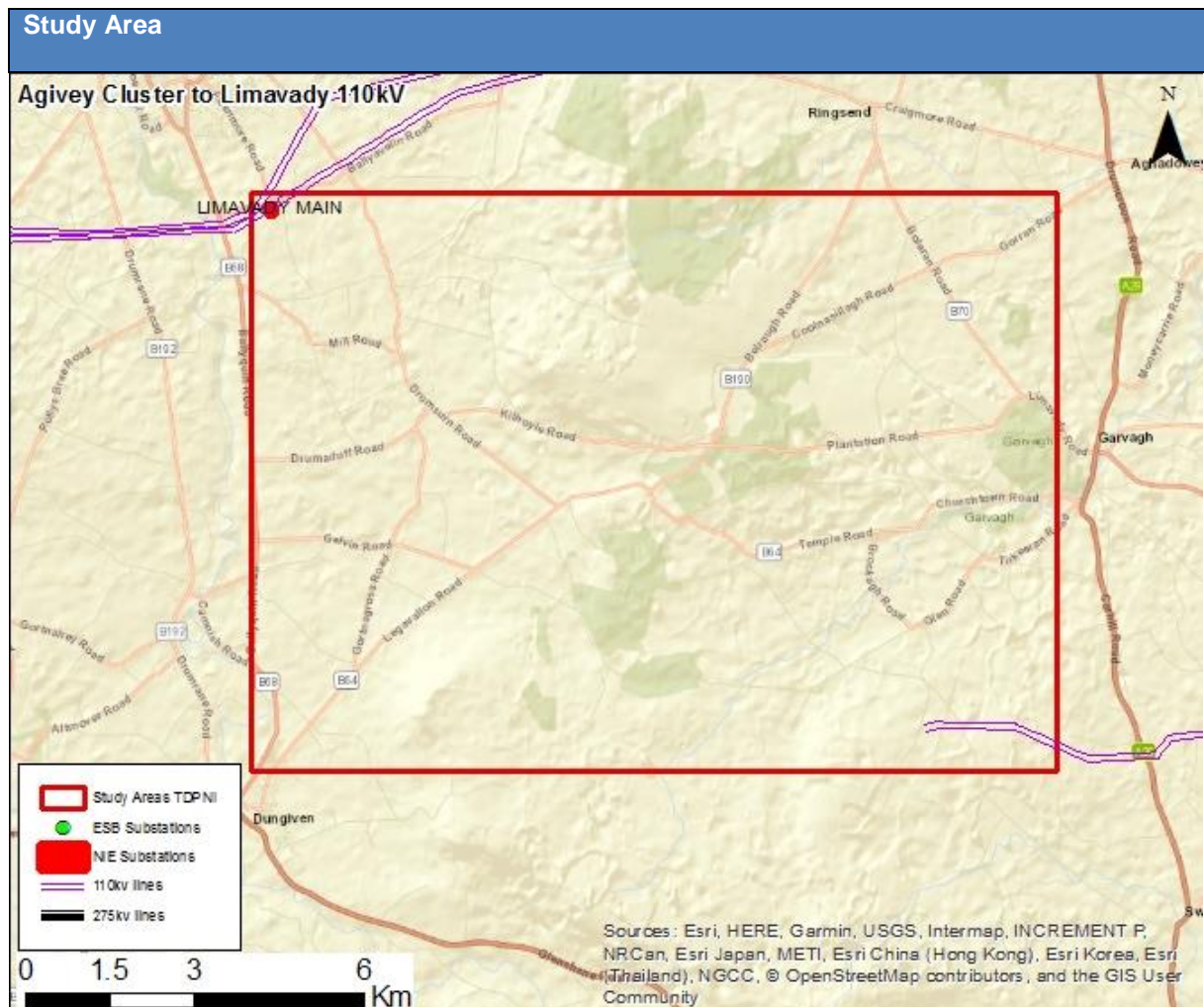


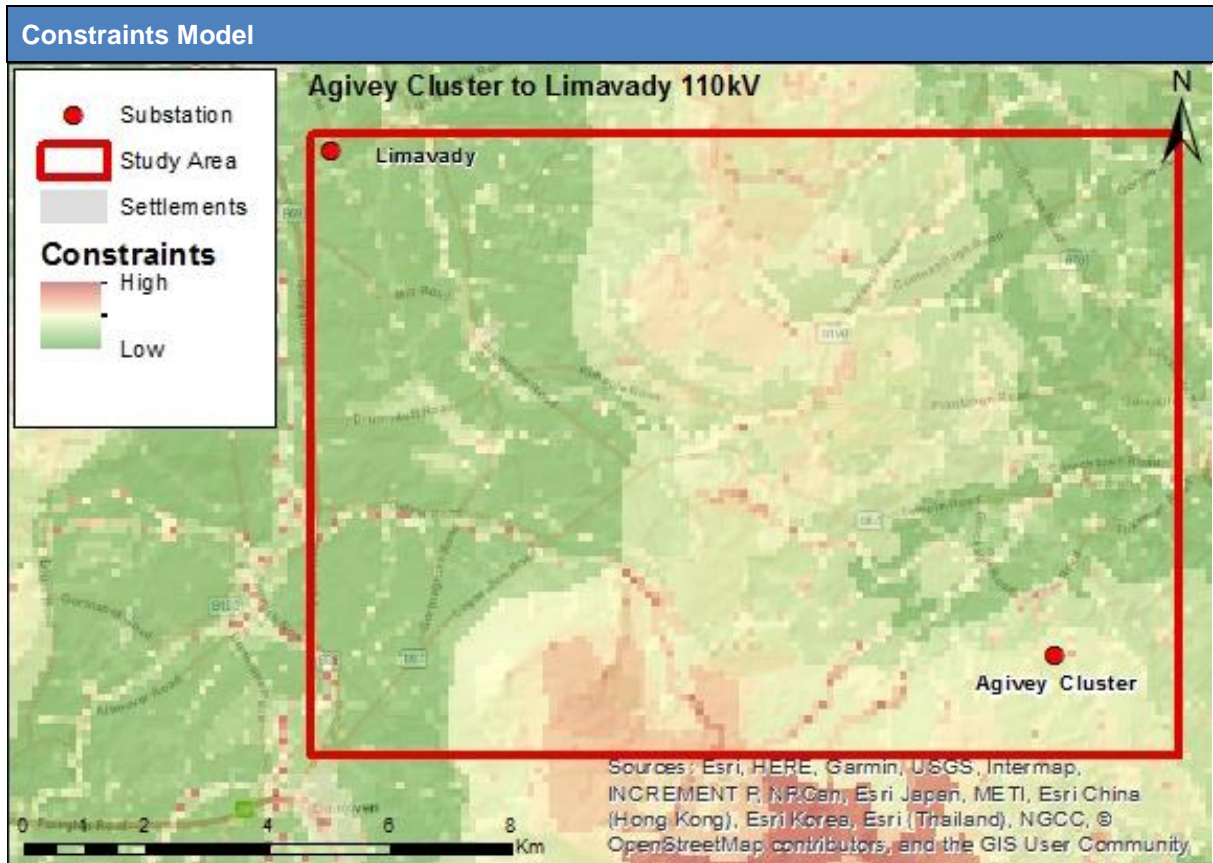
**Climatic Factors** – There are several significant areas of 1% AEP climate change fluvial flood risk within the study area, mainly in the vicinity of the Bonnanaboigh, Brockagh, Drumsurn, Drumagosker, Ballyrogan, and Garvagh Forest areas. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk, mainly in the vicinity of the Drumagosker, Ballyleagry, Drumsurn, Drumaduff, Brockagh, Ballyrogan and Boleran areas. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the vicinity of Gortnamoyagh Forest, Cam Forest, and Garvagh Forest.

**Material Assets & Infrastructure** – There are no major roads within the study area. The North West gas pipeline crosses the north-western periphery of the study area. There are several existing 33 kV and 110 kV transmission lines within the study area, mainly in the west. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 84km<sup>2</sup>.

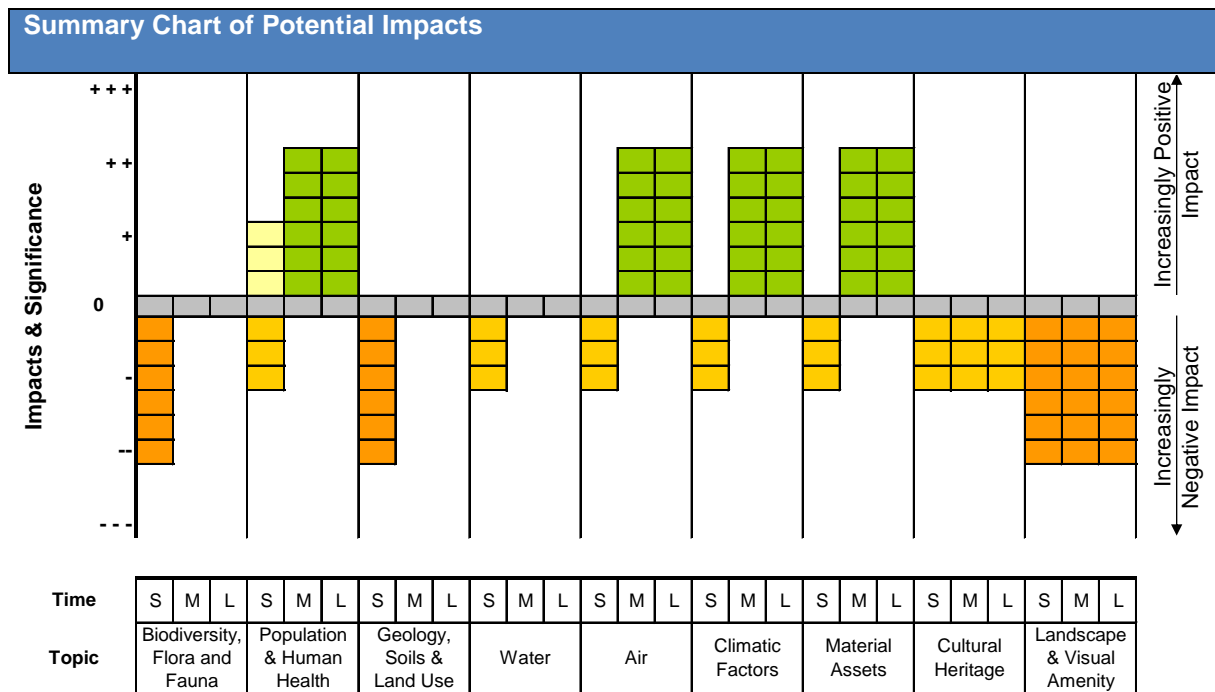
**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 150 SMR sites, 18 scheduled zones, 16 listed buildings, 51 industrial heritage sites and one defence heritage site. There is one Area of Archaeological Potential within the study area, namely Drumsum, along with one listed park, garden and demesne, namely Pellipar.

**Landscape & Visual Amenity** - There are five Landscape Character Areas within the study area, namely the Glenshane Slopes, which is designated as Highly Sensitive to development, and Binevenagh, Eastern Binevenagh Slopes, Garvagh Farmland, and Roe Basin, which are deemed High-Medium sensitive to development LCAs. The Sperrin Area of Outstanding Natural Beauty is the sole AONB within the study area.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-2	0	0
Population & Human Health (PHH)	-1/1	2	2
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	2	2
Climatic Factors (C)	-1	2	2
Material Assets & Infrastructure (MA)	-1	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2



**Key Conclusions:**

If new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include peat compaction to several areas of sensitive peat bog during the construction of the new line. Following the construction of the new transmission line, if it is developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual effects on a highly sensitive Landscape Character Area. If the the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, air, climatic factors and material assets. These moderate positive impacts include permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

**8.20 STRABANE – OMAGH 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)**

**Strabane - Omagh 110 kV Uprate (North West of Northern Ireland Reinforcement)**

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

The initial study area for this restrung has been set as 2km either side of the existing line.

## Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses Owenkillew River SAC and ASSI, Tully Bog SAC and ASSI, River Foyle and Tributaries SAC and ASSI and River Finn SAC. There are three additional ASSIs within the study area, namely McKean's Moss, Strabane Glen and Grange Wood. There are 18 Salmonid Rivers and 32 Local Wildlife Sites within the study area.

**Population & Human Health** – There are four main settlements within the study area, namely Omagh, Strabane, Newtown Stewart and Sion Mills, the largest of which is Omagh. The mean population density of this study area is within the medium range compared to other study areas, at 1,557 people/km<sup>2</sup>. There are no peace lines in the study area. There are two Neighbourhood Renewal Areas within the study area, namely Strabane and Omagh, which are socially sensitive areas. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Sion Mills, Strabane, Omagh and Newtown Stewart areas.

**Soils, Geology and Land use** – The study area covers over 240km<sup>2</sup> and is composed mainly of pastures (74%), peat bogs (4.8%), discontinuous urban fabric (4.5%), land principally occupied by agriculture (4.1%) and non-irrigated arable land (3.4%). Within the study area there are two mine shafts and seven areas of orchards. There are 20 areas of unstable ground identified, with most occurring in the south-east of the study area. There are 112 ancient and long-established woodland areas in the study area, along with seven Forest Service sites. Within the study area there are 11 PPC sites and over 400 historical sites which have the potential of being contaminated land, including; 130 railway lands, 105 manufacturing works, 54 textile works, 14 waste treatment works and 13 sewage works. The study area includes four upland and steep slope areas, namely the Meenaheap, Deers Leap, Bessy Bell and Rylagh Top areas.

**Water** – Within the study area there are 19 river water bodies, of which seven are of good ecological status and 12 are of less than good ecological status. There are 93 sections of river that transect the study area. There is one transitional water body of moderate ecological status within the study area, namely the Upper Foyle. Within the study area there are five drinking water rivers, namely the River Derg, Mourne River, Camowen River, Glenscollip Burn and Cavanalee River. There are significant areas of 1% AEP fluvial flood risk in parts of Newtown Stewart and Omagh that are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

**Air** – Within the study area there are two AQMAs which have been declared for Particulate Matter (PM<sub>10</sub>), being in Strabane and Newtown Stewart. There are no other known air quality issues within the study area.

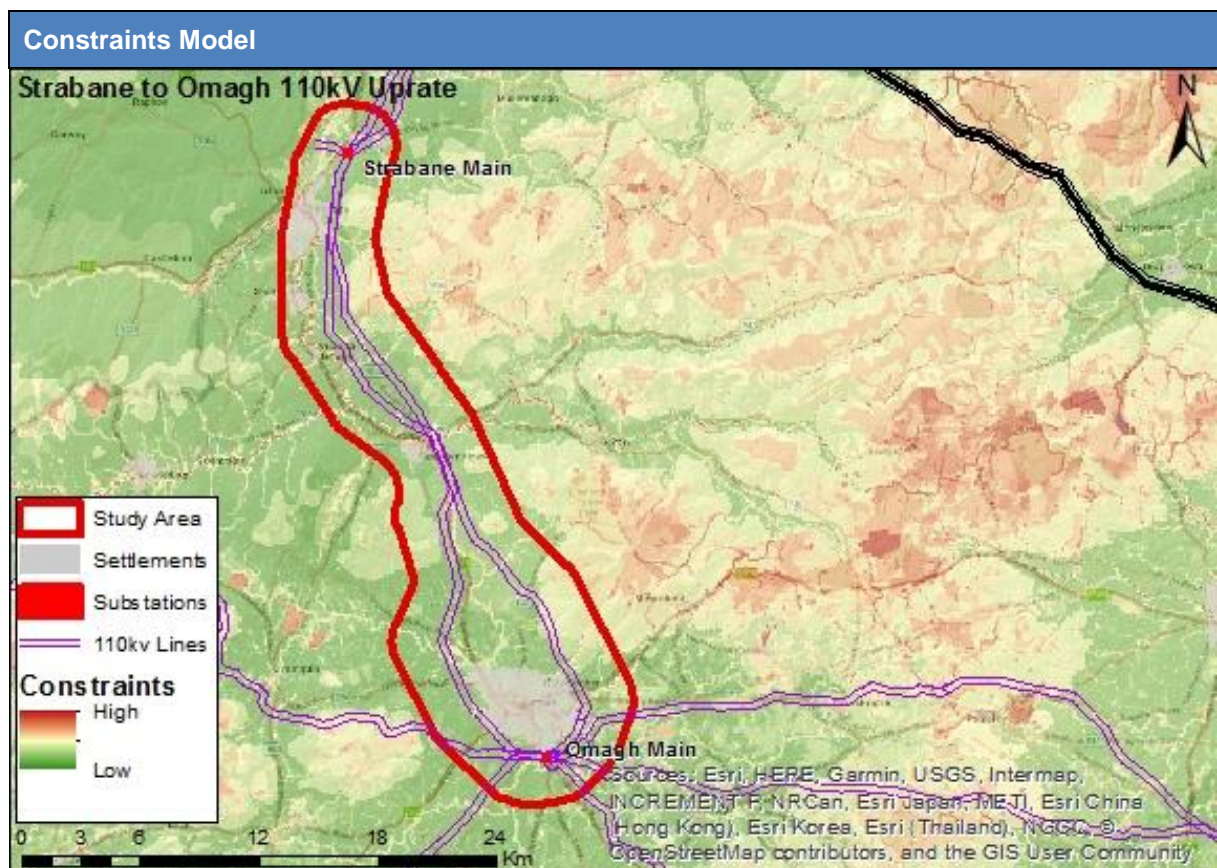
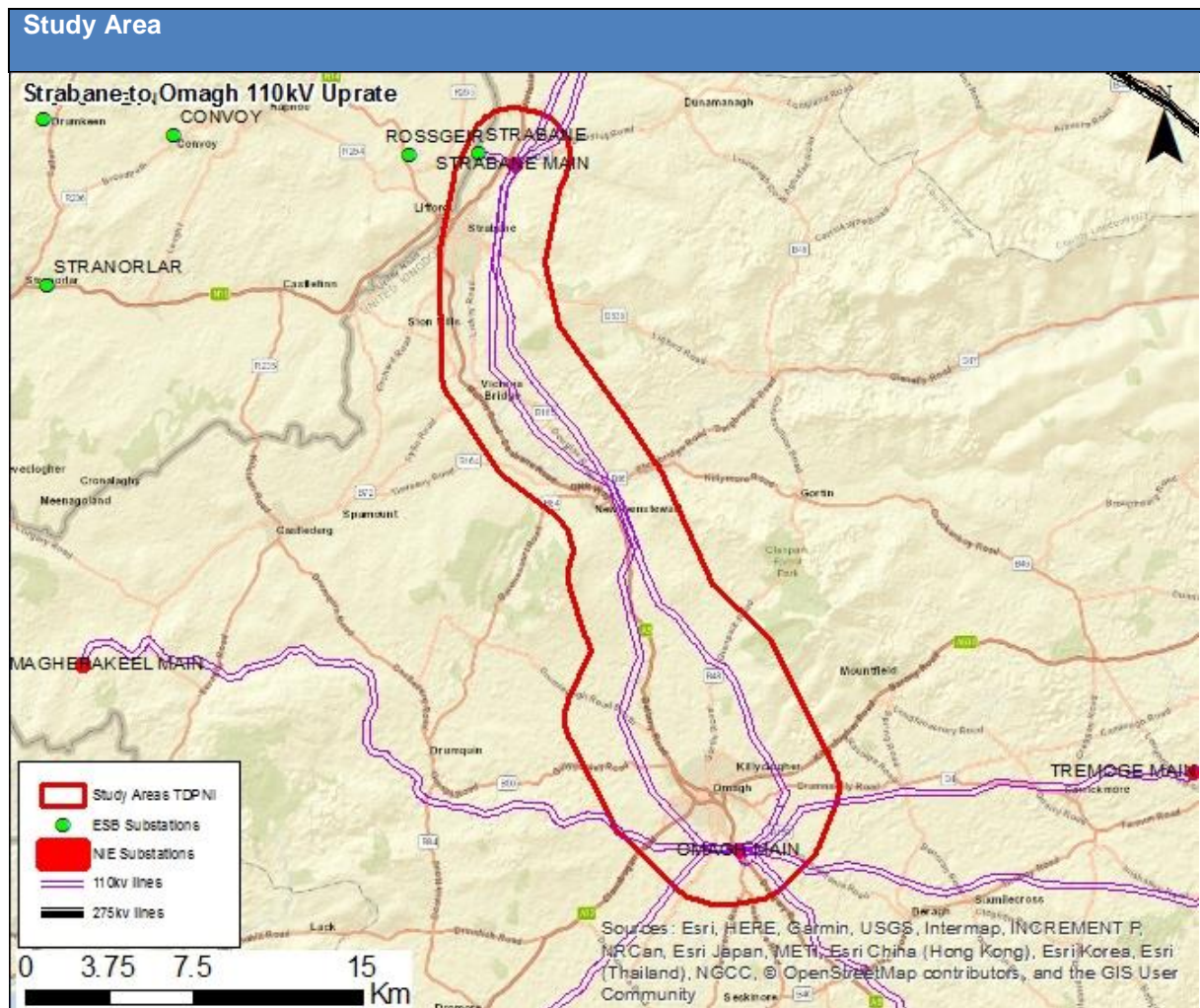
**Climatic Factors** – There are significant areas of 0.5% AEP climate change fluvial flood risk in parts of Newtown Stewart and Omagh that are crossed by the existing line.

**Material Assets & Infrastructure** – Within the study area there is 58km of A roads. There are several 33 kV transmission lines that are crossed by the 110 kV transmission line which is to be updated. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 200km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 160 SMR sites, 23 scheduled zones, over 180 listed buildings, over 280 industrial heritage sites, six defence heritage sites and five listed parks, gardens and demesnes, namely Lisnamallard House, Moyle House, Holy Hill, Creevenagh and Edenfel.

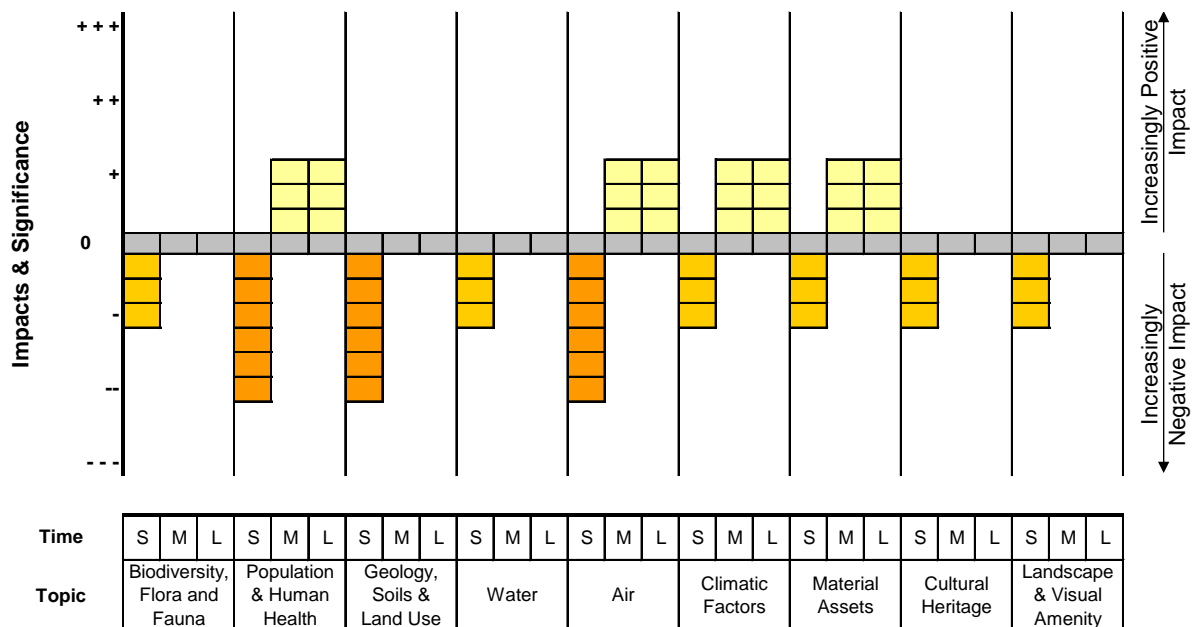
**Landscape & Visual Amenity** - The study area encompasses six Landscape Character Areas, with two LCAs designated as Highly Sensitive to development, namely Bessy Bell and Gortin, and the Sperrin Mountains. The remaining four LCAs, Camowen Valley, Derg Valley, Foyle Valley, and Omagh Farmland, are deemed as High-Medium Sensitive to development. The sole Area of Outstanding Natural Beauty that falls within the study area is the Sperrin AONB. Gray's Printing Press is the only National Trust Land found in the study area.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-2	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in areas of lower perceived health, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the



restring of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.21 COOLKEERAGH – STRABANE 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Coolkeeragh - Strabane 110 kV Uprate (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system electrically close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

The initial study area for this restring has been set as 2km either side of the existing line.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study site encompasses River Foyle and Tributaries SAC and ASSI, River Faughan and Tributaries SAC and ASSI, and River Finn SAC. Lough Foyle SPA, Ramsar site and ASSI are also within the study area. The following ASSIs are also encompassed by the study area; Corbylin Wood, McKean's Moss Part II, McKean's Moss and Strabane Glen. There are five Salmonid Rivers and 13 Local Wildlife Sites within the study area.

**Population & Human Health** – There are five main settlements within the study area, namely Strathfoyle, Strabane, Newbuildings, Londonderry / Derry and Culmore, the largest of which is Londonderry / Derry. The mean population of this study area is high compared to other study areas, at 2,302 people/km<sup>2</sup>. There are two peace lines within the study area, being Lower Tullyally and Dungiven Road. There are three Neighbourhood Renewal Areas within the study area, namely Waterside, Triax (Cityside) and Outer North Derry, which are socially sensitive areas. There are several areas of lower perceived health within the study area, namely the Magheramason and Ballyore areas, along with clustering of poor perceived health in several parts of the Londonderry / Derry area.

**Soils, Geology and Land use** – The study area covers over 140km<sup>2</sup> and is composed mainly of pastures (62%), non-irrigated arable land (13%), complex cultivation patterns (4%), discontinuous urban fabric (3%) and land principally occupied by agriculture (3%). The study area encompasses two ASSI sites of geological heritage, namely Lough Foyle ASSI and River Faughan and Tributaries ASSI. Within the study area there are four active quarries and 11 areas of orchard. There are eight areas of unstable ground identified within the study area, occurring mainly in the Slievekirk and Ballymagorry areas. Within the study area there are 86 ancient and long-established woodland areas. There are 11 PPC sites and almost 300 historical sites which have the potential of being contaminated land including; 57 textile works, 27 manufacturing works, 25 waste treatment works, 14 military installations and two airports. The study area includes eight upland and steep slopes area, including; Avish Hill, Gortree Hill, Curryfree Hill and Killynaght.

**Water** – Within the study area there are seven river water bodies, of which three are of good ecological status and four are of less than good ecological status. There are 35 sections of river that transect the study area. Within the study area there are two transitional water bodies, namely the Foyle Harbour and Faughan, which is of moderate ecological potential, and the Upper Foyle, which is of moderate ecological status. There are two drinking water rivers within the study area, being the River Faughan and Burngibbagh. There are significant areas of 1% AEP fluvial flood risk in parts of Cloghcor, Drumahoe, Mobuoy and Ardlough that are crossed by the existing line. There are significant areas of 0.5% AEP pluvial flood risk in parts of Ardlough, Disertowen and Brookhill that

are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

**Air** – The study area encompasses Dale’s Corner AQMA was declared for Nitrogen dioxide due to high traffic levels. There are not any other known air quality issues within the study area.

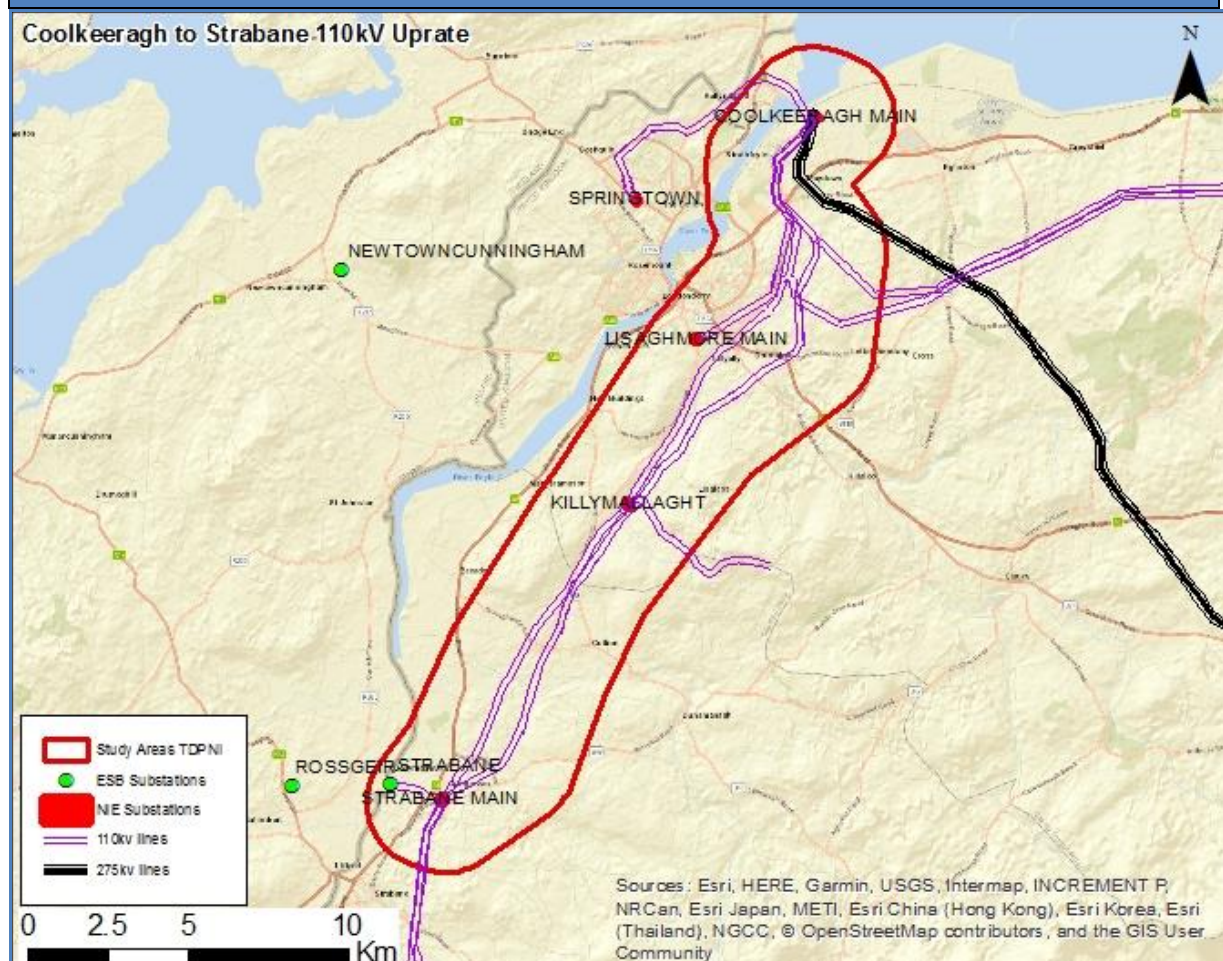
**Climatic Factors** – There are significant areas of 0.5% AEP climate change fluvial flood risk in parts of Ballynagorry, Cloghcor, Drumahoe, Mobuoy and Ardlough within the study area that are crossed by the existing line. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in parts of Ardlough, Disertowen and Brookhill that are crossed by the existing line

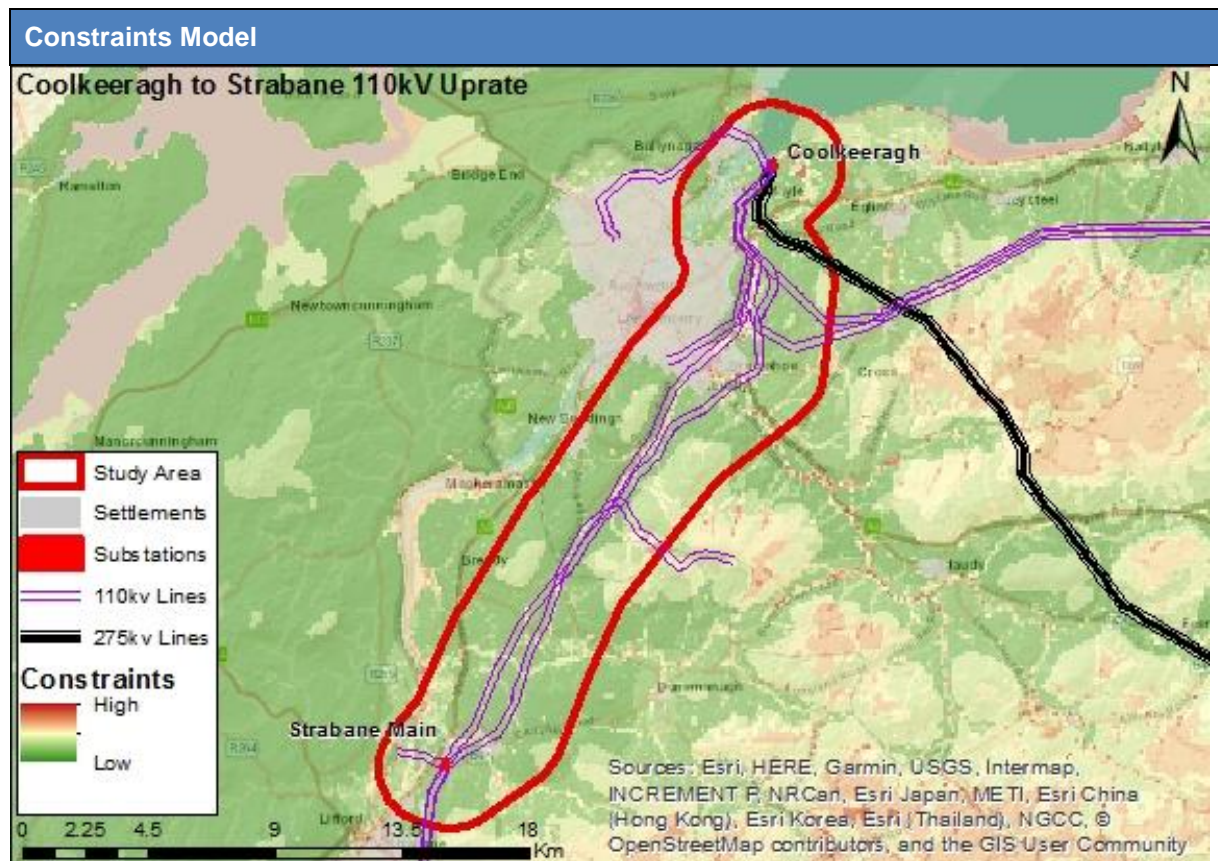
**Material Assets & Infrastructure** – Within the study area there is 47km of A roads and 43km of railway line that runs northwards from Londonderry / Derry. The north section of the study area encompasses part of the North-West gas pipeline. There are several 33 kV transmission lines that are crossed by the 110 kV transmission line which is to be uprated. The majority of agricultural land within the study area is pasture land and non-irrigated arable land, with the total area of agricultural land identified as approximately 120km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 132 SMR sites, 17 scheduled zones, 101 listed buildings, over 160 industrial heritage sites, 17 defence heritage sites and eight listed parks, gardens and demesnes.

**Landscape & Visual Amenity** - The study area crosses six Landscape Character Areas. The Sperrin Foothills are deemed Highly Sensitive to development, while Burngibbagh and Drumahoe, Derry Slopes, Foyle Valley, and Lough Foyle Alluvial Plain LCAs are designated as High-Medium Sensitive to development, and Loughmore Hills LCA is deemed Medium-Low Sensitive to development. The sole Area of Outstanding Natural Beauty that falls within the study area is the Sperrin AONB.

## Study Area

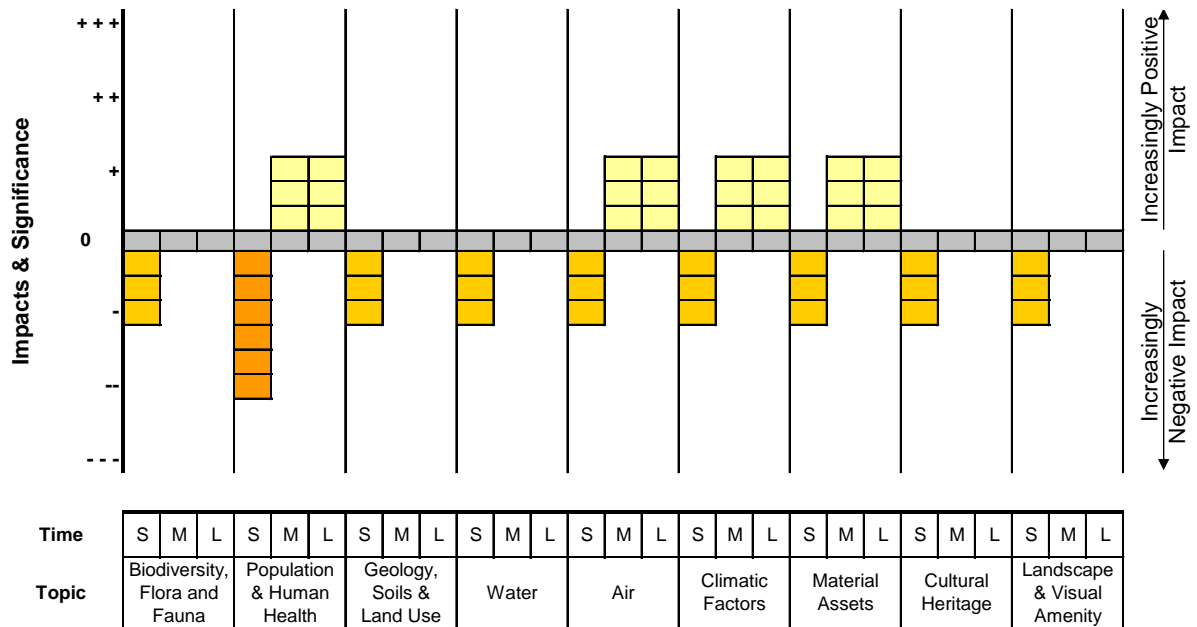




Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0



**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in a Neighbourhood Renewal Area, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

**8.22 COOLKEERAGH - KILLYMALLAGHT 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)**

**Coolkeeragh - Killymallaght 110 kV Uprate (North West of Northern Ireland Reinforcement)**

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

The initial study area for this restrung has been set as 2km either side of the existing line.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – The study area intersects River Faughan and Tributaries SAC and ASSI. Lough Foyle SPA, Ramsar Site and ASSI are crossed by the study area. There are three Salmonid Rivers and two Local Wildlife Sites within the study area.

**Population & Human Health** – There are four main settlements within the study area, namely Strathfoyle, Newbuildings, Derry and Culmore, the largest of which is Londonderry / Derry. The mean population of this study area is high compared to other study areas, at 2,524 people/km<sup>2</sup>. There are two peace lines within the study area, being lower Tullyally and Dungiven Road. There are three Neighbourhood Renewal Areas within the study area, namely Waterside, Triax (Cityside) and Outer North Derry, which are socially sensitive areas. There are several areas of lower perceived health within the study area, being the Lower Tully, Gabnascale, Clooney, Ardnabroky and Altnagevin areas within Londonderry / Derry.

**Soils, Geology and Land use** – The study area covers over 85km<sup>2</sup> and is composed mainly of pastures (53%), non-irrigated arable land (18%), discontinuous urban fabric (4%), industrial or commercial units (4%) and moors and heathland (4%). The study area encompasses two ASSI sites of geological heritage, namely Lough Foyle ASSI and River Faughan and Tributaries ASSI. Within the study area there are 11 areas of orchards and one active quarry, namely Mobuoy. There are five areas of unstable ground identified within the study area, located in the Cross and Slievekirk areas. Within the study area there are 38 ancient and long-established woodland areas. Within the study area there are eight PPC sites and 194 historical sites which have the potential of being contaminated land, including; 36 mineral works, 24 waste treatment works, 24 railway lands, 14 manufacturing works and 13 military installations. The study area includes five upland and steep slope areas, namely Avish Hill, Gortnessy Hill, Gortree Hill, Clondermot and Curryfree Hill.

**Water** – Within the study area there are five river water bodies, of which two are of good ecological status and three are of less than good ecological status. There are 18 sections of river that transect the study area. Within the study area there are two transitional water bodies, namely the Foyle Harbour and Faughan, which is of moderate ecological potential, and the Upper Foyle, which is of moderate ecological status. There are two drinking water rivers within the study area, being the River Faughan and Burngibbagh. There are significant areas of 1% AEP fluvial flood risk in parts of Drumahoe, Mobuoy and Ardlough that are crossed by the existing line. There are significant areas of 0.5% AEP pluvial flood risk in parts of Ardlough and Brookhill that are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

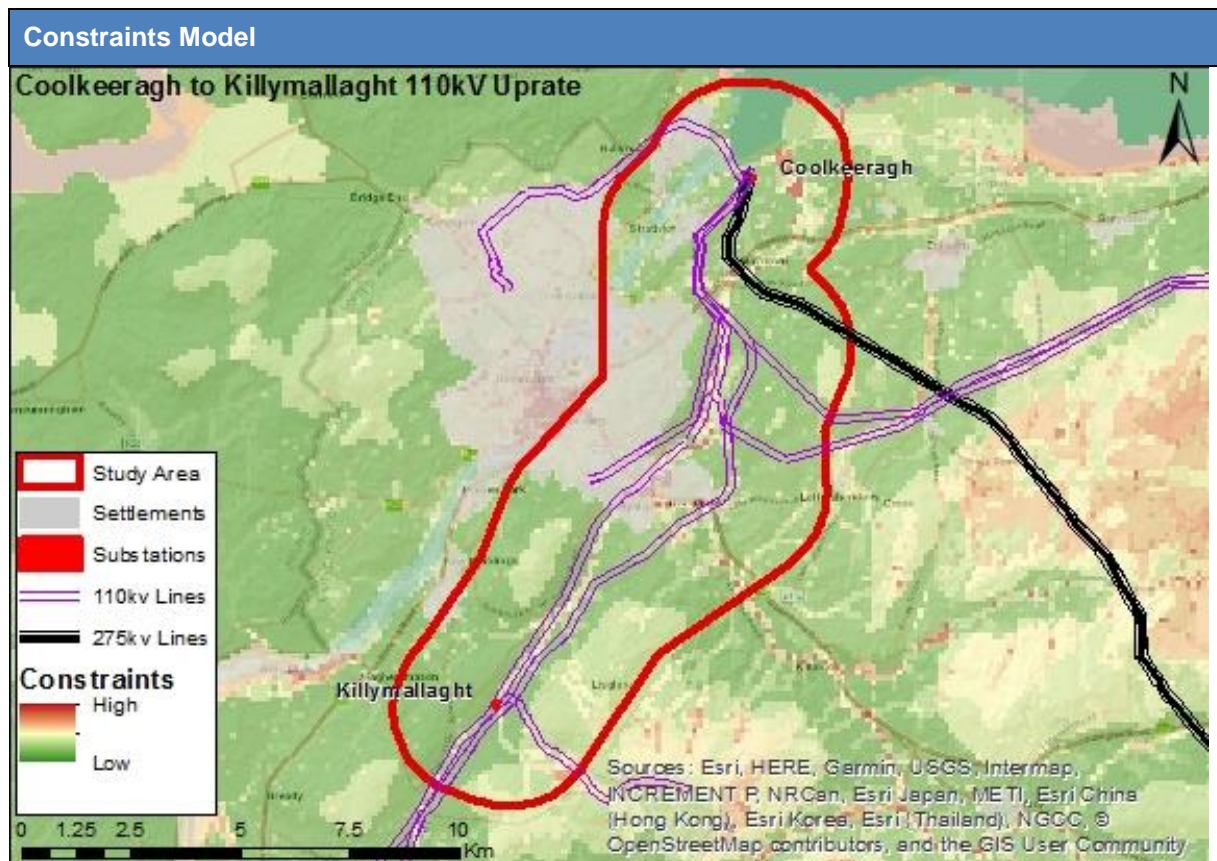
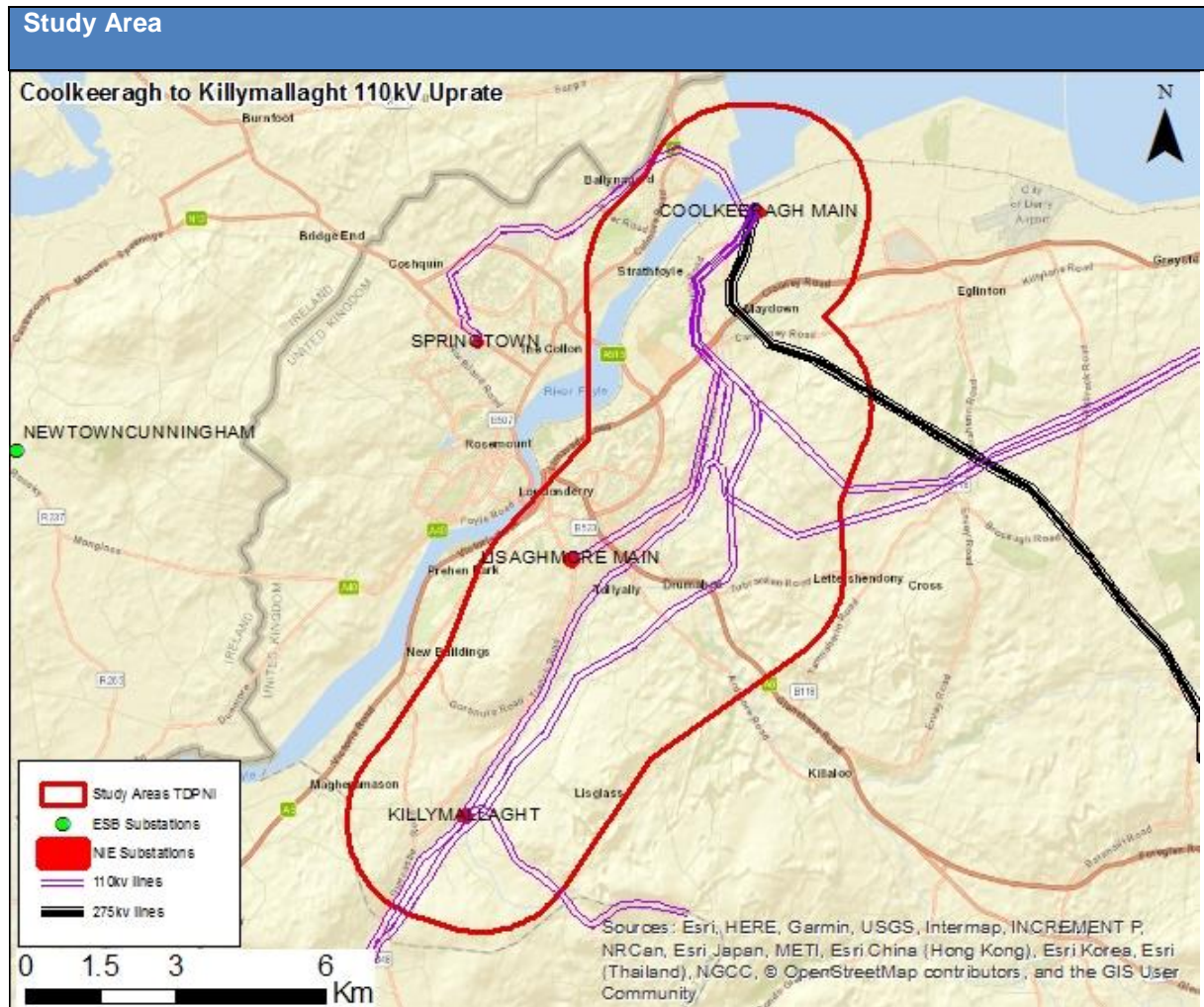
**Air** – The study area encompasses Dale's Corner AQMA and Spencer Road AQMA which were both declared for Nitrogen dioxide due to high traffic levels. There are not any other known air quality issues within the study area.

**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in parts of Drumahoe, Mobuoy and Ardlough within the study area that are crossed by the existing line. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in parts of Ardlough and Brookhill that are crossed by the existing line.

**Material Assets & Infrastructure** - Within the study area there is 37km of A roads and 43km of railway line that runs northwards from Londonderry / Derry. The north section of the study area encompasses part of the North-West gas pipeline. There are several 33 kV transmission lines that are crossed by the 110 kV transmission line which is to be uprated. The majority of agricultural land within the study area is pasture land and non-irrigated arable land, with the total area of agricultural land identified as approximately 67km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 82 SMR sites, 11 scheduled zones, 72 listed buildings, 86 industrial heritage sites, 16 defence heritage sites and seven listed parks, gardens and demesnes, including Beech Hill, Ardmore and Enagh House.

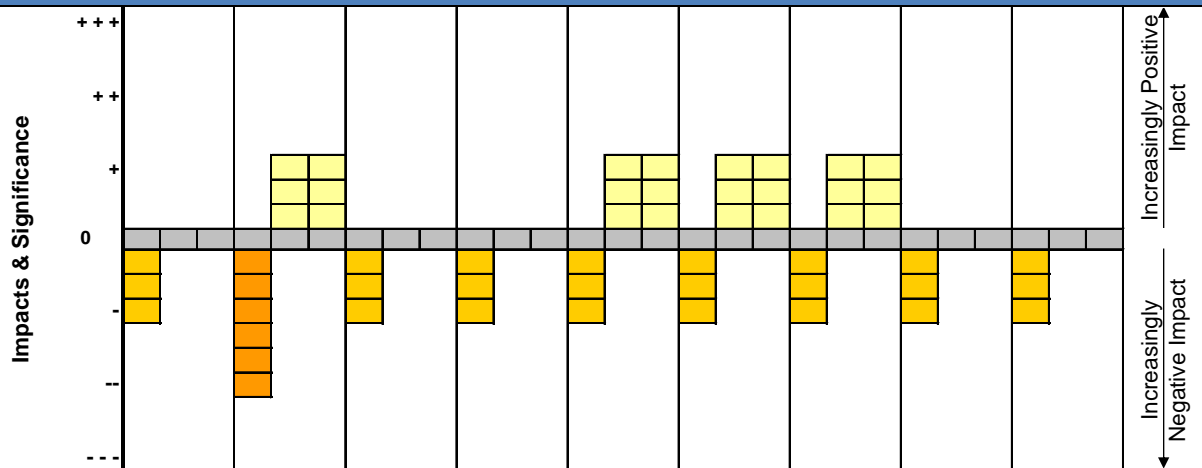
**Landscape & Visual Amenity** - The study area crosses six Landscape Character Areas. The Sperrin Foothills are deemed Highly Sensitive to Development, while Burngibbagh and Drumahoe, Derry Slopes, Foyle Valley, and Lough Foyle Alluvial Plain LCAs are designated as High-Medium Sensitive to development, and Loughermore Hills LCA is deemed Medium-Low Sensitive to development.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



Time	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L						
Topic	Biodiversity, Flora and Fauna			Population & Human Health			Geology, Soils & Land Use			Water			Air			Climatic Factors			Material Assets			Cultural Heritage			Landscape & Visual Amenity		

**Key Conclusions:**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noise and dust, to people in a Neighbourhood Renewal Area, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the restrung of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restrung of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.23 COOLKEERAGH – LIMAVADY 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Coolkeeragh - Limavady 110 kV Uprate (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

The initial study area for this restring has been set as 2km either side of the existing line.

#### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area intersects Lough Foyle SPA, ASSI and Ramsar Site, River Faughan and Tributaries SAC and ASSI, and River Roe and Tributaries SAC and ASSI. The study area encompasses 11 SLNCIs, nine Salmonid Rivers and ten Local Wildlife Sites.

**Population & Human Health** – There are seven main settlements within the study area, being Londonderry / Derry, Limavady, Eglinton, Culmore, Ballykelly, Strathfoyle and Greysteel. The two largest settlements are Londonderry / Derry and Limavady respectively. The mean population density of this study area is within the medium range compared to other study areas, at 1770 people/km<sup>2</sup>. There are no Peace Lines within the study area and three Neighbourhood Renewal Areas, namely Waterside, Outer North Derry and Limavady, which are socially sensitive areas. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Londonderry and Limavady areas.

**Soils, Geology and Land use** – The study area covers over 130km<sup>2</sup> and is composed mainly of pastures (51%), non-irrigated arable land (20%), complex cultivation patterns (7%), peat bogs (7%) and land principally occupied by agriculture (4.3%). The study area encompasses two ASSI sites of geological heritage, namely Lough Foyle ASSI and River Faughan and Tributaries ASSI. Within the study area there are two active quarries and 11 areas of orchards. There are 15 areas of unstable ground identified within the study area, with most occurring in the Loughermore and East of Derry city regions. There are 73 ancient and long-established woodland areas in the study area, along with seven Forest Service sites. Within the study area there are eight PPC sites and 240 historical sites which have the potential of being contaminated land, including; 62 textile works, 52 mineral works, 22 manufacturing works, 22 railway lands and 15 waste treatment works. The study area includes nine upland and steep slope areas, namely Vish Hill, Gortnessy Hill, Gortree Hill, Gortica Hill, Slievebuck, Brockagh Mountain, Giants Grove, Dunbrock Mountain and Thorny Hill.

**Water** – Within the study area there are ten river water bodies, of which six are of good ecological status and four are of less than good ecological status. There are 44 sections of river that transect the study area. Within the study area there are two transitional water bodies, namely the Foyle Harbour and Faughan, which is of moderate ecological potential, and the Upper Foyle, which is of moderate ecological status. There is one drinking water river within the study area, namely the River Faughan. There are significant areas of 1% AEP fluvial flood risk in parts of Mubuoy and Drumahoe that are crossed by the existing line. There are significant areas of 0.5% AEP pluvial flood risk in parts of Drumahoe and Drumraighland that are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

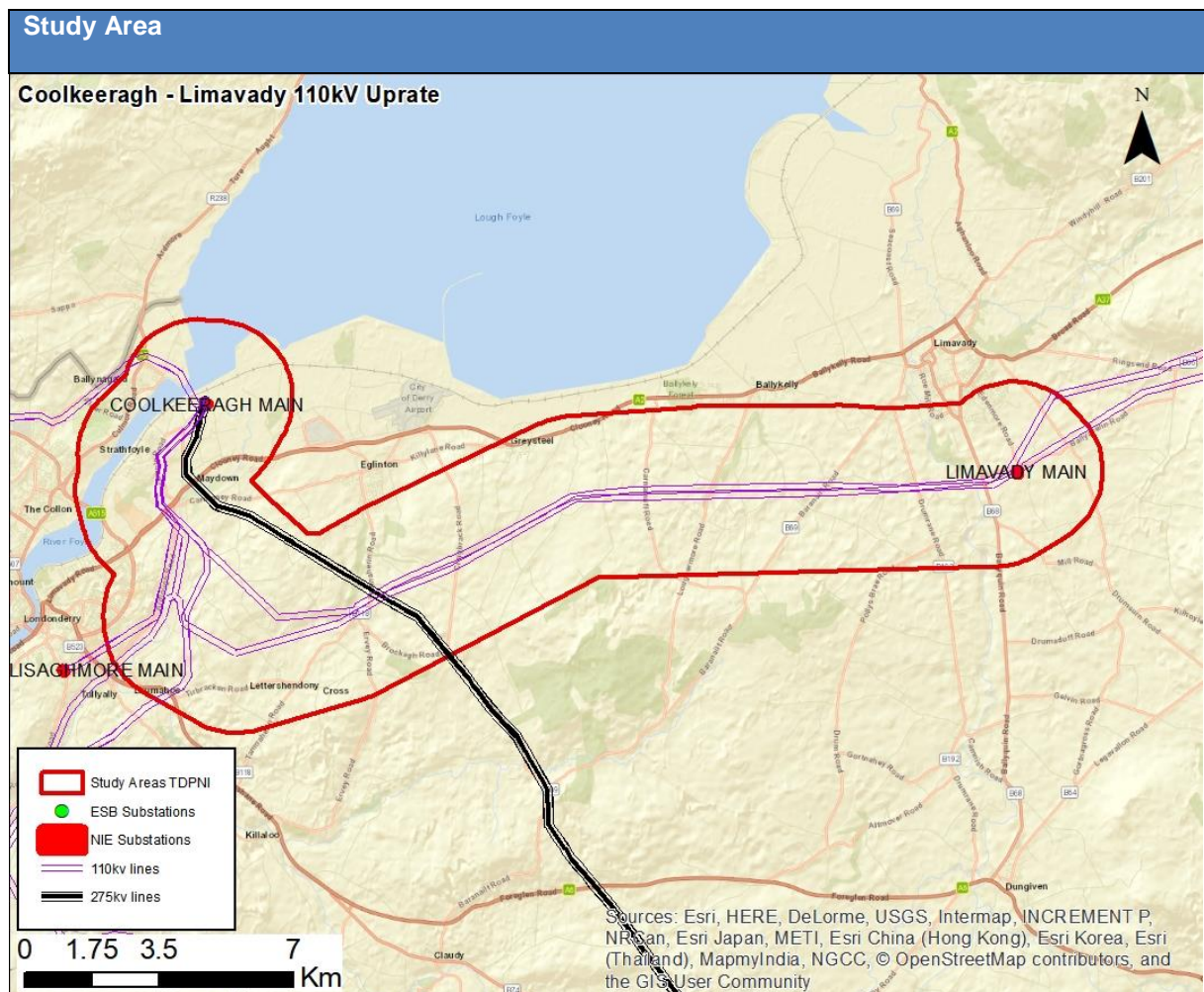
**Air** – There are no AQMAs or other known air quality issues within the study area.

**Climatic Factors** - There are significant areas of 1% AEP climate change fluvial flood risk in parts of Mubuooy and Drumahoe within the study area that are crossed by the existing line. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in parts of Drumahoe and Drumraighland that are crossed by the existing line.

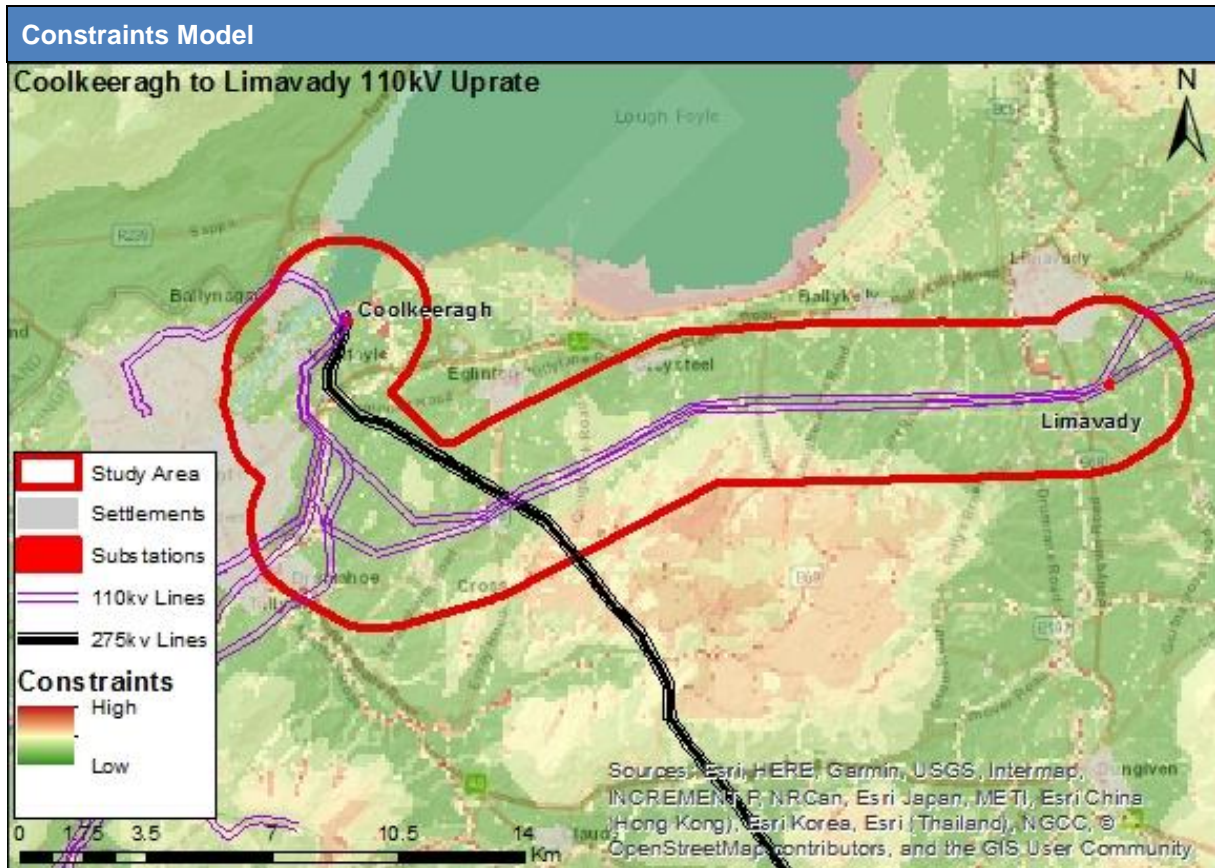
**Material Assets & Infrastructure** – Within the study area there is 29km of A roads and 43km of railway line that runs northwards from Londonderry. The North-West gas pipeline runs through the study area. There are several 33kV transmission lines within the study area that are crossed by the 110kV circuit that is to be uprated. Within the study area there is one 275kV circuit that intersects the 110kV circuit which is to be uprated. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 155km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 130 SMR sites, 19 schedules zones, 46 listed buildings, over 120 industrial heritage sites, 12 defence heritage sites, seven listen parks, gardens and demesnes and seven historic wreck sites within the Lough and River Foyle.

**Landscape & Visual Amenity** - The study area crosses seven Landscape Character Areas. The Sperrin Foothills are deemed Highly Sensitive to Development, while Burngibbagh and Drumahoe, Derry Slopes, Foyle Valley, Lough Foyle Alluvial Plain, and Roe Basin LCAs are designated as High-Medium Sensitive to development, and Loughermore Hills LCA is deemed Medium-Low Sensitive to development. Roe Valley Country Park designated by NIEA, is the sole country park in the study area.

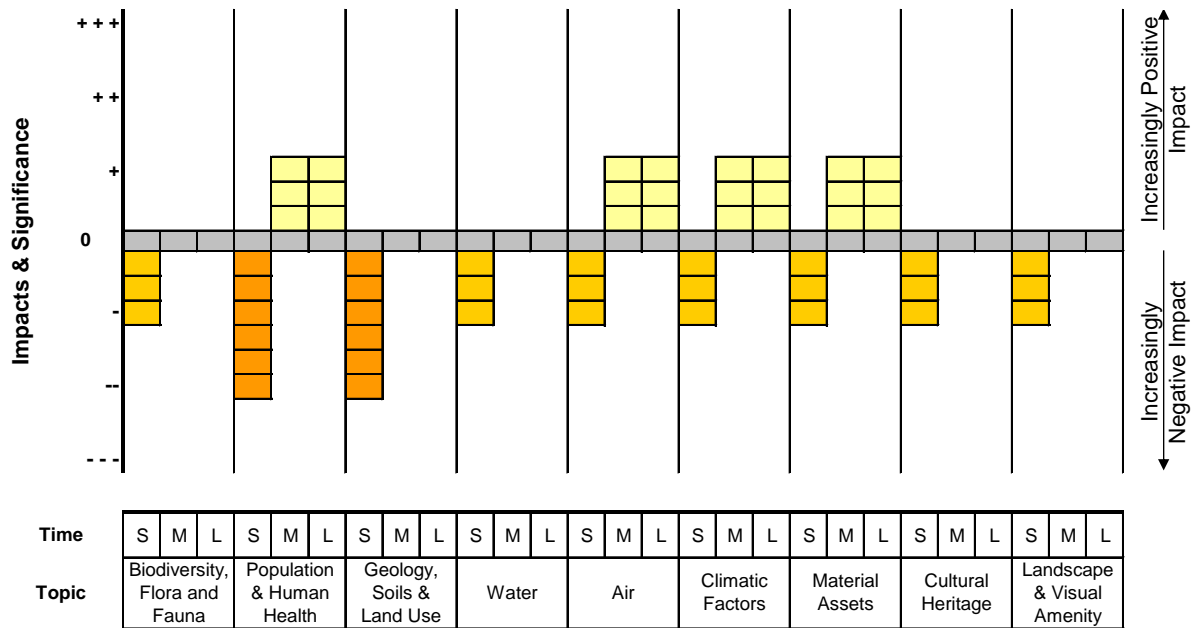






Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-2	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restring has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These potential moderate negative impacts include compaction of a sensitive area of peat bog during the restring works, as it is crossed by the existing line. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restring of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

## 8.24 KILLYMALLAGHT – STRABANE 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Killymallaght - Strabane 110 kV Uprate (North West of Northern Ireland Reinforcement)

As a result of increasing growth in renewable generation in the west there will be a need to construct a new circuit between the 275kV system and the 110kV system close to Coolkeeragh. A long list of main and supporting options shall be narrowed down to a short list. This is one of the options in the long list.

The initial study area for this restring has been set as 2km either side of the existing line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – River Foyle and Tributaries SAC and ASSI, and River Finn SAC are intersected by the study area. The following four ASSIs are crossed by the study area; Corbylin Wood, McKean's Moss II, McKean's Moss and Strabane Glen. The study area encompasses three Salmonid Rivers, namely Burn Dennet Lower, Glenmornan River and Burngibbagh, along with ten Local Wildlife Sites.

**Population & Human Health** – There are two main settlements within the study area, namely Strabane and Newbuildings. The mean population density of this study area is low compared to other study areas, at 250 people/km<sup>2</sup>. There are no Peace lines, Neighbourhood Renewal Areas or areas of lower perceived health within the study area.

**Soils, Geology and Land use** – The study area covers over 65km<sup>2</sup> and is composed mainly of pastures (74.1%), non-irrigated arable land (6.6%), complex cultivation patterns (6.5%), land principally occupied by agriculture (3.7%) and peat bogs (2.9%). Within the study area there are 12 active quarries, along with 41 ancient and long-established woodland areas. There are five areas of unstable ground identified within the study area, located in the Ballymagorry and Slievekirk areas. Within the study area there are three PPC sites and 99 historical sites which have the potential of being contaminated land, including; 35 railway land, 23 textile works, 15 mineral works, 11 manufacturing works and five sewage works. The study area includes four upland and steep slope areas, namely Gortmonly Hill, Slievekirk, Killynaght and Knockavoe.

**Water** – Within the study area there are five river water bodies, of which two are of good ecological status and three are of less than good ecological status. There are 23 sections of river that transect the study area. Within the study area there is one transitional water body which is of moderate ecological status, namely the Upper Foyle, and one drinking water river, being the Burngibbagh. There are significant areas of 1% AEP fluvial flood risk in parts of Cloghcor and Craigtown that are crossed by the existing line. There are significant areas of 0.5% AEP pluvial flood risk in parts of Ballymagorry, Cloghcor and Ardmore that are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

**Air** – There are no AQMAs or other known air quality issues within the study area.

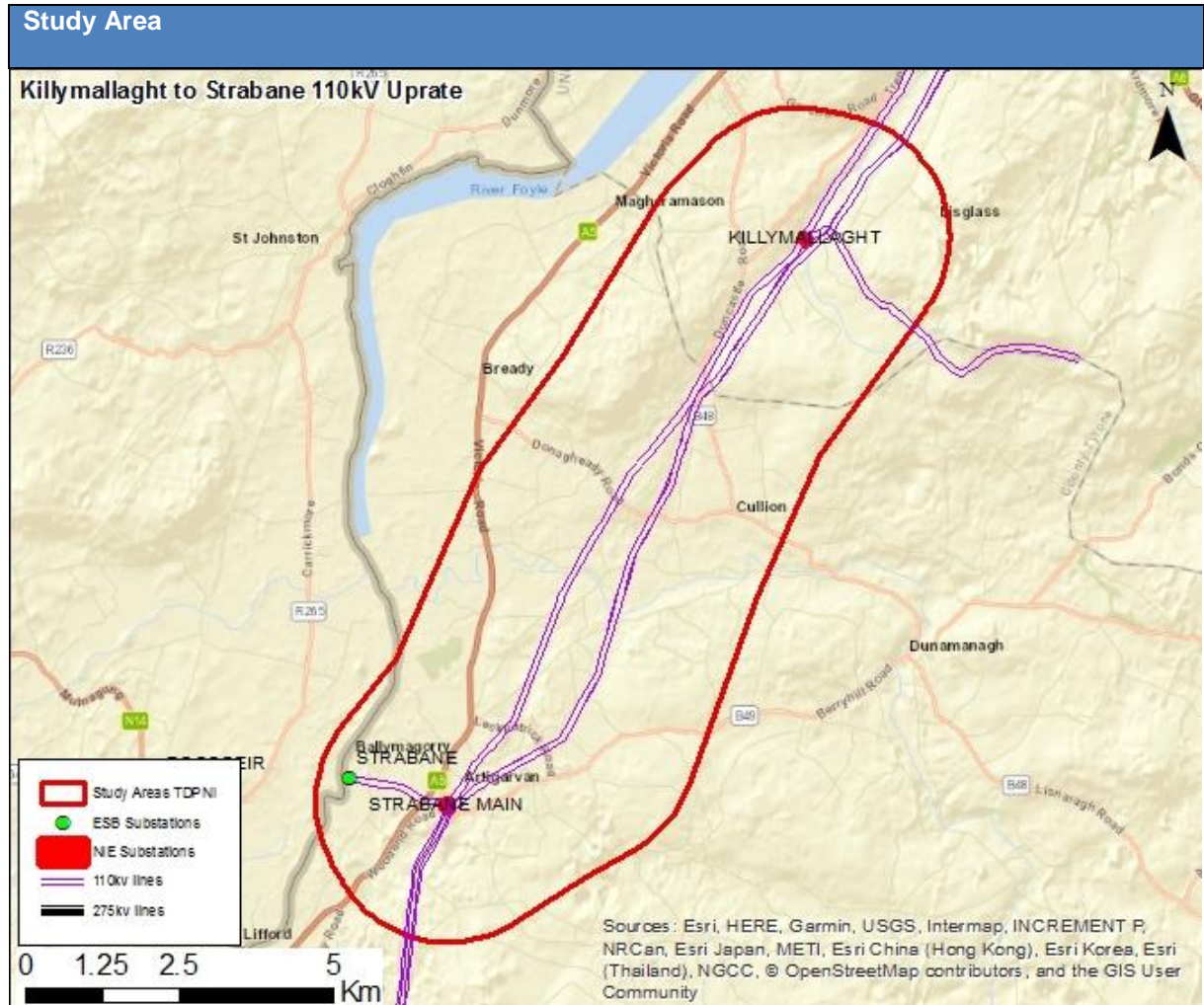
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in parts of Ballymagorry, Cloghcor and Craigtown within the study area that are crossed by the existing line. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in parts of Ballymagorry, Cloghcor and Ardmore that are crossed by the existing line.

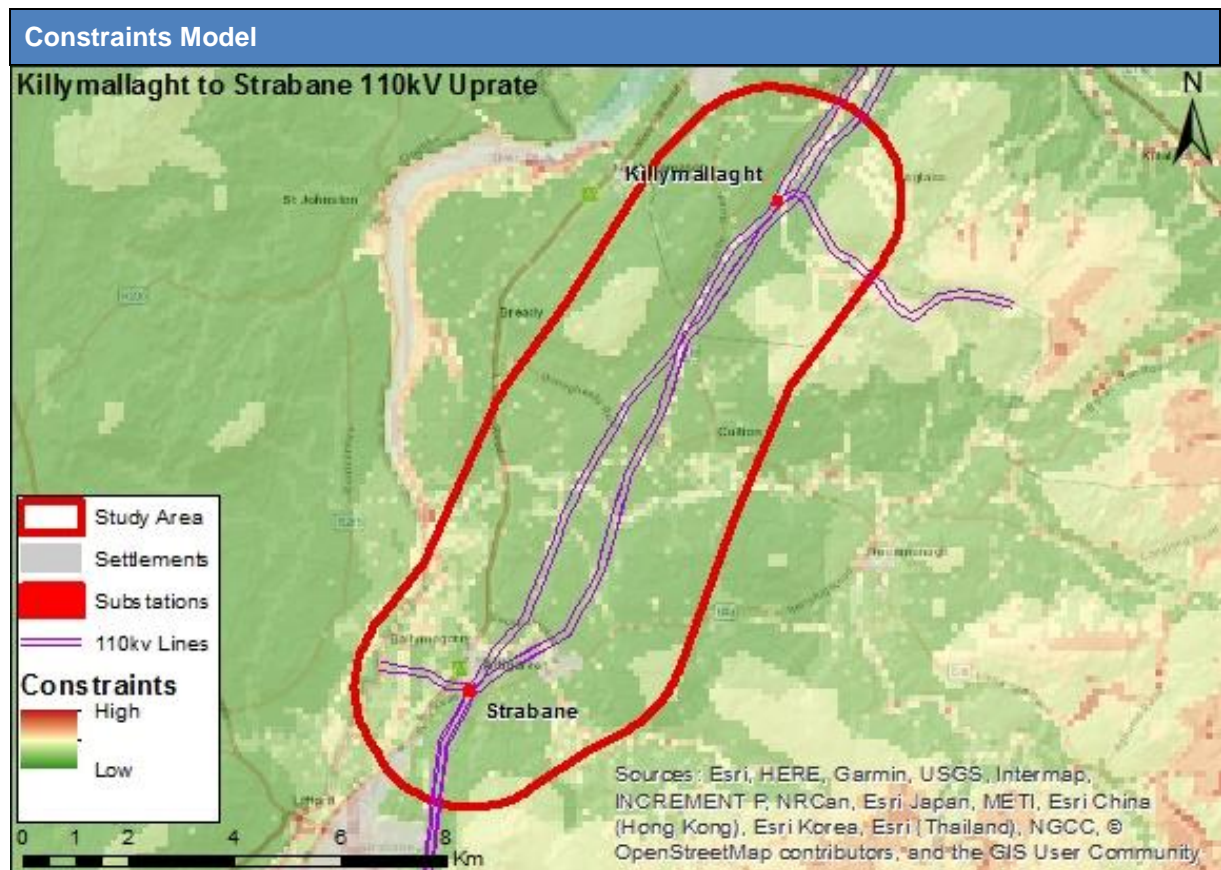
**Material Assets & Infrastructure** – Within the study area there is 8km of A roads. There are two 33kV lines that are crossed by the 110kV line that is to be uprated. The majority of agricultural land within the study area is pasture land and non-irrigated arable land, with the total agricultural land identified as approximately 61km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 51 SMR sites, five scheduled zones, 27 listed buildings, 71 industrial heritage sites, one defence heritage site and one listed park, garden and demesne, namely Holy Hill.



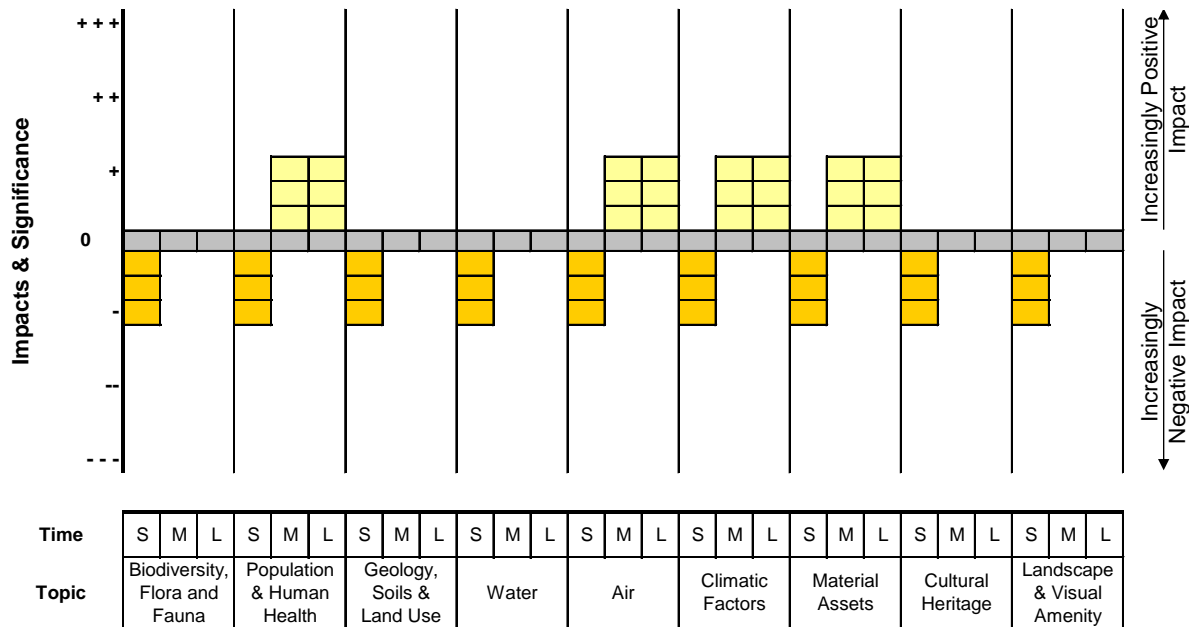
**Landscape & Visual Amenity** - The study area crosses three Landscape Character Areas. The Sperrin Foothills are deemed Highly Sensitive to development, while Burngibbagh and Drumahoe, and Foyle Valley LCAs are designated as High-Medium Sensitive to development. The sole Area of Outstanding Natural Beauty that falls within the study area is the Sperrin AONB.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-1	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	1	1
Climatic Factors (C)	-1	1	1
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0

**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restring has the potential for short term, temporary, construction phase, slight negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, air, climatic factors and material assets, following the restring of the transmission line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on 27 European Sites. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites, as necessary, will be required.

**8.25 SYDENHAM ROAD MAIN (NEW STATION)**

**Sydenham Road Main (new station)**

It is planned to construct a new 110/33 kV substation in the Belfast Harbour Estate, close to the existing Airport Road 33/6.6 kV substation. The substation will be connected to the existing Rosebank substation via the existing 110 kV tower line (currently operated at 33 kV) from Rosebank to Sydenham Road.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – The Inner Belfast Lough ASSI is intersected by the study area.

**Population & Human Health** – There is one main settlement in the study area, namely Belfast Urban Area. The mean population density of this study area is high compared to other study areas, at 6,505 people/km<sup>2</sup>. There is one peace line, namely Short Strand, and one Neighbourhood

Renewal Area, being Inner East Belfast, which are socially sensitive areas. Most of the areas within the study area are of lower perceived health, except for some parts in the south-east Ballymacarret area.

**Soils, Geology and Land use** – The study area covers over 3km<sup>2</sup> and is composed of continuous urban fabric (39.4%), industrial or commercial units (39.2%), port areas (13.8%), green urban areas (3.9%) and discontinuous urban fabric (3.7%). Within the study area there are 71 historical sites which have the potential of being contaminated land; 19 manufacturing works, 13 railway lands, eight textile works, six engineering works and one power station. There are no unstable ground or upland and steep slope areas identified within the study area.

**Water** – Within the study area there is one river water body which is of poor ecological potential, being the Connswater river water body. There is one coastal water body within the study area, namely Belfast Harbour, which is of bad ecological potential. There are significant areas of 1% AEP fluvial flood risk in the vicinity of Victoria Park and in the west of the Ballymacarrett area within the study area. Within the study area there are several significant areas of 0.5% AEP flood risk, mainly in the vicinity of Victoria park and in the Ballymacarrett and Queen's Island areas. These flood risk areas could become inundated and lead to difficult working conditions during construction works along with potential flooding of the new substation.

**Air** – There are no AQMAs or other known air quality issues within the study area. The harbour estate area of Belfast would however have a relatively high level of industrial and transport emissions.

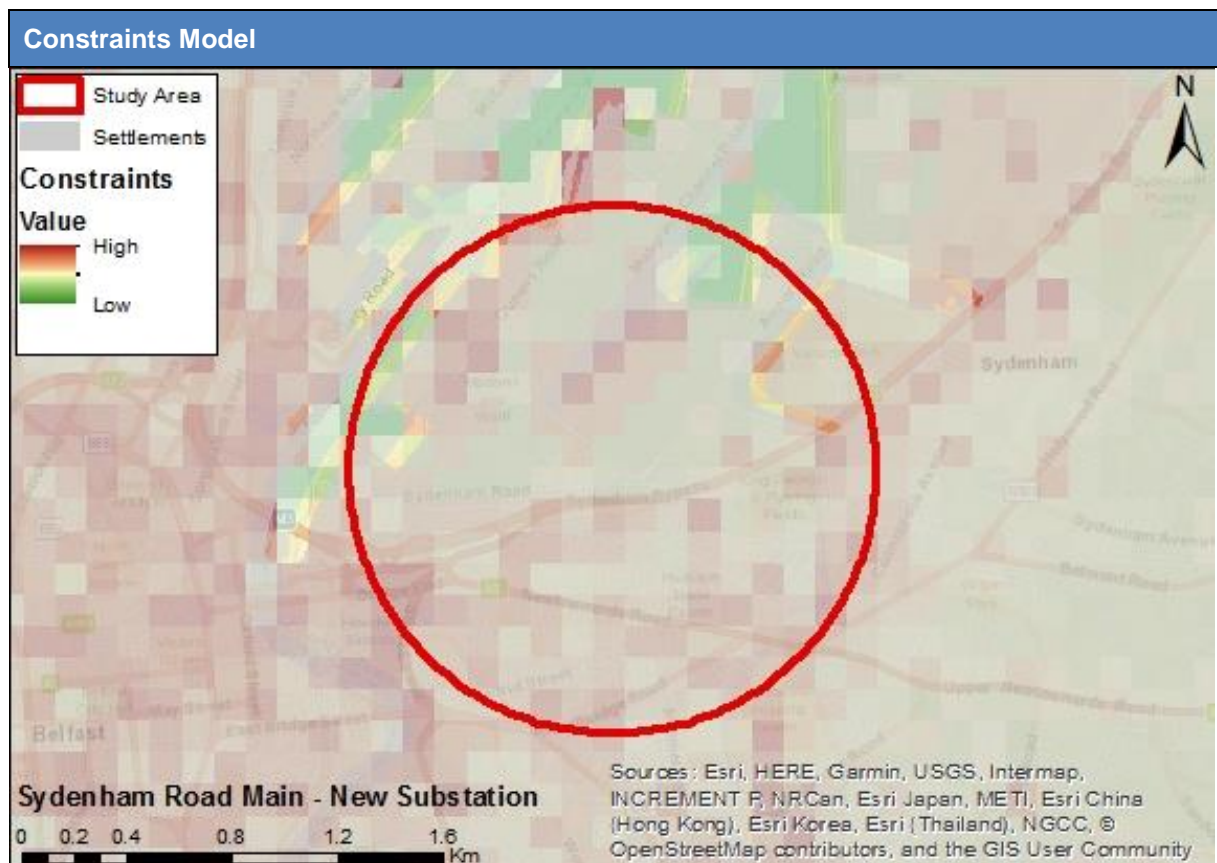
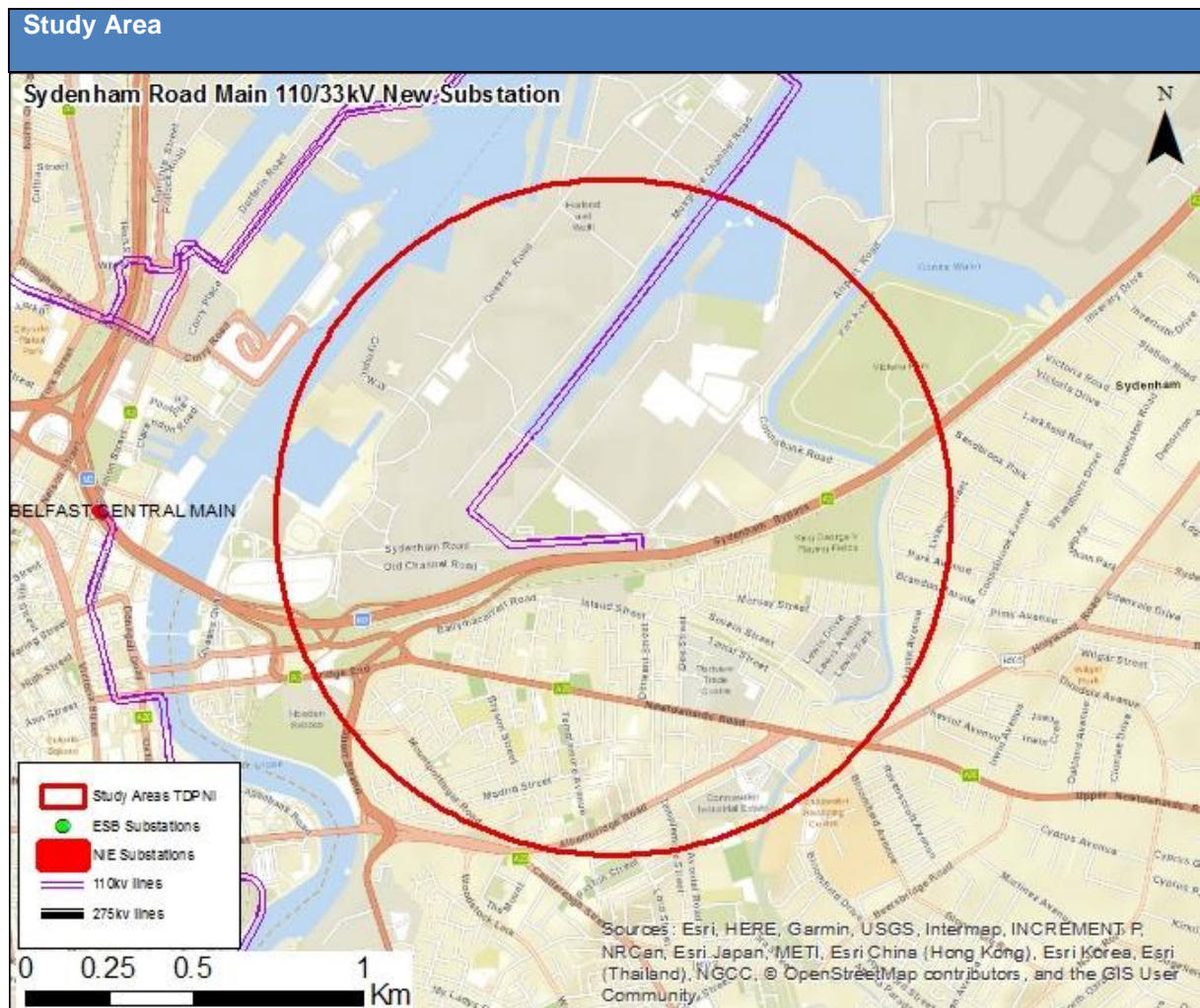
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in the vicinity of Victoria Park and in the west of the Ballymacarrett area within the study area. Within the study area there are several significant areas of 0.5% climate change AEP flood risk, mainly in the vicinity of Victoria park and in the Ballymacarrett and Queen's Island areas.

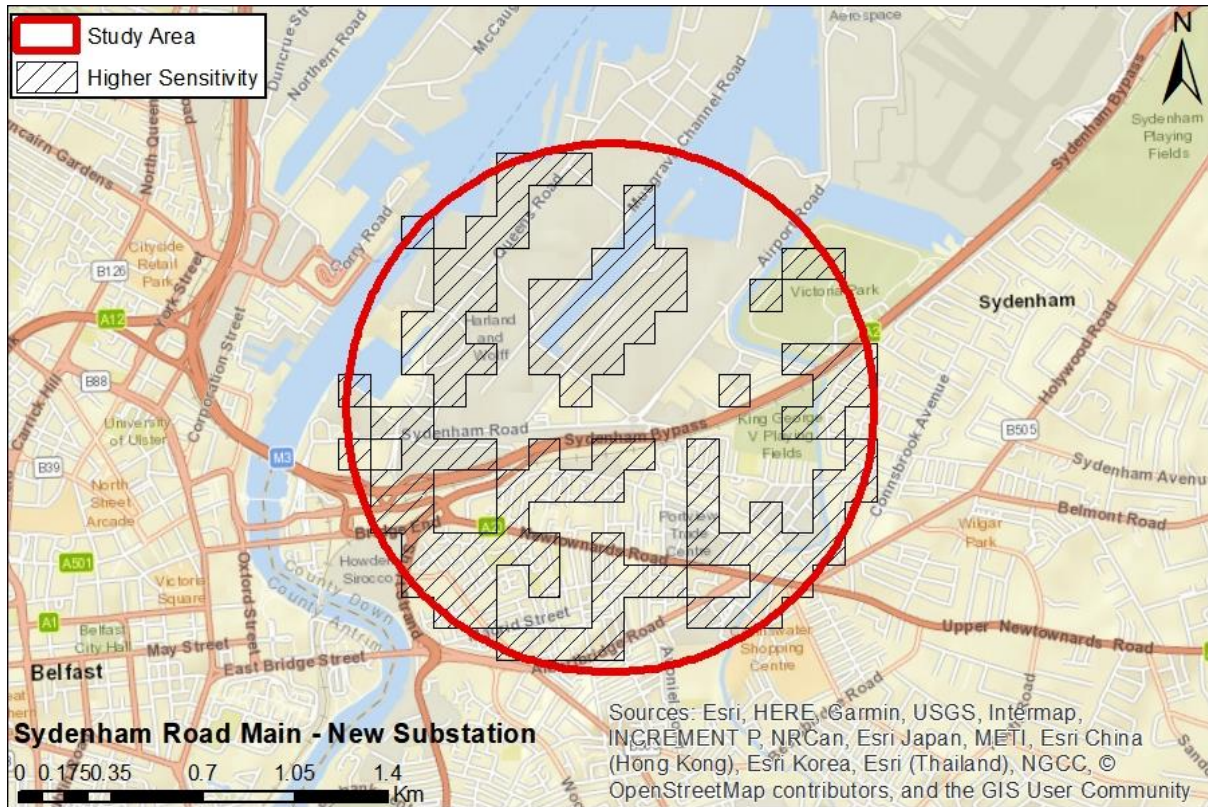
**Material Assets & Infrastructure** – Within the study area there is 2km of motorway and 12km of A roads. There is 4km of railway line within the study area, which forms part of the connection between Belfast and Bangor. Within the study area there are several 33kV transmission lines and one 110kV line.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are seven SMR sites, five scheduled zones, 62 listed buildings, 64 industrial heritage sites, one defence heritage site and one Area of Archaeological Potential, namely Belfast.

**Landscape & Visual Amenity** - The study area is firmly situated in the Belfast/Lisburn Landscape Character Area. The LCA is designated as a High-Medium Sensitive to development landscape area.



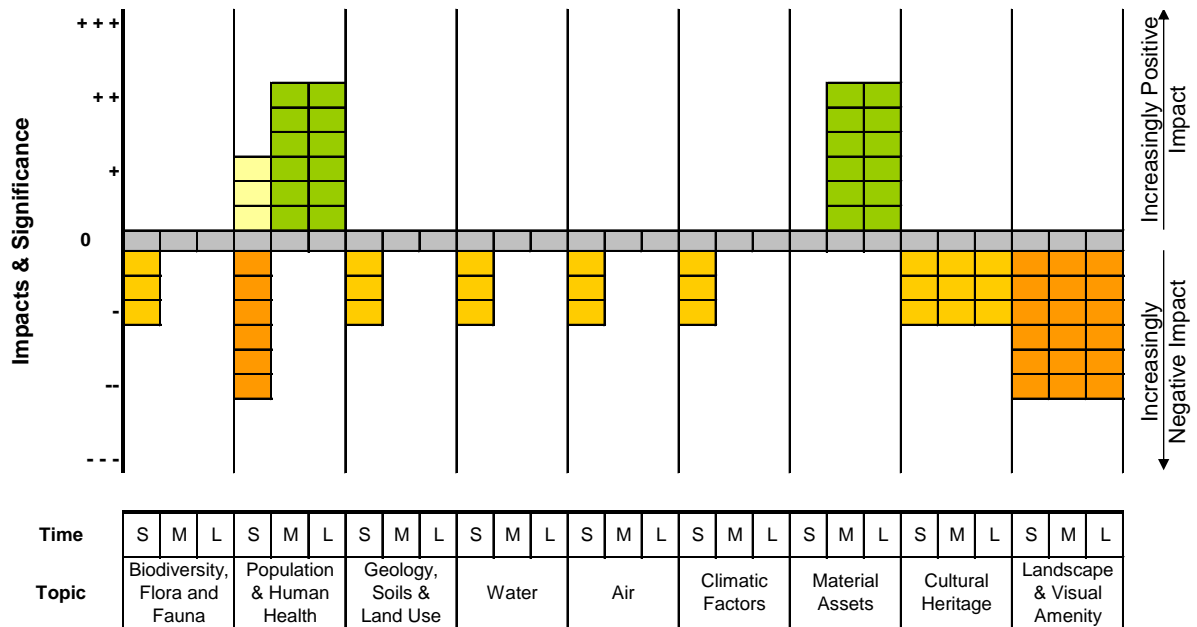




Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-1	0	0
Climatic Factors (C)	-1	0	0
Material Assets & Infrastructure (MA)	0	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2



**Summary Chart of Potential Impacts**



**Key Conclusions:**

If the new substation is developed within the lower sensitivity area there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbance impacts, such as noiconstruction of the new substation, if it is developed within the lower sensitivity area, there is the potential for medium and long term, slight to moderate negative impacts on cultural heritage, and landscape and visual amenity. These moderate negative impacts include permanent landscape and visual amenity impacts on a sensitive Landscape Character Area. If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, and material assets. These moderate positive impacts include the moderate scale local development of new electricity grid infrastructure, providing an increased supply of secure and reliable electricity into the future.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration, and disturbance and displacement impacts on four European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.26 BALLYLUMFORD – CASTLEREAGH 110 KV CIRCUIT RESTRING**

**Ballylumford - Castlereagh 110 kV Circuit Restrung**

The conductor on the existing tower line will be replaced and uprated.  
 The initial study area for this restrung has been set as 2km either side of the existing line.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – The study area intersects Belfast Lough SPA and Ramsar Site, Larne Lough SPA and Ramsar Site and Belfast Lough Open Water SPA. The study area encompasses 11 ASSIs and 68 SLNCIs. Swan Island Nature Reserve and Larne Lough Islands RSPB Reserve are within the study area. There are 5 Salmonid Rivers and 87 Local Wildlife Sites within the study area. There are two sites within the study area that are protected under the Shellfish Directive, namely Belfast Lough and Larne Lough.

**Population & Human Health** – There are eight main settlements within the study area, namely Greenisland Urban Area, Whitehead, Carrickfergus, Newtownabbey Urban Area, Larne, Castlereagh Urban Area, Lisburn Urban Area and Belfast Urban Area. The two largest settlements are Belfast Urban Area and Lisburn Urban area respectively. The mean population density of this study area is high compared to other study areas, at 4,824 people/km<sup>2</sup>. There are six peace lines within the study area, being Squires Hill, Mountainview Parade, Woodvale (Ardoyne), Falls and Shankill, Alliance Avenue and Upper West Belfast, which are socially sensitive areas. There are 11 Neighbourhood Renewal Areas within the study area, namely Whiterock (Upper Springfield), Ballysillan (Upper Ardoyne), South West Belfast, Outer West Belfast, Ligoniel, Inner East Belfast, Greater Shankill, Clonard (Falls), Crumlin (Ardoyne), Colin and Anderstown, which are socially sensitive areas. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Greenisland Urban Area, Whitehead, Carrickfergus, Newtownabbey Urban Area, Castlereagh Urban Area, Lisburn Urban Area, Belfast Urban Area and Larne areas.

**Soils, Geology and Land use** – The study area covers over 200km<sup>2</sup> and is composed mainly of pastures (52.4%), discontinuous urban fabric (15.5%), sport and leisure facilities (4.8%), complex cultivation patterns (3.9%), continuous urban fabric (3.7%) and industrial or commercial units (3.5%). The study area encompasses four ASSI sites of geological heritage, namely Outer Belfast Lough ASSI, The Gobbins ASSI, Cloghfin Port ASSI and Killoan ASSI. Within the study area there are 26 mine shafts, 76 historic mines and 17 areas of orchards. There are seven areas of unstable ground identified within the study area, located in the Belfast, Knockagh and Carnbrock areas. Within the study area there are four landslide deposit areas identified, located in the Knockagh, Carnmoney and Belfast areas. There are 120 ancient and long-established woodland areas in the study area, along with nine Forest Service sites. Within the study area there are 28 PPC sites and over 700 historical sites which have the potential of being contaminated land, including; 107 manufacturing works, 102 mineral works, 101 textile works, 89 railway lands and 13 chemical works. The area includes several upland areas and steep slopes within the Crossnacreevy, North Belfast, Carnmoney and Knockagh areas.

**Water** – Within the study area there are 14 river water bodies, of which two are of good ecological status and 12 are of less than good ecological status. There are 58 sections of river that transect the study area. Within the study area there is one transitional water body, namely the Lagan Estuary, which is of bad ecological potential. Within the study area there are six coastal water bodies, of which three are of good ecological status and three are of less than good ecological status. There is one bathing water body in the north of the study area, namely Browns Bay. Within the study area there are three drinking water rivers, namely the Woodburn River, River Lagan and Copeland Water. There are significant areas of 1% AEP fluvial flood risk in parts of Ballynahatty and Newtownabbey that are crossed by the existing line. There are significant areas of 0.5% AEP pluvial flood risk in parts of Newtownabbey, Craglee, Kilcoan and Ballytober that are crossed by the existing line. These flood risk areas could become inundated and lead to difficult working conditions during the restring.

**Air** – The study area crosses through three AQMAs in Belfast, which are located in the vicinity of the Ormeau Road, the Upper Newtownards Road and the M1 motorway and Westlink Corridor. These AQMAs were declared as these areas exceeded the Nitrogen Dioxide annual mean levels, which can be attributed to high levels of traffic. Ballylumford power station and industrial operations around Belfast would also be significant contributors to national air emissions.

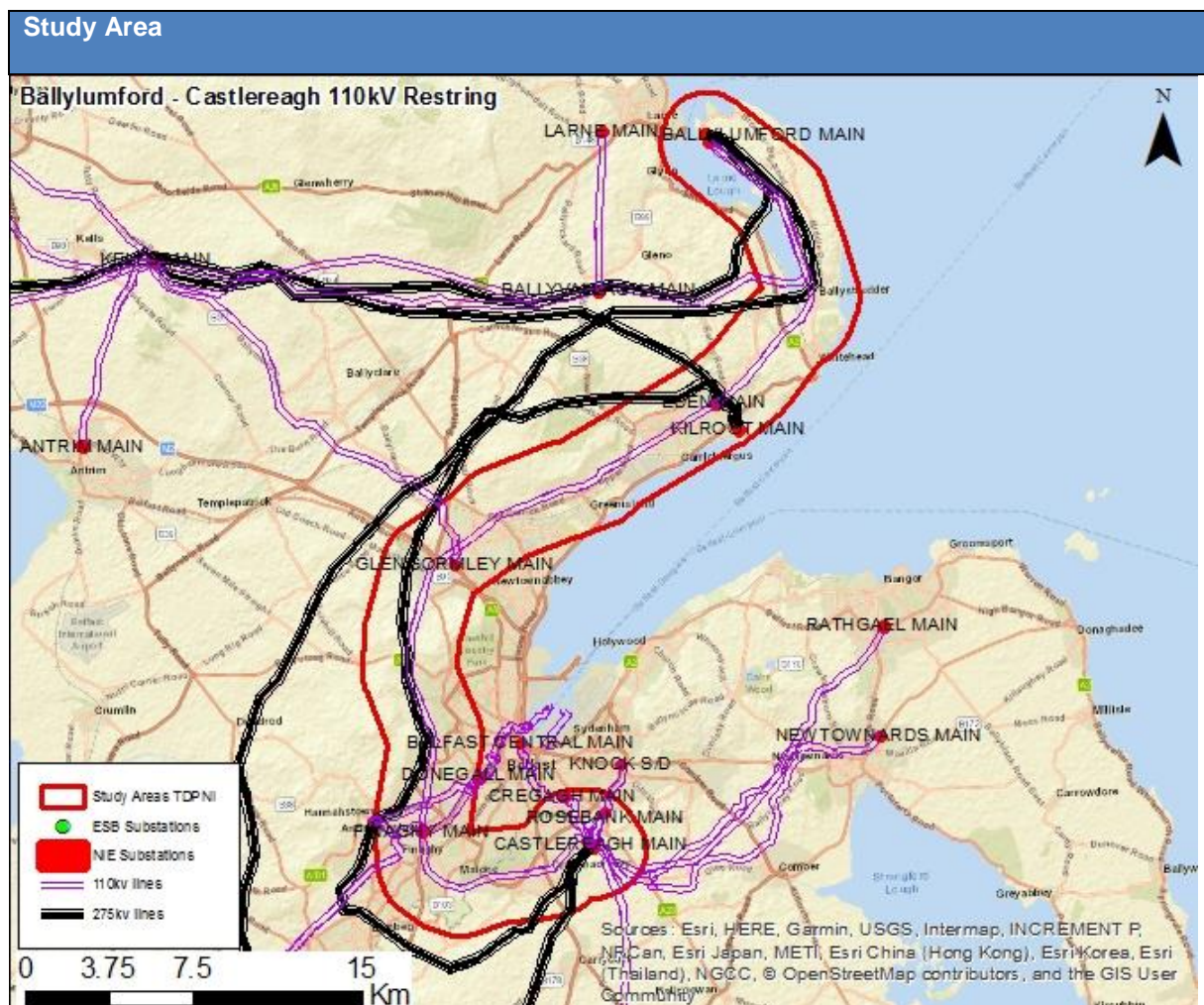
**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in parts of Ballynahatty and Newtownabbey within the study area that are crossed by the existing line. Within the study area there are significant areas of 0.5% AEP climate change pluvial flood risk in parts of Newtownabbey, Craglee, Kilcoan and Ballytober that are crossed by the existing line.

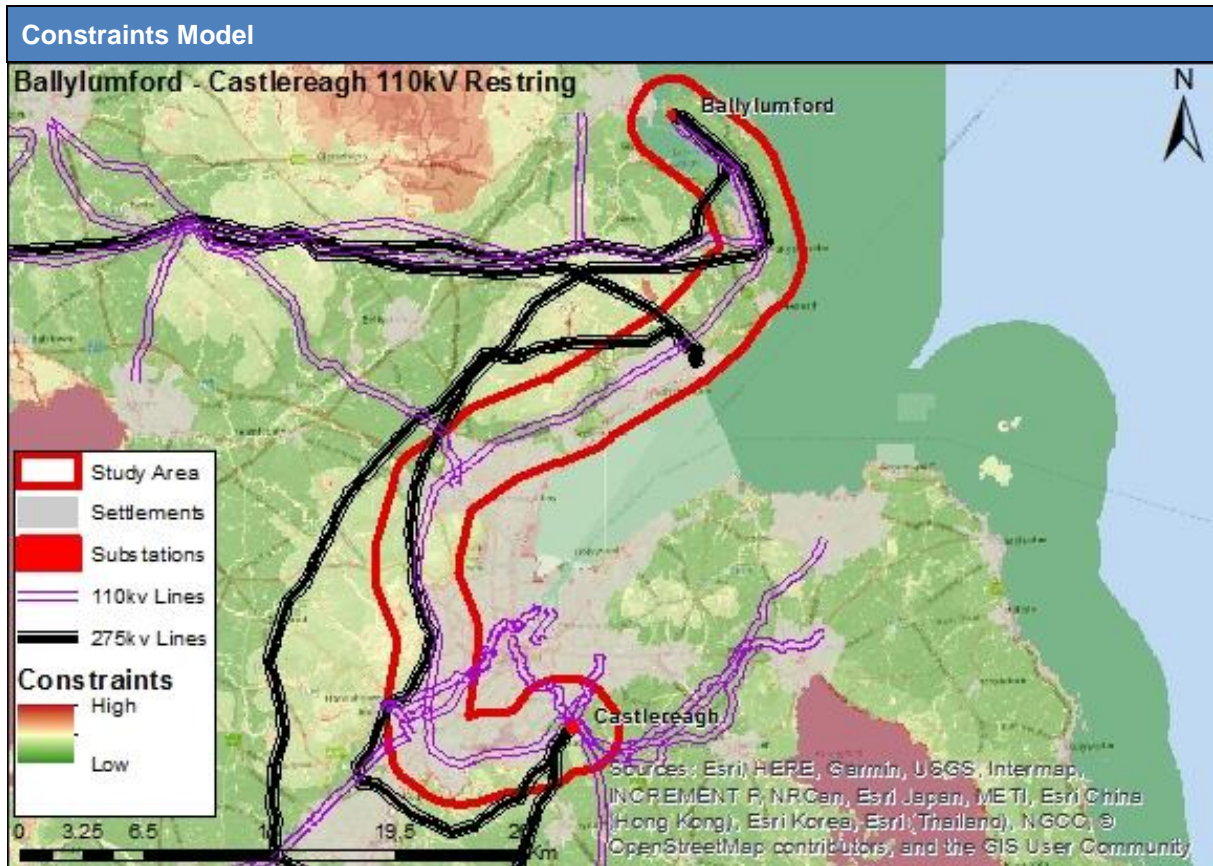
**Material Assets & Infrastructure** – Within the study area there is 47km of motorway, 106km of A

roads and 43km of railway lines. The North-West gas and the Phoenix Natural Gas pipelines are both intersected by the study area. Within the study area there are several 33kV, 110kV and 275kV transmission lines. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 121km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 400 SMR sites, 63 scheduled zones, over 400 listed buildings, over 400 industrial heritage sites and 39 defence heritage sites. There is one Area of Significant Archaeological Interest within the study area, namely Giant’s Ring, along with three Areas of Archaeological Potential, being Carrickfergus, Whitehead and Ballycarry. Within the study area there are 20 listed parks, gardens and demesnes, along with 11 historic wreck sites in the vicinity of Larne Lough.

**Landscape & Visual Amenity** - The study area crosses 16 Landscape Character Areas, including nine LCAs designated as Highly Sensitive to development, namely Belfast Basalt Escarpment, Carrickfergus Farmed Escarpment, Castlereagh Slopes, Divis Summits, Hummocky Lagan Lowlands, Islandmagee, Lagan Parkland, Larne Coast, and Tardree and Six Mile Water Slopes. The remaining seven LCAs are deemed High-Medium Sensitive to development. The sole Area of Outstanding Natural Beauty within the study area is Lagan Valley AONB. Lagan Valley Regional Park is the only NIEA designated country park in the study area. Two National Trust Lands fall within the study area, namely Divis and Black Mountain, and Islandmagee.

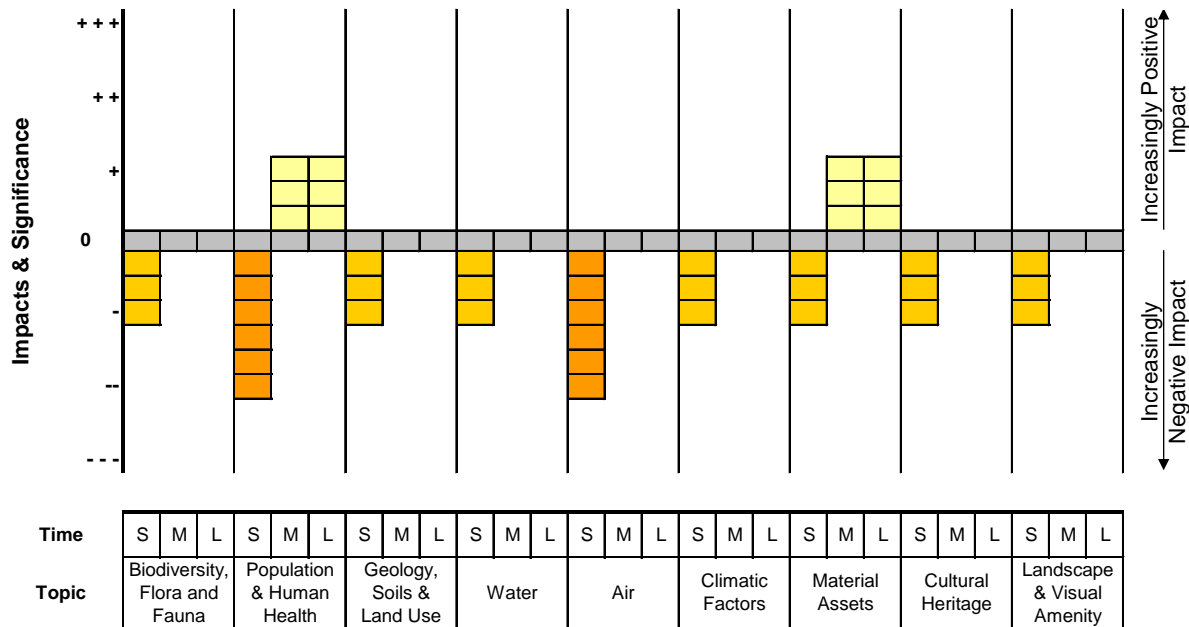




Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-2	0	0
Climatic Factors (C)	-1	0	0
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenity (L)	-1	0	0



**Summary Chart of Potential Impacts**



**Key Conclusions:**

Development of the transmission line restring has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include increases in local air emissions and reduction in local air quality in an AQMA, during the restring works. There are unlikely to be any further medium or long term negative impacts following the restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, and material assets, following the restring of the transmission line.

The HRA of the TDPNI has identified the potential for habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on ten European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

**8.27 DRUMNAKELLY AND ARMAGH DEVELOPMENT PLAN**

**Drumnakelly and Armagh Development Plan**

There is a need to reinforce the distribution system supplying Armagh city and the surrounding area. There is also a need to upgrade capacity at the existing Drumnakelly 110/33kV substation. There are two options for the Armagh Reinforcement, being either a new 110/33 kV substation adjacent to Drumnakelly Main and 33 kV reinforcements to the Armagh area, or, a new 110/33 kV substation at Armagh and 110 kV circuits from Tandragee or Drumnakelly. These options are exclusive of one another, however share the same study area, so are considered as one potential option within the assessment.

**Environmental Baseline**

**Biodiversity, Flora & Fauna** – The study area encompasses three ASSIs, being Moyrourkan Lough, Bracklagh Bog and Drumarg. There are five SLNCIs within the study area, namely Drumarg,

Gosforg Forest Park, Castle Dillon Lake, Milfort Cutting and Marlacoo Lake. The study area intersects River Bann Bannfoot Freshwater Pearl Mussel Catchment and six Salmonid Rivers. There are 26 Local Wildlife Sites within the study area, along with Bracklagh Bog Nature Reserve.

**Population & Human Health** – There are five main settlements within the study area, namely Richhill, Markethill, Craigavon Urban Area and Bleary, Tandragee and Armagh City, of which Craigavon Urban Area and Bleary is the largest. The mean population density of this study area is in the medium range compared to other study areas, at 1,693 people/km<sup>2</sup>. There are no peace lines within the study area. There are two Neighbourhood Renewal Areas, being Portadown North West and Armagh, which are socially sensitive areas. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Craigavon Urban Area and Bleary, Armagh City, Laurelvale and Tandragee areas.

**Soils, Geology and Land use** – The study area covers over 160km<sup>2</sup> and is composed mainly of pastures (72%), complex cultivation patterns (17%), discontinuous urban fabric (5%), annual crops associated with permanent crops (2%) and continuous urban fabric (1%). The study area encompasses one ASSI site of geological heritage, namely Drumarg ASSI. Within the study area there are two mine shafts, two historic mines and several areas of orchards, with clustering of orchards in the Laurelvale, Ballyleny, Richhill, Milltown, East Armagh and South Portadown areas. There are 12 areas of unstable ground identified within the study area, found mainly in the South Portadown, Milltown, Tannaghmore, Cornacrew and Hamiltonsbawn areas. There are 86 ancient and long-established woodland areas in the study area, along with two Forest Service sites. Within the study area there are 13 PPC sites and over 300 historical sites which have the potential of being contaminated land, including; 100 railway lands, 50 manufacturing works, 45 textile works, 38 mineral works, and 11 sewage works. There are four upland and steep slope areas identified in the south of the study area, namely Derryraine, Edenknappagh, Drumachee and Mount Nab.

**Water** – Within the study area there are 14 river water bodies, all of which are less than good ecological status. There are 63 sections of river that transect the study area. There is one drinking water river within the study area, namely Butter Water. There are significant areas of 1% AEP fluvial flood risk in the vicinity the following areas within the study area; Armagh, Richhill, Ballybreagh, Mulladry, Derryhale, Portadown, Laurelvale and Tullyhugh. There are several significant areas of 0.5% AEP pluvial flood risk in the study area, mainly in the Milford, Drumsavage, Cornascreeb, Ballyleny, Drumnakelly, Ballyworkan and Mullahead areas. These flood risk areas could become inundated and lead to difficult working conditions during the development of the new transmission line, along with flooding of the new substation.

**Air** – There is one AQMA within the study area, namely Armagh City, Banbridge and Craigavon Borough Council AQMA, which was declared due to high levels of Nitrogen Dioxide. There are no other known air quality issues within the study area.

**Climatic Factors** – There are significant areas of 1% AEP climate change fluvial flood risk in the vicinity the following areas within the study area; Armagh, Richhill, Ballybreagh, Mulladry, Derryhale, Portadown, Laurelvale and Tullyhugh. Within the study area there are several significant areas of 0.5% AEP climate change pluvial flood risk, mainly in the Milford, Drumsavage, Cornascreeb, Ballyleny, Drumnakelly, Ballyworkan and Mullahead areas. There are several areas of GHG sequestering natural cover within the study area, with large of areas with GHG sequestering natural cover in the vicinity of Gosford Forest Park and Tandragee.

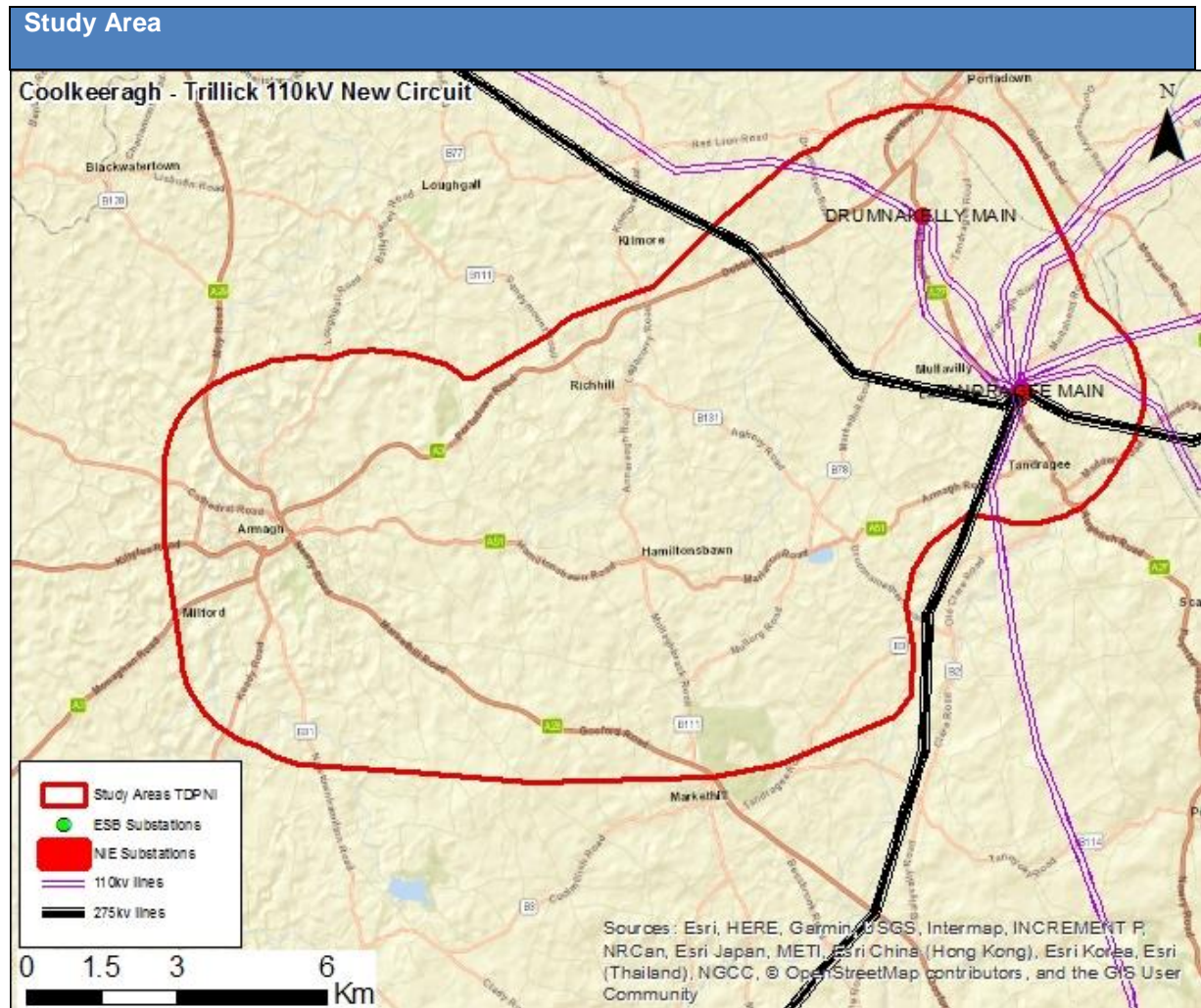
**Material Assets & Infrastructure** – Within the study area there is 71km of A roads and 4km of railway line. Within the study area there are several 33kV, 110kV and 275kV transmission lines. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 150km<sup>2</sup>.

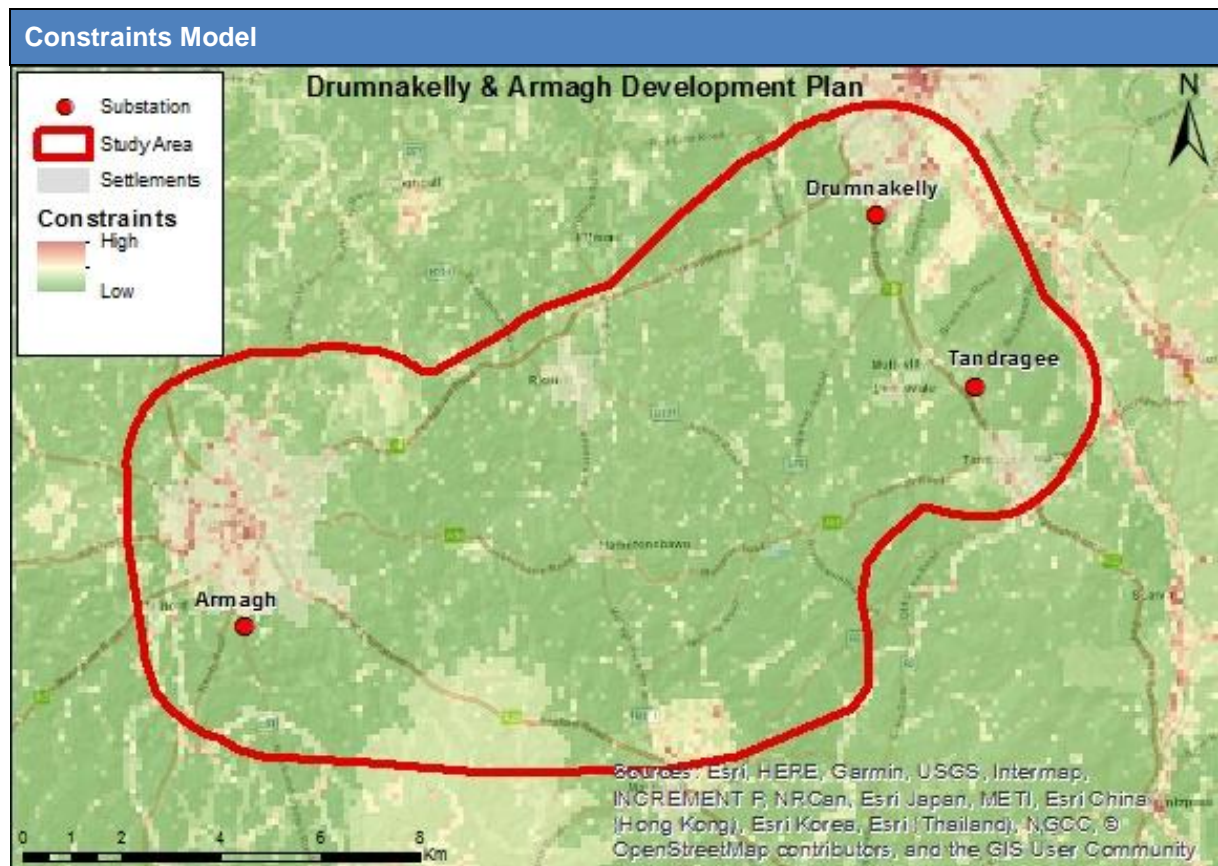
**Cultural, Architectural & Archaeological Heritage** – Within the study area there are over 170 SMR sites, 21 scheduled zones, over 300 listed buildings, over 200 industrial heritage sites and four defence heritage sites. There is one Area of Significant Archaeological Interest within the study area, being Navan. Within the study area there are ten listed parks, gardens and demesnes, including Gosford Castle, Abbey house and Tandragee Castle.

**Landscape & Visual Amenity** - The study area crosses four Landscape Character Areas. The Upper Bann Floodplain is designated as a Highly Sensitive to development LCA, while Armagh Drumlins and Loughgall Orchard Belt are deemed High-Medium Sensitive to development. The



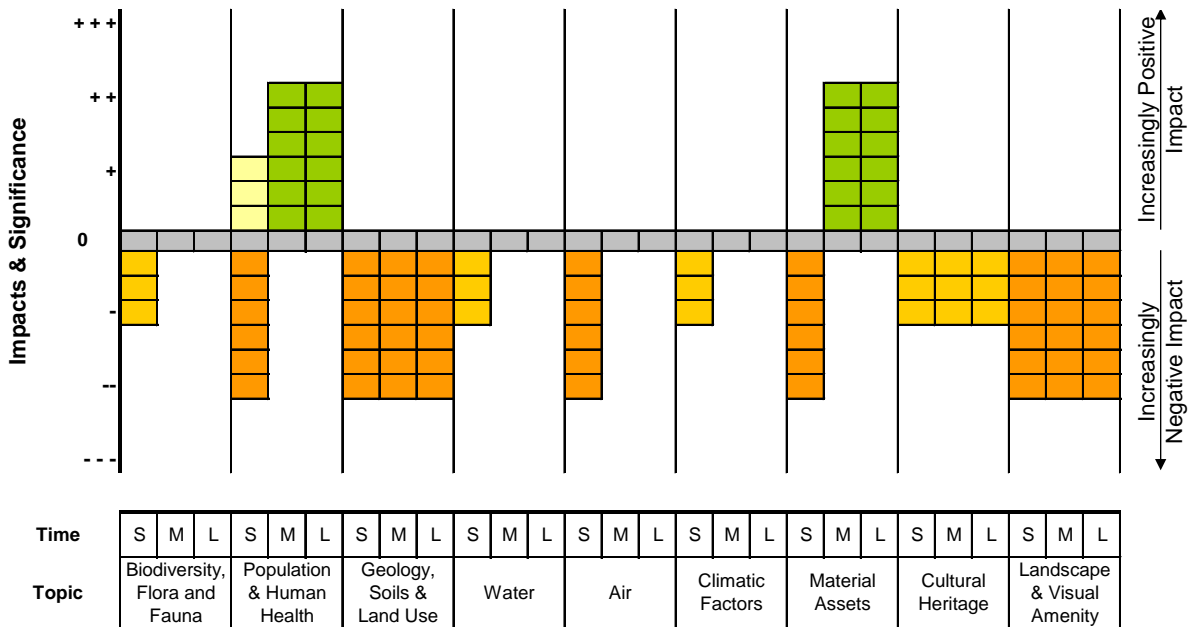
Carrigatuke Hills are considered a Medium Sensitive to development LCA.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2/1	2	2
Soils, Geology and Land use (S)	-2	-2	-2
Water (W)	-1	0	0
Air (A)	-2	0	0
Climatic Factors (C)	-1	0	0
Material Assets & Infrastructure (MA)	-2	2	2
Cultural, Architectural & Archaeological Heritage (H)	-1	-1	-1
Landscape & Visual Amenity (L)	-2	-2	-2

**Summary Chart of Potential Impacts**



**Key Conclusions:**

If a new substation and transmission line are developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include disturbances, such as power supply disruptions, to transport networks, during construction works. Following the construction of the new substation and transmission line, if they are developed within 1% of the best environmental line, there is the potential for medium and long term, slight to moderate negative impacts on geology, soils and land use, cultural heritage, and landscape and visual amenity. These moderate negative impacts include the permanent loss of pasture land and permanent impacts on the setting of cultural heritage sites. If a new substation and transmission line are developed within 1% of the best environmental line, there is the potential for short, medium and long term, slight to moderate positive impacts on population and human health, and material assets. These moderate positive impacts include the moderate scale development of new electricity infrastructure, providing an increased supply of secure and reliable electricity into the future.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on two European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

## 8.28 CASTLEREAGH – KNOCK 110 KV CABLES UPRATE

### Castlereagh – Knock 110 kV Cables Uprate

The protection on this circuit will be replaced and uprated as well as the cable sealing ends and a section of cabling.

The initial study area for this restring has been set as 2km either side of the existing line.

### Environmental Baseline

**Biodiversity, Flora & Fauna** – The study area encompasses 14 SLNCIs and 14 Local Wildlife Sites.

**Population & Human Health** – There are two main settlements within the study area, being Castlereagh Urban Area and Belfast Urban Area. The mean population density of the study area is high compared to other study areas, at 5,399 people/km<sup>2</sup>. There are no peace lines within the study area. There are two Neighbourhood Renewal Areas, namely Tullycarnet and Inner East Belfast, which are socially sensitive areas. There are several areas of lower perceived health within the study area, with clustering of poor perceived health in the Castlereagh Urban and Belfast Urban areas.

**Soils, Geology and Land use** – The study area covers over 30km<sup>2</sup> and is composed of discontinuous urban fabric (49%), pastures (29%), sport and leisure facilities (8%), industrial or commercial units (6%), green urban areas (3%), continuous urban fabric (2%), non-irrigated arable land (2%) and complex cultivation patterns (1%). Within the study area there are six areas of orchards. There is one area of unstable ground identified in the Stormont area. In the study area there are 14 long-established woodland areas. Within the study area there are two PPC sites and 89 historical sites which have the potential of being contaminated land, including; 26 road vehicle fuelling sites, 11 mineral works, nine engineering works, eight waste treatment works and six textile works. The study area includes two upland and steep slope areas, namely Braniel Hill and Lisnabreeny.

**Water** – Within the study area there are five river water bodies, which are all of less than good ecological status. There are five sections of river that transect the study area. The south-eastern periphery of Belfast Harbour coastal water body, which is of bad ecological potential, is within the study area. There is a significant area of 0.5% AEP pluvial flood risk in the Braniel region of Castlereagh, which is crossed by the existing line. This flood risk area could become inundated and lead to difficult working conditions during the restring.

**Air** – The study area crosses through three AQMAs, which are located in the vicinity of the Ormeau Road, the Upper Newtownards Road and Normandy Court (Dundonald). These AQMAs were declared due to high levels of Nitrogen Dioxide, which can be attributed to high levels of traffic. There are not any other known air quality issues within the study area.

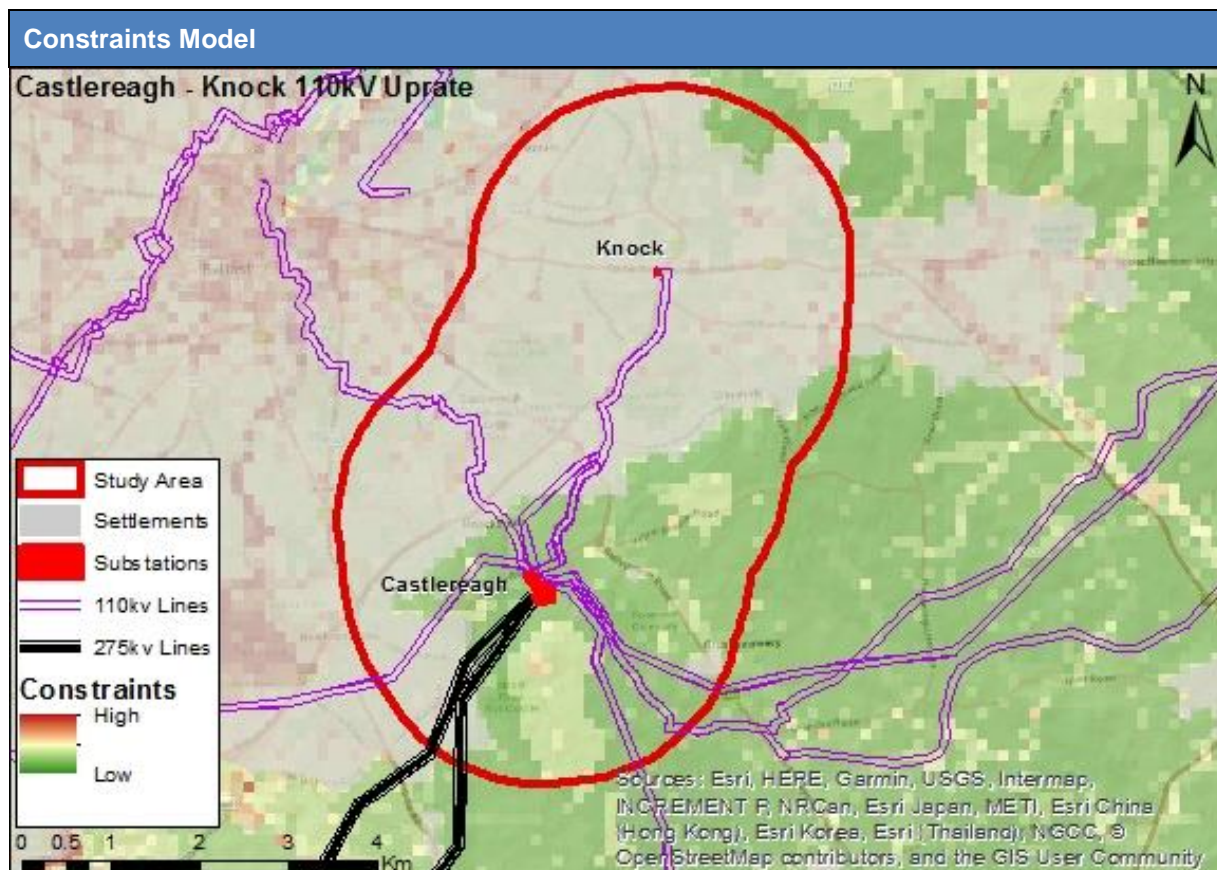
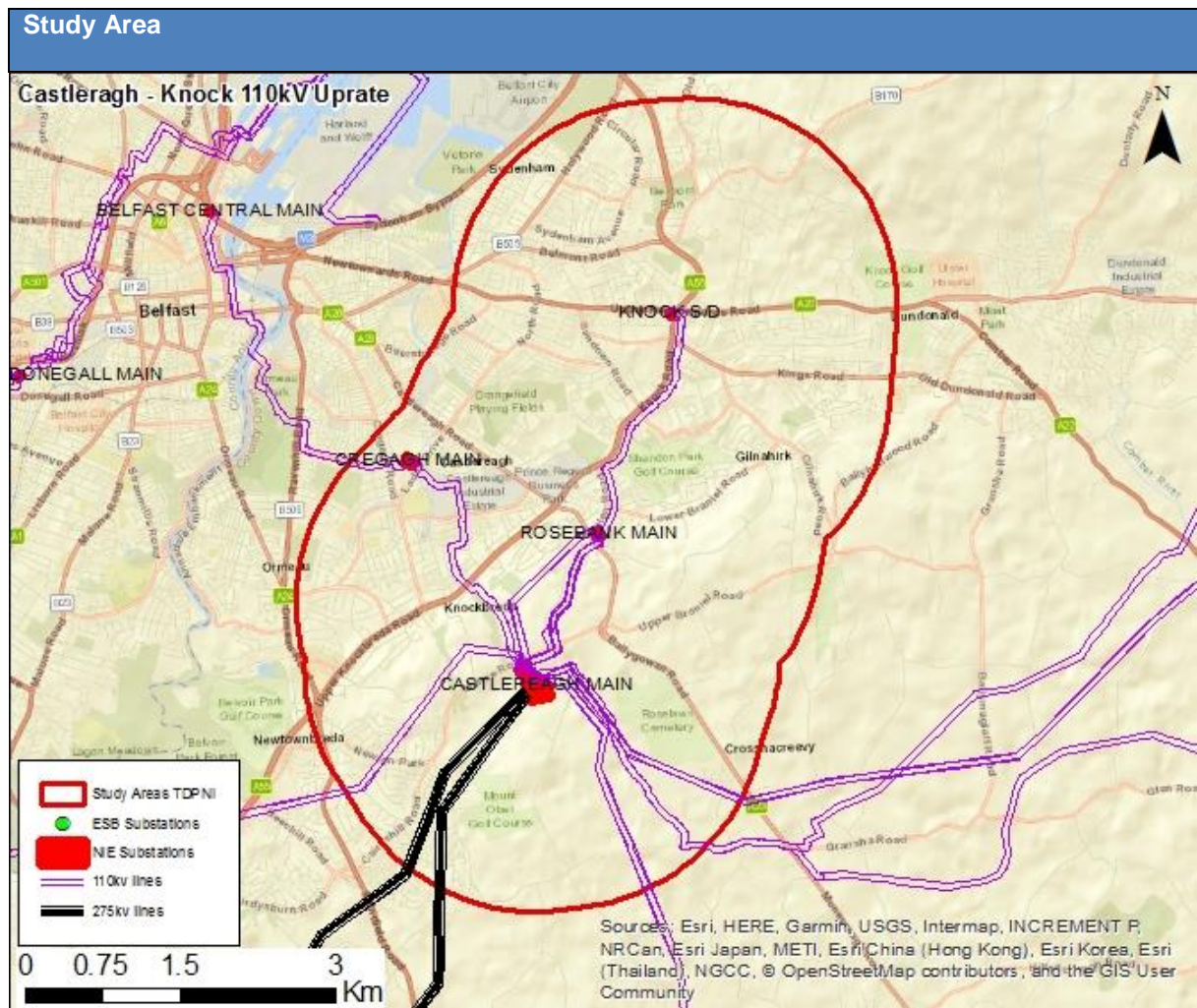
**Climatic Factors** – Within the study area there is a significant area of 0.5% AEP climate change pluvial flood risk in the Braniel region of Castlereagh, which is crossed by the existing line.

**Material Assets & Infrastructure** – Within the study area there is 29km of A roads. There are several 33kV, 110kV and 275kV transmission lines within the study area. The majority of agricultural land within the study area is pasture land, with the total agricultural land identified as approximately 10km<sup>2</sup>.

**Cultural, Architectural & Archaeological Heritage** – Within the study area there are 37 SMR sites, four scheduled zones, over 130 listed buildings, 40 industrial heritage sites, 19 defence heritage sites and one listed park, garden and demesne, namely Stormont Castle.

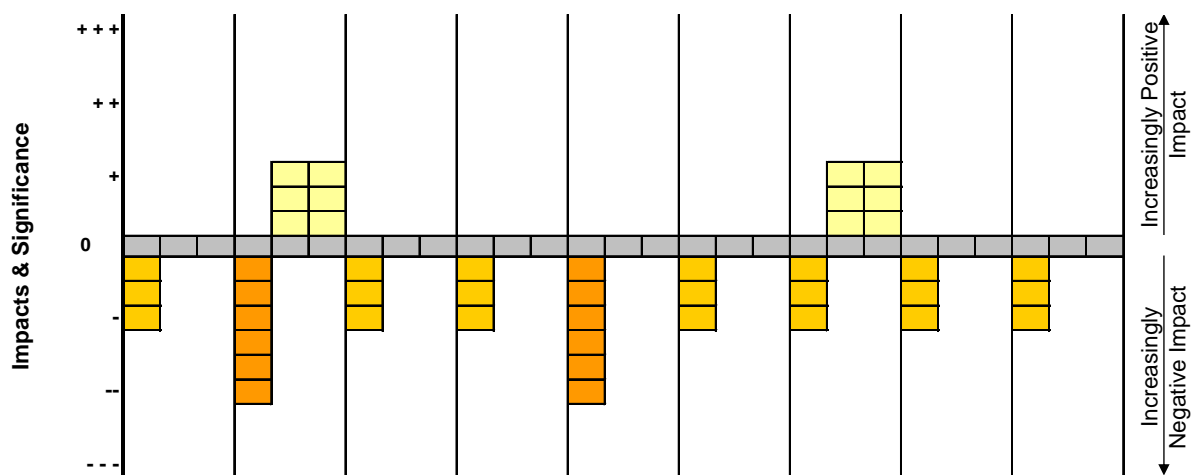
**Landscape & Visual Amenity** - The study area crosses four Landscape Character Areas. The Castlereagh Slopes and Craigtalent Escarpment are designated as Highly Sensitive to development LCAs, while Castlereagh Plateau and Belfast/Lisburn are deemed High-Medium Sensitive to development LCAs.





Environmental Assessment			
Environmental Topic	Short Term Impacts	Medium Term Impacts	Long Term Impacts
Biodiversity, Flora & Fauna (BFF)	-1	0	0
Population & Human Health (PHH)	-2	1	1
Soils, Geology and Land use (S)	-1	0	0
Water (W)	-1	0	0
Air (A)	-2	0	0
Climatic Factors (C)	-1	0	0
Material Assets & Infrastructure (MA)	-1	1	1
Cultural, Architectural & Archaeological Heritage (H)	-1	0	0
Landscape & Visual Amenities (L)	-1	0	0

**Summary Chart of Potential Impacts**



Time	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L						
Topic	Biodiversity, Flora and Fauna			Population & Human Health			Geology, Soils & Land Use			Water			Air			Climatic Factors			Material Assets			Cultural Heritage			Landscape & Visual Amenities		

**Key Conclusions:**

Development of the transmission line restrung has the potential for short term, temporary, construction phase, slight to moderate negative impacts on biodiversity, flora and fauna, population and human health, geology, soils and land use, water, air, climatic factors, material assets, cultural heritage, and landscape and visual amenity. These moderate negative impacts include temporary increases in local air emissions and a reduction in local air quality in an AQMA, during the restrung works. There are unlikely to be any further medium or long term negative impacts following the



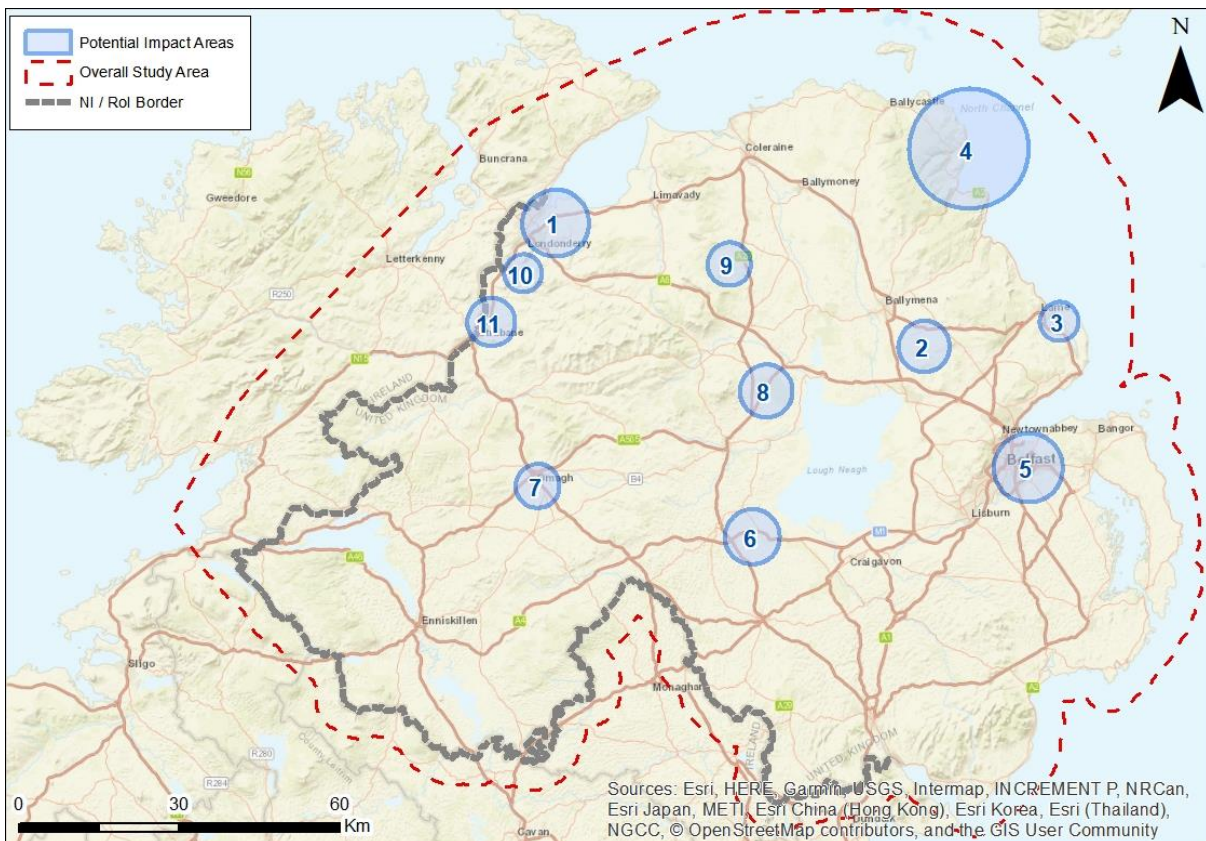
restring of the transmission line. There is the potential for medium and long term, slight positive impacts on population and human health, and material assets, following the restring of the transmission line.

The HRA of the TDPNI has identified the potential for water quality and habitat deterioration impacts on seven European Sites, from this project. The possibility of likely significant effects cannot be discounted on these sites at the Plan level assessment. Project level Appropriate Assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the potential project on European sites, as necessary, will be required.

### 8.29 CUMULATIVE / IN-COMBINATION DEVELOPMENT IMPACTS

Several of the projects within the TDPNI are mutually exclusive and therefore will not be developed if other projects go ahead, i.e. they serve the same purpose so both would not be required. Some independent projects may however come together within the same geographical location and thus have more potential for in-combination or cumulative impacts. As these projects can be developed independently, there is limited potential for significant positive in-combination or cumulative impacts. This section looks at the projects that may be developed within the Plan period, within the same vicinity, therefore giving the potential for cumulative and / or in-combination impacts.

The tables below and **Figure 8.1** demonstrate the identified areas where independent projects may come together either in construction and / or in the long term, and where there is the greater potential for in-combination and / or cumulative negative impacts, which will need to be taken into consideration at the detailed planning and design stages.



**Figure 8.1 Potential Areas of In-Combination and Cumulative Impacts Between TDPNI Projects**

## 1. Coolkeeragh Area

Area ID	Potential Interaction	Project No.	Project Description
1	A	1	Coolkeeragh – Magherafelt 275kV Restrung
		13	Coolkeeragh – Trillick 110kV New Circuit
	B	1	Coolkeeragh – Magherafelt 275kV Restrung
		13	Coolkeeragh – Trillick 110kV New Circuit
		15	Kilroot to Coolkeeragh HVDC Subsea New Circuit
	C	1	Coolkeeragh – Magherafelt 275kV Restrung
		13	Coolkeeragh – Trillick 110kV New Circuit
		16	Magherafelt to Coolkeeragh 275kV or 110kV New Circuit
	D	1	Coolkeeragh – Magherafelt 275kV Restrung
		13	Coolkeeragh – Trillick 110kV New Circuit
		20	Coolkeeragh to Strabane 110kV Uprate
		21	Coolkeeragh to Killymallaght 110kV Uprate
22		Coolkeeragh to Limavady 110kV Uprate	

There is the potential for a range of cumulative and in-combination impacts to arise locally if any of the above combinations of projects take place and works begin in the Coolkeeragh area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as noise and dust disturbance to people in areas of lower perceived health and several Neighbourhood Renewal Areas, impacts on agricultural and forest land, sedimentation, soil compaction, and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs and the Sperrin AONB, from these transmission lines.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the Lough Foyle European sites between the Coolkeeragh – Magherafelt 275kV Restrung and Coolkeeragh – Trillick 110kV New Circuit projects if they were to be progressed and constructed at the same time.

## 2. Kells Area

Area ID	Potential Interaction	Project No.	Project Description
2	A	3	Kells Wind Cluster New Substation
		4	Fair/Torr Head Tidal 275 or 110kV New Circuit
		11	Kells/Creagh – Rasharkin 110kV New Circuit

There is the potential for a range of cumulative and in-combination impacts to arise locally if the above combination of projects takes place and works begin in the Kells area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as a decrease in local air quality, disturbances (e.g. noise and dust) to people in high density areas, sedimentation in rivers, soil compaction, and habitat degradation. Furthermore, there is the potential for permanent, in-

combination or cumulative, negative impacts on the landscape and visual amenity some highly sensitive LCAs and the Antrim Coast and Glens AONB, from these transmission lines and substation.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the Lough Neagh and Lough Beg European sites between the Kells Wind Cluster New Substation, Fair/Torr Head Tidal 275 or 110kV New Circuit and/or the Kells/Creagh – Rasharkin 110kV New Circuit projects if any of them were to be progressed and constructed at the same time.

### 3. Larne Area

Area ID	Potential Interaction	Project No.	Project Description
3	A	6	CAES 275kV New Circuit
		25	Ballylumford – Castlereagh 110kV Restrung
	B	6	CAES 275kV New Circuit
		15	Kilroot to Coolkeeragh HVDC Subsea New Circuit
		25	Ballylumford – Castlereagh 110kV Restrung

There is the potential for a range of cumulative and in-combination impacts to arise locally if any of the above combinations of projects take place and works begin in the Larne area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as disturbance to the local population from increases in noise levels and dust emissions, sedimentation, soil compaction, increased local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs and the Antrim Coast and Glens AONB, from these transmission lines.

The HRA of the TDPNI has determined that there is the potential for in-combination habitat loss effects to occur in Larne Lough SPA and Ramar site, East Coast (NI) Marine SPA or North Channel SAC between the Kilroot to Coolkeeragh HVDC Subsea New Circuit, CAES 275kV New Circuit or Ballylumford – Castlereagh 110kV Restrung projects if any of them were to be progressed and constructed at the same time. There is also the potential for in-combination water quality and deterioration effects to occur in Larne Lough SPA and Ramsar site, East Coast (NI) Marine SPA or North Channel SAC between the Kilroot to Coolkeeragh HVDC Subsea New Circuit, CAES 275kV New Circuit or Ballylumford – Castlereagh 110kV Restrung projects if any of them were to be progressed and constructed at the same time. Additionally there is the potential for in-combination disturbance and displacement effects to occur in Larne Lough SPA and Ramar site, East Coast (NI) Marine SPA or North Channel SAC between the Kilroot to Coolkeeragh HVDC Subsea New Circuit, CAES 275kV New Circuit or Ballylumford – Castlereagh 110kV Restrung projects if any of them were to be progressed and constructed at the same time.

#### 4. Torr Head Offshore Area

Area ID	Potential Interaction	Project No.	Project Description
4	A	4	Fair/Torr Head Tidal 275 or 110kV New Circuit
		15	Kilroot to Coolkeeragh HVDC Subsea New Circuit

There is the potential for a range of cumulative and in-combination impacts to arise locally if the above combination of projects takes place and works begin in the Torr Head Offshore area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as disturbance and sedimentation in spawning grounds and nurseries, noise pollution and electromagnetic disruption to marine species, increased local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs and the Antrim Coast and Glens AONB, along with electromagnetic disturbances to marine species, from these transmission lines.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in East Coast (NI) Marine SPA, North Channel SAC or Rathlin Island European sites between the Fair/Torr Head Tidal 275 or 110kV New Circuit and Kilroot to Coolkeeragh HVDC Subsea New Circuit projects if they were to be progressed and constructed at the same time.

#### 5. Belfast Area

Area ID	Potential Interaction	Project No.	Project Description
5	A	5	Belfast Power Station 480MW CCGT New Circuit - Buried
		24	Sydenham Road Main 110/33kV New Substation
		25	Ballylumford – Castlereagh 110kV Restrung
		27	Castlereagh – Knock 110kV Uprate

There is the potential for a range of cumulative and in-combination impacts to arise locally if the above combination of projects takes place and works begin in the Belfast area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as disturbance and negative health impacts to people the high density population areas and lower perceived health areas in the vicinity of Belfast, along with increases in local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs, from these transmission lines and substation.

The HRA of the TDPNI has determined that there is the potential for in-combination disturbance and displacement effects to occur in the Belfast Lough European sites between the Belfast Power Station, Sydenham Road Main New Substation, Ballylumford – Castlereagh 110kV Restrung and/or Castlereagh – Knock 110kV Uprate projects if any of them were to be progressed and constructed at the same time. There is also the potential for in-combination water quality and deterioration displacement effects to occur in the Belfast Lough European sites between the Belfast Power Station, Sydenham Road Main New Substation, Ballylumford – Castlereagh 110kV Restrung and/or

Castlereagh – Knock 110kV Uprate projects if any of them were to be progressed and constructed at the same time. Additionally there is also potential for in-combination water quality and deterioration displacement effects to occur in the Strangford Lough European sites between the Ballylumford – Castlereagh 110kV Restrung and Castlereagh – Knock 110kV Uprate projects if they were to be progressed and constructed at the same time.

## 6. Tamnamore Area

Area ID	Potential Interaction	Project No.	Project Description
6	A	9	Tamnamore Reactive Compensation 110kV New Equipment
		12	Tamnamore – Turleenan 275kV Uprate
	B	9	Tamnamore Reactive Compensation 110kV New Equipment
		12	Tamnamore – Turleenan 275kV Uprate
		14	Turleenan – Omagh South – Donegal 275kV New Circuit

There is the potential for a range of cumulative and in-combination impacts to arise locally if any of the above combinations of projects take place and works begin in the Tamnamore area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as sedimentation, disturbance to local population, habitat degradation, impacts to agricultural land, soil compaction, an increase in local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs, from these transmission lines.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the Lough Neagh and Lough Beg European sites between the Tamnamore Reactive Compensation 110kV New Equipment, Tamnamore – Turleenan 275kV Uprate and/or Turleenan – Omagh South – Donegal 275kV New Circuit projects if any of them were to be progressed and constructed at the same time.

## 7. Omagh Area

Area ID	Potential Interaction	Project No.	Project Description
7	A	7	Omagh Main – Omagh South 110kV Restrung
		8	Omagh Main Reactive Compensation New Equipment
	B	7	Omagh Main – Omagh South 110kV Restrung
		8	Omagh Main Reactive Compensation New Equipment
		14	Turleenan – Omagh South – Donegal 275kV New Circuit
	C	7	Omagh Main – Omagh South 110kV Restrung
		8	Omagh Main Reactive Compensation New Equipment
		19	Strabane to Omagh 110kV Uprate



There is the potential for a range of cumulative and in-combination impacts to arise locally if any of the above combinations of projects take place and works begin in the Omagh area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as disturbance to agricultural land, forests, and peat bogs, sedimentation to salmonid rivers, disturbance to local people, soil compaction, an increase in local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs, from these transmission lines.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the River Foyle and Tributaries SAC or Lough Foyle European sites between the Omagh Main – Omagh South 110kV Restrung, Omagh Main Reactive Compensation New Equipment, Turleenan – Omagh South – Donegal 275kV New Circuit and/or Strabane to Omagh 110kV Uprate projects if any of them were to be progressed and constructed at the same time.

### 8. Magherafelt Area

Area ID	Potential Interaction	Project No.	Project Description
8	A	1	Coolkeeragh – Magherafelt 275kV Restrung
		16	Magherafelt to Coolkeeragh 275 or 110kV New Circuit
	B	1	Coolkeeragh – Magherafelt 275kV Restrung
		17	Magherafelt to Strabane 275 or 110kV New Circuit

There is the potential for a range of cumulative and in-combination impacts to arise locally if any of the above combinations of projects take place and works begin in the Magherafelt area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as sedimentation to local designated sites, increased disturbance (e.g. noise and dust) to local people, soil compaction, disruption to some A roads, an increase in local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs and the Sperrin AONB, from these transmission lines.

The HRA of the TDPNI has determined that there is the the potential for in-combination water quality and deterioration effects to occur in the Lough Neagh European sites between the Coolkeeragh – Magherafelt 275kV Restrung and Magherafelt to Strabane 275kv or 110kV New Circuit projects if any of them were to be progressed and constructed at the same time.

### 9. Agivey Area

Area ID	Potential Interaction	Project No.	Project Description
9	A	2	Agivey Cluster New Substation
		18	Agivey Cluster to Limavady 110kV New Circuit

There is the potential for a range of cumulative and in-combination impacts to arise locally if the above combination of projects takes place and works begin in the Agivey area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as sedimentation, disturbance (e.g. noise and dust) to local people, soil compaction, disruption to transport networks, an increase in local GHG emissions and reduced air quality. Furthermore, there is the potential for permanent, in-combination or cumulative, negative impacts on the landscape and visual amenity of some highly sensitive LCAs and the Sperrin AONB, from these transmission lines and substation.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the Lough Neagh and Lough Beg European sites between the Agivey Cluster New Substation and Agivey Cluster to Limavady 110kV New Circuit projects if they were to be progressed and constructed at the same time.

### 10. Killymallaght Area

Area ID	Potential Interaction	Project No.	Project Description
10	A	20	Coolkeeragh to Strabane 110kV Uprate
		21	Coolkeeragh to Killymallaght 110kV Uprate
		23	Killymallaght to Strabane 110kV Uprate

There is the potential for a range of cumulative and in-combination impacts to arise locally if the above combination of projects takes place and works begin in the Killymallaght area simultaneously. These include short term, temporary, direct and indirect, construction phase negative impacts such as sedimentation, an increase in noise and dust, an increase in emissions, reduced air quality, and negative impacts on the landscape and visual amenity of the area, during the restring works.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the River Foyle and Tributaries SAC or Lough Foyle European sites between the Coolkeeragh to Strabane 110kV Uprate, Coolkeeragh to Killymallaght 110kV Uprate and/or Killymallaght to Strabane 110kV Uprate projects if any of them were to be progressed and constructed at the same time.

### 11. Strabane Area

Area ID	Potential Interaction	Project No.	Project Description
11	A	19	Strabane to Omagh 110kV Uprate
		20	Coolkeeragh to Strabane 110kV Uprate
		23	Killymallaght to Strabane 110kV Uprate

A range of cumulative impacts have the potential to arise locally if the above combinations of projects take place and works begin in the Strabane area simultaneously. These include short term, temporary,

direct and indirect, construction phase negative impacts such as disturbance (e.g. noise and dust) to the local people, sedimentation, an increase in local GHG emissions, reduced air quality, and negative impacts on the landscape and visual amenity of the area, during the restring works.

The HRA of the TDPNI has determined that there is the potential for in-combination water quality and deterioration effects to occur in the River Foyle and Tributaries SAC or Lough Foyle European sites between the Coolkeeragh to Strabane 110kV Uprate and the Killymallaght to Strabane 110kV Uprate projects if they were to be progressed and constructed at the same time.

The HRA of the TDPNI considered the potential for in-combination effects with other Energy and Sustainability Plans, River Basin and Flood Risk Management Plans, and Land Use Plans. When the implementation of these plans was considered in combination with the TDPNI, and taking into consideration the measures intended to avoid or reduce the harmful effects of the plan on European sites proposed both in the TDPNI (section 6 of HRA) and in each of these respective plans, adverse effects on the integrity of the European sites considered in this assessment were not predicted.

## 9 MITIGATION AND MONITORING

### 9.1 MITIGATION

Mitigation measures have been recommended where potential negative impacts on environmental topic areas have been identified from developing the alternative options. These mitigation measures aim to prevent, reduce and as fully as possible offset any significant adverse effects on the environment due to implementation of the projects within the TDPNI. The mitigation measures that have arisen in the TDPNI and SEA processes have been included within Section 10 of the TDPNI.

#### 9.1.1 General Mitigation

The principal mitigation recommendation is that the predicted negative effects should be considered further during the next stage of detailed planning and design, when the specifics of the development infrastructure options can be optimised through detailed feasibility studies and design in order to limit the potential impacts on sensitive receptors.

Further environmental studies based on the more detailed designs and construction methodologies should be undertaken as appropriate. These studies may involve, but are not limited to, marine, aquatic and terrestrial ecology surveys, ornithological and bat surveys, fish surveys, landscape and visual assessments, WFD assessments, geotechnical investigations and heritage surveys. Further Appropriate Assessment, to meet the requirements of the Habitats Directive, of the detailed designs and construction methodologies will be required at the project level, where potential impacts have been identified in this SEA and accompanying HRA for the TDPNI.

Before any works are carried out, detailed method statements and management plans (construction and environmental) should be prepared, including timing of works, information on the specific mitigation measures to be employed for each works area, and mechanisms for ensuring compliance with environmental legislation and statutory consents.

The timing of construction and maintenance works should be planned to avoid any potential for negative cumulative impacts or inter-relationships with other schemes, plans or projects, yet look to optimise any potential positive cumulative impacts or inter-relationships.

Contractors should be required to prepare Construction Environmental Management Plans (CEMPs), which would include a requirement for related plans to be prepared, as appropriate, for project implementation, such as Erosion and Sediment Control, Invasive Species Management, Emergency Response, Traffic and Safety Management, Dust and Noise Minimisation, and Stakeholder Communication Plans.

Works should only be carried out once the method statements have been consulted on with competent authorities, such as the NIEA. At the project level it will not be sufficient to defer the production of construction method statements. These should be completed in the detailed design stage and may be subject to further Appropriate Assessment where potential impacts have been identified in this SEA

and accompanying HRA for the TDPNI. Where there may be unavoidable impacts on protected habitats and/or species the necessary derogation licences should be applied for prior to seeking planning permission or approval for a scheme.

Marine construction and in stream works have the greatest potential for negative impacts during spawning / breeding and early nursery periods for aquatic and marine protected species. No marine or instream works should occur during restricted periods for relevant species and consultation should be undertaken with the appropriate authorities in this regard.

Monitoring of project-level mitigation measures should be undertaken during and after works, to ensure effectiveness.

All works and planning of works should be undertaken with regard to all relevant legislation, licensing and consent requirements, and recommended best practice guidelines. An ecological clerk of works should be appointed for environmental management of each infrastructure development, and where specific sensitive species may be impacted, an appropriate expert should also be appointed.

### 9.1.2 Mitigation by SEA Topic

**Table 9.1** provides specific mitigation measures that should be adopted within the project stage development of options from the TDPNI to minimise the potential for any negative effects on the wider environment. For transmission development options that are selected to be further investigated these mitigation measures should be implemented and further developed at the next stages of more detailed design / feasibility and project level study.

**Table 9.1 Proposed SEA Mitigation Measures**

Potential Impact	Proposed Mitigation
<p>1 - Construction phase disturbance, such as noise and habitat degradation, to International, National or locally designated sites and species that are within close proximity to developments.</p>	<p>Good planning and timing of works, and good construction and management practices to keep impacts to a minimum. Environmental Management Plan (EMP) and Construction Management Plan (CMP) to be developed and agreed with relevant authorities and consultees prior to commencement of works. Adhere to SONI / EirGrid / best practice guidelines. Scoping of relevant specialist ecological surveys during the detailed planning stage and prior to any construction works.</p> <p>Where applicable, prior to any vegetation clearance an ecologist should be contracted to undertake a 'pre-vegetation clearance' survey for signs of nesting birds and important species. Should important species be found during surveys the sequential approach of avoid, reduce or mitigate should be adopted to prevent significant impacts. Vegetation clearance should only occur outside the main breeding bird season - September to March.</p> <p>Following construction, replanting, landscaping, natural revegetating and habitat enhancement, should be undertaken in line with appropriate guidelines that aim to improve local biodiversity and wildlife. This is likely to provide for medium and long term benefits to the biodiversity, flora and fauna near the working areas. Where possible, original sediment/soil should be reinstated to original levels to facilitate natural restoration and</p>



Potential Impact	Proposed Mitigation
	<p>recolonisation of habitat. Restricted working areas should be imposed to ensure minimal disturbance to sensitive habitats.</p>
<p>2 - Construction phase sedimentation impacts on International, National or locally designated sites and species that are within close proximity to developments and where pathways are evident, as constructions works may mobilise sediments into watercourses.</p>	<p>Consultation with environmental bodies on construction methodology and appropriate timing of works to provide the least potential for sediment mobilisation to watercourses. Good planning and timing of works, and good construction and management practices to keep the potential for impacts to a minimum. Minimise requirement for near or in-stream works through good planning. During construction and site establishment operations, silt fencing should be used to prevent disturbed soil reaching the aquatic zone. Any in-stream works should be carried out during low flow conditions and should cease during heavy rainfall and flood conditions, to reduce suspended solids in the river. Buffer zones along waterways can provide mitigation during construction activities. Buffer zones must be of adequate dimensions and impede all free flow to waterways. Heavy machinery and site traffic should be excluded from these areas.</p>
<p>3 - Increased risk of direct physical disturbance to International, National or locally designated sites and species that are within close proximity to developments, including hazards to birds through collision and electrocution.</p>	<p>To avoid or minimise the potential for bird collision with overhead conductors, bird flight deflectors or bird warning spheres should be installed in areas identified as being of high risk, or having bird species vulnerable to such impacts. Ornithological surveys should be undertaken during the detailed design stage to identify these sensitive areas and species. Any mitigation measures require monitoring programmes to ensure that they are effective,</p>
<p>4 - Increased rate of spread of invasive species during resting or line development works. Mobile construction equipment traversing through areas of invasive species, potentially carrying these species into new areas.</p>	<p>Cleaning of equipment and machinery along with strict management protocols to combat the spread of invasive species. Pre and post construction surveys for invasive species may be recommended in areas of known invasive species risk. If invasive species are found to be present, an Invasive Species Management Plan should be prepared to outline control and or removal measures to ensure such species are not spread during construction or operation of any future projects.</p>
<p>5 - Creation of a new vector for mobile invasive species in the development of new transmission lines. Corridor clearing may act as a pathway for invasive species.</p>	<p>Cleaning of equipment and machinery along with strict management protocols to combat the spread of invasive species. Pre and post construction surveys for invasive species may be recommended in areas of known invasive species risk. If invasive species are found to be present, an Invasive Species Management Plan should be prepared to outline control and or removal measures to ensure such species are not spread during construction or operation of any future projects.</p>
<p>6 - Electromagnetic disturbances to mobile / migratory, marine and aquatic species, e.g. Atlantic salmon, from the development of underwater / subsea transmission lines.</p>	<p>Some studies suggest that marine and aquatic species that use magnetic fields for navigation can be affected by EMF and thus mitigation measures may need to be adopted in some underwater/subsea transmission lines. The Fair Head/Torr Head Tidal Scheme Connection and the Kilroot – Coolkeeragh HVDC Link projects both encompass areas where Salmonid Rivers flow into the sea and therefore significant salmon migration activity is likely to occur. The extent and magnitude of the EMF produced by subsea transmission lines in these areas, and the potential for these aquatic species to come into close contact with the lines, may need to be further studied for potential impacts at a more detailed level on a case by case basis.</p>
<p>7 - Construction phase disturbance impacts to marine or aquatic nursery</p>	<p>Consultation with DAERA Inland Fisheries and DAERA Marine Environment Division at the detailed feasibility stage. Known marine spawning and nursery grounds should be avoided where</p>

Potential Impact	Proposed Mitigation
and spawning grounds, such as noise / vibration pollution and physical habitat disturbance.	possible, or invasive works minimised in these areas. All works involving open cut crossings should be carried out during the period May to September to avoid interruption of salmonid spawning runs, spawning, incubation of eggs and the early developmental stages.
8 - Construction phase sedimentation impacts to marine or aquatic nursery and spawning grounds, as construction works may cause sediment displacement and blanketing / smothering.	The planning of developments should aim to avoid known marine or aquatic nursery or spawning grounds. Where this cannot be avoided, construction timing should be well planned and works duration and invasive workings should be kept to a minimum in these areas.
9 - Construction phase disturbance impacts, such as noise pollution (e.g. cable laying or excavation), to mobile marine and aquatic species (e.g. cetaceans) that are known to frequent the study area.	The planning of developments should aim to avoid known hotspot areas for mobile marine and aquatic species. Where this cannot be avoided, construction times should be kept to a minimum in these areas. Employing Marine Mammal Observers (MMOs) on board construction works vessels can help ensure that impacts of coastal works are minimised. Consultation with DAERA Inland Fisheries and DAERA Marine Environment Division at the detailed feasibility stage. Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010 <sup>5</sup> ) should be followed for marine based cable laying activities.
10 - Construction phase noise pollution disturbance impacts to people in close proximity to developments.	Disturbances can be kept to a minimum with good working practices, planning and timing. Adoption of Construction Best Practice. Noise-producing activities such as excavation and piling should only take place during daylight hours and monitoring of these activities should be ongoing. Continued liaison with local communities is advised with regard to complaints concerning noise and vibration emissions resulting from construction works.
11 - Construction phase dust and sediment releases in close proximity to the developments, causing disturbance and negative health impacts to local people.	Disturbances can be kept to a minimum with good working practices, planning and timing. Adoption of Construction Best Practice. Development of dust minimisation plans in advance of works. Dust suppression measures in place during construction, for example establishing appropriate speed limits over unmade surfaces and establishing wheel washing facilities on construction sites. Continued liaison with local communities is advised with regard to complaints concerning dust releases resulting from construction works.
12 - Construction / maintenance phase compaction or destabilisation of peat and other sensitive soils, from heavy equipment traversing an area.	The development of transmission infrastructure across areas of significant soil sensitivity should be avoided where possible at the design stage (e.g. areas of deep and active peat should be avoided where possible). Where areas of sensitive habitat need to be crossed during construction/maintenance works, measures to reduce the impact of vehicles on wetland or bog should be considered including the use, for example, of low pressure vehicles, wide wheel/tracks and the laying of protective geotextile on the vegetation to be crossed. Construction machinery should also be restricted to site roads and designated access routes. Machinery should not be allowed to access, park or travel over areas outside development construction zones. Where impacts cannot be avoided or reduced, further works should be carried out to compensate for these impacts, or to restore some aspect of the natural environment to an approximation of its previous condition

<sup>5</sup> JNCC, 2010. Handbook for Phase 1 habitat survey – a technique for environmental audit.

Potential Impact	Proposed Mitigation
	(e.g. where disturbance of peat soils cannot be avoided, there should be some consideration given to possible re-seeding with native species to stabilise the peat and accelerate recovery of the vegetation).
13 - Temporary or permanent loss of crops and/or agricultural land due to the disturbance of construction works required for the uprating of existing or development of new transmission infrastructure over agricultural areas.	Good site management practices and construction management plans and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice. Consultation with landowners and/or tenants to identify speciality agricultural crops or lands that may require protection during construction. Consultation with landowners to develop compensation for lost crop value caused by construction works. Land within the working area should be reinstated as near as practical to its former condition.
14 - Construction phase disruption to current land uses, such as noise pollution and dust release from construction works.	Good site management practices and construction management plans and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice. Noise and vibration producing activities such as piling and excavation should only take place during daylight hours and monitoring of these activities should be ongoing in sensitive areas. Development of dust minimisation plans. Dust suppression measures in place during construction, for example establishing appropriate speed limits over unmade surfaces and establishing wheel washing facilities on larger construction sites. Continued liaison with local communities is advised with regard to complaints concerning noise pollutions and dust release resulting from construction works.
15 - Construction phase potential for contaminated materials to be mobilised and tracked through the study area from historically contaminated sites or hazardous soils and activities, impacting on nearby soils and land uses.	Identification of historically contaminated areas and sites and careful route planning during the design stage to avoid these sites where possible, to prevent further contamination. Good management, planning and working practices to minimise contamination of nearby soils and land uses if works crossing historically contaminated sites or hazardous soils cannot be avoided. Good working practices may include installation of wheel wash and plant washing facilities. Strict management and regulation of construction activities. Sampling and analysis of sites prior to construction works in potentially hazardous areas, to establish potential risk.
16 - Access difficulties in topographically unsuitable areas, such as upland and steep slope areas or historic mine sites, and where transport of construction equipment across these areas may be problematic.	Careful route planning during the design stage to avoid topographically unsuitable areas where possible. In some cases, where access for machinery is particularly difficult due to the sensitive nature of habitats or difficult terrain, the aerial transport of materials and machinery by helicopter may be considered.
17 - Construction phase sedimentation impacts to water bodies e.g. construction works may destabilise soil materials, river banks and shorelines.	Good management and planning to keep water quality disturbance to a minimum. Precautions should be put into place to avoid or minimise the generation and release of sediments into any watercourses. Any potential water quality issues from construction should be contained and treated to ensure no damage to natural waterbodies. Construction will have to be planned appropriately, using Best Available Techniques / Technology (BAT) at all times, to ensure water quality issues are kept to a minimum, with no significant adverse effects. Develop, implement and enforce an Erosion and Sedimentation Control Plan (ESCP) where risks are identified to downstream European sites.

Potential Impact	Proposed Mitigation
18 - Construction phase pollution impacts to water bodies, e.g. construction works may accidentally release pollutants, such as fuels, oils and lubricants.	Pollution prevention guidance notes (PPGs) should be consulted, which provide detailed guidance and appropriate mitigation measures to avoid or reduce the impact on the water environment. Develop, implement and enforce a Water Pollution Prevention and Environmental Emergency Response Plan for all work sites. This should include good site practices as described in the Good Practice Guidance notes proposed by EA/SEPA/NIEA. All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice. Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with plant, refuelling and construction equipment into the environment. Emergency and spill response equipment should be kept on hand during construction.
19 - Difficult working conditions during construction and maintenance works due to interactions with coastal, pluvial or fluvial flood extents.	Individual developments to be subject to detailed Flood Risk Assessment at the detailed planning stage, where risk has been identified. Avoid flood extents where possible, or provide infrastructure that is both resilient to the potential flood risk and provides no transfer of flood risk once developed. Critical infrastructure should not be placed in floodplains where it may be impacted, or where it may be inaccessible during flood events.
20 - Increases in local air emissions and reductions in local air quality from construction plant emissions, in areas of the proposed developments.	Development of dust minimisation plans. Dust suppression measures in place during construction to include regular dampening down of stock piles, establishing appropriate speed limits over unmade surfaces and establishing wheel washing facilities on construction sites. Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
21 - Increases in local GHG emissions from construction plant emissions, in areas of the proposed developments.	Plan construction scheduling to minimise vehicle trips. Limit idling of heavy equipment unless needed for the safe operation of the equipment and verify through unscheduled inspections.
22 - Difficult working conditions during construction and maintenance works due to interactions with climate change exacerbated coastal, pluvial or fluvial flood extents.	Individual developments to be subject to detailed Flood Risk Assessment at the detailed planning stage, where risk has been identified, including for climate change scenarios. Avoid climate change flood extents where possible, or provide infrastructure that is both resilient to the potential flood risk and provides no transfer of flood risk once developed. Critical infrastructure should not be placed in floodplains where it may be impacted, or where it may be inaccessible during flood events.
23 - Temporary loss of GHG sequestering vegetation in clearance of development area, during and following the construction of new transmission lines, prior to re-establishment.	Good planning and timing of works to minimise construction footprint impacts. Following construction, replanting, landscaping, and natural revegetating, should be undertaken in line with appropriate guidelines that aim to improve local GHG sequestering vegetation cover.
24 - Construction phase disturbance impacts to existing material assets and infrastructure such as transport networks, agricultural, aquaculture, fisheries, and recreation and amenity areas as construction works may interfere with the functioning of these assets, e.g. road closure or temporary loss of	Development of good site management practices, traffic and construction management plans and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Minimise the frequency and duration of road closures. Adoption of Construction Best Practice.



Potential Impact	Proposed Mitigation
agricultural lands.	
25 - Planning and construction constraints due to the presence of existing infrastructure or other planned developments.	Constraints should be identified, and described in as much detail as possible during the early stages of a project, so that awareness of them and their potential impact can be managed. Incorporation of potential impacts and risks associated with other planned developments at the detailed planning stage. Consultation with other asset owners to establish the best possible working arrangements with the least disturbance.
26 - Permanent, direct loss of existing material assets, such as agricultural land, in the development footprint of new transmission infrastructure, e.g. new substations.	Good spatial planning to minimise the potential for such impacts. Consultation with landowners to develop compensation for loss of assets, such as agricultural land, caused by development of new infrastructure. Good site management practices and construction management plans, and consultation with the competent and statutory authorities prior to any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice.
27 - Construction phase impacts on the setting of heritage sites and features in close proximity transmission infrastructure, during uprating and construction works.	Where necessary a heritage impact assessment should be prepared in respect of any works to architectural or archaeological features in advance of any works being carried out to feed into detailed design. Consultation and agreement with the Department for Communities, Historic Environment Division, in advance of any works taking place in respect of protected archaeological or architectural features. Construction supervision by qualified project archaeologists, combined with sensitive construction methods and restoration to minimise potential for damages, in potentially sensitive areas. Heritage features damaged could be restored / preserved. Statutory consents and notices may be required prior to works taking place.
28 - Permanent impacts on the setting of heritage sites and features in close proximity transmission infrastructure.	Impacts could be kept to a minimum through sensitive design and planning. Planning and design advice from qualified archaeologists. Statutory consents may be required prior to works.
29 - Potential for loss of or damage to known and unknown heritage features in the development of transmission infrastructure.	Impacts could be kept to a minimum through sensitive design and planning. Planning and design advice from qualified archaeologists. Construction supervision by qualified project archaeologists, combined with sensitive construction methods and restoration to minimise potential for damages, in potentially sensitive areas. Statutory consents may be required prior to works.
30 - Construction phase impacts on the local landscape and local visual amenity from construction equipment and works.	Impacts could be kept to a minimum through good site practice and planning (e.g. screened laydown areas and traffic management). Adoption of Construction Best Practice. Landscape and Visual Assessment of options at the detailed feasibility and detailed planning stages to minimise the potential for impacts and provide site specific mitigation measures.
31 - Permanent impacts on landscape and visual amenity from the development of new transmission infrastructure.	Impacts could be kept to a minimum through sensitive design and planning (e.g. vegetative screening and landscape management planning). Landscape and visual assessment and advice during detailed design. Public consultation on draft designs. Landscape and Visual Assessment of options at the detailed feasibility and detailed planning stages to minimise the potential for impacts and provide site specific mitigation measures.

### 9.1.3 HRA Mitigation

In addition to the proposed SEA mitigation **Table 9.2** presents the HRA mitigation measures that should be adopted within the TDPNI project options to minimise the potential for any negative impacts on the European sites.

**Table 9.2 Proposed HRA Mitigation Measures**

Potential Impact	Proposed Mitigation
1 – Construction phase disturbance impacts on feature species birds in European sites.	<p>Mitigation measures to reduce disturbance effects on feature species birds may include the timing of works (e.g. avoiding works in or close to SPAs during the bird breeding season [March to August inclusive] or avoiding works in the vicinity of SPAs with over wintering birds between the months of November and March inclusive) and avoiding working simultaneously with other projects which could also cause disturbance. The screening of works could reduce disturbance impacts. On the advice of relevant ornithological experts and agencies, bird warning devices should be put in place where crossings of sensitive flight corridors cannot be avoided.</p> <p>Surveys focusing on feature species which can move outside the confines of a European site should be conducted to ensure any significant areas of supporting habitat (e.g. foraging areas for feature species birds in close proximity to, but outwith an SPA; or other holts out with an SAC, etc.) would be identified and avoided or appropriate mitigation measure put in place.</p>
2 – Construction phase disturbance impacts on Otters.	<p>Works should avoid active otter holts. In the event that an otter holt cannot be avoided by the works, it will be necessary to seek a derogation licence from NIEA to exclude otters from the holt. No works shall be undertaken within 150m of any holts at which breeding females or cubs are present.</p> <p>No wheeled or tracked vehicles (of any kind) should be used within 30m of non-breeding otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 30m of such holts, except as agreed with NIEA under licence.</p>
3 – Construction phase habitat loss of a European site.	<p>Any and all works in or in proximity to a European site will be supervised by an experienced ecologist acting as an Ecological Clerk of Works (ECoW). Direct habitat loss within European sites should be avoided for new-build infrastructure and avoided where reasonably practicable for refurbishment of infrastructure within European sites.</p> <p>When construction occurs within a designated site, sensitive construction techniques will be used such as the use of bog mats for machinery access, particularly if underground cables are proposed or in remote peatland areas. Ecological monitoring will be undertaken at sensitive sites during construction as appropriate. Such sites will be identified on a case by case basis. Restricted working areas will be imposed to ensure minimal disturbance to sensitive habitats. Re-distribute vegetation and soil stripped from the construction areas to provide a seedbank and do not re-seed with Perennial Ryegrass. Land within the working area will be reinstated to its former condition or as near as is reasonably practicable.</p>



## 9.2 MONITORING

The SEA Directive requires that the significant environmental effects of the implementation of the TDPNI are monitored in order to identify, at an early stage, unforeseen adverse effects and in order to undertake appropriate remedial action. The proposed monitoring programme in **Table 9.3** is based on the Targets and Indicators established in the SEOs (given in **Section 3.2**). This monitoring has been adopted into Section 10 of the draft TDPNI and should be undertaken in advance of development of the next cycle of the TDPNI, to enable the outcomes to influence the development of the Plan. Annual environmental review by SONI could also incorporate some or all of this monitoring. The indicators and data chosen for the monitoring of the Plan are at a strategic level to match the SEOs in this environmental report. The data proposed to be used to monitor the impacts of implementing the TDPNI is all at a strategic level, nationally consistent and freely available. The data proposed is collected and reported by other responsible and statutory bodies, such as the NIEA and NISRA.

Detailed monitoring for specific projects proposed should be re-scoped in consultation with the appropriate authorities at the detailed feasibility and design stages. This agreed detailed monitoring should then be undertaken before, during and after construction, where and when appropriate.

**Table 9.3 Proposed Environmental Monitoring of the TDPNI**

Environmental Topic	Objective	Sub-Objective	Indicators	Possible Data and Responsible Authority
<b>Biodiversity, Flora &amp; Fauna</b>	<b>1</b> Avoid damage to, and where possible enhance, biodiversity, flora and fauna.	<b>A</b> Preserve, protect, maintain and where possible enhance internationally protected species and their key habitats.	Status, condition, area and number of internationally protected species and their key habitats. SACs, SPAs, Ramsar sites	NIEA / NPWS – Conservation Action Plans  NIEA / NPWS reporting on Habitats and Species – Article 17 Reports, and Birds – Article 12 Reports
		<b>B</b> Preserve, protect, maintain and where possible enhance national and local nature conservation sites and protected species, or other know species of conservation concern.	Status, condition, area and number of ASSI, NHA, pNHA, SLNCI and local conservation designations and their species.	NIEA / NPWS – Status of Protected Sites and Species in Northern Ireland / Ireland Reporting  Local Authority – Local Area Plans
<b>Population &amp; Human Health</b>	<b>2</b> Minimise the risk to and provide benefit for the community and human health.	<b>A</b> Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.	Population density within proximity to potential transmission system developments.	NISRA – Census data
		<b>B</b> Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.	Perceived health of the local population within proximity to potential transmission system developments.  Socially sensitive areas within proximity to potential transmission system developments.	NISRA – Census data  NIO data on NI Peace Lines  DSD data on Neighbourhood Renewal Areas

<b>Soils, Geology and Landuse</b>	<b>3</b>	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<b>A</b>	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	<p>Loss or damage to sensitive soils and land uses, e.g. peatlands, ancient woodland, commercial forestry, cultivated lands</p> <p>Interactions with potentially hazardous soils and activities, e.g. PPC sites, mines, quarries, historically contaminated sites</p> <p>Interactions with topographically difficult sites, e.g. steep slopes and uplands.</p>	<p>GSNI / NIEA data</p> <p>Woodland Trust, LPSNI, NIEA, GSNI, and Forest Service data</p> <p>Local Area Plans</p>
<b>Water</b>	<b>4</b>	Avoid impacts and interaction with water quality, quantity and resource.	<b>A</b>	Avoid damage to or deterioration of water status, quality and resource.	<p>WFD water status of surface, coastal, transitional and groundwater's within proximity to potential transmission system developments.</p> <p>Sensitive waterbodies, e.g. drinking and bathing waters within proximity to potential transmission system developments.</p>	NIEA and WFD data
<b>B</b>			Avoid interactions with coastal, pluvial or fluvial flood extents.	Medium probability flood extents - Pluvial and fluvial 100 year and coastal 200 year flood extents.	DfI Rivers data – flood extents / risk – Flood Risk Management Plans	

<b>Air</b>	<b>5</b>	Minimise risk to local air quality and contribute to improving regional emissions	<b>A</b>	Minimise risk to local air quality and contribute to improving regional emissions	Development in air quality sensitive areas.  Enable increased renewable energy connection to reduce requirements for fossil fuel burning.	Local Authorities, DAERA , DEFRA data – Annual air quality monitoring summaries and Continuous air quality monitoring
<b>Climatic Factors</b>	<b>6</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	<b>A</b>	Adaption of infrastructure to potential climatic change and reduced GHG emissions	Medium probability climate change (cc) influenced flood extents - Pluvial and fluvial 100 year + cc and coastal 200 year +cc flood extents.  Enable increased renewable energy connection to reduce requirements for fossil fuel burning.	DfI Rivers data – flood extents / risk – Flood Risk Management Plans  Met Office regional information  SONI / NIE – Annual Reporting and Plans
<b>Material Assets &amp; Infrastructure</b>	<b>7</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	<b>A</b>	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	Transmission infrastructure developed or upgraded.  Potential for impacts on transport (road, rail, air) and energy infrastructure (gas).  Potential for loss of or impacts to agricultural land assets.	SONI and NIE– Annual Reporting and Plans  SGN data  Transport NI and Translink data  LPSNI data  EEA - CORINE Landcover
<b>Cultural, Architectural &amp; Archaeological Heritage</b>	<b>8</b>	Protect the historic environment and cultural heritage.	<b>A</b>	Protect the historic environment and cultural heritage.	Potential for impacts on, or the setting of, known archaeological heritage features.  Potential for impacts on, or the setting of, known architectural heritage features.	NIEA, DfC Heritage and UNESCO data

<p><b>Landscape &amp; Visual Amenity</b></p>	<p><b>9</b></p>	<p>Minimise the potential for negative impacts on landscape and visual amenity.</p>	<p><b>A</b></p>	<p>Minimise the potential for negative impacts on landscape and visual amenity.</p>	<p>Landscape sensitivity to infrastructure development.</p> <p>Potential for impacts on visually sensitive areas, such as AONBs and country parks.</p>	<p>Local Authority / NIEA – Landscape / Seascape Character Assessments</p> <p>Local Area Plans</p> <p>National Trust data</p> <p>EEA – CORINE Landcover</p>
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## 10 SUMMARY AND CONCLUSIONS

This SEA Environmental Report has been prepared to provide a formal and transparent assessment of the likely significant impacts on the environment arising from the Transmission Development Plan for Northern Ireland 2018, including consideration of reasonable alternatives. As the TDPNI has the potential to impact upon European sites there was a requirement under the EU Habitats Directive to also carry out a Habitats Regulations Assessment.

The SEA Environmental Report has identified the potential positive and negative impacts on the wider environment of constructing and operating these individual electricity transmission projects within the TDPNI, along with highlighting the potential cumulative / in-combination impacts of developing the projects. This report is designed to help support the future decision making in implementation of the TDPNI, to ensure that SONI and NIE Networks are fully aware of the environmental constraints and opportunities of these projects, and to help the future sustainable development of projects that come from the TDPNI.

No significant negative impacts are being anticipated from development and operation of the transmission developments, yet several slight to moderate, negative impacts have been identified. However many of these can be avoided or mitigated for in the next detailed design and construction / environmental management planning stages. For transmission infrastructure upgrade developments, the negative impacts identified are mainly restricted to the construction phase, leaving no significant medium or long term footprint on the wider environment. However new transmission infrastructure developments have the potential for short, medium and long term, slight to moderate negative impacts due to their permanent physical and visual disturbance, during and following construction. Mitigation measures have been proposed that can minimise the potential for these negative impacts, if adopted in the detailed planning and design stage. Areas that may be more sensitive to these transmission developments have also been highlighted, to help inform SONI of the areas that should be avoided to minimise potential environmental impacts.

In the medium and long term the development of these transmission projects has the potential for slight to significant positive impacts, including the improved reliability of the grid network, support of economic growth, and facilitating the connection and supply of more renewable energy. These positive impacts in turn will help ensure that electricity supply is able to meet future demand, and that there is less reliance on fossil fuels into the future, resulting in better air quality and less GHG emissions. Furthermore, the projects in the TDPNI could play a key role in shaping a reliable and sustainable energy future for Northern Ireland and help achieve the 2020 renewable electricity target.

The HRA Screening of the 44 potential projects within the TDPNI identified that there is the potential for significant habitat loss, water quality and habitat deterioration, and disturbance and displacement impacts on European sites, in the development of 27 of the potential projects that could come forward during the Plan period. The possibility of these likely significant impacts cannot be discounted on these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects. Furthermore, where avoidance is not



possible, mitigation measures have been identified to address potential adverse effects on the integrity of European Sites from the development of projects within the TDPNI, which should be adopted in the design and planning stage of relevant projects.

Having conducted further investigation and analysis; and having applied measures appropriate at a plan level intended to avoid or reduce the harmful effects of the implementation of the plan on European sites; and taking into consideration the safeguarding regime of lower level screening for appropriate assessment or appropriate assessment as the case may be at a project level for each of the projects brought forward from the TDPNI prior to those projects being consented under the planning code; it is concluded that implementation of the TDPNI will not adversely affect the integrity of any European site.

While SONI is the competent authority for the purpose of preparing the TDPNI and associated SEA, all projects will likely require statutory consent under the provisions of the Planning Act (Northern Ireland) 2011, implemented by the relevant planning authority.

## 11 NEXT STEPS

Consultations on the draft TDPNI, SEA Environmental Report and HRA are anticipated to commence in November 2018 and run for 9 weeks. Documents will be made available for viewing at the RPS offices (Elmwood House, 74 Boucher Road, Belfast, BT12 6RZ) and digitally via the SONI website – <http://www.soni.ltd.uk..>

Following completion of the consultation period, all comments will be collated and the TDPNI, SEA Environmental Report and HRA will be reviewed and revised as necessary. Provided there are no objections or comments that will significantly alter the TDPNI, the final version of the TDPNI can be drafted and adopted. This is anticipated to be in Q1 2019. Following release of the adopted TDPNI an SEA Statement will be drafted to summarise the process undertaken and identify how environmental considerations and consultations have been integrated into the final Plan. **Table 11.1** demonstrates the proposed upcoming time stages for the TDPNI, SEA and AA.

**Table 11.1 Draft Anticipated Milestones**

TDPNI	Dates	Strategic Environmental Assessment / Appropriate Assessment
Development of TDPNI	February - November 2018	Strategic Environmental Assessment and Appropriate Assessment. Writing of SEA Environmental Report and Appropriate Assessment Screening.
Public and statutory consultation on draft TDPNI	November 2018 – January 2019 (9 weeks)	Statutory, Non Statutory and Public Consultation on SEA Environmental Report and Habitats Regulation Assessment.
Publication of final TDPNI	Q1 2019	SEA Environmental Statement

Following adoption of the final TDPNI the next stage of development for any of the potential options is detailed design and further detailed study, incorporating the advice and mitigation measures proposed in these environmental reports.

The proposed timescale to complete the SEA process is given in **Table 11.2**.

**Table 11.2 Proposed Timescale for SEA of the TDPNI**

Actions	Timescales
Screening	February 2018
Scoping	March – April 2018
Scoping Consultation	May – June 2018
Environmental Assessment	June - November 2018
Public Consultation	November 2018 – January 2019 (9 weeks)
Environmental Statement	Q1 2019

The contact for any information regarding the SEA of the TDPNI is as follows:

By post	Richard Bingham RPS 74 Boucher Road Belfast BT12 6RZ Tel: +44 (0)28 90667914
By email	<a href="mailto:richard.bingham@rpsgroup.com">richard.bingham@rpsgroup.com</a>

# **APPENDIX A**

## **SEA Screening Responses**





Mr. Richard Bingham  
RPS  
Consulting Engineers  
Elmwood House  
74 Boucher Road  
Belfast  
BT12 6RZ

Natural Environment Division  
Klondyke Building  
Cromac Avenue  
Gasworks Business Park  
Malone Lower  
BELFAST  
BT7 2JA

Telephone: 028 905 69579

26 February 2017

**Re: SEA Determination for Transmission Development Plan for Northern Ireland**

Dear Richard

Thank-you for your email regarding the Strategic Environmental Assessment (SEA) Determination for the Transmission Development Plan for Northern Ireland.

The Department of Agriculture, Environment and Rural Affairs Northern Ireland (DAERA) has considered the consultation and our opinions are set out below.

Consideration of Likely Significant Effects

We have considered whether the plan is likely to have significant environmental effects in line with the requirements of Regulation 9 of the Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004.

DAREA agrees with the conclusions of the Environmental Assessment Determination Report that the Plan is likely to have significant environmental effects. Regulation 10 publicity of Determinations should now be initiated.

Habitats Regulations Considerations

We recommend that SONI undertakes Habitat Regulations considerations prior to its adoption to ensure the plan is not likely to have significant effects on any Natura 2000 site within Northern Ireland as required under The conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended).



An Agency within the Department of  
**Agriculture, Environment  
and Rural Affairs**  
www.daera-ni.gov.uk



**INVESTORS  
IN PEOPLE**





Please contact the SEA Team at [seateam@daera-ni.gov.uk](mailto:seateam@daera-ni.gov.uk) should you have any queries or require clarification.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'C Hempsey', is written over a light blue circular watermark.

Dr Claire Hempsey  
[claire.hempsey@daera-ni.gov.uk](mailto:claire.hempsey@daera-ni.gov.uk)



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LoCall: 1890 33 33 89

RPS  
Elmwood House  
74 Boucher  
Road  
Belfast  
BT12 6RZ

15<sup>th</sup> March 2018

Our Ref: 180207.1

**Re. SEA Screening of the SONI Transmission Development Plan for Northern Ireland 2018**

Dear Mr Bingham,

The Environmental Protection Agency (EPA) acknowledges your notice, on behalf of the Systems Operator for Northern Ireland (SONI), dated the 10<sup>th</sup> February 2018, regarding the above and notes its contents.

#### **SEA Determination**

We acknowledge your SEA Screening determination, that a Strategic Environmental Assessment (SEA) is required for the Transmission Development Plan for Northern Ireland 2018, referred to hereafter as 'the Plan'.

We welcome the opportunity to provide comments on the Plan and within the SEA consultation process. The timing of this Plan coincides with many key sectoral plans being prepared in the Republic of Ireland (RoI), which may be useful to consider.

The National Planning Framework, recently adopted, sets out the vision for how the RoI will develop up to 2040 and how it aims to provide for continued economic growth and population increase. The Regional Spatial and Economic Strategies (RSES), responsible for achieving and implementing the commitments within the NPF are now under preparation and the RSES's for the Northern & Western, and Eastern & Midlands authority regions may be useful to consider.

This continued economic growth and population increase in both jurisdictions will give rise to further pressures on existing energy and options to support energy supply and supporting infrastructure could be promoted.

Options for additional transboundary network related infrastructure / activity should have environmental sustainability as a key consideration.

With regards climate change adaptation and mitigation, the National Mitigation Plan and National Adaptation Framework have been published and set out the actions and aims to reduce greenhouse gas emissions and adapt to climate change and built up resilience to the effects of climate change. The need to build up resilience in the electricity transmission network will be important and could be explored within the Plan. A challenge exists to determine how the path to achieving a climate resilient and low-carbon society can be progressed. The Plan could consider how this aspect can be supported, within the context of possible future requirements / connectivity aspects, that may be encountered within the existing grid infrastructure network and in relation to future infrastructure requirements.

Some key national plans to consider in preparing the Plan and associated SEA. These include the following:

- Grid 25 Implementation Plan
- Offshore Renewable Energy Development Plan
- National Policy Framework for Alternative Fuels Infrastructure for Transport
- Draft National River Basin Management Plan for Ireland
- Draft National Biodiversity Action Plan 2017-2022
- National Landscape Strategy 2015-2025

Additional aspects to consider include:

- Implications associated with implementation of the Maritime Spatial Planning Directive. The RoI's Marine Spatial Plan is expected to commence during 2018.
- Assessment of potential for cumulative effects, including possible transboundary aspects.
- Need for appropriate community engagement
- Brexit implications and a need for continued cross-border collaboration
- An environmental monitoring programme, with participation from network/infrastructure providers in both jurisdictions, to help monitor and coordinate environmental management activities in border areas.

We look forward to providing further feedback throughout the SEA and Plan-preparation process.

#### *EPA State of the Environment Report 2016*

The EPA has published our latest 'State of the Environment Report' - *Ireland's Environment 2016 – An Assessment (EPA, 2016)*. The recommendations, key issues and challenges described within this report should be considered, as relevant and appropriate to the Plan area. This report can be consulted at: <http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/>

#### **Available SEA Guidance**

Guidance on the SEA Process, including an SEA Pack, Integration Guidance, SEA Checklist, List of SEA Spatial Information Sources and guidance on Integrating Climate Change into SEA, is available on the EPA website and should be considered in the preparation of the SEA. This can be consulted at the following address: <http://www.epa.ie/pubs/advice/ea/>

Guidance on *Developing and Assessing Alternatives in SEA* (EPA, 2015) is also available at: <http://www.epa.ie/pubs/advice/ea/developingandassessingalternativesinsea.html>

#### **SEA WebGIS Search and Reporting Tool**

The EPA WebGIS Search and Reporting application is an online GIS based web application that will allow users to explore, interrogate and produce an indicative report on key aspects of the environment in specific geographic areas. These reports are indicative and will provide an overview of key aspects of the environment within a specific plan area. This may be used to inform the SEA screening and scoping stages for Plans and Programmes with reference in the

first instance to the land use sector, though it is also applicable to other sector plans. It may be accessed via [www.edenireland.ie](http://www.edenireland.ie)

#### **River Basin Catchment Management Tool**

The EPA WFD Application provides a single point of access to catchment data which will be useful for a range of catchment science and management purposes, not just those that are specific to the Water Framework Directive. The Application is accessible through EDEN <https://wfd.edenireland.ie/> and is available to public agencies.

#### **Future Modifications to the Draft Plan**

Where changes to the Plan are made prior to finalisation, or where modifications to the Plan are proposed following its adoption, these should be screened for potential for likely significant effects in accordance with the criteria as set out in the relevant *SEA Regulations*.

#### **Environmental Authorities**

Under National SEA Regulations (*S.I. No. 435 of 2004*, as amended by *S.I. No. 200 of 2011*), notice should also be given to the following:

- The Minister for Housing, Planning and Local Government
- Minister for Agriculture, Food and the Marine, and the Minister for Communications, Climate Action and Environment, where it appears to the competent authority that the plan or programme, or modification of the plan or programme, might have significant effects on fisheries or the marine environment
- where it appears to the competent authority that the plan or programme, or amendment to a plan or programme, might have significant effects in relation to the architectural or archaeological heritage or to nature conservation, the Minister for Culture, Heritage and the Gaeltacht

A copy of your decision regarding the determination, including, as appropriate, the reasons for not requiring an environmental assessment, should be made available for public inspection at your offices, local authority website and should also be notified to any Environmental Authorities already consulted.

Should you have any queries or require further information in relation to the above please contact the undersigned. I would be grateful if an acknowledgement of receipt of this submission could be sent electronically to the following address: [sea@epa.ie](mailto:sea@epa.ie).

Yours sincerely,



**Tadhg O'Mahony**  
*Senior Scientific Officer*  
*SEA Section*  
*Office of Evidence and Assessment*  
*Environmental Protection Agency*  
*Regional Inspectorate*  
*Inniscarra, County Cork*

**Richard Bingham**

---

**From:** Environmental Co-ordination (Inbox) <Environmental\_Co-ordination@agriculture.gov.ie>  
**Sent:** Monday, March 5, 2018 10:43 AM  
**To:** Richard Bingham  
**Subject:** [EXT] RE: SONI TDPNI 2018 - SEA Screening

Dear Richard,

I refer to your email below and wish to state that at this time the Department of Agriculture, Food and the Marine has no submissions or observations in regards to same.

Yours sincerely

*Liz McDonnell*

Liz McDonnell | Environmental Co-ordination Unit | Climate Change & Bioenergy Policy Division | Department of Agriculture, Food and the Marine | Pavilion A | Grattan Business Centre | Portlaoise | Co. Laois | 057 8689915 | E: [environmentalco-ordination@agriculture.gov.ie](mailto:environmentalco-ordination@agriculture.gov.ie)

---

**From:** Richard Bingham [<mailto:Richard.Bingham@resgroup.com>]  
**Sent:** 20 February 2018 16:55  
**To:** Environmental Co-ordination (Inbox); McDonnell, Liz  
**Cc:** [Maeve.Flynn@Eirgrid.com](mailto:Maeve.Flynn@Eirgrid.com); [ronan.kernan@soni.ltd.uk](mailto:ronan.kernan@soni.ltd.uk)  
**Subject:** SONI TDPNI 2018 - SEA Screening

Dear Sir / Madam,

Please see attached a Strategic Environmental Assessment (SEA) Screening Report compiled by RPS on behalf of the Systems Operator for Northern Ireland (SONI) with regards to the proposed Transmission Development Plan for Northern Ireland 2018 (TDPNI 2018).

SONI is the responsible authority for operating and maintaining a safe, secure, economic and reliable electricity network within Northern Ireland. In line with their statutory obligations as transmission system operator in Northern Ireland, SONI is obliged to draft a 10 year Transmission Development Plan outlining projects that are needed for the operation of the transmission network.

As the responsible authority SONI believes that the TDPNI 2018 requires strategic environmental assessment for the reasons given in the attached report.

As there may be the potential for transboundary impacts in the Republic of Ireland, SONI ask that the Department of Agriculture, Fisheries and the Marine, as a statutory consultee for SEA in the Republic of Ireland, respond with their views on the attached report before the 23<sup>rd</sup> March 2018.

We hope you find the attached information to be acceptable, however if you have any queries or require any hardcopies of this information, please feel free to contact us.

Thanks

Richard

---

**Richard Bingham BSc MSc CSci MCIWEM C.WEM**  
**Associate - RPS**  
Consulting Engineers, Elmwood House, 74 Boucher Road,  
Belfast, BT12 6RZ.  
Northern Ireland

# **APPENDIX B**

## **SEA Scoping Responses**



**From:** Cian O'Mahony <C.O'Mahony@epa.ie>  
**Sent:** 30 May 2018 14:28  
**To:** Richard Bingham  
**Cc:** Tadhg O'Mahony; Jonathan Derham  
**Subject:** [EXT] EPA SEA Scoping Submission - SONI TDPNI 2018-2028  
**Attachments:** SCP180405.1 EPA Scoping Submission SONI-TDPNI.pdf; Attachment 1 Executive Summary SOER 2016.pdf.pdf; Attachment 2 - Chpt 13 - Issues\_Challenges-SOER 2016.pdf.pdf

**Re: Transmission Development Plan for Northern Ireland (TDPNI) 2018-2028 – SEA Scoping**

Dear Mr Bingham

We refer to and acknowledge your correspondence, dated 30<sup>th</sup> April, in relation to the Strategic Environmental Assessment Scoping for the Transmission Development Plan for Northern Ireland 2018-2028 (the Plan).

We welcome the opportunity to provide input at this stage of the Plan and SEA process. Please find attached the Agency's submission in relation to the this Plan. This submission includes both general and specific issues to be considered in the Plan and SEA processes. *Appendix 1* of the submission includes responses to the scoping questions posed in the SEA Scoping Report. *Appendix 2* provides links to *Useful Planning and Environmental Resources*. A copy of the *Executive Summary of Ireland's Environment - An Assessment-* and *Chapter 13 - "Environmental Challenges and Emerging Issues for Ireland"* are provided separately in Attachments 1 and 2 respectively.

Yours sincerely

Cian O'Mahony

*Cian O'Mahony  
Scientific Officer  
SEA Section  
Office of Evidence and Assessment  
Environmental Protection Agency  
Regional Inspectorate  
Inniscarra,  
County Cork*



Richard Bingham  
RPS  
74 Boucher Road  
Belfast  
BT12 6RZ  
Northern Ireland

30<sup>th</sup> May 2018

Our Ref: SCP180405.1

**Re: Transmission Development Plan for Northern Ireland (TDPNI) 2018-2028 – SEA Scoping**

Dear Mr Bingham,

We refer to and acknowledge your correspondence, dated 30<sup>th</sup> April, in relation to the Strategic Environmental Assessment Scoping for the Transmission Development Plan for Northern Ireland 2018-2028 (the Plan).

We welcome the opportunity to provide input at this stage of the Plan and SEA process. This submission includes both general and specific issues to be considered in the Plan and SEA processes. *Appendix 1* includes responses to the scoping questions posed in the SEA Scoping Report. *Appendix 2* provides links to *Useful Planning and Environmental Resources*. A copy of the *Executive Summary of Ireland's Environment - An Assessment-* and *Chapter 13 - "Environmental Challenges and Emerging Issues for Ireland"* are provided separately in Attachments 1 and 2 respectively.

Some key influential plans/programmes/strategies in the Republic of Ireland (RoI) currently underway at national and regional level, to consider include the National Planning Framework, Regional Spatial and Economic Strategies, Grid 25 Implementation Plan, second cycle of the Water Framework Directive River Basin Management Plans, National Policy Framework on Alternative Fuels Infrastructure for Transport, National Mitigation Plan, Offshore Renewable Energy Development Plan, Renewable Electricity Policy and Development Framework, National Catchment Flood Risk Assessment and Management Studies.

***EPA State of the Environment Report 2016***

The EPA published the most recent State of the Environment Report in 2016 *Ireland's Environment – An Assessment (EPA, 2016)*. The recommendations, key issues and challenges described within this report should be considered, as relevant and appropriate to the Plan area in preparing the Draft Plan and associated SEA. This report can be consulted at: <http://www.epa.ie/irelandsenvironment/stateoftheenvironmentreport/>

SCP180405.1 EPA Scoping Submission SONI TDPNI 2018-28

30.05.18

**Scoping Process Guidance**

Guidance on the SEA Scoping Process, including an SEA Pack, Integration Guidance, SEA Checklist, SEA Spatial Information Sources and guidance on Integrating Climate Change into SEA, is available on the EPA website and should be considered in the preparation of the SEA. This can be consulted at the following address: <http://www.epa.ie/pubs/advice/ea/>

**Environmental Authorities**

Under the Republic of Ireland's National SEA Regulations (S.I. No. 435 of 2004, as amended by S.I. No. 200 of 2011), notice should also be given to the following:

- The Minister for Housing, Planning and Local Government
- Minister for Communications, Climate Action and Environment, where it appears to the competent authority that the plan or programme, or modification of the plan or programme, might have significant effects on fisheries or the marine environment
- where it appears to the competent authority that the plan or programme, or modification to a plan or programme, might have significant effects in relation to the architectural or archaeological heritage or to nature conservation, the Minister for Culture, Heritage and the Gaeltacht),

Should you have any queries or require further information in relation to the above please contact the undersigned. We would be grateful if an acknowledgement of receipt of this submission could be sent electronically to the following address: [sea@epa.ie](mailto:sea@epa.ie).

Yours Sincerely,

A handwritten signature in blue ink, appearing to read 'Cian O'Mahony'.

**Cian O'Mahony**  
*Scientific Officer*  
*SEA Section*  
*Office of Evidence and Assessment*  
*Environmental Protection Agency*  
*Regional Inspectorate*  
*Inniscarra,*  
*County Cork*



## Appendix

### Responses to Questions Posed in the SEA Scoping Report

*Is there any information missing from the key environmental plans and programmes listed, relevant to the TDPNI 2018 - 2028, that you think should be included, and why?*

The Republic of Ireland's (RoI) National Planning Framework, recently adopted, sets out the vision for how the RoI will develop up to 2040 and how it aims to provide for continued economic growth and population increase, with the associated demands on infrastructure, including electricity / energy.

The Regional Spatial and Economic Strategies (RSES), responsible for achieving and implementing the commitments within the NPF are being prepared and the RSES's for the Northern & Western, and Eastern & Midlands authority regions may be useful to consider.

This continued economic growth and population increase in both jurisdictions will give rise to further pressures on existing energy and options to support sustainable energy supply and supporting infrastructure would be welcome.

With regards climate change adaptation and mitigation, the RoI National Mitigation Plan and National Adaptation Framework have been published and set out the actions and aims to reduce greenhouse gas emissions and adapt to climate change and built up resilience to the effects of climate change. The need to build up resilience in the electricity transmission network will be important and could be explored within the Plan. A challenge exists to determine how the path to achieving a climate resilient and low-carbon society can be progressed. The Plan could consider how this aspect can be supported, within the context of possible future requirements / connectivity aspects, that may be encountered within the existing grid infrastructure network and in relation to future infrastructure requirements. The DCCAE will be commencing preparation of the RoI's National Energy and Climate Plan which may also be useful to refer to.

The RoI's Marine Spatial Plan is expected to commence during 2018, and may be useful to be aware of, in terms of potential opportunities and synergies relating to marine related grid connectivity.

*Do you agree with the proposed initial screening of projects and developments, as to whether they should be assessed further within the SEA and AA processes?*

We note the list of potential developments and projects as described in Table 3.2

*Do you agree with the geographical and temporal scope of the assessment?*

The scope of the assessment seems to be appropriate the level at which the Plan (and SEA) is being prepared.

*Do you agree with the scoping of the environmental assessment topics?*

We acknowledge the scope of the assessment topics provided for, this seems appropriate for the level at which the Plan (and SEA) is being prepared.

*Have we identified the key environmental issues relevant to the TDPNI 2018 - 2028?*

The key issues and challenges facing Ireland, as outlined in our State of the Environment Report, could be reviewed, as appropriate, to help sustainably managed and protect our shared environmental resources.

*Can you propose any other data to be used in the SEA and why it would be beneficial?*





#### *Biodiversity*

The National Parks and Wildlife Service (in the RoI) may also be able to provide relevant information on protected habitats and species in border areas.

#### *Water*

The National CFRAMS Studies (prepared by the Office of Public Works) in the RoI have recently been published. The relevant aspects of flood risk management plans and associated information relating to 'Units of Management' UoM 01, UoM 06 and UoM 36 may be useful to consider in terms of what flood risk / extent information is available as well as possible implications for grid infrastructure.

#### *Air Quality*

The DCCAE have commenced preparation of a National Clean Air Strategy. This will provide the strategic policy framework necessary to identify and promote integrated measures across government policy that are required to reduce air pollution and promote cleaner air while delivering on wider national objectives.

#### *Do you agree with the approach to the assessment?*

The proposed assessment approach seems appropriate to the level at which the Plan is being prepared.

The EPA SEA guidance document '*Developing and Assessing Alternatives in Strategic Environmental Assessment*' (EPA,2015) may be useful to consider and reference in Appendix B of the Scoping Report.

#### *Do you agree with the draft SEA objectives?*

The 'biodiversity, Flora & fauna' objective may benefit from including a reference to also protecting ecological linkages / corridors.

#### *Do you agree with the data and scores proposed for the constraints modelling?*

The proposed approach of producing environmental sensitivity / constraint maps based on the weighting of environmental receptors provides a transparent and useful mechanism to identify and assess activities arising from the Plan in a coordinated and integrated manner. It will assist in determining areas where development should be avoided, or where particularly robust mitigation measures (and associated monitoring) may be required.

#### *Do you agree with the proposed timescales and proposed consultees in the SEA process?*

The proposed timescale for the Plan and associated consultation appears to provide sufficient time for consultation on the Plan and associated SEA Environmental Report.



## Appendix 2 Some Useful Environmental Resources

Environmental Criteria	Selected Resources
State of Environment	<a href="http://www.epa.ie/ireland/environment/stateoftheenvironmentreport/">http://www.epa.ie/ireland/environment/stateoftheenvironmentreport/</a>
Surface Water	<a href="http://www.wfdireland.ie/index.html">http://www.wfdireland.ie/index.html</a> <a href="http://www.catchments.ie">http://www.catchments.ie</a> <a href="http://www.epa.ie/pubs/reports/water/waterqua/">http://www.epa.ie/pubs/reports/water/waterqua/</a>
Ground Water	<a href="http://j.nmp/gsi/groundwater">http://j.nmp/gsi/groundwater</a> <a href="http://www.epa.ie/downloads/pubs/water/ground/">http://www.epa.ie/downloads/pubs/water/ground/</a> <a href="http://www.epa.ie/hydronet/#Water%20Levels">http://www.epa.ie/hydronet/#Water%20Levels</a>
Drinking Water	<a href="http://www.epa.ie/pubs/reports/water/drinking/">http://www.epa.ie/pubs/reports/water/drinking/</a>
Waste Water	<a href="http://www.epa.ie/pubs/reports/water/wastewater/">http://www.epa.ie/pubs/reports/water/wastewater/</a>
Bathing Water	<a href="http://www.epa.ie/pubs/reports/water/bathing">http://www.epa.ie/pubs/reports/water/bathing</a> <a href="http://www.beaches.ie">http://www.beaches.ie</a>
Marine	<a href="http://www.marine.ie/Home/site-area/home/home">http://www.marine.ie/Home/site-area/home/home</a>
Biodiversity	<a href="http://www.npws.ie/guidance-appropriate-assessment-planning-authorities">http://www.npws.ie/guidance-appropriate-assessment-planning-authorities</a> <a href="http://www.npws.ie/publications">http://www.npws.ie/publications</a> <a href="http://maps.biodiversityireland.ie/#/Home">http://maps.biodiversityireland.ie/#/Home</a> <i>EcoPlan Project (Green-Infrastructure/Ecosystems Approaches) Guide and Report</i>
Flood Prevention and Management	<a href="http://www.floodmaps.ie">www.floodmaps.ie</a> <a href="http://www.cfram.ie">www.cfram.ie</a>
Air	<a href="http://www.epa.ie/pubs/reports/air/quality/">http://www.epa.ie/pubs/reports/air/quality/</a>
Climate	<a href="http://www.environ.ie/en/Environment/Atmosphere/ClimateChange/">http://www.environ.ie/en/Environment/Atmosphere/ClimateChange/</a> <a href="http://www.epa.ie/pubs/reports/research/climate/">http://www.epa.ie/pubs/reports/research/climate/</a>
Waste Management	<a href="http://www.epa.ie/pubs/reports/waste/">http://www.epa.ie/pubs/reports/waste/</a>
Radon	<a href="http://www.epa.ie/radiation/radonmap">http://www.epa.ie/radiation/radonmap</a>
Energy Conservation	<a href="http://www.sei.ie">www.sei.ie</a>
Landscape Character Assessment	<a href="http://www.heritagecouncil.ie/">http://www.heritagecouncil.ie/</a>
Geology / Geomorphology	<a href="http://www.gsi.ie/Mapping.htm">http://www.gsi.ie/Mapping.htm</a>
Transportation	<a href="https://www.nationaltransport.ie/planning-policy/">https://www.nationaltransport.ie/planning-policy/</a> <a href="http://www.nra.ie/environment/">http://www.nra.ie/environment/</a>
SEA	<a href="http://www.edenireland.ie">www.edenireland.ie</a> (SEAGIS Reporting Tool) <a href="http://www.epa.ie/pubs/advice/ea/">http://www.epa.ie/pubs/advice/ea/</a>
EIA	<a href="http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/EnvironmentalAssessment/EIASEAGuidance">http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/EnvironmentalAssessment/EIASEAGuidance</a>
Spatial Planning GIS	<a href="http://www.myplan.ie">www.myplan.ie</a> <a href="http://www.epa.ie/soilandbiodiversity/soils/land/corine/">http://www.epa.ie/soilandbiodiversity/soils/land/corine/</a> <a href="http://gis.epa.ie/SeeMaps">http://gis.epa.ie/SeeMaps</a>
DECLG Guidelines / Legislation	<a href="http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/Planning/">http://www.environ.ie/en/DevelopmentHousing/PlanningDevelopment/Planning/</a>
Flood Risk	<a href="http://www.floodinfo.ie/">http://www.floodinfo.ie/</a>





Northern Ireland Environment Agency  
 Natural Environment Division  
 Klondyke Building  
 Cromac Avenue  
 Gasworks Business Park  
 Malone Lower  
 BELFAST  
 BT7 2JA

Richard Bingham  
 RPS Consulting Engineers,  
 Elmwood House,  
 74 Boucher Road,  
 Belfast, BT12 6RZ.  
 Northern Ireland

30<sup>th</sup> May 2018

Dear Richard,

**RE: SONI TDPNI 2018-2028 - SEA Scoping Report**

Thank you for your email dated 30<sup>th</sup> April 2018. The Department of Agriculture, Environment and Rural Affairs Northern Ireland (DAERA) and Department for Communities Historic Environment Division (HED) has considered the consultation and associated documents and our opinions are set out below.

**Biodiversity**

A number of protected and/or priority species are susceptible to collision with overhead transmission lines, in particular migrating bird species. Mitigation measures should be incorporated into the Environmental Report to help minimise this risk.

Table 2.1 Under the national level legislation the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985, the Conservation (Natural Habitats, etc) Regulations (Northern Ireland) 1995 (as amended) (known as the Habitats Regulations) and the Environment (Northern Ireland) Order 2002 (as amended) should be added to the list.

Table 2.1 include The Northern Ireland Regional Landscape Character Assessment.

Table 2.1 under Sub-Regional level the table should include new emerging development plans for the 11 NI Councils.

Table 4.1 under landscape & visual amenity include Areas of High Scenic Value which are were designated through the development plan process



Information on Landscape Character and Seascape Character can be found at:

<https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland>

<https://www.daera-ni.gov.uk/articles/seascape-character-areas>

Table 5.3 Local Planning designations are known as Sites of Local Nature Conservation Importance not interest.

A number of useful information sources that highlight the current state of the environment in Northern Ireland at a regional level are:

Northern Ireland State of the Environment Reports <https://www.daera-ni.gov.uk/publications/state-environment-report-2013>

Northern Ireland Environmental Statistics Reports  
<https://www.daera-ni.gov.uk/articles/northern-ireland-environmental-statistics-report>

DAERA have a map browser for NI protected sites and known priority habitats see:  
<https://www.daera-ni.gov.uk/services/natural-environment-map-viewer>

NIEA Natural Heritage Digital datasets can be downloaded from:  
<https://www.daera-ni.gov.uk/articles/download-digital-datasets>

#### Drinking Water Inspectorate

We note the contents of the SEA scoping report. The report highlights the need to ensure drinking water sources are protected. We would recommend that in the process of assessing any potential impacts on drinking water due regard is also given to the potential impact on private drinking water supplies. Details on these can be obtained from [dwi@daera-ni.gov.uk](mailto:dwi@daera-ni.gov.uk) and information on private water supplies can be viewed at <https://www.daera-ni.gov.uk/articles/private-water-supplies>.

#### Climate Change Unit

Page 53 of the document notes the EU Climate and Energy Package to 2020. What they have is correct, however, a new package to 2030 has been agreed with new targets that may be more appropriate if SONI is looking to what it is going to do in the future. Link below provides details on 2030 package.

[https://ec.europa.eu/clima/policies/strategies/2030\\_en](https://ec.europa.eu/clima/policies/strategies/2030_en)

#### Marine Team

You are advised that when taking any decision which relates to any function capable of affecting (or which might affect) the marine area, which is not an authorisation or



enforcement decision, Section 58 of the Marine and Access Act (MCAA) 2009 and Section 8 of the Marine Act (Northern Ireland) (MANI) 2013, require a public authority to have regard to the appropriate marine policy documents.

For all public authorities, this means that currently, for example, in the preparation of your Transmission Development Plan for Northern Ireland (TDPNI) and all associated documents (including the SEA), you, as the Public Authority, are legislatively required to have regard to the UK Marine Policy Statement (MPS). Careful consideration must be paid to the UK MPS as the current marine policy document and you are advised that this is of equivalent standing to terrestrial planning policy documents, such as, the Regional Development Strategy and the Strategic Planning Policy Statement.

Given your legal requirement, as a public authority preparing the TDPNI, to 'have regard' to the UK Marine Policy Statement (MPS), we would advise you to clearly document and record your process of consideration.

The Marine Plan for Northern Ireland was published for public consultation on 18

April 2018. Once this is published in final form, you will also have to have regard to this document (in addition to the UK MPS) as a marine policy document.

You are further advised of the following:

- The EU Marine Spatial Planning Directive should be included under the international level of key environmental plans and programmes. In addition, the Marine Act (Northern Ireland) 2013, the UK Marine Policy Statement 2011 and the draft Marine Plan for Northern Ireland should be included at the national level. Appendix C will also need to be updated to take these documents into account.
- It is important to recognise the transboundary element of the TDPNI area with the Northern Ireland marine area and the marine area of the Republic of Ireland in the geographical scope of the assessment, given that electricity cables are present in the marine area.
- Given the advice above in relation to any decision that affects or which might affect the marine area, it is important that you ensure that the relevant marine aspects are included within the SEA topics of Table 3.3. It is recommended that you include the relevant policy areas of the UK MPS. For example, it is suggested that Seascape (a policy area in the UK MPS) is included within the Landscape and Visual Amenity topic. You are further advised that this may have implications on Table 3.4 and Table 5.1
- The UK MPS also highlights key environmental issues from a marine perspective that may be relevant to the TDPNI.
- DAERA launched a Marine Mapviewer as part of the public consultation for





- the Marine Plan for Northern Ireland. The Mapviewer is available at <https://apps.d.aera-ni.gov.uk/marinemapviewer/>. This is a publically available tool that displays a range of spatial datasets, relating to the marine area, including electricity cables.
- A Sustainability Appraisal (SA) also accompanied the publication of the draft Marine Plan for Northern Ireland. This document (Volume 3 of the SA Report) provides baseline data on both the marine area and terrestrial area in relation to many of the SEA topics that form part of this Scoping Report. Volume 3 of the SA Report is available at <https://www.daera-ni.gov.uk/articles/marine-plan-northern-ireland>.
- In your consideration of the UK MPS, as required by the MCAA and the MANI, you are further advised that Tables 3.4, 5.1 and 5.3 should be reviewed.

#### DfC Historic Environment Division (HED)

1.3. We note the comments in regard to screening however would have welcomed reference to the potential for impact on the historic environment and heritage assets as part of the content.

#### Question 1.

Table 2.1 On the International/EU level the table should make reference to the European Convention on the Protection of the Archaeological Heritage (Valletta 1992) and the Convention for the Protection of the Architectural Heritage of Europe (Granada 1985)

And to the Historic Monuments and Archaeological Objects (NI) Order 1995

Table 3.1 HED suggest that it may worth assessing the impacts of Section 3 as the approach adopted to the environment has the potential for impact to it.

Question 2. HED are unfamiliar with some of the technical terminology in relation to some of the proposed projects. We highlight the importance of considering the historic environment GIS datasets to inform robust assessment of each project's potential impacts on the historic environment including on the setting of heritage assets as well as potentially encountered below ground archaeological remains that were previously unidentified.

Question 3. Yes

Question 4. Yes

Question 5. In relation to table 3.3 Cultural Heritage HED highlight the need to consider undesignated as well as designated heritage assets.

Question 6. Yes

Question 7. HED request that other heritage assets that are not part of our own record be considered as well. –e.g townland and parish boundaries. These are part of the historic landscape which provides the context and has evolved alongside the



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many assets on the Northern Ireland Monuments and Buildings Record  
Question 8. Yes

Question 9. Draft SEA objectives. Would suggest that the objective for Cultural, Architectural and Archaeological Heritage could include the words conserve and enhance along with protect, (in line with regional strategic objectives). Would also suggest that the indicator text in relation to this objective consider potential for encountering and potentially destroying below ground heritage assets or impacting on landscapes of archaeological significance. Impact on heritage assets generally

Question 10. HED consider that the scoring for ASAs should be higher, around 5, if the proposals will have visual impacts on these areas designated because of their distinctive historic landscape character.

In relation to the example HED highlight the importance of considering the impact of the process of installation of infrastructure as well as the impact of its physical presence

Question 11. Our colleagues in DAERA –NIEA will consult us (DfC Historic Environment Division for commentary in relation to Historic Environment Concerns.

The Historic Environment GIS Datasets are available for download at <https://www.communities-ni.gov.uk/publications/historic-environment-digital-datasets> with further datasets on the marine historic environment available through emailing

[rory.mcneary@daera-ni.gov.uk](mailto:rory.mcneary@daera-ni.gov.uk)

I trust that the above comments are useful and advise that should you wish to discuss any of the points I can be contacted at the email address above.

Please contact the SEA Team at [SEAteam@daera-ni.gov.uk](mailto:SEAteam@daera-ni.gov.uk) should you have any queries or require clarification.

Yours sincerely,

Neil Rainey  
SPTO (Landscape Architect)  
Countryside, Coast and Landscape  
[Neil.Rainey@daera-ni.gov.uk](mailto:Neil.Rainey@daera-ni.gov.uk)

## Richard Bingham

---

**From:** ronan.kernan@soni.ltd.uk  
**Sent:** Wednesday, June 6, 2018 4:21 PM  
**To:** Richard Bingham  
**Subject:** [EXT] FW: SONI TDPNI 2018-2028 - SEA Scoping Report

Hi Richard,

See below response just received from NIE Networks.

Rónán

---

**From:** McKeown Ronan [<mailto:Ronan.McKeown@nie networks.co.uk>]  
**Sent:** 06 June 2018 16:18  
**To:** Kernan, Ronan  
**Subject:** RE: SONI TDPNI 2018-2028 - SEA Scoping Report

Rónán,

Apologies that we could not get these comments back to you on time. See attached responses to the questions posed in the SEA scoping report:

1) Is there any information missing from the key environmental plans and programmes listed, relevant to the TDPNI 2018 - 2028, that you think should be included, and why?

No

2) Do you agree with the proposed initial screening of projects and developments, as to whether they should be assessed further within the SEA and AA processes?

Ballylumford Switchgear replacement will require the GIS substation to be positioned in a new location, should it be in as part of the assessment? Can the North-South be considered as out of scope due to the uncertainty of the planning approval?

3) Do you agree with the geographical and temporal scope of the assessment?

Yes

4) Do you agree with the scoping of the environmental assessment topics?

Yes

5) Have we identified the key environmental issues relevant to the TDPNI 2018 - 2028?

Within the SEA topics, you could consider the post-construction / operational environmental issues such as management of oil filled equipment / failures?

6) Are we proposing the most appropriate data and scale of data to be used?

Yes

7) Can you propose any other data to be used in the SEA and why it would be beneficial?

You may wish to consider Contaminated Land data and Priority Habitats & Species. You may wish to also consider approaching CEDaR, Ulster Wildlife, Strangford Lough and Lecale Partnership and Lough Neagh Partnership

8) Do you agree with the approach to the assessment?

Yes

9) Do you agree with the draft SEA objectives?

Yes

10) Do you agree with the data and scores proposed for the constraints modelling?

There did not appear to be a scoring criteria, can a table be included to explain how each item is scored?

11) Do you agree with the proposed project timescales and proposed consultees in the SEA process?

Yes

If you have any questions, please let me know.



Regards,

Ronan

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# **APPENDIX C**

## **SEA Guidance**

## **Northern Ireland**

A Practical Guide to the Strategic Environmental Assessment Directive. September 2005. Office of the Deputy Prime Minister. <https://www.gov.uk/government/publications/strategic-environmental-assessment-directive-guidance>

Strategic Environmental Assessment. Services and Standards for Responsible Authorities. Environment and Heritage Service. <https://www.daera-ni.gov.uk/publications/strategic-environmental-assessment>

## **Other**

Article 8 (Decision Making) of EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA) as amended. DoECLG Circular (PL 9/2013).

Developing and Assessing Alternatives in Strategic Environmental Assessment. 2015. Environmental Protection Agency. [http://www.epa.ie/pubs/advice/ea/SEA-Alternatives-157-Published\\_web.pdf](http://www.epa.ie/pubs/advice/ea/SEA-Alternatives-157-Published_web.pdf)

Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland. Synthesis Report. 2001. Environmental Protection Agency. [https://www.epa.ie/pubs/advice/ea/EPA\\_development\\_methodology\\_SEA\\_synthesis\\_report.pdf](https://www.epa.ie/pubs/advice/ea/EPA_development_methodology_SEA_synthesis_report.pdf)

Further Transposition of EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA). DoECLG Circular (PSSP 6/2011).

GISEA Manual, Improving the Evidence Base in SEA, 2016. Environmental Protection Agency. [http://www.epa.ie/pubs/advice/ea/EPA%20GISEA\\_web.pdf](http://www.epa.ie/pubs/advice/ea/EPA%20GISEA_web.pdf)

Implementation of SEA Directive (2001/42/EC). Assessment of Certain Plans and Programmes on the Environment. Guidelines for Regional Planning Authorities. November 2004. Department of Environment, Heritage and Local Government. <http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownload,1616,en.pdf>

SEA Scoping Guidance Document. 2016. Environmental Protection Agency. <http://www.epa.ie/pubs/advice/ea/seascopingguidance.html>

Strategic Environmental Assessment (SEA) Checklist - Consultation Draft. January 2008. Environmental Protection Agency. [http://www.epa.ie/downloads/consultation/strategic\\_environmental\\_assessment\\_jan086.pdf](http://www.epa.ie/downloads/consultation/strategic_environmental_assessment_jan086.pdf)

Guidance on Consideration of Air in Strategic Environmental Assessment. April 2017. Scottish Environment Protection Agency.

Guidance on Consideration of Climatic Factors within Strategic Environmental Assessment. March 2010. Scottish Environment Protection Agency.

Guidance on Consideration of Material Assets in Strategic Environmental Assessment. August 2016. Scottish Environment Protection Agency.

Guidance on Consideration of Soil in Strategic Environmental Assessment. April 2017. Scottish Environment Protection Agency.

### EirGrid

Cultural Heritage Guidelines for Electricity Transmission Projects. October 2015. Eirgrid.

Ecology Guidelines for Electricity Transmission Projects. February 2012. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 1: EMF. July 2014. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 2: Cultural Heritage. November 2015. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 3: Bats. December 2015. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 4: Habitats. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 5: Birds. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 6: Water Quality & Aquatic Ecology. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 7: Soils & Geology. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 8: Noise. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 9: Settlement and land use. May 2016. Eirgrid.

EirGrid Evidence Based Environmental Studies Study 10: Landscape & Visual. June 2016. Eirgrid.

EMF & You: Information about Electric & Magnetic Fields and the electricity transmission system in Ireland. July 2014. Eirgrid.



# **APPENDIX D**

## **Plans and Programmes**



## REVIEW OF PLANS AND PROGRAMMES

Plan / Programme	High Level Description	Key Objectives, Actions etc.	Relevance to the TDPNI
<i>International / European</i>			
The Ambient Air Quality and Cleaner Air for Europe Directive (2008/50/EC)	<p>This Directive replaces the air framework directive and the first three daughter directives.</p> <p>It sets down air quality standards in the EU and the other member states for a wide variety of pollutants.</p>	<p>Sets targets for the following air pollutants:</p> <ul style="list-style-type: none"> <li>• Sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter (PM10 and PM2.5) and lead</li> <li>• Carbon monoxide and benzene</li> <li>• Ozone</li> <li>• Arsenic, Cadmium, Nickel and Benzo(a)pyrene</li> </ul>	<p>The TDPNI will be obliged to comply with air quality standards set out in this Directive and may be able to contribute to reducing air emissions by connecting renewable energy generators to the system.</p>
Bathing Water Directive (2006/7/EC)	<p>The overall objective of the revised Bathing Water Directive remains the protection of public health whilst bathing. It:</p> <ul style="list-style-type: none"> <li>• Imposes stricter standards for water quality and the implementation of new method of assessment.</li> <li>• Establishes a more pro-active approach to the assessment of possible pollution risks, and to the management of bathing waters; and</li> <li>• Places considerable emphasis on promoting increased public involvement, and for improved dissemination of information on bathing water quality to the general public.</li> </ul>	<ul style="list-style-type: none"> <li>• Updates the way in which water quality is measured, focusing on fewer microbiological indicators, and setting different standards for inland and coastal bathing sites.</li> <li>• Reduces the health risks linked to bathing by setting scientifically based minimum water quality standards.</li> <li>• Makes changes to monitoring and sampling frequency.</li> <li>• Allows a limited number of water samples to be disregarded during short term pollution incidents, if the event is predicted and the public warned beforehand.</li> <li>• Provides better information to the public, allowing more informed choices to be made about the risk of bathing.</li> <li>• Improves the overall management of bathing water quality by requiring an assessment of</li> </ul>	<p>The TDPNI should consider the contribution that measures could make towards the attainment of bathing water quality standards. Development and operation of electrical transmission infrastructure should not negatively impact on designated bathing waters.</p>

Plan / Programme	High Level Description	Key Objectives, Actions etc.	Relevance to the TDPNI
		<p>potential sources of pollution.</p> <ul style="list-style-type: none"> <li>• Is compatible with other EU water related legislation, in particular the Water Framework Directive.</li> </ul>	
Birds Directive [2009/147/EC]	Protects all wild birds, their nests, eggs and habitats within the European Community. It gives EU member states the power and responsibility to classify Special Protection Areas (SPAs) to protect birds which are rare or vulnerable in Europe, as well as all migratory birds which are regular visitors.	<ul style="list-style-type: none"> <li>• Preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds referred to in Annex I.</li> <li>• Preserve, maintain and establish biotopes and habitats to include the creation of protected areas (Special Protection Areas); ensure the upkeep and management in accordance with the ecological needs of habitats inside and outside the protected zones, re-establish destroyed biotopes and creation of biotopes</li> <li>• Measures for regularly occurring migratory species not listed in Annex I is required as regards their breeding, moulting and wintering areas and staging posts along their migration routes. The protection of wetlands and particularly wetlands of international importance.</li> </ul>	<p>The TDPNI should ensure that European Sites are suitably protected from loss or damage.</p> <p>The developmental infrastructure options are expected to require Appropriate Assessment to ensure that any options proposed do not adversely affect SPAs and SACs.</p>
Bonn Convention [L210, 19/07/1982 (1983)]	The Bonn Convention focuses on preserving the habitats used by migratory species and aims to enhance the conservation of terrestrial, marine and avian species on a global scale throughout their range.	<ul style="list-style-type: none"> <li>• Establishes a legal foundation for internationally coordinated conservation measures throughout a migratory range.</li> <li>• Migratory species threatened with extinction are listed on Appendix I of the Convention. CMS Parties strive towards strictly protecting these animals, conserving or restoring the places where they live, mitigating obstacles to migration and controlling other factors that might endanger them.</li> <li>• In Europe, legislation to ensure that the</li> </ul>	The TDPNI should have regard for any implications on migratory species.

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Drinking Water Directive (98/83/EC)	<ul style="list-style-type: none"> <li>• Aimed at the improvement and maintenance of the quality of water intended for human consumption.</li> <li>• Aims to protect human health from the adverse effects of any contamination of water intended for human consumption by ensuring that it is wholesome and clean.</li> </ul>	<p>provisions of the Bonn convention are applied includes the Birds Directive and the Habitats Directive.</p> <ul style="list-style-type: none"> <li>• Sets values applicable to water intended for human consumption for a defined range of parameters.</li> <li>• Requires implementation of all measures necessary to ensure that regular monitoring of the quality of water intended for human consumption is carried out, in order to check that the water available to consumers meets the requirements set out in the legislation.</li> <li>• Any failure to meet the required standards is immediately investigated in order to identify the cause.</li> <li>• Any necessary remedial action is taken as soon as possible to restore its quality and gives priority to their enforcement action.</li> <li>• Undertake remedial action to restore the quality of the water where necessary to protect human health.</li> <li>• Notification of consumers when remedial action is being undertaken, except where the competent authorities consider the non-compliance with the required standards value to be trivial.</li> </ul>	The TDPNI may have implications for waters used as a drinking water supply. Development and operation of electrical transmission infrastructure should not negatively impact on designated drinking waters.
EIA Directive [85/337/EEC] [2014/52/EU]	<ul style="list-style-type: none"> <li>• Requires the assessment of the environmental effects of public and private projects which are likely to have significant effects on the environment.</li> <li>• Aims to assess and implement avoidance or mitigation measures to eliminate environmental effects, before consent is given of projects</li> </ul>	<ul style="list-style-type: none"> <li>• All projects listed in Annex I are considered as having significant effects on the environment and compulsorily require an EIA.</li> <li>• For projects listed in Annex II, a "screening procedure" is required to determine the effects of projects on the basis of</li> </ul>	The TDPNI will have regard to the EIA regulations in the development of any infrastructure. Development and operation of some electrical transmission infrastructure may require EIA.

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	<p>likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are made subject to a requirement for development consent and an assessment with regard to their effects.</p>	<p>thresholds/criteria or a case by case examination. The competent authority may give a decision on whether a project requires EIA.</p> <ul style="list-style-type: none"> <li>• Requirement for identification, description and assessment in an appropriate manner, in the light of each individual case, on the direct and indirect effects of a project on the following factors: human beings, fauna and flora, soil, water, air, climate and the landscape, material assets and the cultural heritage, the interaction between each factor.</li> <li>• Requirement for consultation with relevant authorities, stakeholders and public allowing sufficient time to make a submission before a decision is made.</li> <li>• Establishment of a recognised structure and content for the Environmental Impact Statement, which is the document submitted as a written account of the EIA.</li> <li>• Inclusion of proposed flood risk management schemes in EIA screening process</li> </ul>	
<p>Energy Efficiency Directive (2012/27/EU)</p>	<p>The Directive brings forward legally binding measures to step up Member States' efforts to use energy more efficiently at all stages of the energy chain – from the transformation of energy and its distribution to its final consumption. Measures include the legal obligation to establish energy efficiency obligations schemes or policy measures in all Member States. These will drive energy efficiency improvements in households, industries and transport sectors.</p>	<ul style="list-style-type: none"> <li>• Energy distributors or retail energy sales companies have to achieve 1.5% energy savings per year through the implementation of energy efficiency measures</li> <li>• EU countries can opt to achieve the same level of savings through other means, such as improving the efficiency of heating systems, installing double glazed windows or insulating roofs</li> <li>• The public sector in EU countries should purchase energy efficient buildings, products</li> </ul>	<p>The TDPNI will be obliged to comply with the requirements of this directive particularly in regards to metering and monitoring. . Development and operation of new electrical transmission infrastructure should contribute to improved energy efficiency.</p>

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		<p>and services</p> <ul style="list-style-type: none"> <li>• Every year, governments in EU countries must carry out energy efficient renovations on at least 3% (by floor area) of the buildings they own and occupy</li> <li>• Energy consumers should be empowered to better manage consumption. This includes easy and free access to data on consumption through individual metering</li> <li>• National incentives for SMEs to undergo energy audits</li> <li>• Large companies will make audits of their energy consumption to help them identify ways to reduce it</li> <li>• Monitoring efficiency levels in new energy generation capacities.</li> </ul>	
Environmental Liability Directive [2004/35/EC]	<ul style="list-style-type: none"> <li>• Establishes a framework for environmental liability based on the 'polluter-pays' principle, to prevent and remedy environmental damage.</li> <li>• Relates to environmental damage caused by occupational activities (listed in Annex III), and to any imminent threat of such damage occurring by reason of any of those activities; damage to protected species and natural habitats caused by any occupational activities other than those listed in Annex III, and to any imminent threat of such damage occurring by reason of any of those activities, whenever the operator has been at fault or negligent.</li> </ul>	<ul style="list-style-type: none"> <li>• Describes procedures for circumstances where environmental damage has occurred. Requires the polluter to take all practicable steps to immediately control, contain, remove or otherwise manage the relevant contaminants and/or any other damage factors in order to limit or to prevent further environmental damage and adverse effects on human health or further impairment of services and the necessary remedial measures.</li> <li>• Establishes measures for cases where environmental damage has not yet occurred, but there is an imminent threat of such damage occurring.</li> <li>• The regulations make the polluter financially liable and allow the competent authority to initiate cost recovery proceedings where</li> </ul>	<p>The TDPNI will be obliged to comply with the requirements of the regulations and to prevent environmental damage. Development and operation of electrical transmission infrastructure should aim to cause no damage to the wider environment.</p>

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		appropriate.	
Environmental Quality Standards Directive (Directive 2008/105/EC) (also known as the Priority Substances Directive), as amended by Directive 2013/39/EU.	<ul style="list-style-type: none"> <li>Establishes environmental quality standards (EQS) for priority substances and certain other pollutants as provided for in Article 16 of the Water Framework Directive and aims to achieve good surface water chemical status in accordance with the provisions and objectives of Article 4 of the Water Framework Directive.</li> </ul>	<ul style="list-style-type: none"> <li>Apply the EQS laid down in Part A of Annex I to this Directive for bodies of surface water.</li> <li>Determine the frequency of monitoring in biota and/or sediment of substances.</li> <li>Monitoring shall take place at least once every year, unless technical knowledge and expert judgment justify another interval.</li> <li>Notify the European Commission if the substances for which EQS have been established if a deviation of the monitoring is planned along with the rationale and approach.</li> <li>Establish an inventory, including maps, if available, of emissions, discharges and losses of all priority substances and pollutants listed in Part A of Annex I to this Directive for each river basin district.</li> </ul>	Impacts on water quality are of relevance to TDPNI as the infrastructure development options have the potential to be linked to water pollution. Development and operation of electrical transmission infrastructure should aim to not negatively impact on any environmental quality standards.
Espoo Convention (2017)	United Nations Economic Commission for Europe convention on Environmental Impact Assessment in a Transboundary Context	Parties to the Convention shall, either individually or jointly, take all appropriate and effective measures to prevent, reduce and control significant adverse transboundary environmental impact from proposed activities.	The TDPNI will have regard to the EIA regulations in the development of any infrastructure and the potential for transboundary impacts as part of this assessment. Development and operation of some electrical transmission infrastructure may require EIA.
EU Biodiversity Strategy to 2020 [COM(2011)244]	<p>Aimed at reversing biodiversity loss and speeding up the EUs transition towards a resource efficient and green economy. Primary objectives of the strategy include:</p> <ul style="list-style-type: none"> <li>conserving and restoring nature;</li> <li>maintaining and enhancing ecosystems and</li> </ul>	<ul style="list-style-type: none"> <li>To mainstream biodiversity in the decision making process across all sectors.</li> <li>To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity.</li> <li>To increase awareness and appreciation of</li> </ul>	The TDPNI should have regard for this strategy and look for opportunities to conserve, and, where possible, restore or enhance biodiversity.



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	<p>their services;</p> <ul style="list-style-type: none"> <li>• ensuring the sustainability of agriculture, forestry and fisheries;</li> <li>• Ensuring the sustainable use of fisheries resources</li> <li>• combating invasive alien species; and</li> <li>• addressing the global biodiversity crisis.</li> </ul>	<p>biodiversity and ecosystems services.</p> <ul style="list-style-type: none"> <li>• To conserve and restore biodiversity and ecosystem services in the wider countryside.</li> <li>• To conserve and restore biodiversity and ecosystem.</li> <li>• services in the marine environment</li> <li>• To expand and improve on the management of protected areas and legally protected species.</li> <li>• To substantially strengthen the effectiveness of International governance for biodiversity and ecosystem services.</li> </ul>	
EU Climate and Energy Package	<p>To meet the EU's obligation under international law and in line with European ambition. Member States are required to: Collectively reduce their combined GHG emissions in 2030 by at least 40 % compared to 1990 levels. Produce 27 % of their combined energy from renewable sources. Improve energy efficiency to reduce primary energy use by 27 % compared with projected levels. This target will; be reviewed in 2020 having in mind a 30% target. To achieve the at least 40% target the EU Emissions Trading System (ETS) sectors will have to cut emissions by 43% (compared to 2005) – to this end the ETS is to be reformed and strengthened. Non-ETS sectors would need to cut emissions by 30% (compared to 2005) – this needs to be translated into individual binding targets for member states. The '40-27-27' targets are supported by the long-term target of 85-90 % reduction in GHG emissions against 1990 levels by 2050.</p>	<p>The package sets three key targets:</p> <ul style="list-style-type: none"> <li>• 40% cut in greenhouse gas emissions (from 1990 levels)</li> <li>• 27% of EU energy from renewables</li> <li>• 27% improvement in energy efficiency</li> </ul>	<p>The TDPNI should aim to contribute towards climate change mitigation. The TDPNI may contribute to reducing GHG emissions by connecting renewable energy generators to the system.</p>
EU Green Infrastructure	<p>Aims to develop preserve and enhance healthy green infrastructure to help stop the loss of</p>	<p>The Green Infrastructure strategy is made up of</p>	<p>The TDPNI will have regard to the Strategy in regards to the development of</p>

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Strategy (COM(2013) 249 final)	biodiversity and enable ecosystems to deliver their many services to people and nature. The greater the scale, coherence and connectivity of the green infrastructure network, the greater its benefits. The EU Strategy on green infrastructure aims to outline how to deploy such a network and encourages action at all levels.	<p>four main elements:</p> <ul style="list-style-type: none"> <li>• Promoting Green Infrastructure in the main EU policy areas</li> <li>• Supporting EU-level GI projects</li> <li>• Improving access to finance for GI projects</li> <li>• Improving information and promoting innovation.</li> </ul>	green infrastructure as part of infrastructure developments.
EU Habitats Directive [92/43/EEC]	Builds on the Birds Directive (see above) by protecting natural habitats and other species of wild plants and animals. Together with the Birds Directive, it underpins a European network of protected areas known as Natura 2000: Special Protection Areas (SPAs, classified under the Birds Directive) and Special Areas of Conservation (SACs, classified under the Habitats Directive).	<ul style="list-style-type: none"> <li>• Propose and protect sites of importance to habitats, plant and animal species.</li> <li>• Establish a network of Natura 2000 sites hosting the natural habitat types listed in Annex I and habitats of the species listed in Annex II, to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.</li> <li>• Carry out comprehensive assessment of habitat types and species present.</li> <li>• Establish a system of strict protection for the animal species and plant species listed in Annex IV.</li> </ul>	<p>The TDPNI should ensure that European Sites are suitably protected from loss or damage.</p> <p>The developmental infrastructure options are expected to require Appropriate Assessment, to ensure that any options proposed do not adversely affect SPAs and SACs.</p>
EU Shellfish Directive (2006/ 113 / EC)	Aimed at detailing the quality required of shellfish waters in order to protect shellfish.	<ul style="list-style-type: none"> <li>• To protect and improve shellfish waters in order to support shellfish life and growth.</li> <li>• It is designed to protect and maintain the aquatic habitats of bivalve and gastropod molluscs, which include oysters, mussels, cockles, scallops and clams.</li> <li>• The Directive sets physical, chemical and microbiological requirements that designated shellfish waters must either comply with or</li> </ul>	The TDPNI should have regard to this Directive in order to minimise adverse impacts on water quality and shellfish life and growth in development and operation of electricity transmission infrastructure.

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		endeavour to improve	
EU Strategy on Adaptation to Climate Change	<p>The European Commission adopted a White Paper on Adapting to Climate Change in 2009, leading to an EU Adaptation Strategy in 2013. The Adaptation Strategy will recognise how important impact assessment is for climate proofing, identify the key priorities for action and how EU policies can encourage effective adaptation action, highlight the issue of adapting infrastructure to climate change and include a separate document on this topic, encourage creating green infrastructure and applying ecosystem-based approaches. Provides guidance on how to mainstream adaptation into the Common Agricultural Policy and Cohesion Policy will be developed after the Adaptation Strategy is adopted.</p>	<p>The strategy aims to make Europe more climate-resilient. By taking a coherent approach and providing for improved coordination, it will enhance the preparedness and capacity of all governance levels to respond to the impacts of climate change.</p>	<p>The TDPNI should aim to contribute towards climate change mitigation and infrastructure to be planned for and resilient to climatic change.</p>
European Landscape Convention [ETS No. 176]	<ul style="list-style-type: none"> <li>• Promotion of the protection, management and planning of European landscapes and organising European co-operation on landscape issues.</li> <li>• Applies to the entire territory of the Parties and covers natural, rural, urban and peri-urban areas.</li> <li>• Inclusion of landscapes that might be considered outstanding as well as everyday or degraded landscapes.</li> <li>• Aimed at the protection, management and planning of all landscapes and raising awareness of the value of a living landscape.</li> <li>• Complements the Council of Europe's and UNESCO's heritage conventions.</li> </ul>	<ul style="list-style-type: none"> <li>• Respond to the public's wish to enjoy high-quality landscapes and to play an active part in the development of landscapes.</li> <li>• Each administrative level (national, regional and local) should draw up specific and/or sectoral landscape strategies within the limits of its competences. These are based on the resources and institutions which, when co-ordinated in terms of space and time, allow policy implementation to be programmed. The various strategies should be linked by landscape quality objectives.</li> </ul>	<p>The TDPNI could potentially have implications on landscapes and visual amenity. Infrastructure should be planned to avoid sensitive landscapes.</p>

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Floods Directive (2007/60/EC)	This Directive provides a framework for the assessment and management of flood risks, aiming to reduce the adverse consequences associated with flooding for human health, the environment, cultural heritage and economic activity.	<p>Member States must:</p> <ul style="list-style-type: none"> <li>• assess the risk of flooding of all water courses and coast lines,</li> <li>• map the flood extent and assets and humans at risk in these areas at River Basin level and in areas covered by Article 5(1) and 13(1); and</li> <li>• implement flood risk management plans and take adequate and coordinated measures to reduce this flood risk.</li> </ul> <p>Member States are required to first carry out a preliminary assessment by 2011 to identify the river basins and associated coastal areas at risk of flooding. For such zones they would then need to draw up flood risk maps by 2013 and establish flood risk management plans focused on prevention, protection and preparedness by the end of 2015. The public must be informed and allowed to participate in the planning process.</p>	The TDPNI should consider the implications of the flood risk arising from developmental options, being located along the coast and in the vicinity of a number of rivers.
Groundwater Directive [80/68/EEC] and Daughter Directive [2006/118/EC]	<ul style="list-style-type: none"> <li>• Aims to protect groundwater from pollution by controlling discharges and disposals of certain dangerous substances to groundwater.</li> <li>• Made under the Water Framework Directive, the Daughter Directive aims to prevent and limit inputs of pollutants to groundwater.</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of criteria for assessing good groundwater status and for the identification of significant and sustained upwards trends and the starting points for trend reversal.</li> <li>• Threshold values adopted for the pollutants, groups of pollutants and indicators of pollution which have been identified as contributing to the characterisation of bodies or groups of bodies of groundwater as being at risk.</li> </ul>	The TDPNI should, where possible, contribute to the protection of groundwater from point source and diffuse pollution that could be caused or exacerbated by developmental options.
National Emission Ceilings for Certain Atmospheric	Objectives seek to limit the national emissions of certain airborne pollutants for the protection of	It sets the limits on total national emissions from four pollutants - sulphur dioxide,	The TDPNI should where possible contribute to the protection of air quality.

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Pollutants (2001/81/EC)	human health and the environment.	nitrogen oxides, volatile organic compounds and ammonia. These can cause acidification (e.g. the chemical composition of the sea acidifies), water and soil pollution (eutrophication) and ground-level ozone (ozone resulting from the reaction of the four pollutants with heat and sunlight).	Connection of renewable energy infrastructure could contribute to reducing national emissions.
Marine Strategy Framework Directive (2008/56/EC).	<ul style="list-style-type: none"> <li>Establishes a framework whereby the necessary measures are undertaken to achieve or maintain good environmental status in the marine environment by the year 2020.</li> <li>Requires the development and implementation of marine strategies in order to protect and preserve the marine environment, prevent its deterioration or, where practicable, restore marine ecosystems in areas where they have been adversely affected.</li> <li>It aims to prevent and reduce inputs in the marine environment, with a view to phasing out pollution as defined in Article 3(8), so as to ensure that there are no significant impacts on or risks to marine biodiversity, marine ecosystems, human health or legitimate uses of the sea.</li> </ul>	<ul style="list-style-type: none"> <li>Preparation of an assessment of the current environmental status of the waters concerned and the environmental impact of human activities.</li> <li>Establishment of a series of environmental targets and associated indicators.</li> <li>Development of a programme of measures designed to achieve or maintain good environmental status, by 2020.</li> <li>Establishment of a monitoring programme for ongoing assessment and regular updating of targets.</li> <li>Cooperation with transboundary Member States to implement these measures.</li> </ul>	The TDPNI could have implications on the environmental status of marine waters. Development and operation of transmission infrastructure to avoid impacts on the marine environment.
Renewable Energy Directive (2009/28/EC)	This Directive establishes a common framework for the use of energy from renewable sources in order to limit greenhouse gas emissions and to promote cleaner transport. The Member States are to establish national action plans which set the share of energy from renewable sources consumed in transport, as well as in the production of electricity and heating, for 2020.	It requires the EU to fulfil at least 20% of its total energy needs with renewable by 2020 – to be achieved through the attainment of individual national targets. All EU countries must also ensure that at least 10% of their transport fuels come from renewable sources by 2020.	The TDPNI can contribute to achieving renewable energy targets through connection of renewable energy generators to the system.
Roadmap to a Resource	Outlines how we can transform Europe's economy	The roadmap aims to address resource	The TDPNI should have regard for this

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Efficient Europe (COM(2011) 571)	into a sustainable one by 2050. It proposes ways to increase resource productivity and decouple economic growth from resource use and its environmental impact. It illustrates how policies interrelate and build on each other.	inefficiency in the sectors that are responsible for the greatest share of environmental impacts – namely food, buildings and mobility, whose combined effects account for 70-80 % of all environmental impacts.	roadmap and could potentially have implications on achieving renewable energy targets.
Second European Climate Change Programme (ECCP II) 2005.	<p>Objectives seek to develop the necessary elements of a strategy to implement the Kyoto protocol.</p> <p>The climate and energy package is a set of binding legislation which aims to ensure the European Union meets its ambitious climate and energy targets for 2020. These targets, known as the "20-20-20" targets, set three key objectives for 2020:</p> <ul style="list-style-type: none"> <li>• A 20% reduction in EU greenhouse gas emissions from 1990 levels;</li> <li>• Raising the share of EU energy consumption produced from renewable resources to 20%;</li> <li>• A 20% improvement in the EU's energy efficiency.</li> </ul>	<p>Develop a framework for a low carbon economy which will be achieved through a National Mitigation Plan (to lower Northern Ireland's level greenhouse emissions) and a National Adaptation Framework (to provide for responses to changes caused by climate change). This includes:</p> <ul style="list-style-type: none"> <li>• Reform of the EU Emissions Trading System (EU ETS) to include a cap on emission allowances in addition to existing system of national caps</li> <li>• Agreement of national targets for non-EU ETS emissions from countries outside the EU</li> <li>• Commitment to meet the national renewable energy targets of 16% for Ireland by 2020</li> <li>• Preparation of a legal framework for technologies in carbon capture and storage</li> </ul>	The TDPNI can contribute towards climate change mitigation though connection of renewable energy generators to the system. The study could potentially have implications on achieving renewable energy targets.
The EU Biodiversity Strategy to 2020 [COM(2011)244] "Our life insurance, our natural capital"	<p>Aimed at reversing biodiversity loss and speeding up the EU's transition towards a resource efficient and green economy. Primary objectives of the strategy include:</p> <ul style="list-style-type: none"> <li>• conserving and restoring nature;</li> <li>• maintaining and enhancing ecosystems and</li> </ul>	<ul style="list-style-type: none"> <li>• To mainstream biodiversity in the decision making process across all sectors.</li> <li>• To substantially strengthen the knowledge base for conservation, management and sustainable use of biodiversity.</li> <li>• To increase awareness and appreciation of</li> </ul>	The TDPNI should have regard for this strategy and look for opportunities to conserve, and, where possible, restore or enhance biodiversity, in development and operation of transmission infrastructure.



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	<p>their services;</p> <ul style="list-style-type: none"> <li>• ensuring the sustainability of agriculture, forestry and fisheries;</li> <li>• Ensuring the sustainable use of fisheries resources</li> <li>• combating invasive alien species; and</li> <li>• addressing the global biodiversity crisis.</li> </ul>	<p>biodiversity and ecosystems services.</p> <ul style="list-style-type: none"> <li>• To conserve and restore biodiversity and ecosystem services in the wider countryside.</li> <li>• To conserve and restore biodiversity and ecosystem.</li> <li>• services in the marine environment</li> <li>• To expand and improve on the management of protected areas and legally protected species.</li> <li>• To substantially strengthen the effectiveness of International governance for biodiversity and ecosystem services.</li> </ul>	
<p>The World Heritage Convention United Nations Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris 1972)</p>	<p>Objectives seek to ensure the identification, protection, conservation, presentation and transmission to future generations of cultural and natural heritage and ensure that effective and active measures are taken for these.</p> <p>The Convention recognises the way in which people interact with nature and encourages signatories to</p> <ul style="list-style-type: none"> <li>• integrate the protection of cultural and natural heritage into regional planning programmes,</li> <li>• set up staff and services at their sites,</li> <li>• undertake scientific and technical conservation research and</li> <li>• adopt measures which give this heritage a function in the day-to-day life of the community.</li> </ul>	<ul style="list-style-type: none"> <li>• Establishment of measures for the protection of monuments of national importance by virtue of the historical, architectural, traditional, artistic or archaeological interest attaching to them. Includes the site of the monument, the means of access to it and any land required to preserve the monument from injury or to preserve its amenities.</li> <li>• World Heritage Sites in Northern Ireland are specific locations that have been included in the UNESCO World Heritage Programme list of sites of outstanding cultural or natural importance to the common heritage of humankind. The Giants Causeway in Northern Ireland has been designated</li> </ul>	<p>The TDPNI should consider sites of archaeological, architectural, cultural and natural heritage and ensure they are protected from loss or damage resulting from the development of infrastructure.</p>
<p>Waste Electrical and Electronic Equipment</p>	<p>The WEEE Directive (Waste Electrical and Electronic Equipment) aims to conserve landfill</p>	<p>The purpose of this Directive is the prevention of waste electrical and electronic equipment</p>	<p>The TDPNI should consider the implications of this Directive with</p>

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Directive (2002/96/EC), as recast by 2012/19/EU	and support more sustainable development by providing an impetus to boost recycling. Electronic and electrical manufacturers and importers will be most affected by the Directive and will be required to take responsibility for treating and recycling their products when they become waste. The Directive does not just apply to new products. Producers will be made responsible collectively for goods already on the market.	(WEEE), and in addition, the reuse, recycling and other forms of recovery of such wastes so as to reduce the disposal of waste. It also seeks to improve the environmental performance of all operators involved in the life cycle of electrical and electronic equipment, e.g. producers, distributors and consumers and in particular those operators directly involved in the treatment of waste electrical and electronic equipment.	developmental infrastructure options within the Plan which are likely to result in waste electrical equipment being generated.
Waste Framework Directive [2008/98/EC]	<ul style="list-style-type: none"> <li>• Sets the basic concepts and definitions related to waste management, such as definitions of waste, recycling, recovery.</li> <li>• Explains when waste ceases to be waste and becomes a secondary raw material (so called end-of-waste criteria), and how to distinguish between waste and by-products.</li> </ul>	<p>The Directive requires that:</p> <ul style="list-style-type: none"> <li>• Waste is managed without endangering human health</li> <li>• Waste is managed without harming the environment.</li> <li>• Waste is managed without harming water, air, soil, plants or animals.</li> <li>• Waste does not cause a nuisance a nuisance through noise or odours, or to countryside or places of special interest.</li> </ul>	The TDPNI should consider the implications of this Directive with developmental infrastructure options within the Plan which are likely to result in waste being generated.
Water Framework Directive (2000/60/EC), (as amended by Decision 2455/2001/EC and Directives 2008/32/EC, 2008/105/EC and 2009/31/EC.	<p>Aims to improve water quality and quantity within rivers, estuaries, coasts and aquifers.</p> <p>Aims to prevent the deterioration of aquatic ecosystems and associated wetland by setting out a timetable until 2027 to achieve good ecological status or potential.</p> <p>Member States are required to manage the effects on the ecological quality of water which result from changes to the physical characteristics of water bodies.</p>	<ul style="list-style-type: none"> <li>• Identification and establishment of individual river basin districts.</li> <li>• Preparation of individual river basin management plans for each of the catchments. These contain the main issues for the water environment and the actions needed to deal with them.</li> <li>• Establishment of a programme of monitoring water quality in each RBD.</li> <li>• Establishment of a Register of Protected Areas (includes areas previously designated under the Freshwater Fish and Shellfish</li> </ul>	<p>The TDPNI will need to consider the requirements of the WFD and ensure that it does not compromise its objectives, and that it contributes to achieving its aims.</p> <p>The TDPNI should promote sustainable management of the water environment by carefully considering current land use and future climate scenarios, to facilitate long term improvements in water quality, including the protection of groundwater.</p>

Plan / Programme	High Level Description	Key Objectives, Actions etc.	Relevance to the TDPNI
	<p>Action is required in those cases where these “hydro-morphological” pressures are having an ecological impact which will interfere with the ability to achieve WFD objectives.</p> <p>The following Directives have been subsumed into the Water Framework Directive :</p> <ul style="list-style-type: none"> <li>• The Drinking Water Abstraction Directive</li> <li>• Sampling Drinking Water Directive</li> <li>• Exchange of Information on Quality of Surface Freshwater Directive</li> <li>• Shellfish Directive</li> <li>• Freshwater Fish Directive</li> <li>• Groundwater (Dangerous Substances) Directive</li> <li>• Dangerous substances Directive</li> </ul>	<p>Directives which have become sites designated for the protection of economically significant aquatic species under WFD and placed on the Protected Areas register).</p> <ul style="list-style-type: none"> <li>• Promotion of sustainable management of the water environment by carefully considering current land use and future climate scenarios, minimising the effects of flooding and drought events and facilitating long term improvements in water quality, including the protection of groundwater near landfill sites, as well as minimising agricultural runoff.</li> </ul>	

<i>National</i>			
<p>A Green Future: Our 25 Year Plan to Improve the Environment 2018</p>	<p>This is a 25 year plan to improve the Environment. This environment plan sets out our goals for improving the environment within a generation and leaving it in a better state than we found it. It details how we in government will work with communities and businesses to do this.</p>	<p>The targets of the plan are :</p> <ul style="list-style-type: none"> <li>• Clean air</li> <li>• Clean and plentiful water</li> <li>• Thriving plants and wildlife</li> <li>• Reducing the risks of harm from environmental hazards</li> <li>• Using resources from nature more sustainably and efficiently</li> <li>• Enhancing beauty, heritage and engagement with the natural environment</li> </ul>	<p>The TDPNI should promote sustainable management of the environment by carefully considering current land use and future climate scenarios, to facilitate long term improvements in environment.</p>

		<ul style="list-style-type: none"> <li>• Mitigating and adapting to climate change</li> <li>• Minimising waste</li> <li>• Managing exposure to chemicals</li> <li>• Enhancing biosecurity</li> </ul>	
Biodiversity Strategy for Northern Ireland to 2020	A strategy for Northern Ireland to meet its international obligations and local targets to protect biodiversity	<p>The strategy sets out the proposals for action to help halt the loss of biodiversity and the degradation of ecosystems up to 2020.</p> <ol style="list-style-type: none"> <li>1. Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society</li> <li>2. Reduce the direct pressures on biodiversity and promote sustainable development</li> <li>3. To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity</li> <li>4. Enhance the benefits to all from biodiversity and ecosystem services</li> <li>5. Enhance implementation through participatory planning, knowledge management and capacity building.</li> </ol>	The TDPNI should look for opportunities to conserve, and where possible, restore biodiversity.
Grid 25/ Grid 25/ Grid 25 Implementation Plan 2011-2016	Grid25 is a high-level strategy outlining how EirGrid intends to undertake the development of the electricity transmission grid in the short, medium and longer-terms, to support a long-term sustainable and reliable electricity supply.	<p>The core strategy must, among other aspects: -</p> <p>Detail and take account of existing and proposed transmission infrastructure in a county;</p> <p>Provide the framework for deciding on the scale, phasing and location of new development, having regard to existing serviced and planned investment over the coming years.</p>	The TDPNI will have regard to this plan and will (in combination with other users and bodies) cumulatively contribute towards the achievement of its objectives. This Plan will have transboundary implications with the TDPNI. The TDPNI and Eirgrid Transmission Plans should work together for the all-island electricity system.

Draft Grid Implementation Plan 2017-2022 (EIRGRID, 2018)	The draft Grid IP identifies those parts of the transmission system that are likely to need development over the five year period (2017 – 2022). The IP also sets out EirGrid’s approach to the planning and development of the grid that will be undertaken in implementing the Grid Development Strategy.	Several policies and objectives have been developed for the draft Grid IP to provide sustainable transmission grid development, under the headings: <ul style="list-style-type: none"> <li>• Environmental</li> <li>• Technical</li> <li>• Project development</li> <li>• Consenting</li> <li>• Consultation and engagement, and</li> <li>• Human beings and society</li> </ul>	The TDPNI will have regard to this plan and will (in combination with other users and bodies) cumulatively contribute towards the achievement of its objectives. This Plan will have transboundary implications with the TDPNI. The TDPNI and Eirgrid Transmission Plans should work together for the all-island electricity system.  The SONI TDPNI policies and objectives align well with the draft Grid IP policies and objectives.
Marine and Coastal Access Act (2009)	New Marine Licensing legislation came into operation in Northern Ireland on the 6th April 2011. It replaced licensing under the Food and Environment Protection Act 1985 (FEPA). The purpose of this licensing system is to aid industry and encourage investment by enabling more strategic decisions to be made about what activities are permissible in the marine environment. The overall objective of marine licensing is to regulate sustainable development in a cohesive and fair manner.	The key features of the new system include <ul style="list-style-type: none"> <li>• The definition of marine licensable activities;</li> <li>• exempt activities;</li> <li>• fees and charges;</li> <li>• implementation of measures for sanctioning and enforcement; and]</li> <li>• making appeals against licensing decisions, statutory notices and monetary penalties.</li> </ul>	The TDPNI should consider the implications of this Act with developmental infrastructure options within the Plan that may impact on coastal and marine areas.
Draft National Biodiversity Action Plan 2017-2022 (Ireland)	ROI National strategy for the maintenance and enhancement of biological diversity, which should be integrated across other policy sectors.	The key targets include: <ul style="list-style-type: none"> <li>• Mainstream biodiversity in the decision making process across all sectors.</li> <li>• Substantially strengthen the knowledge base for conservation management and sustainable use of biodiversity.</li> <li>• Increase awareness and appreciation of biodiversity and ecosystems services.</li> <li>• Conserve and restore biodiversity and ecosystem services in the wider countryside.</li> </ul>	The TDPNI should have regard for this action plan and look for opportunities to conserve, and, where possible, restore or enhance biodiversity, from potential transboundary impacts.

		<ul style="list-style-type: none"> <li>• Conserve and restore biodiversity and ecosystem services in the marine environment.</li> <li>• Expand and improve on the management of protected areas and legally protected species.</li> <li>• Strengthen international governance for biodiversity and ecosystem services.</li> </ul>	
National Landscape Strategy for Ireland (2015 – 2025 (DAHG, 2015)	Strategy for the provision of a framework for the protection of the many cultural, social, economic and environmental values embedded in the landscape.	<ul style="list-style-type: none"> <li>• To be implemented by the State, working in co - operation with public authorities, stakeholders, communities and individuals.</li> <li>• Objectives include to establish and to implement, through a series of actions, policies aimed at understanding, managing, protecting and planning the landscape.</li> <li>• Sets out specific measures to integrate and embed landscape considerations in all sectors which influence the landscape and improve and enhance the quality of decision - making by those who have an impact on it.</li> </ul>	The TDPNI should consider the potential transboundary impacts on landscape and visual amenity within Ireland, particularly in sensitive areas, from the development of transmission infrastructure.
National Policy Framework for Alternative Fuels Infrastructure for Transport 2017 to 2030 (Ireland)	This is a ROI national policy position framework, to transition to a low carbon economy by 2050.	<p>This policy set out to achieve five key goals in transport:</p> <ul style="list-style-type: none"> <li>• Reduce overall travel demand</li> <li>• Maximise the efficiency of the transport network</li> <li>• Reduce reliance on fossil fuels</li> <li>• Reduce transport emissions</li> <li>• Improve accessibility to transport</li> </ul>	The TDPNI can contribute to reduced fossil fuel requirements through connection of renewable energy infrastructure to the all-island electrical energy network.
NIEA Strategic Priorities	This plan sets out the NIEA strategic direction over the next ten years to bring together the diverse	Their strategic goals and actions under four	The TDPNI should consider the potential for impacts on the strategic goals and



2012 – 2022	roles of the NIEA and guide corporate business planning. It is aimed at everyone who works for the NIEA and with the NIEA to help understand what the NIEA do and where they fit. It describes the context for their work, who they are, what they do and how they deliver,	priority themes – <ul style="list-style-type: none"> <li>• Healthy Natural Environment,</li> <li>• People and Places,</li> <li>• Sustainable Economic Growth,</li> <li>• Using Our Resources Well.</li> </ul>	actions from infrastructure development.
Northern Ireland Climate Change Adaption Programme, 2014	The Adaptation Programme provides the strategic objectives in relation to adaptation to climate change, the proposals and policies by which each department will meet these objectives, and the timescales associated with the proposals and policies identified in the period up to 2019.	Five objectives have been identified: <ul style="list-style-type: none"> <li>• Fulfil the statutory duties as set out under the UK Climate Change Act 2008.</li> <li>• Work in partnership across Government and with relevant stakeholders.</li> <li>• Raise awareness of the likely effects of climate change and the need for adaptation action.</li> <li>• Promote and support the enhancement of scientific evidence and sector specific data collection that will address climate change adaptation need.</li> <li>• Engage with other administrations at national and international level, in order to ensure the sharing of climate change adaptation best practice.</li> </ul>	The TDPNI should aim to contribute towards climate change mitigation and infrastructure to be planned for and resilient to climatic change.
Northern Ireland Executive Programme for Government 2016-2021	The Programme for Government identifies the actions the Executive stated purpose – Improve wellbeing for all – by tackling disadvantage, and driving economic growth.	List of Programme for Government Outcomes <ul style="list-style-type: none"> <li>• We prosper through a strong, competitive, regionally balanced economy.</li> <li>• We live and work sustainably - protecting the environment.</li> <li>• We have a more equal society.</li> <li>• We enjoy long, healthy, active lives.</li> <li>• We are an innovative, creative society where</li> </ul>	The TDPNI will have regard to this programme and will (in combination with other users and bodies) cumulatively contribute towards the achievement of the objectives of this programme.

		<p>people can fulfil their potential.</p> <ul style="list-style-type: none"> <li>• We have more people working in better jobs.</li> <li>• We have a safe community where we respect the law and each other.</li> <li>• We care for others and we help those in need.</li> <li>• We are a shared, welcoming and confident society that respects diversity.</li> <li>• We have created a place where people want to live and work, to visit and invest.</li> <li>• We connect people and opportunities through our infrastructure.</li> <li>• We give our children and young people the best start in life.</li> </ul>	
Northern Ireland Executive Sustainable Development Strategy 2010. 'Everyone's Involved.' (and Implementation Plans)	The main aim of this Strategy is to embed responsible business practice throughout the Northern Ireland Assembly Secretariat so that the Commission becomes an exemplar organisation in respect of sustainable development.	<p>The purpose of this Strategy is to:</p> <ul style="list-style-type: none"> <li>• Implement initiatives which support the Commission's aspirations of becoming an exemplar organisation in respect of sustainable development; and</li> <li>• Facilitate the transition to a more proactive and structured management approach to sustainable development.</li> </ul>	The TDPNI will have regard to this strategy and will (in combination with other users and bodies) cumulatively contribute towards the achievement of its objectives.
Northern Ireland Marine Position Paper, 2012	<p>This paper sets out existing departmental policies and strategies which will contribute to the sustainable development of the Northern Ireland marine area.</p> <p>Northern Ireland's Marine Plan Area will cover approximately 12,350 km<sup>2</sup>, and include 650km of coastline. This area is becoming increasingly crowded with demands on space for marine activities, designations and waste water</p>	A key objective of the Northern Ireland Marine Plan will be to allow for, and facilitate the sustainable development of both existing and emerging marine activities.	The TDPNI could have implications on the environmental status of marine waters. Development and operation of transmission infrastructure to avoid impacts on the marine environment.

	infrastructure		
Northern Ireland Strategic Energy Framework 2010	The Strategic Energy Framework (SEF 2010) is the result of examining the drivers, strengths, opportunities and threats to Northern Ireland's energy landscape and attempting to balance many diverse social, environmental and economic issues alongside their associated risks.	The framework's four goals are to: <ul style="list-style-type: none"> <li>• build competitive markets;</li> <li>• ensure security of supply;</li> <li>• enhance sustainability; and</li> <li>• develop energy infrastructure.</li> </ul>	The TDPNI will have regard to this strategy in planning for future electrical transmission infrastructure to meet the supply and demand requirements in Northern Ireland.
Northern Ireland Waste Management Strategy, 2012	The Waste Management Strategy sets out in detail those proposed policies, including specific actions to be taken. Strategy development is a continuous process and the Waste Management Strategy for Northern Ireland is considered as a living document, requiring regular review and revision to ensure that it remains relevant and the policies and actions therein remain appropriate.	The proposals of this Strategy are as follows: <ul style="list-style-type: none"> <li>• The development of a Waste Prevention Programme;</li> <li>• A new 60% recycling target for local authority collected municipal waste (LACMW);</li> <li>• The introduction of a statutory requirement on waste operators to provide specified data on commercial and industrial waste;</li> <li>• New and more challenging collection and recycling targets for packaging and WEEE;</li> <li>• The introduction of a landfill restriction on food waste;</li> <li>• The potential for the devolution of landfill tax;</li> <li>• The implementation of legislation on carrier bags;</li> <li>• The development of detailed proposals for an Environmental Better Regulation Bill.</li> </ul>	The TDPNI should consider the implications of this Management Strategy with developmental infrastructure options within the Plan which are likely to result in waste being generated.
Offshore Renewable Energy Development Plan (DCENR, 2014) (Ireland)	The OREDP is a plan that identifies the opportunity for the sustainable development of Ireland's abundant offshore renewable energy resources for increasing indigenous production of renewable electricity, thereby contributing to	<ul style="list-style-type: none"> <li>• Ireland is obliged to reach a target of 16% of all energy consumed in the State coming from renewable sources by 2020.</li> <li>• This obligation is to be met by 10% in transport, 12% from heat and 40% from</li> </ul>	The TDPNI should have consideration for this plan, as it identifies the opportunity for offshore renewable energy for which may have transboundary impacts on SONI

	reductions in our greenhouse gas emissions,	electricity	strategic planning.
Offshore Renewable Energy Strategic Action Plan 2012-2020	This Plan outlines the Executive's aim of Northern Ireland generating 900MW of energy from offshore wind and 300MW from tidal resources by 2020. This Plan is currently being implemented as offshore energy lease zones have been granted by the Crown Estate.	<ul style="list-style-type: none"> <li>Northern Ireland has a target of 40% electricity consumption from renewable resources by 2020.</li> </ul>	The TDPNI should have consideration for this plan, as it identifies the offshore renewable energy for which SONI may be required to provide transmission infrastructure.
Planning Policy Statements 1 – 23	Policies on land-use and other planning matters that apply to the whole of Northern Ireland.	<p>PPS1: General Principles- Sets out the general principles that the DoENI observes in carrying out its planning functions.</p> <p>PPS2: Natural Heritage- Sets out the Department's planning policies for the conservation, protection and enhancement of our natural heritage,</p> <p>PPS4: Planning and Economic Development- Sets out the Department's revised planning policies for economic development uses and indicates how growth associated with such uses can be accommodated and promoted in development plans.</p> <p>PPS6: Planning, Archaeology and the Built Heritage- Provides the main criteria in assessing proposals which affect the archaeological or built heritage.</p> <p>PPS15: Planning and Flood Risk- The main objectives are to: Adopt a precautionary approach to decision-making taking account of climate change so that risk is avoided where possible;</p> <p>PPS18: Renewable Energy- Sets out the planning policy for development that generates energy from renewable resources.</p>	The TDPNI should have consideration for these planning policies in strategic and detailed planning for transmission infrastructure.

		PPS21: Sustainable Development in the Countryside- sets out planning policies for development in the countryside.	
Draft 2 <sup>nd</sup> River Basin Management Plan 2018-2021 (2017) (Ireland)	Aims to set out river basin management planning in Ireland. This leads on from the 1 <sup>st</sup> Cycle River Basin Management Plans: 2009-2014.	<ul style="list-style-type: none"> <li>• Details the most recent water quality results and the outcomes of the risk characterisation process.</li> <li>• Informs on the significant pressures for at-risk water bodies.</li> <li>• Sets out the environmental objectives of the WFD and the priorities.</li> <li>• Outlines the key measures aimed at meeting our environmental objectives.</li> <li>• Outlines measures to be taken to improve stakeholder engagement.</li> </ul>	The TDPNI will need to consider the requirements of the WFD and ensure that it does not compromise its objectives, and that it contributes to achieving its aims, for potential transboundary impacts.
Strategic Planning Policy Statement for Northern Ireland 2015	This planning policy sets out the Department's regional planning policies for securing the orderly and consistent development of land in Northern Ireland under the reformed two-tier planning system. The provisions of the SPPS must be taken into account in the preparation of Local Development Plans, and are also material to all decisions on individual planning applications and appeals.	<p>There are two new Core Planning Principles included in the SPPS:</p> <ul style="list-style-type: none"> <li>• Supporting Sustainable Economic Growth, and</li> <li>• 'Preserving and Improving the Built and Natural Environment</li> </ul>	The TDPNI should have consideration for these planning policies.
Sustainable Energy Action Plan, 2012-2015 and beyond	<p>The Action Plan outlines the various initiatives being undertaken by the Northern Ireland Executive and includes a statement of leadership from the Executive, demonstrating a united and long-lasting commitment to sustainable energy.</p> <p>This Plan builds from the Strategy Energy Frameworks, 2010.</p> <ul style="list-style-type: none"> <li>• Building energy markets</li> <li>• Ensuring security supply</li> <li>• Enhancing sustainability and development of competitive energy markets</li> </ul>	<p>The aim is underpinned by three strategic objects:</p> <ul style="list-style-type: none"> <li>• Reduce greenhouse gas emission from transport.</li> <li>• Protect biodiversity</li> <li>• Reduce water, noise and air pollution</li> </ul>	The TDPNI can contribute to sustainable energy provision in Northern Ireland through connection of sustainable energy generators to the electricity grid. The TDPNI should aim to meet the strategic objectives in developing and operating transmission infrastructure.

	<ul style="list-style-type: none"> <li>Increasing the level of electrify and heat from renewable sources</li> </ul>		
The Northern Ireland Climate Change Adaptation Programme 2014-2019	<p>The Adaptation Programme provides the strategic objectives in relation to adaptation to climate change, the proposals and policies by which each department will meet these objectives, and the timescales associated with the proposals and policies identified in the period up to 2019.</p> <p>Adaptation Programme, four primary areas for action are as follows:</p> <ul style="list-style-type: none"> <li>Flooding;</li> <li>Water;</li> <li>Natural Environment; and</li> <li>Agriculture and Forestry</li> </ul> <p>The high level actions and key activities for each primary area have been identified within the Adaptation Programme.</p>	<p>The Adaptation Programme focuses on three adaptation principles:</p> <ul style="list-style-type: none"> <li>Integrating adaptation into relevant key policy areas;</li> <li>Developing the evidence base; and</li> <li>Communication and cooperation</li> </ul>	<p>The TDPNI should aim to contribute towards climate change mitigation. The Plan can contribute towards achieving renewable energy targets through connection of renewable generators to the electricity system.</p>
The Regional Development Strategy 2035 – Shaping Our Future	<p>The strategy aims to take account of the economic ambitions and needs of the Region, and put in place spatial planning, transport and housing priorities that will support and enable the aspirations of the Region to be met.</p>		<p>The TDPNI should consider landuse changes and spatial planning impacts from energy infrastructure development.</p>
UK Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2011	<p>This Air Quality Strategy sets out air quality objectives and policy options to further improve air quality in the UK from today into the long term.</p> <p>As well as direct benefits to public health, these options are intended to provide important benefits to quality of life and help to protect our environment</p>	<p>The strategy:</p> <ul style="list-style-type: none"> <li>sets out a way forward for work and planning on air quality issues</li> <li>sets out the air quality standards and objectives to be achieved</li> <li>introduces a new policy framework for tackling fine particles</li> <li>identifies potential new national policy measures which modelling indicates could give further health benefits and move closer towards meeting the Strategy's objectives.</li> </ul>	<p>The TDPNI should aim to not cause any negative impacts on air quality that could breach standards and objectives, and may be able to contribute to reducing air emissions by connecting renewable energy generators to the system.</p>



UK Biodiversity Action Plan	Sets out the UK Government's response to the Convention on Biological Diversity (CBD) signed in 1992 and describes the UK's biological resources and commits a detailed plan for the protection of these resources. Includes Species Action Plans, Habitat Action Plans and Local Biodiversity Action Plans with targeted actions.	To conserve and enhance biological diversity within the UK and to contribute to the conservation of global biodiversity through all appropriate mechanisms". And this has been translated into the specific objectives of conserving and where possible enhancing; <ul style="list-style-type: none"> <li>• the overall populations and natural ranges of native species and the quality and range of wildlife habitats and ecosystems;</li> <li>• internationally important and threatened species, habitats and ecosystems;</li> <li>• species, habitats and natural and managed ecosystems that are characteristic of local areas;</li> <li>• the biodiversity of natural and semi-natural habitats where this has been diminished over recent decades.</li> </ul>	The TDPNI should have regard for this strategy and look for opportunities to conserve, and, where possible, restore or enhance biodiversity in development of transmission infrastructure.
UK Climate Change Act 2008	The Climate Change Act, the first of its kind in any country, set out a framework for moving the UK to a low-carbon economy. The key component of the legislation requires a mandatory 60% cut in the UK's carbon emissions by 2050.		The TDPNI should aim to contribute towards climate change mitigation. The Plan can contribute towards achieving renewable energy targets through connection of renewable generators to the electricity system.
UK Climate Change Risk Assessment Programme 2017	This Programme provides details and national targets for the reduction of greenhouse gas emissions in accordance with the Kyoto agreement, the goal of the programme is a 20% reduction of the 1990 CO <sub>2</sub> emissions by 2010. It also aims to protect and where possible enhance, the UK's economic standing, tackle social exclusion and health risks.		The TDPNI should aim to contribute towards climate change mitigation. The Plan can contribute towards achieving renewable energy targets through connection of renewable generators to the electricity system.
UK Marine Policy Statement	This Marine Policy Statement (MPS) is the framework for preparing Marine Plans and taking	The MPS will facilitate and support the formulation of Marine Plans, ensuring that	The TDPNI could have implications on the status of the marine environment.

	<p>decisions affecting the marine environment. It will contribute to the achievement of sustainable development in the United Kingdom marine area. It has been prepared and adopted for the purposes of section 44 of the Marine and Coastal Access Act 2009.</p>	<p>marine resources are used in a sustainable way in line with the high level marine objectives and thereby:</p> <ul style="list-style-type: none"> <li>• Promote sustainable economic development;</li> <li>• Enable the UK's move towards a low-carbon economy, in order to mitigate the causes of climate change and ocean acidification and adapt to their effects;</li> <li>• Ensure a sustainable marine environment which promotes healthy, functioning, marine ecosystems and protects marine habitats, species and our heritage assets; and</li> <li>• Contribute to the societal benefits of the marine area, including the sustainable use of marine resources to address local societal and economic issues.</li> </ul>	<p>Development and operation of transmission infrastructure to avoid impacts on the marine environment. The TDPNI should have regard for this framework and where possible should contribute to the UK's move towards a low-carbon economy, by increasing its' connection of renewable energy.</p>
<p>UK National Ecosystem Assessment (2011)</p>	<p>Provides a comprehensive overview of the state of the natural environment in the UK and a new way of estimating our national wealth. Northern Ireland covered in Chapter 18.</p> <p>The four key components are:</p> <ol style="list-style-type: none"> <li>1. environmental spaces;</li> <li>2. cultural practices;</li> <li>3. cultural values; and</li> <li>4. benefits need to be considered if CES are to be fully addressed in the ecosystem service framework</li> </ol>		<p>The TDPNI should have regard for this action plan and look for opportunities to conserve, and, where possible, restore or enhance biodiversity, from potential transboundary impacts.</p>
<p>UK Sustainable Development Strategy, Agenda 21</p>	<p>Requires that nations participating in the quest for a more sustainable social, environmental and economic future develop national strategies for their sustainable development.</p>	<p>The UK Government bases its vision of sustainable development on four broad objectives:</p> <ul style="list-style-type: none"> <li>• Social progress which recognises the needs of everyone;</li> <li>• Effective protection of the environment;</li> <li>• Prudent use of natural resources; and</li> <li>• Maintenance of high and stable levels of</li> </ul>	<p>The TDPNI should promote sustainable planning and management in the development and operation of transmission infrastructure.</p>

		economic growth and employment.	
Waste Management Plans 2013 – 2020	The Waste Management Plan 2013-2020 outlines how it will efficiently manage waste for the Councils it represents with the overall goal of creating a system that 'meets the region's needs and contributes towards economic and sustainable development'. Subject to review every five years the Plan details how NI will fulfil its statutory obligations under the EU Waste Framework Directive and The Waste and Contaminated Land (Northern Ireland) Order 1997.	<p>The Action Plan proposes to:</p> <ul style="list-style-type: none"> <li>• Deliver a communications campaign to build public awareness, understanding of and confidence in recycling.</li> <li>• Undertake a Recycling Gap study to identify kerbside recycling options.</li> <li>• Provide £2.5m to the Rethink Waste Capital fund in 2016/17 with further government support planned for successive years.</li> <li>• Support the development of strategic infrastructure for treating and recovering waste;</li> <li>• and support separate treatment of food waste</li> </ul>	The TDPNI should consider the implications of this Directive with developmental infrastructure options within the Plan which are likely to result in waste being generated.

<i>Regional</i>			
Local Biodiversity Action Plans (LBAPs)	Local Biodiversity Action Plans are a way of encouraging people to work together and deliver a programme of continuing action for biodiversity at a local level. They set out practical steps that aim to help protect biodiversity, enhance and improve biodiversity where possible, and promote biodiversity at a local level.		The TDPNI should have regard for these local plans and look for opportunities to conserve, and, where possible, restore or enhance biodiversity in development of transmission infrastructure.
Regional Development Strategy for Northern Ireland 2025	A Strategy to guide the future development of Northern Ireland to 2025. The RDS will be material to decisions on planning applications and appeals.	<p>The 8 aims of the RDS are:</p> <ul style="list-style-type: none"> <li>• Support strong, sustainable growth for the benefit of all parts of Northern Ireland</li> <li>• Strengthen Belfast as the regional economic driver and Londonderry as the principal city</li> </ul>	The TDPNI will look to support the Strategy through provision of robust and reliable transmission infrastructure to meet the electrical supply and demand requirements in Northern Ireland.

		<p>of the North West</p> <ul style="list-style-type: none"> <li>• Support our towns, villages and rural communities to maximise their potential</li> <li>• Promote development which improves the health and well-being of communities</li> <li>• Improve connectivity to enhance the movement of people, goods, energy and information between places</li> <li>• Protect and enhance the environment</li> <li>• Take actions to reduce our carbon footprint and facilitate adaptation to climate change</li> <li>• Strengthen links between north and south, east and west, with Europe and the rest of the world</li> </ul>	
A Planning Strategy for Rural Northern Ireland	This document considers the inter-relationships between town and country and seeks to present a clear vision for the future development of the rural area.	<ul style="list-style-type: none"> <li>• Strategic Objectives:</li> <li>• to protect and enhance the natural and man-made environment;</li> <li>• to meet the future development needs of the rural community;</li> <li>• to facilitate regeneration of the rural economy;</li> <li>• to accommodate change, while maintaining the character of the countryside;</li> <li>• to revitalise rural towns and villages in order to make them more attractive places in which to live and work; and</li> <li>• to promote a high quality of design new development</li> </ul>	The TDPNI will look to support the Strategy through provision of robust and reliable transmission infrastructure to meet the electrical supply and demand requirements in Northern Ireland.

Sub-Regional			
A Community Plan for Newry, Mourne and Down to 2030	This Community Plan becomes the overarching strategic plan for integrated planning and delivery of services for the area of Newry, Mourne and Down.	<p>The aims of this plan are as follows:</p> <ul style="list-style-type: none"> <li>• Highlight the challenges facing Newry, Mourne and Down, both now and in the coming decade</li> </ul>	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.

		<ul style="list-style-type: none"> <li>• Prioritise what really matters to communities within Newry, Mourne and Down</li> <li>• Empower communities to respond to these challenges</li> <li>• Clearly communicate the Partnership's framework for action</li> <li>• Improve the wellbeing of people in Newry, Mourne and Down</li> <li>• Continually improve our delivery on the service action plan using data development and key partnerships</li> <li>• Strive for inspirational outcomes underpinned by strategic indicators</li> </ul>	
Antrim, Ballymena and Larne Plan 2016 – Issues Paper	The Plan will play a major role in guiding the future development of the Antrim, Ballymena and Larne Borough Council areas over the Plan period. In so doing, it will help to give effect to the Regional Development Strategy 2025 (RDS), published on 20th September 2001, which provides an overarching strategic framework to help achieve a strong balanced economy, a healthy environment and an inclusive society, in accordance with the Programme for Government 2001.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Antrim Area Plan 1984 – 2001	Previous Area Plan for the Antrim Borough Council area that set out the development framework until 2001.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Ards and Down Area Plan 2015	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within Ards Borough and Down District over the Plan period 2000 -2015.	Identifies issues of relevance to the area and outlines principles for future development of area	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.

Armagh Area Plan 2004	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area. This development plan remains the statutory instrument for its particular plan area, however a new development plan covering this area is being prepared. See Armagh Area Plan 2018 – Issues Paper.	Identifies issues of relevance to the area and outlines principles for future development of area	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Armagh Area Plan 2018 – Issues Paper	The Armagh Area Plan 2018 provides a policy framework for development and conservation of Armagh, acting as a blueprint for land use decisions affecting housing, industry, tourism, retailing, roads, transportation, open space, and community facilities. It also protects the environment through designations and policies such as the Green Belt Policy, Countryside Policy Areas.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Ballymena Area Plan 1986-2001	This development plan remains the statutory Previous Area Plan for the Ballymena Borough Council area that set out the development framework until 2001.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Banbridge Rural Area Plan 1986 – 1998	This development plan remains the statutory instrument for its particular plan area; however a new development plan covering this area is being prepared.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Banbridge, Newry and Mourne Area Plan 2015	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2015. The purpose of the Plan is to	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.



	inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2010.		
Belfast Metropolitan Area Plan 2015	The purpose of the Plan is to inform the general public, statutory authorities' developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Belfast Metropolitan Area over the Plan period. The Plan will help to give effect to the Regional Development Strategy. The Plan covers Belfast City, Lisburn City, Carrickfergus Borough, Castlereagh Borough, Newtownabbey Borough and North Down Borough Councils.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Cookstown Area Plan 2010	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2010.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Craigavon Area Plan 2010	The purpose of the Plan is to inform the general public, statutory authorities and other interested bodies within the context of the Adopted Area Plan 2010, of the policy framework and designations that will be used to guide retail development decisions within the Craigavon Borough.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Derry Area Plan 2011	The purpose of the Plan is to inform the general public, statutory authorities, developers and other	Identifies issues of relevance to the area and outlines principles for future development of	The TDPNI will have regard to this plan in order to take into consideration the local

	interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2011.	area.	community in transmission infrastructure development.
Dungannon & South Tyrone Area Plan 2010	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within Dungannon and South Tyrone Borough.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Fermanagh Area Plan 2007	The Fermanagh Area Plan sets out the policies and proposals to guide development decisions in the Fermanagh District Council area up to the year 2007.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Larne Area Plan 2010	Previous Area Plan for the Larne Borough Council area that set out the development framework until 2010.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Magherafelt Area Plan 2015	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2015.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Newry and Mourne Rural Area Subject Plan 1986 – 1999	This development plan remains the statutory instrument for its particular plan area; however a new development plan covering this area is being prepared.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.

Northern Area Plan 2016 (Ballymoney, Coleraine, Limavady & Moyle)	The purpose of the Plan is to inform the general public, statutory authorities, developers and other interested bodies of the policy framework and land use proposals that will be used to guide development decisions within the Plan area for the period up to 2016.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
Omagh Area Plan 1987 – 2002	This development plan remains the statutory instrument for its particular plan area; however a new development plan covering this area is being prepared.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local in transmission infrastructure development.
Strabane Area Plan 1986 – 2001	This development plan remains the statutory instrument for its particular plan area; however a new development plan covering this area is being prepared.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
West Tyrone Area Plan 2019 Issues Paper	The West Tyrone Area Plan (WTAP) will be one of the series of development plans covering Northern Ireland. The Plan will replace the Strabane Area Plan 1986-2001 and the Omagh Area Plan 1987–2002 and will cover the combined area as defined by the political boundaries of Omagh and Strabane District Councils. It is proposed that the plan period will address land use needs up until 2019.	Identifies issues of relevance to the area and outlines principles for future development of area.	The TDPNI will have regard to this plan in order to take into consideration the local community in transmission infrastructure development.
North Western River Basin Management Plan	<p>Describes existing condition of waters in the international River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements.</p> <ul style="list-style-type: none"> <li>• Establish a framework for the protection of water bodies at River Basin District (RBD) level</li> <li>• Preserve, prevent the deterioration of water status and where necessary improve and</li> </ul>	<ul style="list-style-type: none"> <li>• Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive</li> <li>• Identifies and manages water bodies in the RBD</li> <li>• Establishes a programme of measures for</li> </ul>	The TDPNI should promote sustainable management of the water environment by carefully considering current land use and future climate scenarios, minimise the effects of flooding and drought events and to facilitate long term improvements in water quality, including the protection of groundwater in transmission infrastructure development.

	<p>maintain “good status” of water bodies in that RBD</p> <ul style="list-style-type: none"> <li>Promote sustainable water usage</li> </ul>	<p>monitoring and improving water quality in the RBD</p> <ul style="list-style-type: none"> <li>Involves the public through consultations</li> <li>RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.</li> </ul>	
Neagh Bann River Basin Management Plan	<p>Describes existing condition of waters in the international River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements.</p> <ul style="list-style-type: none"> <li>Establish a framework for the protection of water bodies at River Basin District (RBD) level</li> <li>Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD</li> <li>Promote sustainable water usage</li> </ul>	<ul style="list-style-type: none"> <li>Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive</li> <li>Identifies and manages water bodies in the RBD</li> <li>Establishes a programme of measures for monitoring and improving water quality in the RBD</li> <li>Involves the public through consultations</li> <li>RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.</li> </ul>	<p>The TDPNI should promote sustainable management of the water environment by carefully considering current land use and future climate scenarios, minimise the effects of flooding and drought events and to facilitate long term improvements in water quality, including the protection of groundwater in transmission infrastructure development.</p>
North Eastern River Basin Management Plan	<p>Describes existing condition of waters in the River Basin District, the objectives for improving their condition and the measures to be used to deliver these improvements.</p> <ul style="list-style-type: none"> <li>Establish a framework for the protection of water bodies at River Basin District (RBD) level</li> <li>Preserve, prevent the deterioration of water status and where necessary improve and maintain “good status” of water bodies in that RBD</li> <li>Promote sustainable water usage</li> </ul>	<ul style="list-style-type: none"> <li>Aims to improve water quality and quantity within inland surface waters (rivers and lakes), transitional waters coastal waters and groundwater and meet the environmental objectives outlined in Article 4 of the Water Framework Directive</li> <li>Identifies and manages water bodies in the RBD</li> <li>Establishes a programme of measures for monitoring and improving water quality in the RBD</li> </ul>	<p>The TDPNI should promote sustainable management of the water environment by carefully considering current land use and future climate scenarios, minimise the effects of flooding and drought events and to facilitate long term improvements in water quality, including the protection of groundwater in transmission infrastructure development.</p>

		<ul style="list-style-type: none"> <li>• Involves the public through consultations</li> <li>• RBMPs are prepared and reviewed every six years. The first RBMPs covered the period 2010 to 2015.</li> </ul>	
<p>River Basin – Local Management Area Action Plans</p>	<p>Local Management Area Action Plans implement the WFD River Basin Management Plans within the 2010 to 2015 planning cycle. The action plans detail the local measures identified to improve the water environment. Action Plans are available for the following Management Areas:</p> <ul style="list-style-type: none"> <li>▪ Bush</li> <li>▪ Lagan</li> <li>▪ South Down</li> <li>▪ Strangford</li> <li>▪ Belfast Lough</li> <li>▪ Glens and Rathlin</li> <li>▪ Quoile</li> <li>▪ Larne Lough</li> </ul>	<p>Local Management Areas (LMAs) were derived from surface water bodies. They were created to manage and improve water quality at a local level through local involvement.</p>	<p>The TDPNI have regard for these local area action plans to facilitate long term improvements in water quality, including the protection of groundwater in transmission infrastructure development.</p>

# **APPENDIX E**

## **SEA Scoring Guidelines**



No.	Topic	Objective	Score	Score Description	Example of Impacts
1A	Biodiversity, Flora and Fauna	Preserve, protect, maintain and where possible enhance internationally protected species and their key habitats (SACs, SPAs, Ramsar sites).	3	Significant Positive Impacts	Potential for enhancement of, restoration of, or significantly increased protection to internationally protected species and their key habitats, in line with conservation objectives.
			2	Moderate Positive Impacts	Potential for increased protection of internationally protected species and their key habitats with the potential for new habitats.
			1	Slight Positive Impacts	Potential to help maintain internationally protected species and their key habitats, in line with conservation objectives.
			0	Neutral / No Impacts	No impacts on internationally protected species and their key habitats in development of transmission infrastructure.
			-1	Slight Negative Impacts	Potential for temporary, indirect disturbance impacts in the vicinity of internationally protected species and their key habitats. Slight potential for increased spread of invasive species.
			-2	Moderate Negative Impacts	Potential for temporary direct, or permanent indirect impacts to internationally protected species and their key habitats. Moderate potential for increased spread of invasive species.
			-3	Significant Negative Impacts	Potential for permanent direct impacts to internationally protected species and their key habitats. High potential for increased spread of invasive species.
1B	Biodiversity, Flora and Fauna	Preserve, protect, maintain and where possible enhance national and local nature conservation sites and protected species, or other known species of conservation concern (ASSI, NHA, pNHA, SLNCl and local conservation designations and their species).	3	Significant Positive Impacts	Potential for enhancement of, restoration of, or significantly increased protection to national or local nature conservation sites and / or protected species, or other known species of conservation concern, in line with conservation objectives.
			2	Moderate Positive Impacts	Potential for increased protection of national or local nature conservation sites, and protected species, or other known species of conservation concern, in line with conservation objectives.
			1	Slight Positive Impacts	Potential to help maintain national or local nature conservation sites, and protected species, or other known species of conservation concern, in line with conservation objectives.
			0	Neutral / No Impacts	No impacts on national or local nature conservation sites and protected species, or other known species of conservation concern in development of transmission infrastructure.
			-1	Slight Negative Impacts	Potential for temporary, indirect disturbance impacts in the vicinity of national or local nature conservation sites and protected species, or other known species of conservation concern. Slight potential for increased spread of invasive species.
			-2	Moderate Negative Impacts	Potential for temporary direct or permanent indirect impacts to national or local nature conservation sites and protected species, or other known species of conservation concern. Moderate potential for increased spread of invasive species.
			-3	Significant Negative Impacts	Potential for permanent, direct impacts to national or local nature conservation sites and protected species, or other known species of conservation concern. High potential for increased spread of invasive species.

2A	Population and Human Health	Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.	3	Significant Positive Impacts	Potential for the provision of new robust transmission infrastructure and significant improvements to transmission infrastructure, in low density population areas, causing minimal disturbance in the local area.
			2	Moderate Positive Impacts	Potential for improvements to / enhancements of existing transmission infrastructure in low density population areas, causing minimal disturbance in the local area.
			1	Slight Positive Impacts	Potential for improvements to transmission infrastructure, in higher density population areas, causing minimal disturbance in the local area.
			0	Neutral / No Impacts	No disruption or displacement to the local population and no change in transmission infrastructure in the local area.
			-1	Slight Negative Impacts	Potential for temporary disturbances, in low population density areas, during development of infrastructure, e.g. traffic, noise, dust.
			-2	Moderate Negative Impacts	Potential for temporary disruption / displacement impacts in high density population areas or permanent disruption impacts in low density population areas during development and operation of transmission infrastructure.
			-3	Significant Negative Impacts	Potential for permanent disruption or displacement impacts in high density population areas, during development and operation of transmission infrastructure.
2B	Population and Human Health	Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.	3	Significant Positive Impacts	Potential for the provision of new robust transmission infrastructure and significant improvements to transmission infrastructure, causing no disturbance to areas of generally poor perceived health and / or social deprivation.
			2	Moderate Positive Impacts	Potential for improvements to / enhancements of existing transmission infrastructure causing no disturbance to areas of generally poor perceived health and / or social deprivation. Potential for a permanent, direct increase in employment opportunities, as a result of maintenance activities relating to new transmission infrastructure or a permanent, indirect increase in employment opportunities through impacts upon the supply chain.
			1	Slight Positive Impacts	Potential for improvements to transmission infrastructure, causing minimal temporary disturbance to areas of generally poor perceived health or social deprivation. Potential for a temporary, direct increase in employment opportunities as a result of construction activities relating to new transmission infrastructure.
			0	Neutral / No Impacts	No impacts on areas of generally poor health or social deprivation, as no change in transmission infrastructure in the local area.
			-1	Slight Negative Impacts	Potential for temporary disturbance impacts on human health and wellbeing from development of transmission infrastructure.
			-2	Moderate Negative Impacts	Potential for temporary disturbance impacts on human health in areas of generally poor perceived health and / or social deprivation, or permanent disturbance impacts on human health in areas of general good health / no social deprivation, from development of transmission infrastructure
			-3	Significant Negative Impacts	Potential for permanent disturbance impacts from development of significant infrastructure in areas of perceived poor health and / or social deprivation.

3A	Soils, Geology and Land use	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	3	Significant Positive Impacts	No potential for damage to existing soils, geology and land use by reusing brownfield sites to develop and operate transmission infrastructure.
			2	Moderate Positive Impacts	Minimal potential for damage to soils, geology and land use by reusing existing transmission infrastructure sites.
			1	Slight Positive Impacts	Minimal potential for damage to soils, geology and land use by avoiding the development and operation of transmission infrastructure on sensitive land uses.
			0	Neutral / No Impacts	No change to the function and quality of the soil resource, geology and land use in the study area from development of transmission infrastructure.
			-1	Slight Negative Impacts	Potential for temporary damage and disruption to the function and quality of the soil resource of non-sensitive sites in the study area during the construction phase of the transmission infrastructure.
			-2	Moderate Negative Impacts	Potential temporary damage to sensitive soil resource, geology or land use, or for permanent damage or disruption to non-sensitive soil resource, geology or land use in development and operation of transmission infrastructure.
			-3	Significant Negative Impacts	Potential for permanent loss or damage to sensitive soils and / or land uses in development and operation of transmission infrastructure.
4A	Water	Avoid damage to or deterioration of water status, quality and resource.	3	Significant Positive Impacts	Potential for contribution to improvement of water status in development and operation of transmission infrastructure.
			2	Moderate Positive Impacts	Potential for contribution to improvement to water quality and / or resource in development and operation of transmission infrastructure.
			1	Slight Positive Impacts	Minimal potential for deterioration of water status, quality or resource in development and operation of infrastructure by avoiding any direct interaction with water bodies.
			0	Neutral / No Impacts	No transmission infrastructure development. No potential for deterioration of water status, quality or resource in development and operation of infrastructure by avoiding any interaction or close proximity with water bodies.
			-1	Slight Negative Impacts	Potential for temporary, negative impacts on the water quality and / or resource of waterbodies within the study site from development and operation of transmission infrastructure.
			-2	Moderate Negative Impacts	Potential for permanent, negative impacts on water quality and / or resource of waterbodies that interact or are in within proximity to the development and operation of transmission infrastructure.
			-3	Significant Negative Impacts	Potential for permanent, negative impacts and deterioration of the water status of waterbodies that interact or are within proximity to the development and operation of transmission infrastructure.
4B	Water	Avoid interactions with coastal, pluvial or fluvial flood extents.	3	Significant Positive Impacts	Potential for development of significant, flood resilient, transmission infrastructure with limited interactions with medium probability flood extents.
			2	Moderate Positive Impacts	Potential for development of flood resilient transmission infrastructure with limited interactions with medium probability flood extents.

			1	Slight Positive Impacts	Potential for development of flood resilient transmission infrastructure with several interactions with medium probability flood extents
			0	Neutral / No Impacts	No transmission infrastructure development. Minimal potential for development of transmission infrastructure within medium probability flood extents, with all infrastructures resilient to flooding.
			-1	Slight Negative Impacts	Potential for development of transmission infrastructure with several interactions with medium probability flood extents, some infrastructure resilient to flooding.
			-2	Moderate Negative Impacts	Potential for development of transmission infrastructure with several interactions within medium probability flood extents, and infrastructure not resilient to flooding.
			-3	Significant Negative Impacts	Potential for development of transmission infrastructure mainly within medium probability flood extents, infrastructure not resilient to flooding.
5A	Air	Minimise risk to local air quality and contribute to improving regional emissions.	3	Significant Positive Impacts	Potential for significant reductions in regional emissions and significant improvement to air quality with increased renewable energy connection and reduced fossil fuel power station activity and emissions.
			2	Moderate Positive Impacts	Potential for moderate reductions in regional emissions and slight improvement to air quality with increased renewable energy connection and reduced fossil fuel power station activity and emissions.
			1	Slight Positive Impacts	Potential for slight reductions in emissions and improvement to air quality with increased renewable energy connection.
			0	Neutral / No Impacts	No change in air quality or emissions from the development and operation of transmission infrastructure.
			-1	Slight Negative Impacts	Potential for a temporary increase in local emissions and reduction in local air quality during the construction of transmission infrastructure. Non-sensitive receptors.
			-2	Moderate Negative Impacts	Potential for temporary increases in emissions and reduction in air quality during the construction of significant transmission infrastructure. Sensitive receptors.
			-3	Significant Negative Impacts	No new connections for renewable energy to the transmission grid so potential for permanent increases in regional emissions and permanent reductions in air quality.
6A	Climatic Factors	Adaption of infrastructure to potential climatic change and reduced	3	Significant Positive Impacts	Potential for significant reductions in regional GHG emissions, with increased renewable energy connection and reduced fossil fuel power station activity. Potential for development of flood resilient transmission infrastructure with limited interactions with medium probability climate change flood extents.

		GHG emissions.	2	Moderate Positive Impacts	Potential for moderate reductions in regional GHG emissions, with increased renewable energy connection and reduced fossil fuel power station activity. Potential for development of flood resilient transmission infrastructure with limited interactions with medium probability climate change flood extents.
			1	Slight Positive Impacts	Potential for slight reductions in GHG emissions with increased renewable energy connection. Potential for development of flood resilient transmission infrastructure with several interactions with medium probability climate change flood extents
			0	Neutral / No Impacts	No change in GHG emissions. No transmission infrastructure development. Minimal potential for development of transmission infrastructure within medium probability climate change flood extents, with all infrastructure resilient to flooding.
			-1	Slight Negative Impacts	Potential for temporary increases in local GHG emissions during construction of transmission infrastructure. Temporary loss of GHG sequestering natural cover during construction of transmission infrastructure. Potential for development of transmission infrastructure with several interactions with medium probability climate change flood extents, some infrastructure resilient to flooding.
			-2	Moderate Negative Impacts	Potential for permanent increases in local GHG emissions from development and operation of transmission infrastructure. Moderate loss of GHG sequestering natural cover during the construction of transmission infrastructure, which may re-establish. Potential for development of transmission infrastructure with several interactions within medium probability flood extents, and infrastructure not resilient to flooding.
			-3	Significant Negative Impacts	Potential for permanent increases in regional GHG emissions from development and operation of transmission infrastructure. Permanent loss of GHG sequestering natural cover. Potential for development of transmission infrastructure mainly within medium probability flood extents, infrastructure not resilient to flooding.
7A	Material Assets and Infrastructure	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	3	Significant Positive Impacts	Potential for significant development of regional scale new electricity grid infrastructure, with minimal potential disruption to other assets and infrastructure. Potential for the enhancement of current or development of new assets with the increased supply of secure and reliable electricity provided.
			2	Moderate Positive Impacts	Potential for a moderate scale local or regional development of new and reinforced electricity grid infrastructure, with minimal potential disruption to other assets and infrastructure.
			1	Slight Positive Impacts	Potential for a small scale, local development of new and reinforced electricity grid infrastructure, with minimal potential disruption to other assets and infrastructure.
			0	Neutral / No Impacts	Potential for a small scale, local development of new and reinforced electricity grid infrastructure, with potential disruption to other assets and infrastructure.
			-1	Slight Negative Impacts	Potential for temporary, indirect disruption to other assets and infrastructure during construction of transmission infrastructure.
			-2	Moderate Negative Impacts	Potential for moderate temporary or slight permanent disruption to other assets and infrastructure in development and operation of transmission infrastructure.

			-3	Significant Negative Impacts	Potential for significant, permanent disruption or loss of other assets and infrastructure in development and operation of transmission infrastructure. No development of new transmission infrastructure.
8A	Cultural, Architectural and Archaeological Heritage	Protect the historic environment and cultural heritage.	3	Significant Positive Impacts	Potential for preservation / restoration of a known international or nationally designated heritage feature within study area in development and operation of transmission infrastructure.
			2	Moderate Positive Impacts	Potential for preservation / restoration of a known locally designated heritage feature within study area in development and operation of transmission infrastructure. Potential for discovery of new heritage features.
			1	Slight Positive Impacts	Potential to avoid impacts on, or the setting of, known heritage features, in development and operation of transmission infrastructure.
			0	Neutral / No Impacts	No impacts on known archaeological or architectural heritage features within study area.
			-1	Slight Negative Impacts	Potential for temporary disturbance / damage to or negative impacts on the setting of a known locally designated heritage feature.
			-2	Moderate Negative Impacts	Potential for permanent damage to / loss of a known locally designated heritage feature or temporary disturbance / damage or negative impacts on the setting of a known international or nationally designated heritage features.
			-3	Significant Negative Impacts	Potential for permanent damage to / loss of known international or nationally designated heritage feature.
9A	Landscape and Visual Amenity	Minimise the potential for negative impacts on landscape and visual amenity.	3	Significant Positive Impacts	Minimal negative impacts to landscape and visual amenity, in areas with low sensitivity and few receptors in development and operation of infrastructure.
			2	Moderate Positive Impacts	Minimal negative impacts to landscape and visual amenity, in areas with low sensitivity or few receptors in development and operation of infrastructure.
			1	Slight Positive Impacts	Minimal negative impacts to landscape and visual amenity in areas with moderate sensitivity and / or moderate amount of receptors in development and operation of infrastructure.
			0	Neutral / No Impacts	No change to the landscape and visual amenity in the development and operation of transmission infrastructure. No development of transmission infrastructure.
			-1	Slight Negative Impacts	Potential for temporary negative impacts on landscape and / or visual amenity on areas in the development and operation of transmission infrastructure.
			-2	Moderate Negative Impacts	Potential for permanent negative impacts on landscape and / or visual amenity of low sensitivity or permanent impacts on areas with low sensitivity and / or few receptors in the development and operation of transmission infrastructure.
			-3	Significant Negative Impacts	Potential for permanent negative impacts on areas of sensitive landscape and / or visual amenity, with many receptors, in the development and operation of new transmission infrastructure.





## **APPENDIX F**

### **Assessment – Discussion of Potential Impacts**

## F1. DO NOTHING SCENARIO

Discussion of Potential Impacts
<p><b>Biodiversity, Flora &amp; Fauna</b></p> <p>There are unlikely to be any short, medium or long term changes to biodiversity, flora or fauna in Northern Ireland, such as increased risk to or loss of species or habitat, in the absence of the Plan. Biodiversity, flora and fauna will continue to be impacted upon by developments, human activity and population growth, however this will not be the result of the absence of the Plan.</p>
<p><b>Population &amp; Human Health</b></p> <p>There are unlikely to be any short term impacts to population and human health as a result of absence of the Plan.</p> <p>In absence of the plan, construction and maintenance works to the electricity transmission infrastructure in Northern Ireland will be ad hoc. With projected population growth, in the medium and long term this approach may result in an unreliable supply of electricity in some areas due to lack of planning and insufficient development of infrastructure. Disruptions of supply could result in detrimental impacts upon the delivery of essential services which in turn could have economic and social consequences.</p> <p>In absence of the Plan, there is the potential for an ongoing reliance upon fossil fuels due to a lack of collaborative planning reducing the connection of renewable energy sources to the supply network. In the medium and long term this is likely to result in ongoing detrimental impacts on human health, which will worsen going forward from the medium to the long term.</p>
<p><b>Soils, Geology &amp; Land use</b></p> <p>There are unlikely to be any short, medium or long term changes to geology, soil or land use within Northern Ireland, in absence of the Plan. There may be pockets of improvement of soil and land for agricultural purposes and therefore loss of more natural land, and also the loss of natural and agricultural lands to urban creep; however these would not be due to the absence of the Plan.</p>
<p><b>Water</b></p> <p>There are unlikely to be any short, medium or long term changes to the water environment in absence of the plan. There are unlikely to be any short, medium or long term changes to flood risk in Northern Ireland due to of absence of the Plan, which is likely to increase to increase as a result of rising sea-levels and wetter conditions brought about by climate change.</p>
<p><b>Air</b></p> <p>In the absence of the Plan, there are unlikely to be any short term impacts upon air quality.</p> <p>In absence of the Plan, there is the potential for medium and long term detrimental impacts upon air quality within Northern Ireland, because an ad hoc approach may result in less connection of renewable energy sources to the electricity supply network. This is likely to result in the continued reliance upon finite fossil fuels and thus the ongoing, long term emissions of pollutants into the atmosphere. With population growth and therefore increased electricity demand expected into the future, the severity of these impacts is likely to increase with time, in absence of the Plan.</p>
<p><b>Climatic Factors</b></p> <p>In absence of the Plan, there are unlikely to be any short term impacts upon climatic factors.</p> <p>In absence of the Plan, there is the potential for medium and long term detrimental impacts upon climatic factors within Northern Ireland, because an ad hoc approach may result in less connection of renewable energy sources to the electricity supply network. The continued reliance upon fossil</p>

fuels to provide electricity in the medium and long term will contribute to the further acceleration of climate change and the exacerbation of the impacts of climate change. Impacts of climate change would worsen going forward from the medium to the long term as the volume of greenhouse gases in the atmosphere would continue to rise.

#### **Material Assets & Infrastructure**

There are unlikely to be any short term impacts on material assets in absence of the Plan, as the current supply of electricity is likely to meet current demand.

In absence of the Plan, there is the potential for an ad hoc approach to result in electricity supply shortages in parts of Northern Ireland. A lack of strategic and collaborative planning of the future electricity transmission network may leave some areas unable to meet increased demand resulting from economic and population growth. There is also the potential for secondary impacts on other material assets such as rail and road, and also gas and water supply networks by way of disruption to services. These impacts have the potential to worsen going forward from the medium to the long term if demand continues to surpass supply in some underdeveloped areas.

#### **Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term changes to cultural, architectural and archaeological heritage features in Northern Ireland, in the absence of the Plan.

#### **Landscape & Visual Amenity**

There are unlikely to be any significant short, medium or long term changes to the landscape value of Northern Ireland in absence of the Plan.

#### **Additional Impacts**

In the absence of the Plan there is the potential for several additional, in-combination and cumulative negative impacts, such as reduced electricity leading to power outages, lack of future investment, leading to negative impacts on the population, with less job security, less future opportunities, reduced quality of life, and negatively impacting on land uses that require reliable electricity supply, such as urban areas and businesses. There is the potential for increased GHG emissions to accelerate climate change, increasing the chances and severity of climate change influenced flooding and droughts. GHG emissions and climate change could also impact biodiversity, flora and fauna by altering habitat conditions, with the climate becoming unsuitable for some species. This could also create ideal conditions for new flora and fauna, or provide advantages to invasive species.

## **F2. COOLKEERAGH – MAGHERAFELT 275 KV CIRCUITS RESTRING**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts to River Faughan and Tributaries SAC and ASSI and species within them, in particular Atlantic Salmon *Salmo salar* and Otter *Lutra lutra*, and the River Roe and Tributaries SAC and ASSI and species within them, in particular Atlantic Salmon *Salmo salar* and Otter *Lutra lutra*, during the restring, as the existing line crosses both rivers several times.

There is the potential for short term, temporary, indirect, sedimentation impacts to Banagher Glen SAC, ASSI and Nature Reserve, which is over 300m downstream of the existing line, during the restring, due to the presence of a potential pathway via the River Roe and Tributaries.

There is the potential for short term, temporary, indirect sedimentation impacts on Lough Foyle

SPA, ASSI and Ramsar site and internationally important species, in particular Whooper Swan *Cygnus Cygnus*, Light bellied Brent Goose *branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica*, during the restring, due to the presence of potential pathways. There is unlikely to be impacts on the Drumbally Hill ASSI, which is almost 2km away with no impact pathway evident.

There is potential for short term, temporary, direct disturbance and indirect sedimentation impacts to five SLNCIs, 12 Salmonid Rivers and five Local Wildlife sites, and associated species, within the study area during the restring, due to the existing line crossing these sites.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the restring of the 275 kV circuit.

Restring of the 275 kV circuit has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction works.

The HRA of the TDPNI has determined that the development of this restring has the potential for habitat loss impacts on Banagher Glen SAC, River Roe and Tributaries SAC, and River Faughan and Tributaries SAC. There is also the potential for water quality and habitat deterioration impacts on River Roe and Tributaries SAC, River Faughan and Tributaries SAC, Lough Foyle SPA and Ramsar Site, and Lough Neagh and Lough Beg SPA and Ramsar Site, along with disturbance and displacement impacts on Banagher Glen SAC, and Lough Foyle SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### **Population & Human Health**

There is unlikely to be significant direct disturbance impacts to people within any main settlement within the study area, as none are crossed by the existing line.

There is the potential for short term, temporary, indirect disturbances, such as noise and dust, to people in Draperstown Village, which is less than 60m from the existing line, during the restring. There are unlikely to be short term, negative impacts to people in the Munreery and Meenatammy areas, which are areas of perceived lower health, during the construction phase of the restring, as they are both over 290m away from the existing line.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the 275 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people within the study area, following the restring, from improvements to existing transmission infrastructure.

#### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct impacts, such as soil or peat compaction and loss of crops, to several types of land uses within the study area which are crossed by the existing line, mainly being agricultural land, forest and semi natural land, along with several sensitive areas of peat bogs, during the restring works.

There is the potential for short term, temporary, direct sedimentation impacts to one ASSI site of geological heritage during the restring, namely River Faughan and Tributaries ASSI, as it is crossed by the existing line.

There are several areas along the existing line of difficult ground conditions, including several unstable ground areas, and upland and steep slope areas, within the Brackagh Mountain and Sperrin Mountains regions. These topographical conditions could lead to access difficulties during

restring works.

There is the potential for short term, temporary, direct, disruption to working operations at Banagher and Muff Glen Forest Service sites, along with long-established woodland in the Coolshinny area, during the restring, as the existing line crosses these areas.

There are five potentially historically contaminated sites which are in close proximity to the existing line, including four manufacturing works and one mineral working site, and interaction with these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use. Works crossing these sites has the potential to track contaminated materials further though the study area, however good working practices and planning could minimise the potential for these impacts.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring of the 275 kV line.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to 24 sections of river within the study area, which are crossed by the existing line, during the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to nine river water bodies of good or high ecological status, seven river water bodies of less than good ecological status, and two drinking water rivers, namely the Owenrigh River and River Faughan, which are all crossed by the existing line. There is the potential for short term, temporary, indirect, downstream sedimentation and pollution impacts to the Foyle Harbour and Faughan transitional water body, which is of bad ecological status, in the construction of the restring. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the restring in the Draperstown area, where there is a significant area of 1% AEP fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Edenreagh, Strawmore, Brackaghislea, Longfield and Annakeeragh areas, where there are significant areas of 0.5% AEP pluvial flood risk within the vicinity of the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 275 kV line.

### **Air**

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the restring.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Draperstown area, where there is a significant area of 1% AEP climate change fluvial flood risk



within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Edenreagh, Strawmore, Brackaghliclea, Longfield and Annakeeragh areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, flood risk within this area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct disturbance impacts, such as power supply disruptions and increased construction related traffic, to four sections of A roads during the restring, as they are crossed by the existing line.

There are unlikely to be any short, medium or long term impacts to railway lines in the study area, in the development of this 275 kV restring, as they are not within close proximity of the existing line.

There is the potential for short term, temporary, construction constraints in the vicinity of Coolkeeragh, where the North-West Gas Pipeline is crossed by the existing line.

There are unlikely to be any further medium or long term impacts to the existing infrastructure in the study area, following the 275 kV restring.

There is the potential for short term, temporary, direct disturbance impacts to several types of agricultural land within the study area which are crossed by the existing line, during the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, indirect disturbance to one SMR site, in the Longfield area, during the restring, which is in close proximity to the existing line.

There are unlikely to be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative visual and landscape effects during the restring to several Landscape Character Areas within the study area which are crossed by the existing line, including the Sperrin Mountains and Sperrin Foothills which are designated as Highly Sensitive Areas.

There is the potential for short term, temporary, negative visual and landscape effects to the Sperrin AONB, as it is crossed by the existing line.

There are unlikely to be any further medium or long term impacts on landscape and visual amenity in the study area, from the 275 kV restring, as the line currently exists, giving no change to the landscape and visual setting.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area and to the national grid. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally if construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage no other significant construction projects are known of within the study area.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

### F3. AGIVEY 110/33 KV CLUSTER

#### Discussion of Potential Impacts

##### Biodiversity, Flora & Fauna

If the new transmission infrastructure is developed within the lower sensitivity area there are unlikely to be any short, medium or long term impacts on the three SLNCs and Local Wildlife Sites within the study area, namely Brockaboy, Dunnavenny Bridge Bog and Glenullin Bog, and associated species, along with Agivey Upper Salmonid River, as these sites would not be in close proximity to the new substation or associated transmission line.

If the new substation is constructed and operates within the lower sensitivity area, there is the potential for short, medium and long term, permanent loss of non-designated, semi-natural habitats.

Construction of the new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to during construction works.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on River Roe and Tributaries SAC, River Faughan and Tributaries SAC, and Lough Foyle SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

##### Population & Human Health

If the new transmission infrastructure is developed within the lower sensitivity area, there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as noise and dust, to the low density local population that are within close proximity to the new transmission infrastructure.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply within the study area.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people within the study area, following the development of the new substation and transmission line.

##### Soils, Geology & Land use

If the new substation is developed within the lower sensitivity area there is the potential for short, medium and long term, permanent, direct loss of agricultural land, and moors and heathland.

If the new transmission line is developed within the lower sensitivity there is the potential for short

term, temporary, direct impacts, such as soil compaction and loss of crops, to agricultural land, and moors and heathland.

There is the potential for difficulties during construction and maintenance works in the upland and steep slope areas in the south and east, along with unstable ground areas in the north-west of the lower sensitivity area of the study area, therefore these areas should be avoided if possible.

There are two potentially historically contaminated sites, both being waste treatment sites, within the vicinity of Cuilbane, that should be avoided to prevent impacts on nearby soils and land use, as works crossing these sites has the potential to track contaminated materials further through the study area.

### **Water**

If the new substation is developed within the lower sensitivity area there is the potential for short term, temporary, indirect, construction phase sedimentation and pollution impacts to five sections of river within the study area. However, the risk of these impacts can be avoided if there is a sufficient buffer zone between the new substation and these sections of river.

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short term, temporary, direct sedimentation and pollution impacts to four river water bodies of good or high ecological status. However, the risk of these impacts can be minimised by maintaining good working practices in the construction of the new transmission infrastructure.

There is the potential for difficult working conditions and flooding of the new substation in vicinity of Dunnavenny Bridge, where there is a significant area of 0.5% AEP pluvial flood risk. Development of the new substation and transmission line in this region of the lower sensitivity area should be avoided to minimize the risk of these impacts.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the development of the new substation and transmission line.

### **Air**

If the new substation and transmission line are developed within the lower sensitivity area of the study area there is the potential for short term, temporary increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment during the development of the new transmission infrastructure. There are unlikely to be any further medium or long term increases in local air emissions or reductions in local air quality following the development of the new transmission infrastructure. If the new substation and transmission line are developed within the lower sensitivity area there is the potential for medium and long term, permanent, slight reductions in national air emissions and improvement to air quality, due to the increased renewable energy connection.

### **Climatic Factors**

There is the potential for difficult working conditions and flooding of the new substation in vicinity of Glen Ullin and Dunnavenny Bridge, where there are significant areas of 0.5% AEP pluvial flood risk. Development of the new substation and transmission line in these parts of the lower sensitivity area should be avoided to minimize the risk of these impacts.

If the new substation and transmission line within the lower sensitivity area within the study area has the potential for short, medium and long term, permanent loss of GHG sequestering vegetation, if the new transmission infrastructure is developed across the forested area in Brockaghboy. To minimise the potential of these impacts, development of new transmission infrastructure across this forested area should be avoided.

If the new substation and transmission line are developed within the lower sensitivity area of the study area there is the potential for short term, temporary increases in local GHG emissions, from

the use of construction equipment during the development of the new transmission infrastructure. There are unlikely to be any further medium or long term increases in local GHG emissions following the development of the new substation and transmission line. However construction of the new substation and transmission line the potential for medium and long term, permanent, slight reductions in national GHG emissions due to the increased renewable energy connection.

#### **Material Assets & Infrastructure**

If the new substation and associated transmission line are developed within the lower sensitivity area there is unlikely to be any short, medium or long term impacts on existing infrastructure within the study area.

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short, medium and long term, permanent, direct disturbance to or loss of agricultural land within the study area.

There is the potential for the moderate scale local development of new electricity grid infrastructure within the study area, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

Within the lower sensitivity area of the study area there are three SMR sites and one listed building. If the new substation and transmission line are developed within close proximity to these sites there is the potential for direct impacts on, or the setting of, these heritage features, and therefore this should be avoided. If there is a sufficient buffer between these heritage sites and the new transmission infrastructure, there are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, in the development and operation of the new substation and associated transmission line.

#### **Landscape & Visual Amenity**

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short, medium and long term, permanent, negative landscape and visual effects to two landscape character areas, namely the Glenshane Slopes, which is designated as Highly Sensitive to Development, and East Binevenagh Slopes, which are High-Medium Sensitive to Development.

There is the potential for short, medium and long term, permanent, negative landscape and visual effects to the Sperrins AONB, if the new substation and transmission line are developed in the lower sensitivity area.

#### **Additional Impacts**

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area to be exacerbated by current land uses and existing features. This could result from a lack of other transmission infrastructure features or large developments in the study area, meaning that this development has the potential to contrast significantly to the form, colour and texture of the current surroundings.

Following the development of the new substation and transmission line there is the potential for improved reliability and capability of the electricity supply into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new substation and transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments

may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new substation and transmission line.

## F4. KELLS WIND 110/33 KV CLUSTER

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There are no short, medium or long-term impacts anticipated to International, National or locally designated sites and species if the new substation and transmission line are developed and operate in the lower sensitivity area.

If the new substation is developed and operates in the lower sensitivity area there is the potential for short, medium and long term, permanent loss of non-designated, semi-natural habitats.

Construction of the transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to during construction works.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Lough Neagh and Lough Beg Ramsar Site and SAC. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short term, temporary, direct, construction phase disturbance impacts to the low density local population that are within close proximity to the new transmission infrastructure.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply capability.

There is the potential for medium and long term provision of a secure and reliable electricity supply, to meet future needs of the population, following the development of the new substation and transmission line.

#### Soils, Geology & Land use

If the new substation is developed and operates within the lower sensitivity area there is the potential for short, medium and long term, permanent loss of agricultural land.

If the new transmission line is developed within the lower sensitivity area there is the potential for short term, temporary, direct construction phase impacts, such as soil compaction and loss of crops, to agricultural land.

There are unlikely to be interactions with any hazardous sites or topographically unsuitable areas identified within the study area, if the transmission infrastructure is developed and operates within

the lower sensitivity area.

### **Water**

If the new transmission infrastructure is developed within the lower sensitivity area there is the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to five sections of river within the study area. However, the risk of these impacts can be avoided if there is a sufficient buffer zone between the new transmission infrastructure and these sections of river.

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for short term, temporary, direct sedimentation and pollution impacts to one river water bodies of high ecological status and two river water bodies of less than good ecological status. However, the risk of these impacts can be minimised by maintaining good working practices in the construction of the new transmission infrastructure.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the development of the new substation and transmission line.

### **Air**

If the new substation and transmission line are developed within the lower sensitivity area of the study area there is the potential for short term, temporary increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment during the development of the new transmission infrastructure. There are unlikely to be any further medium or long term increases in local air emissions or reductions in local air quality following the development of the new transmission infrastructure.

If the new substation and transmission line are developed within the lower sensitivity area there is the potential for medium and long term, permanent, slight reductions in air emissions and improvement to air quality, due to the increased renewable energy connection.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development.

If the new substation and transmission line are developed within the lower sensitivity area of the study area there is the potential for short term, temporary, construction phase increases in local GHG emissions, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions following the development of the new transmission infrastructure. However if the new substation and transmission line are developed within the lower sensitivity area there is the potential for medium and long term, permanent, slight reductions in GHG emissions, due to the increased renewable energy connection.

There are unlikely to be any short, medium or long term interactions with significant areas of climate change fluvial, coastal or pluvial flood risk within the study area, in the development and operation of the new substation and transmission line.

### **Material Assets & Infrastructure**

There are unlikely to be any short, medium or long term impacts to existing infrastructure in the study area if the new substation and transmission line are developed within the lower sensitivity area of the study area.

There is the potential for short, medium and long term, permanent, direct disturbance to or loss of agricultural land, if the new substation is developed within the lower sensitivity area of the study area.

There is the potential for the moderate scale development of new electricity grid infrastructure within the study area, with minimal disruption to other assets and infrastructure in the medium and



long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are not any known heritage features within the lower sensitivity area of the study area, therefore if the new substation and transmission line are developed within the lower sensitivity area of the study area there is unlikely to be any short, medium or long term impacts on, or the setting of, any known heritage features.

#### **Landscape & Visual Amenity**

If the new substation and transmission line are developed and operate within the lower sensitivity area of the study area there is the potential for short, medium and long term, permanent, negative landscape and visual effects to the Tardree and Six Mile Water Slopes which are Highly Sensitive to Development Landscape Character Areas.

#### **Additional Impacts**

Following the development of the new substation and transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new substation and transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new substation and transmission line.

## **F5. FAIR HEAD / TORR HEAD TIDAL SCHEME CONNECTION**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to the north-eastern periphery of Garron Plateau SAC and Ramsar Site, and associated species, namely Marsh Saxifrage *Saxifraga hirculus* and Bog Orchard *Hammarbya paludosa*, if this site is crossed by the new line. If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to Red Bay SAC, if the new line crosses this site.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, direct disturbance impacts, including hazards to birds through collision and electrocution, to the East Coast Marine Proposed SPA and associated species, namely Sandwich Tern *Thalasseus sandvicensis*, Common Tern *Sterna hirundo* and Arctic Tern *Sterna paradisaea*, if the new line crosses this site. To minimise the risk of these impacts to this site and associated species, the development of the new transmission line across this site should be avoided.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to ten SLNCs and seven ASSIs, namely Gortnagory, Torr Head, Galboly, Garron Plateau,

Black Burn, Cranny Falls and Straidkilly Wood, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, direct disturbance impacts, including hazards to birds through collision and electrocution, to the north-eastern and the south-eastern periphery of the Antrim Hills SPA and associated species, namely the Hen Harrier *Circus cyaneus* and Merlin *Falco columbarius*, as they could be crossed by the new line. Development of the new transmission line across or in close proximity to this designated site should be avoided to minimise the risk of these impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts to nine Salmonid Rivers and associated species, namely Kells Water Upper, Devenagh Burn, Cashel Burn (Braid), Braid River Upper (Cleggan), Braid River Upper Middle, Killycarn Tributary (Braid), Glencloy River, Carnlough River and Priests Burn, which could all be crossed by the new line, along with short term, temporary, construction phase, indirect, downstream sedimentation impacts to two Salmonid Rivers and associated species, being Glenwhirry River and Douglas Burn (Glenwhirry). Within 1% of the best environmental line there are two areas where Salmonid Rivers, being the Carnlough River and Glencloy River, flow into the sea and therefore significant salmon migration activity is likely to occur. In order to minimise the potential for short, medium and long term impacts, such as electromagnetic disturbances, to these hotspot areas of salmon migration, the development of the new transmission line within these areas should be avoided.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts to 34 Local Wildlife Sites within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to nursery or spawning grounds of several species within the study area, including Cod *Gadus morhua*, Herring *Clupea harengus* and Whiting *Merlangius merlangus*.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, including noise and vibration pollution from construction equipment, to several marine species which have been known to use marine areas within the study areas, including the Bottlenose Dolphin *Tursiops truncatus*, Harbour Porpoise *Phocoenidae phocoena* and Basking Shark *Cetorhinus maximus*.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for habitat loss impacts on Garron Plateau SAC, Breen Wood SAC and Antrim Hills SPA. There is also the potential for water quality and habitat deterioration impacts on Red Bay SAC, Larne Lough SPA and Ramsar Site, Lough Neagh and Lough Beg SPA and Ramsar Site and East Coast (NI) Marine SPA, along with disturbance and displacement impacts on Antrim Hills SPA and East Coast (NI) Marine SPA. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### Population & Human Health

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise

and dust, to people in Carnlough, if the new line passes in the vicinity of this village. To minimise the risk of these impacts, development of the new line near Carnlough should be avoided

if the new transmission line is developed within 1% of the best environmental line there is unlikely to be impacts on any socially sensitive areas or areas of lower perceived health within the study area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line if it is developed with 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased renewable energy supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation, and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural land, and forest and semi natural land, along with several sensitive areas of peat bogs in the Cloghinarney, Mullaghboy Hill, Knockore and Caraneigh areas, and one urban area in Carnlough.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction and sedimentation, to 23 ancient and long-established woodland areas along with four ASSI sites of geological heritage, namely Galboly, Black Burn, Torr Head and Garron Plateau, if the new transmission infrastructure crosses these sites. Development of new transmission infrastructure across these sites should be avoided to minimise the risk of these impacts.

The area within 1% of the best environmental line includes several areas of difficult ground conditions, including 41 mine shafts, three landslide deposit areas, being Loughan Bay, Straidkilly Point and Galboly, one unstable ground area the vicinity of Black Top, and several upland and steep slopes areas, namely Racavan Hill, Mullaghboy Hill, Castle Hill and Black Top. These areas should be avoided as the topographical conditions outlined could lead access difficulties during construction works.

There are two PPC sites and 57 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites have the potential to track contaminated materials further though the study area, therefore development within these sites should be avoided.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the development of the new transmission line if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 44 sections of river within the study area, if they are

crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary direct, construction phase sedimentation and pollution impacts to seven river water bodies of good or high ecological status, three river water bodies of less than good ecological status and one coastal water body of good ecological status, namely the North Coast, if they are crossed by the new line. However, these risks could be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in The Shreddings and Moorfields areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it developed within 1% of the best environmental line, in The Shreddings and Carlough areas, where there are significant areas of 0.5% AEP pluvial flood risk. Construction of the new line over these areas should be avoided where possible, to minimise the potential of these risks.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

### **Air**

If the new transmission line is developed within 1% of the best environmental line within the study area there is unlikely to be any short, medium, or long term increases in local air emissions or reductions in local air quality in the two AQMAs within the study area, as they are not within close proximity to the area within 1% of the best environmental line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the construction of the new transmission line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are unlikely to be any short, medium or long term impacts on significant areas of GHG sequestering vegetation from this development.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the The Shreddings and Moorfields areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line in the The Shreddings and Carlough areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the transmission line in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in GHG emissions, as a result of increased

connection to renewable energy.

### **Material Assets & Infrastructure**

If new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as power supply disruptions and increased construction related traffic, to three sections of A roads within the study area.

The North-West Gas Pipeline crosses through the area that is within 1% of the best environmental line, in the south of the study area. The presence of this existing infrastructure has the potential for short term, temporary planning constraints relating to the development of the new line if it is constructed in this area.

There is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to one Atlantic Salmon aquaculture site which is located off the coast of the Knockore region, if the new line is built across this site. There is the potential for short term, temporary, indirect, construction phase sedimentation impacts to an Atlantic Salmon aquaculture site which is located off the coast of the Glenarm region, if the new line is built within close proximity to this site. However, if good working practices are adopted and there is a sufficient buffer zone between the new line and these sites, the potential for impacts can be minimised.

There is the potential for short term, temporary, direct or indirect, construction phase disturbance and sedimentation impacts to Carnlough beach, which is a Seaside Award beach, if the new line crosses, or is in close proximity to this site. Construction of the new line across this site should be avoided, and a sufficient buffer zone between transmission infrastructure and Carnlough beach will minimise the risk for indirect impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts to several types of agricultural land within the study area which are crossed by the 1% impact corridor.

If the new line is developed within 1% of the best environmental line there is unlikely to be any further medium or long term impacts to existing infrastructure or material assets within the study area.

There is the potential for regional scale development of significant new electricity grid infrastructure within the study area, providing a supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are the following known heritage sites; 132 SMR sites, eight areas containing historic monuments or archaeological objects that have been scheduled for protection, 45 listed buildings, 123 industrial heritage sites, 14 defence heritage sites, three listed demesnes and two historic wrecks between Runabay Head and Cushendun. If the new transmission line is developed over or in close proximity to these sites then there is the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features, and therefore this should be avoided.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, negative landscape and visual effects to the highly sensitive Landscape Character Areas of the Central Ballymena Glens, Fair Head, Larne Glens, Moyle Glens and Tardree and Six Mile Water Slopes.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, negative landscape and visual effects to the Antrim Coast and Glens AONB.

There is the potential for short term, temporary, direct negative landscape and visual effects to the National Trust Lands of Loughan Bay and Portaleen Bay, in the construction of the new transmission line, in the case that it is built along the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, negative landscape and visual effects on three Seascape Character Areas, namely, the Torr Head Coast, the Northern Glens Coast, and the Southern Glens Coast.

#### **Additional Impacts**

There is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area to be exacerbated by current land uses in some areas, in particular where there is a lack of other transmission infrastructure or developments. This may be the case where the lack other transmission infrastructure features or large developments in the certain areas means that this development has the potential to contrast significantly to the form, colour and texture of the current surroundings.

Following the development of the new transmission line there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future within the study area, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## **F6. BELFAST POWER STATION**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to the north-eastern periphery of Inner Belfast Lough ASSI and associated species, including Redshank *Tringa tetanus*, Oystercatcher *Haema* and Bar-tailed Godwit *Limosa lapponica*, along with two SLNCIs and Local Wildlife Sites, namely Hillfoot Scrub and Hillfoot Glen, if these sites are crossed by the new transmission infrastructure.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise, to Inverary ASSI and Local Wildlife Site, as this site is within close proximity to the proposed area.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of the new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.



The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration, along with disturbance and displacement impacts on Belfast Lough SPA, Belfast Lough Open Water SPA, East Coast (NI) Marine SPA, and Belfast Lough Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as noise and dust, to people in Belfast Urban Area and Castlereagh Urban Area, if the new line crosses these main, high density settlements.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as noise and dust, to people in the Inner East Belfast Neighbourhood Renewal Area. Development of the new transmission line through this socially sensitive area could lead to greater negative cumulative impacts and cause further deprivation, and thus should be avoided.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as noise and dust, as well as negative health impacts, to people in several areas of lower perceived health, namely in the Strandtown, Sydenham, Ballymisert and Lisnasharragh areas, so planning should ensure that construction times are minimised where possible in these sensitive areas, if the new line is developed across them.

If the new transmission line is developed within 1% of the best environmental line there are unlikely to be any further medium or long term negative impacts to people within this high population density area, following the construction of the new line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction and current land use disruption, to agricultural areas and artificial surfaces, including industrial and commercial units, green urban areas and discontinuous urban fabric, if they are crossed by the new line.

There is one long established woodland within 1% of the best environmental line, in the Glencregagh area, which should be avoided if possible to minimise the potential of short term, temporary, direct soil compaction and sedimentation impacts during construction, or short to long term loss of long-established woodland area.

There are 15 potentially historically contaminated sites within 1% of the best environmental line, and works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use. Works crossing these sites should be avoided as there is the potential to track contaminated materials further though the study area, however good working practices and planning could otherwise minimise the potential for these impacts.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in

the study area, following the development of the new transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to one section of river in the Orangefield area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary direct, construction phase sedimentation and pollution impacts to one river water body within the study area, namely Connswater, which is of poor ecological potential, and one coastal water body, namely Belfast harbour, which is of bad ecological potential. However, these risks could be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Orangefield area, where there is a significant area of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the North Sydenham area, where there is a significant area of 0.5% AEP coastal flood risk. There is the potential for difficult working conditions during the construction of the new line, if it developed within 1% of the best environmental line, in the North Sydenham and Orangefield areas, where there are significant areas of 0.5% AEP pluvial flood risk. Development of the new line over these areas should be avoided where possible, to minimise the potential of these risks.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line.

### **Air**

The Upper Newtownards Road AQMA is within 1% of the best environmental line. Development of the new line through or in close proximity to this area should be avoided to minimise the potential for planning constraints as well as short term, temporary, construction phase increases in local air emissions and reductions in local air quality in this sensitive area, during the development of the new transmission line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

There is the potential for medium and long term, permanent, slight reductions in emissions and improvement to air quality, following the development of the new line, due to increased energy connection to a modern, less polluting source of energy generation.

### **Climatic Factors**

There are unlikely to be any short, medium or long term impacts on significant areas of GHG sequestering vegetation from this development.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Cregagh, Orangefield and Ballymacarrett areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Orangefield, North Sydenham and Fortwilliam areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of Queen's Island and

Sydenham, where there are significant areas of 0.5% AEP climate change coastal flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the transmission line in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed by the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

There is the potential for medium and long term, permanent, slight reductions in GHG emissions within the study area, following the development of the new line, due to increased energy connection to a modern, less polluting source of energy generation.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic, to five sections of A roads within the study area.

There is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions, to the railway line between Belfast and Bangor, during the construction of the new transmission line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance, such as increased construction related traffic, to Belfast City Airport which is in close proximity of the 1% impact corridor.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase disturbance impacts, such as loss of crops, to agricultural land within the southern region of the study area, which is crossed by the 1% impact corridor.

There is the potential for moderate local scale development of new electricity grid infrastructure within the study area, providing a supply of secure and reliable electricity, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are the several known heritage sites, being two SMR sites, 13 listed buildings, four industrial heritage sites and four defence heritage sites. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent negative landscape and visual effects, to the Highly Sensitive to Development LCA of the Castlereagh Slopes, as well as the High-Medium Sensitive to Development LCA of Belfast/Lisburn in the development of the new line, as the 1% impact corridor crosses both of these sensitive LCAs.

If the new transmission line is developed within 1% of the best environmental line there are unlikely to be any short, medium or long term impacts on country parks or AONBs in the study area, as they are not within close proximity to the 1% impact corridor.

**Additional Impacts**

If the new transmission line is developed within 1% of the best environmental line there is the potential for a cumulative, permanent increased risk of bird strike in the medium and long term within the study area, following the construction of the new transmission line, due to the close proximity of Belfast City Airport to the 1% impact corridor.

There is the potential for the significance of the short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area, resulting from the development of the new transmission line, to be reduced due to current land uses and surrounding features. This could be the case due to the presence of existing transmission infrastructure and other developments within the study area, meaning that the new transmission line would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

**F7. COMPRESSED AIR ENERGY STORAGE SCHEME CONNECTION****Discussion of Potential Impacts****Biodiversity, Flora & Fauna**

If the new line is developed within 1% of the best environmental line there is unlikely to be any impacts on Larne Lough SPA, Ramsar Site and ASSI, as the protected area is not within close proximity to the area that is within 1% of the best environmental line, and there are no potential pathways for impacts evident.

There is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts on non-designated, semi-natural habitats, if the new transmission line is developed within 1% of the best environmental line.

Construction of the new transmission line has the potential to create a new vector for invasive species or increase their rate of spread, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for habitat loss impacts on Larne Lough SPA and Ramsar Site, East Coast (NI) Marine SPA and North Channel SAC. There is also the potential for water quality and habitat deterioration, along with disturbance and displacement impacts on The Maidens SAC, Larne Lough SPA and Ramsar Site, East Coast (NI) Marine SPA and North Channel SAC. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

There is the potential for short term, temporary, direct, construction phase disturbance impacts, such as noise and dust, to people that are within close proximity to the new line, during the transmission line development.

There are unlikely to be any further medium or long term impacts to people within this low population density area following the development of the new transmission line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct construction phase impacts, such as soil compaction and loss of crops, on two land uses in the development of the new transmission line, if it is developed within 1% of the best environmental line, being pastures, and industrial and commercial units. There are unlikely to be any further medium or long term impacts to any land uses within the study area following the development of the new transmission line.

There are unlikely to be any interactions with hazardous sites in the development of the new transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If new transmission line is developed within 1% of the best environmental line there is unlikely to be any impacts on the water status or water resource of rivers and water bodies within the study area.

If the new transmission line is developed within 1% of the best environmental line it is unlikely to interact with any significant areas of coastal, pluvial or fluvial flood risk within the study area.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line.

### **Air**

There is the potential for short term, temporary, construction phase increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

There is the potential for medium and long term, permanent, slight reductions in emissions and improvement to air quality, following the development of the new line, due to increased renewable energy connection.

### **Climatic Factors**

If the new transmission line is developed within 1% of the best environmental line it is unlikely to interact with any significant areas of climate change coastal, pluvial or fluvial flood risk within the study area.

If the new transmission line is developed within 1% of the best environmental line within the study

area there is the potential for short and medium term, temporary loss of GHG sequestering natural cover in the vicinity of Ballylumford, if the new line is constructed across this area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

There is the potential for medium and long term, permanent, slight reductions in GHG emissions, following the development of the new line, due to increased renewable energy connection.

#### **Material Assets & Infrastructure**

The Phoenix Natural Gas Transmission line and a 275 kV circuit both cross through the area that is within 1% of the best environmental line. The presence of these existing infrastructures has the potential for short term, temporary planning and development constraints relating to the construction of the new line, if it is developed within 1% of the best environmental line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, in the development of the new transmission line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, disturbance impacts, such as loss of crops, to agricultural land within the study area which is crossed by the 1% impact corridor.

There is the potential for small scale, local development of new electricity grid infrastructure within the study area, providing a supply of secure and reliable electricity, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are not any known heritage sites within 1% of the best environmental line, therefore if the new transmission line is developed within this area then there is unlikely to be any short, medium and long term impacts on, or the setting of, any known heritage features.

#### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line, there is the potential for short, medium and long term, permanent, negative landscape and visual effects on the Highly Sensitive to Development Islandmagee LCA.

#### **Additional Impacts**

There is the potential for the significance of the short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area, resulting from the development of the new transmission line, to be reduced due to current land uses and surrounding features. This could be the case due to the presence of existing 110 kV and 275 kV circuits within the study area, meaning that the new transmission line would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at



the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## F8. OMAGH MAIN – OMAGH SOUTH UPRATE

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There are unlikely to be impacts to Cranny Bogs SAC and ASSI, which are 1.3km to the east of the existing line, with no impact pathways evident.

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts to Drumragh River and Owenreagh River, which are Salmonid Rivers, along with the species within them, during the construction phase of the 110 kV restring, as they are crossed by the existing line. There is potential for short term, temporary, indirect sedimentation to other Salmonid Rivers in the study area, during the construction phase of the restring, which are in close proximity but not crossed by the restring, however pathways are present.

There are unlikely to be any impacts to Tattykeel and Clarks Hill Local Wildlife Sites, which are over 1.5km and 150m away respectively, with no impact pathways evident.

There is unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area in the development of the 110 kV restring.

Construction of this 110 kV circuits restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this restring has the potential for water quality and habitat deterioration impacts on River Foyle and Tributaries SAC, and Lough Foyle SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is potential for short term, temporary, direct disturbance impacts to people in the southern periphery of Omagh, from of the restring.

There are no socially sensitive areas or areas of lower perceived health in close proximity to the proposed restring, and there are unlikely to be impacts on these receptors.

There is the potential for short term, temporary, indirect disturbance impacts to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations in the development of the restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission infrastructure.

#### Soils, Geology & Land use

There is the potential for short term, temporary, direct, impacts to several types of land use within the study area which are crossed by the existing line, mainly being agricultural land, during the uprate.

The existing 110 kV line crosses none of the unstable ground areas identified within the study area, so there are unlikely to be any interactions with topographically unsuitable areas during the restring.

There are unlikely to be any interactions with potentially hazardous soils and activities during the restring, as the existing line doesn't cross any of the PPC sites or historical sites identified in the study area.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, in the development of this 110 kV restring.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to eight sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to three river water bodies of moderate ecological status, being the Drumragh River, Ballynahatty (Drumragh) Water and Cranny Burn. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the Mullawinny, Tullycunny and Edenmount areas, where there are significant areas of 1% AEP fluvial flood risk within the vicinity of the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the transmission line.

### **Air**

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restring. However, development of the restring has the potential for medium and long term, permanent, slight reductions in local air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, development of the restring has the potential for medium and long term, permanent, slight reductions in GHG emissions, as a result of increased connection to renewable energy.

There is the potential for difficult working conditions during the construction of the restring in the Mullawinny, Tullycunny and Edenmount areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which

is already scored under the Water section. Furthermore, ensuring that the transmission line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct impacts, such as power supply disruption and increased construction related traffic, to one section of A Road within the study area, during the restring works.

There is the potential for short term, temporary, direct disturbance impacts to agricultural land, during the uprate of the 110 kV transmission line, as the existing line crosses through it. There are unlikely to be any further medium or long term negative impacts to material assets or infrastructure within the study area following the uprate of the transmission line.

There is the potential for reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, during or following the restring, as there are no heritage features crossed by or in close proximity to the existing line.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to Irvinestown Farmland and Omagh Farmland, which are High-Medium Sensitive to Development LCAs, during the uprate of the 110 kV transmission line, as they are crossed by the existing line.

There are unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area following the uprate of the transmission line.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## F9. OMAGH REACTIVE COMPENSATION

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, indirect sedimentation impacts to the Drumragh Salmonid River during the construction phase of the substation extension, due the proximity of current substation to the river (approximately 40m at the closest point). There are unlikely to be any further medium or long term impacts to Drumragh Salmonid River following the development of the substation extension.

There is the potential for short term, temporary, direct negative impacts on non-designated, semi-natural habitats within the study area, during the construction of the substation extension.

The construction and operation of the substation extension is unlikely to create a new vector for invasive species or increase their rate of spread, given that strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on River Foyle and Tributaries SAC, and Lough Foyle SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is the potential for short term, temporary, direct disturbance impacts, such as noise and dust, along with negative health impacts, to people in the southern periphery of Omagh, in which the existing transmission infrastructure is situated, during the construction phase of the substation extension.

There are unlikely to be any significant medium and long term negative health or disturbance impacts to people in the study area, in the operation of the substation extension.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the development of the substation extension.

#### Soils, Geology & Land use

There are unlikely to be any interactions with hazardous soils in the PPC sites in the development and operation of the substation extension, as they are not in close proximity to the existing substation.

There is the potential for short, medium and long term, permanent, loss of small areas of pastures surrounding the existing substation, in the development and operation of the substation extension.

#### Water

There is the potential for short term, temporary, indirect construction phase sedimentation and pollution impacts to the sections of the Drumragh River within the study area, in the development of the substation extension, due to the close proximity of these sections of river to the existing substation site. However the risk of these impacts can be minimised if there is a sufficient buffer zone between the substation extension and the sections of the Drumragh River that are within the

study area.

Development of the substation extension has the potential for short term, temporary, indirect, construction phase sedimentation and pollution impacts to one river water body within the study area, namely the Drumragh River, which is of moderate ecological value. However, the risk of these impacts can be minimised by maintaining good working practices in the construction of the substation extension.

There is the potential for difficult working conditions in the vicinity of the Drumragh River, where there is a significant area of 0.5% AEP fluvial flood risk. However, development of the substation extension is unlikely to interact with this flood risk area as the current substation site has a sufficient buffer zone.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the development of the substation extension.

#### **Air**

Development of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary, construction phase increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment.

Operation of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight reductions in local air emissions and improvement to local quality, in non-sensitive areas, due to the increased renewable energy connection.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development.

Development of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary, construction phase increases in local GHG emissions, from the use of construction equipment.

Development of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight reductions in GHG emissions, due to the increased renewable energy connection.

There is the potential for difficult working conditions in the vicinity of the Drumragh River, where there is a significant area of 0.5% AEP climate change fluvial flood risk. However, development of the substation extension is unlikely to interact with this climate change flood risk area as the current substation site has a sufficient buffer zone.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic, to one section of A road within the study area, in the development of the substation extension.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, in the development and operation of the substation extension.

There is the potential for short, medium and long term, permanent, direct disturbance to or loss of agricultural land within the study area, during the development and operation of the substation extension.

There is the potential for the development of reinforced electricity infrastructure within the study area, with minimal disruption to other assets and infrastructure in the medium and long term.

**Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, in the development and operation of the substation extension, as there are no heritage features in close proximity to the existing substation.

**Landscape & Visual Amenity**

There is the potential for short term, temporary, construction phase, negative landscape and visual impacts on the High-Medium Sensitive to Development Landscape Area within the study area, in the development of the substation extension.

**Additional Impacts**

Following the substation extension there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the substation extension take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the substation extension.

**F10. TAMNAMORE REACTIVE COMPENSATION****Discussion of Potential Impacts****Biodiversity, Flora & Fauna**

There is no potential for impacts on International, National or locally designated sites and species in the construction and operation of this substation extension.

There the potential for short, medium and long term, permanent, direct negative impacts on non-designated, semi-natural habitats within the study area in the construction and operation of this substation extension.

Construction and operation of the substation extension is unlikely to create a new vector for invasive species or increase their rate of spread, provided that strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Lough Neagh and Lough Beg Ramsar Site and SPA. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

**Population & Human Health**

There is the potential for short term, temporary, indirect disturbance impacts, such as noise, to the local population that are within close proximity to the existing substation, during the construction phase of the substation extension.

There are unlikely to be any significant medium and long term negative health or disturbance



impacts to people in the study area, in the operation of the substation extension.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the development of the substation extension.

### **Soils, Geology & Land use**

There are unlikely to be interactions with any hazardous sites or topographically unsuitable areas identified within the study area, in the development and operation of the substation extension, as none are in close proximity to the existing substation.

There is the potential for short, medium and long term, permanent, loss of small areas of pastures surrounding the existing substation, in the development and operation of the substation extension.

### **Water**

Development of the substation extension has the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to one river water body within the study area, namely the Torrent River, which is of moderate ecological potential. However, the risk of these impacts can be minimised by maintaining good working practices in the construction of the substation extension.

Construction works during the development of the substation extension are unlikely to interact with any pluvial or fluvial flood risk areas within the study area, as none are in close proximity to the existing substation site.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the development of the substation extension.

### **Air**

Construction of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment during the development of the new transmission infrastructure.

The operation of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight improvements to air quality, due to the increased renewable energy connection.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development.

Construction of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary increases in local GHG emissions, from the use of construction equipment during the development of the new transmission infrastructure.

Operation of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight reductions in GHG emissions due to the increased renewable energy connection.

There are unlikely to be any short, medium or long term interactions with significant areas of

climate change fluvial, coastal or pluvial flood risk within the study area, in the development and operation of the substation extension, as none are in close proximity to the existing substation site.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic, to one section of A road within the study area, during the development of the substation extension.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the development of the substation extension.

There is the potential for short, medium and long term, permanent, direct disturbance to and loss of agricultural land within the study area, during the development and operation of the substation extension.

There is the potential for the development of reinforced electricity infrastructure within the study area, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features, as there are none present within the study area.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs within the study area. Lough Neagh Peatlands is particularly at risk for impacts during the construction phase of the substation extension, as the majority of the study area is situated within the Highly Sensitive to Development LCA.

There are unlikely to be any medium and long term negative impacts to the local landscape and visual amenity of areas within the study area following the development of the substation extension.

#### **Additional Impacts**

Following the substation extension there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the substation extension take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the substation extension.

## F11. COLERAINE REACTIVE COMPENSATION

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is no potential for impacts on International, National or locally designated sites and species in the construction and operation of this substation extension.

There is the potential for short, medium and long term, permanent, direct negative impacts on non-designated, semi-natural habitats within the study area in the construction and operation of the substation extension.

Construction and operation of the substation extension is unlikely to create a new vector for invasive species or increase their rate of spread, provided that strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Bann Estuary SAC. The possibility of likely significant effects cannot be discounted for this European site without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is the potential for short term, temporary, direct disturbance impacts, such as noise and dust, along with negative health impacts, to people in the south-west periphery of Coleraine, which is bordered by the existing transmission infrastructure, during the construction phase of the substation extension.

There are unlikely to be any significant medium and long term negative health or disturbance impacts to people in the study area, following the development of the substation extension.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the development of the substation extension.

#### Soils, Geology & Land use

There are unlikely to be any interactions with hazardous sites or topographically unsuitable areas in the development and operation of the substation extension, as none are in close proximity to the existing substation.

There is the potential for short, medium and long term, permanent, loss of pastures surrounding the existing substation, in the development and operation of the substation extension.

#### Water

The current substation site is not in close proximity to any rivers or water bodies within the study area. Therefore, development of the substation extension is unlikely to have any impacts on the water status or water resource of rivers and water bodies within the study area.

Construction works during the development of the substation extension are unlikely to interact with any pluvial or fluvial flood risk areas within the study area, as none are in close proximity to the

existing substation site.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the development of the substation extension.

#### **Air**

Development of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary, construction phase increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment.

The operation of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight reductions in air emissions, due to the increased renewable energy connection.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development.

Development of the substation extension within the lower sensitivity area of the study area has the potential for short term, temporary, construction phase increases in local GHG emissions, from the use of construction equipment.

Operation of the substation extension within the lower sensitivity area has the potential for medium and long term, permanent, slight reductions in GHG emissions, due to the increased renewable energy connection.

There are unlikely to be any short, medium or long term interactions with significant areas of climate change fluvial, coastal or pluvial flood risk within the study area, in the development and operation of the substation extension, as none are in close proximity to the existing substation site.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic, to two sections of A roads within the study area, during the development of the substation extension.

There are unlikely to be any further medium or long term impacts to A roads in the study area, following the development of the substation extension.

There is the potential for short, medium and long term, permanent, direct disruption to and loss of agricultural land within the study area, during the development and operation of the substation extension.

There is the potential for the development of reinforced electricity infrastructure with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, in the development and operation of the substation extension, as there are no heritage features in close proximity to the existing substation.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, construction phase, negative landscape and visual effects on the Highly Sensitive to Development Coleraine Farmland LCA surrounding the existing substation, in the development of the substation extension.

There are unlikely to be any medium and long term negative impacts to the local landscape and visual amenity of areas within the study area following the development of the substation extension.

#### **Additional Impacts**

Following the substation extension there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the substation extension take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the substation extension.

## **F12. KELLS/CREAGH – RASHARKIN NEW 110 KV CIRCUIT**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance, sedimentation and habitat degradation impacts to Drumbolcan SLNCI and Local Wildlife Site, Saugh Island SLNCI and Local Wildlife Site, Saugh Island Bog Local Wildlife Site and Keel Wood Local Wildlife Site. Construction of the new transmission line over Saugh Island SLNCI and Local Wildlife Site, and Saugh Island Bog Local Wildlife Site should be avoided in particular due to the sensitivity of these peat bog habitats.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase sedimentation impacts to seven Salmonid Rivers, namely River Main Lower, River Main Middle, Braid River Middle, Braid River Lower Middle, Deerfin Burn, Kells Water Upper and Kells Water Lower, if the new line crosses these rivers.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to during construction works.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Lough Neagh and Lough Bed Ramsar Site and SPA. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### **Population & Human Health**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise

and dust, to people in Ballymena, Cullybackey and Connor (Kells), if the new line crosses these main settlements. Development of the new line within these main settlements should be avoided to minimise the risk of these impacts,

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in the Neighbourhood Renewal area in Ballymena, along with people in several areas of lower perceived health, mainly in the Ballymena and Connor (Kells) areas. Development of the new line over these socially sensitive areas should be avoided to prevent cumulative impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation, and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural land, artificial surfaces and sensitive peat bogs, along with some forest and semi-natural areas.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase soil compaction and sedimentation impacts to 20 ancient and long-established woodland areas, and four areas of orchards, if they are crossed by the new line. Development of new transmission infrastructure across these sites should be avoided to minimise the risk of these impacts.

The area within 1% of the best environmental line contains several areas of difficult ground conditions, including several areas of unstable ground, mainly in the vicinity of McKeown's Hill, Lisnacannon Hill, Aghill Hill, Dunnygarran, Teeshan, Knowehead and Carsonstown, along with upland and steep slope areas in the vicinity of McKeown's Hill and Lisnacannon Hill, and one mine shaft in Cainstown. These areas should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are six PPC sites and 187 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites has the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the



potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 32 sections of river within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to three river water bodies of good or high ecological status, four river water bodies of moderate ecological status, two river water bodies of moderate ecological potential and one drinking water river, namely the Braid River. However, these risks could be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Ballymena, Kells and Cullybackey areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Ballymena, Ballylesson, Kells and Gettystown areas, where there are significant areas of 0.5% AEP pluvial flood risk. Construction of the new line over these flood risk areas should be avoided where possible, to minimise the potential of these risks.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line.

### **Air**

Within 1% of the best environmental line there are two AQMAs, being Linehall Street AQMA and Ballykeel AQMA. Construction of the new line through or in close proximity to these areas should be avoided to minimise the potential for planning constraints as well as short term, temporary, construction phase increases in local air emissions and reductions in local air quality in sensitive areas within the study area, during the development of the new transmission circuit.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are several areas of GHG sequestering natural cover within 1% of the best environmental line in the study area, with clustering in the vicinity of McKeown's Hill and Hill Mount. To minimise the potential for short and medium term, temporary loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Ballymena, Ballylesson, Kells and Gettystown areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Edenreagh, Strawmore, Brackaghlistea, Longfield and Annakeeragh areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 110 kV circuit in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short

term, temporary increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic, to several sections of A Roads and part of the motorway outside Ballymena, within the study area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and to the Belfast to Coleraine railway line in the study area.

The North-West Gas Pipeline crosses through the area that is within 1% of the best environmental line. The presence of this existing infrastructure has the potential for short term, temporary planning and construction constraints relating to the construction of the new line, if it is developed within 1% of the best environmental line.

The area that is within 1% of the best environmental line is crossed by several existing 33 kV, 110 kV and 275 kV transmission lines. Development of the new transmission line across these existing lines has the potential for short term, temporary planning constraints relating to the construction of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the transmission line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which are crossed by the 1% impact corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are several known heritage sites, being 104 SMR sites, 18 scheduled zones, 186 listed buildings, 175 industrial heritage sites, eight defence heritage sites and three historic parks, gardens or demesnes, namely People's Park Ballymena, Hill Mount and Craigdun. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, negative landscape and visual effects to the highly sensitive landscape character areas of the Lower Bann Valley, and Tardree and Six Mile Water Slopes. Development of the new line across or in close proximity to these sensitive areas should be avoided to minimise the risk of these impacts.

### **Additional Impacts**

There is the potential for the significance of the short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area, resulting from the development

of the new transmission line, to be reduced due to current land uses and surrounding features. This could be the case particularly between Ballymena and Kells/Creagh, due to the presence of existing 110 kV circuits, meaning that the new transmission line would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

### F13. TAMNAMORE – TURLEENAN UPRATE

#### Discussion of Potential Impacts

##### Biodiversity, Flora & Fauna

There are unlikely to be any impacts to Drumcrow ASSI, Argory Mosees SLNCI and Annaghoboe SLNCI, during the restring, as they are more than 1.2km, 800m and 1.7km away respectively from the current 275 kV line, and there are no impact pathways evident.

There is potential for short term, temporary, direct disturbance and indirect sedimentation impacts to Torrent River SLNCI and Local Wildlife Site and two Salmonid Rivers, namely River Blackwater Lower and Torrent River Lower, and associated species, during the restring works, as the existing line crosses these rivers.

There is potential for short term, temporary, indirect, downstream sedimentation impacts to Callan Lower Salmonid River during the restring.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area in the development of the 275 kV circuits restring.

Construction of this 275 kV circuits restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this restring has the potential for water quality and habitat deterioration impacts on Lough Neagh and Lough Bed Ramsar Site and SPA. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

##### Population & Human Health

There are unlikely to be any short, medium or long term negative impacts to the two main settlements within the study area, namely Moy and Coalisland, which are more than 1.4km and 1.6km away respectively from the existing transmission infrastructure.

There are no areas of lower perceived health in close proximity to existing transmission infrastructure.

There is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the development of the 275 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct, impacts to several types of agricultural land, which the existing line crosses, during the uprate.

There is the potential for short term, temporary, direct, impacts to several areas of orchards in the Tamnamore area, which the existing line crosses, during the uprate.

There is the potential for short term, temporary, direct, impacts to an area of unstable ground present in the Turleenan area, which is in close vicinity to the proposed Turleenan substation, during the uprate.

There is the potential for short term, temporary, direct interaction with one site which could have potential land contamination, namely a railway land in the Bovean area, during the uprate, as the existing line crosses this site.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, in the development of this uprate.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to three sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to three river water bodies of less than good ecological status, namely the River Rhone (Dungannon), Tamnamore Stream and River Blackwater (Argory), and one river water body of less than good ecological potential, being the Torrent River. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the Rhone Hill and Clonbeg areas, where there are significant areas of 1% AEP fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Drumhorrik area, where there is a significant area of 0.5% AEP pluvial flood risk within the vicinity of the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 275 kV line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Moy AQMA due to the restring works, as the Moy AQMA is not in close proximity to the existing line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There are unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality

within the study area following the restring. However, development of the restring has the potential for medium and long term, permanent, slight reductions in in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, development of the restring has the potential for medium and long term, permanent, slight reductions in in GHG, as a result of increased connection to renewable energy.

There is the potential for difficult working conditions during the construction of the restring in the Kilsally, Lettercleary, Clonoe, Rhone Hill and Clonbeg areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Rhone Hill, Clonoe, Lettercleary and Brigh areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the transmission line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic to the section of motorway within the study area, during the restring works. There are unlikely to be any further medium or long term impacts to the significant transport infrastructure in the study area, following the development of the uprate.

There is the potential for short term, temporary, direct, construction phase disruptions to the SGN High Pressure gas line within the study area, during the restring works. There are unlikely to be any further medium or long term impacts to the SGN High Pressure gas line in the study area, following the development of the uprate.

There is the potential for short term, temporary, direct, construction phase disturbance impacts to agricultural land, during the uprate, as the existing line crosses it.

There are unlikely to be any further medium or long term negative impacts to the agricultural land within the study area following the uprate of the transmission line.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There are unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, during or following the restring, as there are no heritage features crossed by or in close proximity to the existing line.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs within the study area. Lough Neagh Peatlands is particularly at risk for impacts during the the

development of the uprate, as the existing transmission line crosses the Highly Sensitive to Development LCA.

There are unlikely to be any further medium or long term negative landscape or visual effects to the Landscape Character Areas within the study area following the restring.

There is the potential for short term, temporary, indirect visual disturbance at The Argory National Trust Land, during the development of the uprate, but any impact will be minimal and no medium or long term impacts will occur.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have secondary positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## **F14. COOLKEERAGH – TRILLICK NEW 110 KV LINE**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase sedimentation impacts to Lough Foyle SPA, as the new line would be developed over or under the River Foyle, which could be a potential pathway for sedimentation into Lough Foyle SPA.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to non-designated, semi-natural habitats, both transboundary and within the study area.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread, both transboundary and within the study area; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Lough Swilly SAC and SPA, and Lough Foyle SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### **Population & Human Health**



If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in Culmore, as the new line could pass through or near this main settlement, along with short term, temporary, indirect, construction phase impacts, such as noise, to people in the north-eastern periphery of Derry city, due to the close proximity of this main settlement to the potential development area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in Ballyarnet, which is an area of lower perceived health. There is also the potential for transboundary, short term, temporary, direct, construction phase impacts, such as noise and dust, to people in main settlements and socially sensitive areas, if the new transmission is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation, current land use disruption and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural areas, forest and semi-natural areas, artificial surfaces, water bodies and sensitive areas of peat bog.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase sedimentation impacts to Lough Foyle ASSI, which is a site of geological heritage, as there is a pathway via the River Foyle, which would be crossed by the new line.

There are three areas of orchards in the area that is within 1% of the best environmental line, along with one long-established woodland, specifically in the Ballynagard area. Construction of the new transmission line over these sites has the potential for short and medium term, temporary degradation and should be avoided.

There is one PPC site and 13 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as there is the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

The area within 1% of the best environmental line includes several areas of difficult ground conditions, being upland and steep slope topography, within the vicinity of Scalp Mountain. These areas should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1%

of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase, sedimentation and pollution impacts to one river water body in the Northern Ireland section of the study area, namely the Skeoge River, which is of poor ecological potential, and one transitional water body, being the Foyle Harbour and Faughan, which is of moderate ecological potential.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase sedimentation and pollution impacts to the Upper Foyle transitional water body, which is of moderate ecological status, as there is a pathway via the Foyle Harbour and Faughan. However, these risks can be minimised by maintaining good working practices during the construction of the new line.

If the new transmission line is developed within 1% of the best environmental line there are unlikely to be any interactions with significant areas of fluvial, coastal or pluvial flood risk.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Bunrana Road/Racecourse Road AQMA if the new line is developed within 1% of the best environmental line, as the Bunrana Road/Racecourse Road AQMA is not in close proximity.

There is the potential for short term, temporary, construction phase increases in local air emissions and a reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

If the new transmission line is developed within 1% of the best environmental line there are unlikely to be any interactions with significant areas of climate change fluvial, coastal or pluvial flood risk.

There are several areas of GHG sequestering natural cover within 1% of the best environmental line in the study area, with clustering in the vicinity of Gortcormacan and Mullanaghy. To minimise the potential for short and medium term, temporary loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as power supply disruptions and increased construction related traffic to one section of A Road, within the study area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts to the Coleraine to Derry/Londonderry railway line in the study area.

There are several existing 33 kV, 110 kV and 275 kV transmission lines within 1% of the best environmental line. Development of the new line within close proximity to these existing transmission lines has the potential for short term, temporary construction constraints relating to the development of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line, there is the potential for short term, temporary, direct, construction phase disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which could be crossed.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are the following known heritage sites; ten SMR sites, two scheduled zones, 12 listed buildings, five industrial heritage sites, and two defence heritage sites. If the new transmission line is developed over or in close proximity to these sites there is the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided.

### **Landscape & Visual Amenity**

If the new 110 kV transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, negative landscape and visual effects to the High-Medium Sensitive to Development LCAs of the Burngibbagh and Drumahoe, Derry Slopes, Foyle Valley, and Lough Foyle Alluvial Plain.

### **Additional Impacts**

There is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects in the Scalp Mountain region of the study area to be exacerbated by current land uses, if the new line is developed within 1% of the best environmental line. This could result from a lack of other transmission infrastructure features or large developments in the study area, meaning that this development has the potential to contrast significantly to the form, colour and texture of the current surroundings.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at

the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the transmission line.

## F15. TURLEENAN – OMAGH SOUTH – COUNTY DONEGAL NEW 275 KV LINE

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance, habitat degradation and sedimentation impacts to River Foyle and Tributaries SAC, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, and Cranny Bog SAC, if the new line is built across these sites. Development of the new line over these sites should be avoided, especially Cranny Bogs SAC, due to the sensitivity of this peat bog habitat.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance, habitat degradation and sedimentation impacts to Lough Fad Bog NHA, Tamur Bog pNHA, Lough Derg pNHA and Durragh Loughs/Pettigo Plateau pNHA, if the new line is built across these sites. Development of the new line over these sites should be avoided, especially Lough Fad Bog NHA and Tamur Bog pNHA, due to the sensitivity of these peat bog habitats.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance, habitat degradation and sedimentation impacts to ten ASSI sites and five SLNCs, namely Mullaghdroilly, Crans Lough, Mullycar Lough, Friary Lough and Annaghloaghan Bog, if the new line is built across these sites. Development of the new line over these sites should be avoided, especially Annaghloaghan Bog, due to the sensitivity of this peat bog habitat.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts within the Waterfoot Freshwater Pearl Mussel Catchment, if the new line is built across this site. Development of the new line over this area should be mitigated for or avoided to minimise the potential for these impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to Lower Lough Erne Islands RSPB Reserve and associated species, including Curlew *numenius arquata*, Redshank *Tringa tetanus* and Lapwing *Vanellus vanellus*. Development of the new line over this site should be mitigated for or avoided to minimise the potential for these impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance, habitat degradation and sedimentation impacts to 60 Local Wildlife Sites, 31 Salmonid Rivers and Lower Lough Erne Salmonid Lake, if the new line is built across these sites. Development of the new line over these sites should be mitigated for or avoided to minimise the potential for these impacts.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in

construction.

The HRA of the TDPNI has determined that the development of this project has the potential for habitat loss impacts on 14 European Sites, water quality and habitat deterioration impacts on 12 European Sites, and disturbance and displacement impacts on four European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in Dromore (Omagh), Fintona, Moy and Dungannon, if the new line is built within close proximity to these main settlements.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such noise and dust, to people in several areas of lower perceived health, namely in the south Dungannon, west Fintona, Seskinore and Dromore areas, if the new line is built within proximity to these sensitive areas, which should be avoided if possible.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect disturbance impacts, such as noise, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation, current land use disruption and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural areas, forest and semi-natural areas, artificial surfaces, water bodies and sensitive areas of peat bog.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction and sedimentation, to five ASSI sites of geological heritage, namely Dromore Big, Ederney Quarry, Crockanaver, Straduff and Dromore ASSI, if the new line is built across these sites. Development of the new transmission line across these sites should be mitigated for or avoided to minimise the potential for these impacts.

There are several areas of clustering of orchards that are within 1% of the best environmental line, mainly in the Moy and Ederney areas, along with over 140 ancient and long-established woodland areas, and 110 Forest Service sites. Construction of the new transmission line over these sites has the potential for short and medium term, temporary degradation and should be avoided if possible.

The area within 1% of the best environmental line includes several areas of difficult ground conditions, including 12 active quarries, several areas of unstable ground, mainly in the vicinity of the Drumskiddy, Garvaghy, Greenan Mountain, Ederney and Slievemore regions, and several

upland and steep slopes areas, mainly in the vicinity of Lough Derg, Garvaghy and Crocknatummoge areas. These regions should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are 23 PPC sites and over 300 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites has the potential to track contaminated materials further through the study area, therefore this should be avoided if possible.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 183 sections of river within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to ten river water bodies of good ecological status, 28 river water bodies of less than good ecological status, one lake water body of moderate ecological potential, four drinking water rivers, namely the Kesh River tributary, Torrent River, Bannagh River and River Blackwater (Monaghan), and one drinking water lake, being Lower Lough Erne (Kesh). However, the potential of these risks could be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Ederney, Dromore, Eskragh, Clonelly and Eglishe areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Ballygawley, Eskragh, Pigeon Top Forest, Ederney and Rhone Hill areas, where there are significant areas of 0.5% pluvial flood risk. Construction of the new line over these areas should be avoided where possible, to minimise the potential of these risks.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Moy AQMA or the Newell Road (Dungannon) AQMA, if the new line is developed within 1% of the best environmental line, as these AQMAs are not in close proximity to the area.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new line within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in air emissions and improvements in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are several areas of GHG sequestering natural cover within 1% of the best environmental



line in the study area, with large areas of GHG sequestering natural cover in the west of the study area. To minimise the potential for short and medium term, temporary loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Ederney, Dromore, Eskragh, Clonelly and Eglishe areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Ballygawley, Eskragh, Pigeon Top Forest, Ederney and Rhone Hill areas, where there are significant areas of 0.5% AEP climate change fluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the new 275 kV transmission line in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

#### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to several sections of A roads within the study area.

There are several existing 33 kV, 110 kV and 275 kV transmission lines within 1% of the best environmental line. Development of the new line within close proximity to these existing transmission lines has the potential for short term, temporary construction constraints relating to the development of the new line.

The SGN high pressure gas line crosses the area that is within 1% of the best environmental line. There is the potential for short term, temporary, construction constraints in the development of the new line in the vicinity of the gas line, and therefore this should be avoided.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Development of the new transmission line within 1% of the best environmental line has the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which are crossed by the 1% impact corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are many known heritage sites, being 271 SMR sites, 40 scheduled zones, 70 listed buildings, 209 industrial heritage sites, one defence heritage site, one Areas of Archaeological Potential, namely Ballygawley, and one historic park, garden and demesne, being Martray House. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long

term impacts on, or the setting of, these heritage features and should be avoided.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, direct negative landscape and visual amenity impacts to the Highly Sensitive to development landscape character areas of the Clogher Valley Lowlands, Croagh and Garvary River, Enniskillen, and Lower Lough Erne.

If the new transmission line is developed within 1% of the best environmental line, there are unlikely to be any significant short, medium, or long term impacts to the Sperrin AONB, as it is not within close proximity of the 1% impact corridor.

If the new transmission line is developed within 1% of the best environmental line, there are unlikely to be any significant short, medium, or long term impacts to the Castle Archdale Country Park, as it is not within close proximity of the 1% impact corridor.

If the new transmission line is developed within 1% of the best environmental line, there is the potential for short term, temporary, indirect visual disturbance at The Argory National Trust Land, during the construction of the 275 kV transmission line, but any impact will be minimal and no medium or long term impacts will occur.

If the new transmission line is developed within 1% of the best environmental line, there are unlikely to be any significant short, medium, or long term impacts to the Wellbrook National Trust Land, as it is not within close proximity of the 1% impact corridor.

### **Additional Impacts**

Following the development of the new transmission line there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## **F16. KILROOT - COOLKEERAGH HVDC LINK (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to five SAC sites and associated species, being Rathlin Island, the North Antrim Coast, Red Bay, The Maidens and Skerries and Causeway.

If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation

impacts to the northern periphery of the North Channel MPA (cSAC) and associated species, namely the Harbour Porpoise *Phocoena phocoena*.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to nursery or spawning grounds of several species within the study area, including Cod *Gadus morhua*, and Whiting *Merlangius merlangus*.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, which could include noise and vibration pollution, to several cetacean species which have been known to use marine areas within the study areas, including the Bottlenose Dolphin *Tursiops truncatus*, Minke Whale *Balaenoptera acutorostrata*, Killer Whale *Orcinus orca* and Harbour Porpoise *Phocoenidae phocoena*.

Within 1% of the best environmental line there is one area where a Salmonid River, being the Glenarm River, flows into the sea and therefore significant salmon migration activity is likely to occur. In order to minimise the potential for short, medium and long term impacts, such as electromagnetic disturbances, to this hotspot areas of salmon migration, the development of the new transmission line within this area should be avoided or potential impacts mitigated for.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new subsea transmission line, if it is developed with 1% of the best environmental line.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

If the new subsea line is developed within 1% of the best environmental line it is unlikely that there will be any significant, direct, short, medium or long term disturbance impacts to people within the study area, due to the subsea nature of this development, and therefore the lack of direct impact on any land. However, there is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to people along the coastline of the study area, during the construction of the shoreline elements of new line.

If the new subsea line is developed within 1% of the best environmental line there are unlikely to be impacts on any socially sensitive areas or areas of lower perceived health within the study area, due to the subsea nature of this development.

There are unlikely to be any further medium or long term impacts to people or human health within the study area, following the construction of the new subsea line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new subsea transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

There are unlikely to be any short, medium or long term impacts to any soils, geology or land use features of the coastal land within the study area, due to the subsea nature of this development.

The marine area within 1% of the best environmental line contains one defence and national security danger area, being Magilligan military practice area. This area should be avoided to prevent short term, temporary difficulties and safety issues during construction works.

There are several areas with high marine traffic densities within 1% of the best environmental line, including parts of the coastal area surrounding Larne Lough and the route between Ballycastle and Rathlin Island. There is the potential for difficulties completing construction works or disruption to marine traffic in these high use areas, in the construction of the new subsea line if it is developed within 1% of the best environmental line.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the marine environment of the study area, following the construction of the new subsea transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to the sea beds of eight coastal water bodies within the study area, being the Maiden Islands, North Coast, Lough Foyle, Rathlin Island, North Channel, Belfast Lough Outer, Portstewart bay and Larne Lough North, if they are crossed by the new transmission line. However good working practices during the construction of the subsea line has the potential to minimise the risk of these impacts.

If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to shoreline, to the Foyle harbour and Faughan transitional water body. However good working practices during the construction of the subsea line has the potential to minimise the risk of these impacts.

If the new subsea transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase sedimentation and pollution impacts to four river water bodies within the study area, namely the Kilroot River, Dunseverick River, Rathlin Island Rivers and Copeland Water river water bodies, along with five areas with bathing waters, being Ballycastle, Castlerock, Magilligan, Portrush and Portstewart. However good working practices during the construction of the subsea line has the potential to minimise the risk of these impacts.

If the new subsea transmission line is developed within 1% of the best environmental line there are unlikely to be any further medium or long term impacts on water status and resource within the study area, following the construction of the new line.

There is unlikely to be additional flood risk to submerged cabling, however any associated shoreline infrastructure should be situated out of flood risk areas.

### **Air**

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, during the construction of the new subsea line, in non-sensitive areas, which are crossed by or in close proximity to new subsea line, from the use of construction equipment. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new subsea line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in local air emissions and improvement in local air

quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are unlikely to be any short, medium or long term impacts on significant areas of GHG sequestering vegetation from this development.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

If the new subsea line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance and sedimentation impacts to the Atlantic Salmon aquaculture sites in the vicinity of Knockore and Glenarm. Development of the new subsea line within close proximity to these sites should be avoided to minimise the risk of these impacts.

If the new subsea line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance impacts on two significant harbour areas within the study area, namely the Londonderry Port and Inner Pilotage Area, and the Port of Larne. Construction of the new subsea line within close proximity to these sites should be avoided or mitigated for to minimise the potential for these impacts.

The area within 1% of the best environmental line contains sections of three submarine power lines, namely the Moyle Interconnector South, the Moyle Interconnector North and the submarine power line that runs between Ballycastle and Rathlin Island, along with three subsea telecommunication cables. There is the potential for planning and construction restrictions in the vicinity of these existing submarine power lines and telecommunication cables. Therefore, development of the subsea line across areas containing these existing infrastructures should be avoided or mitigated for to minimise the potential for impacts.

Within 1% of the best environmental line there are four dive sites, several canoe trails and a section of a Lough Foyle wildfowling area. Development of the new subsea line across or in close proximity to these areas should be avoided to minimise the risk of short term, temporary, direct and indirect, construction phase disturbance and sedimentation impacts.

There are unlikely to be any further medium or long term negative impacts to material assets and infrastructure within the study area, following the construction of the new subsea transmission line, if it is developed within 1% of the best environmental line, and if the highlighted sensitive areas are avoided.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are 56 SMR sites, with clustering of SMR sites in the vicinity of Ballintoy and Rathlin Island. There are four scheduled zones within 1% of the best environmental line, including two castles and one cave on the north coast, along with three listed buildings on the coastline of the Ballintoy area. Within 1% of the best environmental line there are 18 industrial heritage sites, with clustering of industrial heritage sites in the Glenarm, Sheep Island and Carrickfergus areas, along with three defence heritage sites. The area within 1% of the best

environmental line crosses the northern periphery of Dunluce, which is an Area of Significant Archaeological Interest. There are 45 historic wrecks in the area within 1% of the best environmental line, with clustering of historic wrecks in the vicinity of Carrickfergus, The Maidens, Rathlin Island and Portrush. Development of the new subsea transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided where possible.

There is the potential for discovery of new features of cultural, architectural and archaeological heritage within the marine environment during the short term, temporary, construction phase of this development.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, negative landscape and visual effects to the nine Highly Sensitive to development landscape character areas of Ballycastle Glens, Causeway Coast and Rathlin Island, Coleraine Farmland, Fair Head, Islandmagee, Larne Coast, Larne Glens, Magilligan Lowlands, and Moyle Glens.

There is the potential for short term, temporary, visual disturbance at Causeway Coast, Antrim Coast and Glens, and Binevenagh AONBs, during the construction of the transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short term, temporary, negative visual impacts at ten National Trust Lands in the study area, during the construction of the transmission line, if it is developed within 1% of the best environmental line, but any impact will be minimal and no medium or long term impacts are likely to occur.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, negative landscape and visual effects to ten Seascape Character Areas.

There are unlikely to be any medium or long term landscape and visual impacts within the study area following the construction of the new line, due to the subsea nature of this development.

### **Additional Impacts**

There is the potential for short term, temporary, construction phase, negative landscape and visual effects in the study area to be exacerbated by current land uses within 1% of the best environmental line, if the new line is developed within this area. This relates to the marine nature of the study area, which lacks other visually intrusive features and thus the construction of new line has the potential to create temporary visual disturbances that contrast significantly to the form, colour and texture of the existing marine surroundings, however with very few potential visual receptors.

Following the development of the subsea transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future within the study area, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new subsea line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.



## F17. MAGHERAFELT - COOLKEERAGH 275 KV OR 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

If the new transmission line is within within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to River Roe and Tributaries SAC and associated species, including Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, and Lough Foyle SPA and Ramsar Site and associated species, including Red-throated Diver *Gavia stellate*, Great Crested Grebe *Podiceps cristatus* and Mute Swan *Cygnus olor*, if they are crossed by the new transmission infrastructure.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to 40 SLNCs and six ASSIs, namely Drumbally, Lough Foyle, Banagher Glen, Altmover Glen, River Roe and Tributaries, and Bovevagh, if they are crossed by the new line. To minimise the potential of these impacts, development of the new transmission line over these sites should be avoided where possible.

The northern periphery of Ballinderry Freshwater Pearl Mussel Catchment is within 1% of the best environmental line. Development of the new transmission line across this area has the potential for short term, temporary, direct, construction phase, habitat degradation and sedimentation impacts, and therefore should be avoided if possible.

There are 34 Local Wildlife Sites, 24 Salmonid Rivers and one Nature Reserve, namely Banagher Glen, within 1% of the best environmental line. Development of the new transmission line over these sites has the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts, and therefore should be avoided where possible.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided provided strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There are five main settlements within 1% of the best environmental line, namely Magherafelt, Eglinton, Dungiven, Draperstown and Greysteel. Development of the new line in proximity to these main settlements has the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to the residents, and therefore this should be avoided where possible.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in several areas of lower perceived health, namely in the Cloghfin, Munreery and Eglinton areas. These are socially sensitive areas and thus construction of the new

transmission line in proximity to these areas should be avoided if possible.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation, and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural land, forest and semi natural land, artificial surfaces and several sensitive areas of peat bogs.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase soil compaction and sedimentation impacts to three ASSI sites of geological heritage, namely Lough Foyle ASSI, Banagher Glen ASSI and Bovevagh ASSI, if the new line is built across these sites. Development of the new transmission line across these sites should be avoided to minimise the potential for impacts.

There are several areas of clustering of orchards that are within 1% of the best environmental line, mainly in the Hillside (Magherafelt), Eglinton and Orchardtown areas, along with 87 ancient and long-established woodland areas, and 28 Forest Service sites. Development of the new transmission line over these sites has the potential for short and medium term degradation and should be avoided.

The area within 1% of the best environmental line includes several areas of difficult ground conditions, including 12 historic mines, three active quarries, several areas of unstable ground, mainly in the vicinity of Loughermore and in the Sperrin Mountains region, and several upland and steep areas, mainly in the vicinity of Loughermore and in the Sperrin Mountains region also. Development of the new transmission line in these areas should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are six PPC sites and over 370 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites have the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 160 sections of river within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary direct, construction phase sedimentation and pollution impacts to 12 river water bodies of good or high ecological status, 15 river water bodies of less than good ecological status, one transitional water body of moderate ecological potential, being the Foyle Harbour and Faughan, and one drinking water river, being the Owenrigh River. However, the potential for these risks can be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Bonnanaboigh, Dungiven, Campsey and Eglinton areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Campsey and Greysteel areas, where there are significant areas of 0.5% AEP coastal flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Eglinton, Bonnanaboigh and Desertmartin areas, where there are significant areas of 0.5% pluvial flood risk. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

#### **Air**

If the new line is developed within 1% of the best environmental line there are unlikely to be any short, medium or long term increases in emissions or reduction in air quality in the Dale's Corner AQMA, Buncrana Road/Racecourse Road AQMA, Creggan Road/Infirmary Road AQMA, Spencer Road AQMA, Strand Road AQMA or Magherafelt AQMA, as none of these AQMAs are in close proximity to the 1% corridor. However, development of the new line within 1% of the best environmental line has the potential for short term, temporary increases in local air emissions and reduction in local air quality in the Dungiven AQMA, during the construction of the new line. There are unlikely to be any further medium or long term impacts on air quality in the Dungiven AQMA following the construction of the new transmission line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

#### **Climatic Factors**

There are several areas of GHG sequestering natural cover within 1% of the best environmental line in the study area, with large areas of GHG sequestering natural cover in the vicinity of Moydamlaght Forest, Glenshane Forest, Banagher Forest and Loughermore. To minimise the potential for short and medium term loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Bonnanaboigh, Dungiven, Campsey and Eglinton areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Eglinton, Bonnanaboigh and Desertmartin areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Campsey and Greysteel

areas, where there are significant areas of 0.5% AEP climate change coastal flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the sections of transmission lines in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to five A Roads within the study area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances to a section of railway line in the north of the study area that runs between Londonderry / Derry and Limavady.

The North-West gas pipeline crosses through the area that is within 1% if the best environmental line. The presence of this existing infrastructure has the potential for short term, temporary planning constraints relating to the development of the new line.

The City of Derry Airport is within 1% of the best environmental line, along with several existing 33 kV, 110 kV and 275 kV transmission lines. Development of the new transmission line within close proximity to these existing infrastructures should be avoided to minimise the potential for development constraints relating to the construction of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which are crossed by the 1% corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are many known heritage sites with over 250 SMR sites, 39 scheduled zones, 74 listed buildings, over 200 industrial heritage sites, 44 defence heritage sites, with most occurring in the vicinity of Eglinton, three Areas of Archaeological Potential, namely Dungiven, Desertmartin and Tobermore, and three historic parks, gardens and demesnes, namely Ash Park, Pellipar and Templemoyle. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term, direct impacts on, or the setting of, these heritage features and should be avoided where possible.

### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent, negative visual and landscape effects to the

Highly Sensitive to Development Landscape Character Areas of the Glenshane Slopes, Sperrin Foothills and Sperrin Mountains.

If the new transmission line is developed within 1% of the best environmental line there are likely to be short, medium, and long term, permanent, negative landscape and visual effects to the Sperrin AONB, as the 1% impact corridor crosses it.

If the new transmission line is developed within 1% of the best environmental line here are unlikely to be short, medium, or long term impacts to the Binevenagh AONB, Ness Wood Country Park, Roe Valley Country Park, Gray's Printing Press or Rough Fort National Trust Lands as they are not within close proximity to the 1% corridor.

#### **Additional Impacts**

If the new transmission line is developed within 1% of the best environmental line there is the potential for a cumulative / in-combination, permanent increased risk of bird strike in the medium and long term within the study area, following the development of the new transmission line, due to the presence of City of Derry Airport in the 1% impact corridor.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future within the study area, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## **F18. MAGHERAFELT – STRABANE 275 KV OR 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to River Faughan and Tributaries SAC and associated species, namely Otter *Lutra lutra* and Atlantic Salmon *Salmo salar*, as this site could be crossed by the new transmission infrastructure. To minimise the potential for these impacts, construction of the new transmission line over this site should be avoided if possible.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to 15 SLNCIs and four ASSIs, namely River Faughan and Tributaries, Silverbrook Wood, Aghabrack and Lisnaragh, as they could be crossed by the new line. To minimise the potential of these impacts, construction of the new transmission line over these sites should be avoided where possible.

The northern periphery of Ballinderry Freshwater Pearl Mussel Catchment is within 1% of the best environmental line. Development of the new transmission line over this site has the potential for

short term, temporary, direct, construction phase habitat degradation and sedimentation impacts, and therefore should be avoided if possible.

There are 37 Local Wildlife Sites and 25 Salmonid Rivers within 1% of the best environmental line. Development of the new transmission line over these sites has the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts, and therefore should be avoided where possible.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission, if it is developed line with 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided provided strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

There is one main settlement within 1% of the best environmental line, namely Draperstown. To minimise the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to the people in the area of this main settlement, development of the new transmission line within the Draperstown area should be avoided.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people in Dunnamanagh, which is an area of lower perceived health. This is a socially sensitive area, therefore development of the new line in this area should be avoided to minimise the potential for cumulative impacts.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to local people that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

### **Soils, Geology & Land use**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural land, forest and semi natural land, several sensitive areas of peat bogs and two areas of discontinuous urban fabric, being in Draperstown and the southern



periphery of Magherafelt.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase soil compaction and sedimentation impacts to three ASSI sites of geological heritage, namely River Faughan and Tributaries ASSI, Aghabrack ASSI and Lisnaragh ASSI, if the new line is built across these sites. Development of the new transmission line across these sites should be avoided to minimise the potential for these impacts.

The area within 1% of the best environmental line includes several areas of difficult ground conditions, including 12 historic mines, ten active quarries, several areas of unstable ground, mainly in the Sperrin Mountains region, and several upland and steep areas, also mainly in the Sperrin Mountains region. Development of the new transmission line across these areas should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are 63 ancient and long-established woodland areas, and 17 Forest Service sites within 1% of the best environmental line. Construction of the new transmission line over these sites has the potential for short and medium term degradation and should be avoided.

There are two PPC sites and over 170 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites has the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

#### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 119 sections of river within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary direct, construction phase sedimentation and pollution impacts to 12 river water bodies of good or high ecological status, ten river water bodies of less than good ecological status and two drinking water rivers, namely the Owenrigh River and White Water (Co. Tyrone). However, the potential for these risks can be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Straw, Draperstown and Desertmartin areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Artigarvan, Craig, Straw and Desertmartin areas, where there are significant areas of 0.5% pluvial flood risk. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

#### **Air**

If the new transmission line is developed within 1% of the best environmental line there is unlikely to be any short, medium or long term increases in local air emissions and reductions in local air quality in any of the AQMAs within the study area, as none are in close proximity to the 1% impact

corridor.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There are unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climate Change**

There are several areas of GHG sequestering natural cover within 1% of the best environmental line in the study area, with large areas of GHG sequestering natural cover in the vicinity of Learmount Wood, Banagher Forest, Goles Forest, Moydamlaght Forest and Derrynoyd Forest. To minimise the potential for short and medium term, temporary loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Straw, Draperstown and Desertmartin, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in Artigarvan, Craig, Straw and Desertmartin areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the sections of transmission lines in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to two A Roads within the study area.

There are several existing 33 kV, 110 kV and 275 kV transmission lines within 1% of the best environmental line, mainly in the vicinity of Strabane and Magherafelt. Development of the new line within close proximity to these existing transmission lines should be avoided to minimise the potential for short term, temporary construction constraints relating to the development of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural

land within the study area which are crossed by the 1% impact corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are many known heritage features with 200 SMR sites, 30 scheduled zones, 68 listed buildings, over 170 industrial heritage sites, two defence heritage sites, one Area of Archaeological Potential, namely Desertmartin, and two areas with historic parks, gardens and demesnes, namely Holy Hill and Learmount. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided.

#### **Landscape & Visual Amenity**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects to the Highly Sensitive to development Landscape Character Areas of the Glenelly Valley, South Sperrin, Sperrin Foothills and Sperrin Mountains.

If the new line is developed within 1% of the best environmental line there is the potential for short, medium, and long term, permanent, negative landscape and visual impacts to the Sperrin AONB, as the 1% impact corridor crosses it.

If the new line is developed within 1% of the best environmental line there are unlikely to be short, medium, or long term negative landscape or visual effects to the Gray's Printing Press National Trust Land, as it is not within close proximity of the 1% impact corridor.

#### **Additional Impacts**

There is the potential for the significance of the short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area, resulting from the development of the new transmission line, to be reduced due to current land uses and surrounding features. This could be the case if the new line is developed in the eastern section of the 1% impact corridor where there is already an existing 275 kV transmission circuit, meaning that the new transmission line would have less of a contrast to the current surroundings and features and thus would be less visually intrusive.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have direct secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## F19. AGIVEY CLUSTER – LIMAVADY 110 KV CIRCUIT (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to three ASSIs, namely Smulgedon ASSI, Castle River Valley ASSI and Brockagh Quarry ASSI, as they could be crossed by the new line. To minimise the potential of these impacts, development of the new transmission line over these sites should be avoided where possible.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts to seven SLNCIs, six Local Wildlife Sites and three Salmonid Rivers, namely Agivey River Upper, Brockagh Water and Castle River. To minimise the potential of these impacts, construction of the new transmission line over these sites should be avoided where possible.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

Construction of this new transmission line has the slight potential to create a new vector for invasive species or increase the rate of their spread; however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

If the new transmission line is developed within 1% of the best environmental line there are unlikely to be impacts on any main settlements, socially sensitive areas or areas of lower perceived health within the study area.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust to the local population that are within close proximity to new line. There are unlikely to be any further medium or long term negative impacts to people within the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of a significant volume of secure and reliable electricity, to meet future needs of the population, following the construction of the new transmission line, from the provision of new transmission infrastructure.

#### Soils, Geology & Land use

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction or destabilisation and loss of crops, to several types of land uses which may be crossed by the new line, mainly being agricultural land, and forest and semi natural land, and several sensitive areas of peat bog.

The area within 1% of the best environmental line includes some areas of difficult ground conditions, including several areas of unstable ground, mainly in the Brockagh and Gortnamoyagh Forest areas, and several upland and steep areas, also mainly in the Brockagh and Gortnamoyagh Forest areas, along with one landslide deposit area in the vicinity of Kilhoyle. Development of the new transmission line across these areas should be avoided as the topographical conditions outlined could lead to access difficulties during construction works.

There are two ancient and long-established woodland areas, and four Forest Service sites within 1% of the best environmental line. Construction of the new transmission line over these sites has the potential for short and medium term degradation and should be avoided.

There are two PPC sites and over seven potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as works crossing these sites has the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the construction of the new transmission line, if it is developed within 1% of the best environmental line.

#### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 18 sections of river within the study area, if they are crossed by the new line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary direct, construction phase sedimentation and pollution impacts to four river water bodies of good or high ecological status and one river water body of moderate ecological status. However, the potential for these risks can be minimised by maintaining good working practices during the construction of the new line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Brockagh and Drumsurn areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Brockagh, Drumsurn and Woodview areas, where there are significant areas of 0.5% pluvial flood risk. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

#### **Air**

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There is unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

If the new line is developed within 1% of the best environmental line there is the potential for

medium and long term, permanent reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are several areas of GHG sequestering natural cover within 1% of the best environmental line in the study area, mainly in the vicinity of Gortnamoyagh Forest. To minimise the potential for short and medium term, temporary loss of GHG sequestering natural cover during, and following the construction of the new line, development over these areas should be avoided.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Brockagh and Drumsum areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line in the Brockagh, Drumsum and Woodview areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 110 kV line in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

If the new line is developed within 1% of the best environmental line there is the potential for medium and long term, permanent reductions in in GHG emissions, as a result of increased connection to renewable energy.

### **Material Assets & Infrastructure**

The North-West gas pipeline crosses through the area that is within 1% of the best environmental line. The presence of this existing infrastructure has the potential for short term, temporary construction constraints relating to the development of the new line.

The northern periphery of the area that is within 1% of the best environmental line is crossed by several existing 33 kV and 110 kV transmission lines. Development of the new transmission line within close proximity to these existing lines has the potential for short term, temporary construction constraints relating to the development of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which are crossed by the 1% impact corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable renewable energy, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are several known heritage sites, with 21 SMR sites, five scheduled zones, three listed buildings and seven industrial heritage sites. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage



features and should be avoided where possible.

### Landscape & Visual Amenity

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects to the Highly sensitive to development landscape character area of the Glenshane Slopes, as well as the High-Medium sensitive to development LCAs of Binevenagh, Eastern Binevenagh Slopes, and Roe Basin.

If the new transmission line is developed within 1% of the best environmental line there are likely to be short, medium, and long term, temporary and permanent, negative landscape and visual effects to the Sperrin AONB, as is within the 1% impact corridor.

### Additional Impacts

If the new transmission line is developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area to be exacerbated by current land uses. This could occur due to a lack of other transmission infrastructure features or large developments in the study area, meaning that this development has the potential to contrast significantly to the form, colour and texture of the current surroundings.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## F20. STRABANE – OMAGH 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts on Owenkillew River SAC and ASSI, and associated species, in particular Freshwater Pearl Mussel *Margaritifera margaritifera*, Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, during the construction phase of the restring, as the existing line crosses the river twice.

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts on River Foyle and Tributaries SAC and ASSI, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, during the construction phase of the restring, as the existing line crosses the river twice. There is the potential for short term, temporary, indirect, downstream sedimentation impacts on River Finn SAC and associated species, in particular Atlantic Salmon *Salmon salar* and otter *Lutra lutra*, during the construction phase of the restring, as there is an evident pathway via the River Foyle and Tributaries SAC and ASSI.

There are unlikely to be any impacts to Tully Bog SAC and ASSI during the restring, as it is at least 150m from the existing line, is separated by a road and agricultural land, and there is no impact pathway evident.

There is the potential for short term, temporary, indirect, construction phase, sedimentation impacts on Strabane Glen ASSI, which is in close proximity to the existing line. McKean's Moss ASSI and Grange Wood ASSI are unlikely to be impacted by the restring as they are not in close proximity to the existing line and there are no impact pathways evident.

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts on eight Salmonid Rivers, namely Canowen River Lower, Cappagh Burn, Douglas Burn Foyle, Drumragh River, Glenscollip Burn, Owenkillew River Lower, Fairy Water Lower and Strule River Lower, along with Sesslagh Wood Local Wildlife Site, and associated species, during the construction phase of the restring, as the existing line crosses these sites.

There is the potential for short term, temporary, indirect sedimentation impacts on two Local Wildlife Sites, namely Roundhill Wood and Pattens Glen, during the construction phase of the restring, as there are potential pathways present.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area in the development of the 110 kV circuits restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to the population in the eastern periphery of Strabane and people in south Omagh, as both of these areas are crossed by the existing circuit. The villages of Newtown Stewart and Sion Mills are not within close proximity to the existing line, so negative impacts to the populations in these areas are unlikely to result from the restring.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the to the Strabane Neighbourhood Renewal Area, which is crossed by the existing circuit. There are unlikely to be any significant negative impacts to the people in Omagh Neighbourhood Renewal Area, which is over 500m from the existing circuit.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to the populations of four clustered areas of lower perceived health, namely in the Sion Mills, Strabane, Omagh and Newtown Stewart areas, as the existing line crosses all of these areas.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust to local populations that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the development of the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission

infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct impacts to several types of land uses within the study area which are crossed by the existing line, mainly being agricultural land and forest and semi natural land, along with two sensitive areas of peat bogs in South Omagh, during the restring works.

There is the potential for short term, temporary, direct, construction phase impacts to one long-established woodland in the Strabane area, which the existing line directly crosses, along with short term, temporary, indirect, construction phase impacts to four long-established and ancient woodlands in the Omagh and Strabane areas, which are all in close proximity to the existing line.

There is the potential for short term, temporary, direct interaction with four potentially hazardous soils and activities within the study area during the restring, being two textile works, one mineral working and one manufacturing works, which are all in close proximity of the existing line.

There is the potential for short term, temporary, direct interactions with upland and steep slope topography in the vicinity of Rylagh Top, and one unstable ground area in south Omagh, during the uprate, as the existing line crosses this region, and may cause technical difficulties in development.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, in the development of this uprate.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to 40 sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Development of the restring has the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to four river water bodies of good ecological status, seven river bodies of less than good ecological status, and four drinking water rivers, namely the Mourne River, Camowen River, Glenscollip Burn and Cavanalee River. However, the potential for these risks can be minimised by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the parts of Newtownstewart and Omagh that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Newtownstewart AQMA due to the restring works, as the AQMA is not in close proximity to the existing line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality in the Strabane AQMA, from the use of construction equipment during the restring, as the existing line crosses through this sensitive area. There are unlikely to be any further medium or long term impacts on air quality in the Strabane AQMA following the restring.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restring. However development of the restring has the potential for medium and long term, permanent, slight reductions in in air emissions and improvement in air

quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development as updates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, there is the potential for medium and long term, permanent, slight reductions in in GHG emissions, as a result of increased connection to renewable energy, following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Newtownstewart and Omagh areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to three A roads within the study area, during the restring works.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV lines are crossed by the 110 kV line that is to be updated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, indirect, construction phase disturbance to several SMR sites and industrial heritage sites, along with short term, temporary, direct, construction phase disturbance to one area of historic parks, gardens and demesnes, namely Moyle House, during the restring, which are all crossed by or in close proximity to the existing line.

There is unlikely to be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

### **Landscape & Visual Amenity**

There is the potential for short term, temporary, construction phase, negative landscape and visual effects to the LCAs. Bessy Bell and Gortin, and the Sperrin Mountains are particularly at risk for impacts during the the development of the 110 kV restring, as the existing line crosses the Highly Sensitive to Development LCAs.

There is unlikely to be any further medium or long term negative landscape and visual effects to the

Landscape Character Areas within the study area in the development of the 110 kV restring.

There is the potential for short term, temporary, construction phase, negative landscape and visual effects to the Sperrin AONB during the development of the 110 kV restring, as the existing line crosses the Area of Outstanding Natural Beauty.

There is unlikely to be short, medium or long term, negative landscape and visual effects to Gray's Printing Press National Trust Land, during the development of the 110 kV restring, as it is not within close proximity to the existing line.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## **F21. COOLKEERAGH – STRABANE 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

There is the potential for short term, temporary, direct, construction phase disturbance and indirect sedimentation impacts on River Faughan and Tributaries SAC and ASSI, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, during the restring, as the existing line crosses the river multiple times.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on River Foyle SAC and ASSI and River Finn SAC, and associated species, in particular Atlantic Salmon *Salmon salar* and otter *Lutra lutra*, during the restring, as there is a potential pathway via the Glenmornan River, which the existing line crosses upstream.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on Lough Foyle SPA, Ramsar site and ASSI, and internationally important species, in particular Whooper Swan *Cygnus Cygnus*, Light bellied Brent Goose *branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica*, during the 110 kV restring, as there is a potential pathway via the River Faughan and Tributaries, which the existing line crosses upstream.

There are unlikely to be any significant short, medium or long term impacts on the four remaining ASSIs in the study area, namely Strabane Glen, Corbylin Wood, McKeans's Moss and McKeans's Moss II, which are all more than 1.1km away from the existing line, and there are no impact pathways evident.

There is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts on five Salmonid Rivers in the study area, namely Burn Dennet Lower, Glenmornan River, River Faughan Lower, River Faughan Lower Middle and Burngibbagh, during

restring, as all five rivers are crossed by the existing line.

There is the potential for short term, temporary, indirect, construction phase downstream sedimentation impacts to Glenmornan River Local Wildlife Site, during the restring, as there is a potential pathway via the Glenmornan River, which the existing line crosses upstream.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area in the development of the 110 kV circuits restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise or dust, to the population in the south of Londonderry / Derry and people in the eastern periphery of Strathfoyle, as both areas are crossed by the existing circuit. There are unlikely to be any significant negative impacts to the populations of Strabane, Culmore or Newbuildings, which are over 500m from the existing line.

There are unlikely to be any significant negative impacts to the populations of the Lower Tullyally and Dungiven Road peace line areas, or the Triax (Cityside) and Outer North Derry Neighbourhood Renewal Areas, as none are in close proximity to the existing line.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people residing in the Waterside Neighbourhood Renewal Area, as the existing line crosses this socially sensitive area twice.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the Arnabroky and Altnagelvin areas of Londonderry / Derry, which are areas of lower perceived health, as the existing circuit crosses these parts of Londonderry / Derry.

There is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the development of the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people within the study area, following the restring, from improvements to existing transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct, construction phase impacts to several types of land uses within the study area during the restring works, which are crossed by the existing line, mainly being agricultural land, along with one water body and one transitional woodland scrub area.

There is the potential for short term, temporary, direct, construction phase impacts to one ASSI site of geological heritage during the restring works, namely River Faughan and Tributaries ASSI, as it

is crossed by the existing line several times.

There is the potential for short term, temporary, direct, construction phase impacts to two long-established woodlands in Londonderry / Derry, which are crossed by the existing line.

There is the potential for short term, temporary, interactions with ten areas of potentially hazardous soils and activities within the study area during the restring, being direct interaction with one waste treatment site which is crossed by the existing line, and indirect interactions with one mineral working site, three military installation areas, three railway lands and two tarry waste areas, which are all in close proximity to the existing line.

There are unlikely to be any interactions with topographically unsuitable areas as the existing line does not cross, and is not in close proximity to any of the unstable ground or upland and steep slope areas identified within the study site.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, in the development of this restring.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to 19 sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to two river water bodies of good ecological status, three river water bodies of less than good ecological status and two drinking water rivers within the study area, namely the River Faughan and Burngibbagh. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the parts of Cloghcor, Drumahoe, Mobuoy and Ardlough that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line. There is the potential for difficult working conditions during the construction of the restring in the parts of Ardlough, Disertowen and Brookhill that have significant areas of 0.5% AEP pluvial flood risk and are crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Dale's Corner AQMA due to the restring works, as the Dale's Corner AQMA is not in close proximity to the existing line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restring. However development of the restring has the potential for medium and long term, permanent, slight reductions in in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment



during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, there is the potential for medium and long term, permanent, slight reductions in GHG emissions, as a result of increased connection to renewable energy, following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Ballynagorry, Cloghcor, Drumahoe, Mobuoy and Ardlough areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Ardlough, Disertowen and Brookhill areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to two A roads within the study area during the restring.

The western end of the North-West gas pipeline is crossed by the existing 110 kV transmission line in the Coolkeeragh area. There is the potential for short term, temporary construction constraints during the restring in this area.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV lines are crossed by the 110 kV line that is to be updated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, indirect, construction phase disturbances to several SMR, industrial and defence heritage sites, along with short term, temporary, direct disturbance to one scheduled zone and three listed parks, gardens and demesnes, during the restring, which are all crossed by or in close proximity to the existing line.

There is unlikely to be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs. Burngibbagh and Drumahoe, and Foyle Valley are particularly at risk for impacts during the development of the 110 kV restring, as the existing line crosses the High-Medium Sensitive to development LCAs.

There is unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area in the development of the 110 kV restring.

There is unlikely to be short, medium or long term, negative landscape and visual effects on the Sperrin AONB, during the development of the 110 kV restring, as it is not within close proximity to

the existing line.

### Additional Impacts

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. In particular, there is the potential for short term, temporary, cumulative impacts to material assets and the local population in the vicinity of Londonderry / Derry City if the restring works coincide with the A6 Londonderry to Dungiven Dualling Scheme.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## F22. COOLKEERAGH - KILLYMALLAGHT 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, direct, construction phase disturbance and indirect sedimentation impacts on River Faughan and Tributaries SAC and ASSI, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, during the restring, as the existing line crosses the River multiple times.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on Lough Foyle SPA, Ramsar site and ASSI, and associated species, in particular Whooper Swan *Cygnus Cygnus*, Light bellied Brent Goose *branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica*, during the restring, as there is a potential pathway via the River Faughan and Tributaries, which the existing line crosses upstream.

There is the potential for short term, temporary, direct, construction phase disturbance and indirect sedimentation impacts on River Faughan Lower, River Faughan Lower Middle and Burngibbagh Salmonid Rivers, during the restring, as the existing line crosses these rivers.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the 110kV circuits restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### Population & Human Health

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the south of Londonderry / Derry and people in the eastern periphery of Strathfoyle, as both areas are crossed by the existing circuit. There are unlikely to be any negative impacts to the populations of Culmore and Newbuildings settlements, which are over 500m from the existing line.

There are unlikely to be any negative impacts to the populations of the Lower Tullyally and Dungiven Road peace line areas, or the Triax (Cityside) and Outer North Derry Neighbourhood Renewal Areas, as none are in close proximity to the existing line.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people residing in the Waterside Neighbourhood Renewal Area, as the existing line crosses this socially sensitive area.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the Arnabroky and Altnagelvin areas of Londonderry / Derry, which are areas of lower perceived health, as the existing circuit crosses these parts of the study area.

There is the potential for short term, temporary, indirect, construction disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission infrastructure.

### Soils, Geology & Land use

There is the potential for short term, temporary, direct, construction phase impacts to several types of land uses within the study area during the restring, which are crossed by the existing line, mainly being agricultural land, along with one water body and one transitional woodland scrub area.

There is the potential for short term, temporary, direct, construction phase impacts to one ASSI site of geological heritage during the restring, namely River Faughan and Tributaries ASSI, as it is crossed by the existing line several times.

There is the potential for short term, temporary, direct, construction phase impacts to two long-established woodlands in Derry, which are crossed by the existing line.

There is the potential for short term, temporary, construction phase, interactions with seven potentially hazardous soils and activities within the study area during the restring, being one waste treatment site, one mineral working site, three military installation areas and two tarry waste areas, which are all in close proximity to the existing line.

There are unlikely to be any interactions with topographically unsuitable areas as the existing line does not cross, and is not in close proximity to, any of the unstable ground or upland and steep slope areas identified within the study site.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring.

### Water

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to ten sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restrung has the potential for short term, temporary, direct sedimentation and pollution impacts to two river water bodies of good ecological status, one river water body of good ecological potential and two drinking water rivers, being the River Faughan and Burngibbagh. However, these risks could be avoided by maintaining good working practices during the restrung.

There is the potential for difficult working conditions during the construction of the restrung in the parts of Drumahoe, Mobuoy and Ardlough that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line. There is the potential for difficult working conditions during the construction of the restrung in the parts of Ardlough and Brookhill that have significant areas of 0.5% AEP pluvial flood risk and are crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restrung of the 110 kV line.

#### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Dale's Corner AQMA or Spencer Road AQMA due to the restrung works, as neither is in close proximity to the existing line.

There is the potential for short term, temporary, construction phase increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restrung. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restrung. However development of the restrung has the potential for medium and long term, permanent, slight reductions in in local air emissions and improvement in local air quality, as a result of increased connection to renewable energy.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restrung. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restrung. However, there is the potential for medium and long term, permanent, slight reductions in GHG emissions, as a result of increased connection to renewable energy, following the restrung.

There is the potential for difficult working conditions during the construction of the restrung in the Drumahoe, Mobuoy and Ardlough areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restrung in the Ardlough and Brookhill areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to two A roads within the study area during the restrung works.

The western end of the North-West gas pipeline is crossed by the existing 110 kV transmission line in the Coolkeeragh area. There is the potential for short term, temporary construction constraints

during the restring in this area.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV lines are crossed by the 110 kV line that is to be updated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, construction phase, indirect disturbance to several SMR, industrial and defence heritage sites, along with short term, temporary, construction phase direct disturbance to one scheduled zone and three listed parks, gardens and demesnes, during the restring, which are all crossed by or in close proximity to the existing line.

There is unlikely be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, construction phase, negative landscape and visual effects to the LCAs. Burngibbagh and Drumahoe, and Lough Foyle Alluvial Plain are particularly at risk for impacts during the development of the 110 kV restring, as the existing line crosses the High-Medium Sensitive to development LCAs.

There is unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area following the 110 kV restring.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. In particular, there is the potential for short term, temporary, cumulative impacts to material assets and the local population in the vicinity of Londonderry / Derry City if the restring works coincide with the A6 Londonderry to Dungiven Dualling Scheme.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## F23. COOLKEERAGH – LIMAVADY 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on Lough Foyle SPA, ASSI and Ramsar Site, and associated species, in particular Whooper Swan *Cygnus Cygnus*, Light bellied Brent Goose *branta bernicla hrota* and Bar-tailed Godwit *Limosa lapponica*, during the restring, due to the presence of a pathway via the River Faughan Lower River, which is crossed by the existing line.

There is the potential for short term, temporary, construction phase direct, disturbance and indirect sedimentation impacts on, River Faughan and Tributaries SAC and ASSI, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, and River Roe and Tributaries SAC and ASSI, and associated species, in particular Otters *Lutra lutra* and Atlantic Salmon *Salmo salar*, during the restring, as the existing line crosses this site.

There is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts on three SLNCs, and species within them, namely Ballykelly Glen, Ballykelly Moraine and River Roe, during the restring, as the existing line crosses these sites. There is the potential for short term, temporary, indirect, downstream sedimentation impacts on three SLNCs, namely Deer Park Wood, Castle River Woodland and Faughanvale, and associated species, during the restring, as there are potential pathways evident.

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts on six Salmonid Rivers, being Burnfoot River Tributary, Ballykelly River, Burnfoot River, Muff River, River Faughan Lower and River Roe Middle, along with three Local Wildlife sites, namely Ballykelly Moraine and Carrick Rocks, Ballykelly Glen and River Roe, and associated species, during the construction of the uprate, as the existing line crosses these sites.

There is the potential for short term, temporary, indirect, construction phase, downstream impacts on three Salmonid Rivers, being River Roe Lower Middle, River Faughan Lower Middle and Castle River, along with two Local Wildlife Sites, namely Castle River Woodland and Faughanvale, during the restring, as there are potential pathways evident.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the circuit restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust to people in the eastern periphery of Strathfoyle, which is crossed by the existing circuit. There are unlikely to be any negative impacts to populations of the other main settlements in the study area, as none are in close proximity to the existing line.

There are unlikely to be any negative impacts to the populations in the three Neighbourhood

Renewal Areas within the study area, as none are in close proximity to the existing line.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust to people in the Bolie and Lissahawley areas, which are areas of lower perceived health, as they are crossed by the existing circuit. There is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust to people in the Killywood area, which is an area of lower perceived health, as it is in close proximity to the existing circuit.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations in the development of the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people within the study area, following the restring, from improvements to existing transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct, construction phase impacts to several types of land uses within the study area during the restring, which are crossed by the existing line, mainly being agricultural land, along with two broad leaved forest areas, one water body and one sensitive area of peat bog.

There is the potential for short term, temporary, direct, construction phase impacts to one ASSI site of geological heritage during the restring, namely River Faughan and Tributaries ASSI, as it is crossed by the existing line several times.

There is the potential for short term, temporary, direct, construction phase impacts to several areas of unstable ground present in the Loughermore and east of Derry city regions, as these areas are crossed by the existing line.

There is the potential for short term, temporary interactions with ten potentially hazardous soils and activities within the study area during the restring, being one waste treatment site, one chemical work, three textile works, one mineral work, one military installation area, one manufacturing work and two tarry waste areas, which are all in close proximity to the existing line.

There is the potential for short term, temporary, direct, construction phase interactions with upland and steep slope areas, during the restring, specifically in the Loughermore region and in the vicinity of Giants Grave, as the existing line crosses these areas.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to 15 sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to four river water bodies of good ecological status, four river water bodies of less than good ecological status, and one drinking water river, being the River Faughan. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the parts of Mubuoy and Drumahoe that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line. There is the potential for difficult working conditions during the construction of the restring in the parts of Drumahoe and Drumraighland that have significant areas of 0.5% AEP pluvial flood risk and are crossed by the existing line.



There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

#### **Air**

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restring. However development of the restring has the potential for medium and long term, permanent, slight reductions in air emissions and improvement in air quality, as a result of increased connection to renewable energy.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, there is the potential for medium and long term, permanent, slight reductions in GHG emissions, as a result of increased connection to renewable energy, following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Mubuo and Drumahoe areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Drumahoe and Drumraighland areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to one A road within the study area, being the Clooney Road, during the restring.

The western end of the North-West gas pipeline is crossed by the existing 110 kV transmission line in the Coolkeeragh area. There is the potential for short term, temporary construction constraints during the restring in this area.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV transmission lines are crossed by the 110 kV transmission line that is to be uprated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

**Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, indirect disturbance to two defence heritage sites, along with short term, temporary, direct disturbance to one scheduled zone and one listed park, garden and demesne, during the restring works, which are all crossed by or in close proximity to the existing line.

There is unlikely be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

**Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs. Burngibbagh and Drumahoe, Lough Foyle Alluvial Plain, and the Roe Basin are particularly at risk for impacts during the restring works, as the existing line crosses the High-Medium Sensitive to development LCAs.

There is unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area following the restring.

There is the potential for short term, temporary, negative landscape and visual effects to Roe Valley Country Park, during the the development of the 110 kV restring, as the existing line runs straight through the country park.

There is unlikely to be any further medium or long term negative landscape and visual effects to Roe Valley Country Park following the restring.

**Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## F24. KILLYMALLAGHT – STRABANE 110 KV UPRATE (NORTH WEST OF NORTHERN IRELAND REINFORCEMENT)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on River Foyle and Tributaries SAC and ASSI and River Finn SAC, and associated species, in particular Atlantic Salmon *Salmon salar* and otter *Lutra lutra*, during the restring, as there is a potential pathway via Burn Dennet River, which is crossed by the existing line upstream.

There are unlikely to be impacts on the four remaining ASSIs in the study area, namely Strabane Glen, Corbylin Wood, McKeans's Moss and McKeans's Moss II, which are all more than 1.1km away from the existing line, and there are no impact pathways evident.

There is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts on the Burn Dennet Lower, Glenmornan River and Burngibbagh Salmonid Rivers, during the restring, which are all crossed by the existing line.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts to Glenmornan River Local Wildlife Site, during the restring, as there is a potential pathway via the Glenmornan River which is crossed by the existing line upstream.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the 110 kV circuits restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI assessed the North West of Northern Ireland Reinforcement as one group of projects and determined that the development of these projects has the potential for habitat loss impacts on 27 European Sites, water quality and habitat deterioration impacts on 24 European Sites, and disturbance and displacement impacts on 18 European Sites. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There are unlikely to be any negative impacts to the populations of the two main settlements in the study area, namely Strabane and Newbuildings, as neither are in close proximity to the existing line.

There is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the restring. There are unlikely to be any further medium or long-term negative impacts to local populations in the development of the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of people within the study area, following the restring, from improvements to existing transmission infrastructure.

#### Soils, Geology & Land use

There is the potential for short term, temporary, direct, construction phase impacts to several types of agricultural land, as well as to the northern periphery of one urban fabric area, which are crossed

by the existing line in the study area, during the restring.

There is the potential for short term, temporary, interactions with potentially hazardous soils at three railway lands within the study area during the restring, which are within close proximity to the existing line.

There are unlikely to be any interactions with topographically unsuitable areas as the existing line does not cross, and is not in close proximity to, any of the unstable ground or upland and steep slope areas identified within the study site.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring.

#### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to nine sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Development of the restring has the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to two river water bodies of good ecological status, two river water bodies of less than good ecological status, and one drinking water river, being the Burngibbagh. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the parts of Cloghcor and Craigtown that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line. There is the potential for difficult working conditions during the construction of the restring in the parts of Ballymagorry, Cloghcor and Ardmore that have significant areas of 0.5% AEP pluvial flood risk and are crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

#### **Air**

There is the potential for short term, temporary, construction phase increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term negative impacts on local air emissions and reductions in local air quality within the study area following the restring. However development of the restring has the potential for medium and long term, permanent, slight reductions in in local air emissions and improvement in local air quality, as a result of increased connection to renewable energy.

#### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development, as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring. However, there is the potential for medium and long term, permanent, slight reductions in GHG emissions, as a result of increased connection to renewable energy, following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Ballymagorry, Cloghcor and Craigtown areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Ballymagorry, Cloghcor and

Ardmore areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

#### **Material Assets & Infrastructure**

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV transmission lines are crossed by the 110 kV transmission line that is to be uprated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, indirect, construction phase disturbance to two SMR sites and four industrial heritage sites during the restring, which are all in close proximity to the existing line.

There is unlikely be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

#### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs. Burngibbagh and Drumahoe, and Foyle Valley are particularly at risk for impacts during the development of the 110 kV restring, as the existing line crosses the High-Medium Sensitive to development LCAs.

There is unlikely to be any further medium or long term, negative landscape and visual effects to the Landscape Character Areas within the study area following the 110 kV restring works.

There is unlikely to be any short, medium or long term, negative landscape and visual effects to Sperrin AONB in the development of the 110 kV restring, as the Area of Outstanding Natural Beauty is not in close proximity to the existing transmission line.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## F25. SYDENHAM ROAD MAIN (NEW STATION)

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, indirect sedimentation and disturbance impacts to Inner Belfast Lough ASSI and associated species, including the Redshank *Tringa totanus*, Oystercatcher *Haematopus ostralegus* and Mallard *Anas platyrhynchos*, during the construction of the substation, if it is built in close proximity to this protected site. There are unlikely to be any further medium or long term impacts to Inner Belfast Lough ASSI following the construction of the new substation, if it is developed within the lower sensitivity area.

Construction and operation of the substation is unlikely to create a new vector for invasive species or increase their rate of spread, given that strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration, along with disturbance and displacement impacts on Belfast Lough SPA, Belfast Lough Open Water SPA, East Coast (NI) Marine SPA and Belfast Lough Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, and negative health impacts, to the high density population, of lower perceived health, within Belfast Urban Area, during the construction of the new substation, if it is developed within the lower sensitivity area.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, and negative health impacts, to the people in Inner East Belfast Neighbourhood Renewal Area during the construction of the substation, if it is developed within the lower sensitivity area.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new substation within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply within the study area.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the development of the new substation and transmission line.

#### Soils, Geology & Land use

The low sensitivity area identified is composed entirely of artificial surfaces, so development of the new substation within the low sensitivity area would not result in the loss of any natural land use type. This is likely to be a brownfield development.

If the new substation is developed within the lower sensitivity area, there is the potential for short term, temporary, construction phase interactions with several historical sites which could have potential land contamination, including dockyards, engineering works and an electricity generation station.

#### Water

If the new substation is developed within the lower sensitivity area there is the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to Connswater

river water body, which is of poor ecological potential. However, the risk of these impacts can be minimised by maintaining good working practices in the construction of the new transmission infrastructure.

If the new substation is developed within the lower sensitivity area there are unlikely to be interactions with any significant areas of fluvial, coastal or pluvial flood risk.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial or fluvial flood risk areas within the study area, following the construction of the new substation, if it is developed within the lower sensitivity area.

#### **Air**

if the new substation is developed within the lower sensitivity area of the study area there is the potential for short term, temporary increases in local air emissions and reductions in local air quality, in non-sensitive areas, from the use of construction equipment during the development of the new transmission infrastructure. There are unlikely to be any further medium or long term increases in local air emissions or reductions in local air quality following the construction of the substation, if it is developed within the lower sensitivity area.

#### **Climatic Factors**

If the new substation is developed within the lower sensitivity area there are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation.

If the new substation is developed within the lower sensitivity area of the study area there is the potential for short term, temporary increases in local GHG emissions, from the use of construction equipment during the development of the new transmission infrastructure. There are unlikely to be any further medium or long term increases in GHG emissions following the construction of the new substation, if it is developed within the lower sensitivity area.

If the new substation is developed within the lower sensitivity area there are unlikely to be any interactions with significant areas of climate change fluvial, coastal or pluvial flood risk.

#### **Material Assets & Infrastructure**

If the new substation is developed within the lower sensitivity area there are unlikely to be any short, medium or long term impacts to material assets or infrastructure within the study area.

There is the potential for the moderate scale local development of new electricity grid infrastructure within the study area, providing an increased supply of secure and reliable electricity, with minimal disruption to other assets and infrastructure in the medium and long term.

#### **Cultural, Architectural & Archaeological Heritage**

Within the lower sensitivity area of the study area there are five listed buildings, which are all in the Ballymacarrett area, and five industrial heritage sites in the Queen's Island area. Construction of the new substation within close proximity to these sites should be avoided to minimise the potential for impacts on, or the setting of, these heritage features. If there is a sufficient buffer between these heritage sites and the new transmission infrastructure, there is unlikely to be any significant short, medium or long term impacts on, or the setting of, any known heritage features within the study area, in the development and operation of the new substation and transmission line.

#### **Landscape & Visual Amenity**

There is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects to the Belfast/Lisburn Landscape Character Area, designated as High-Medium Sensitive to development, in the development of the new substation, if it developed within the lower sensitivity area.



**Additional Impacts**

There is the potential for the significance of the short, medium and long term, temporary and permanent, negative landscape and visual effects in the study area, resulting from the development of the new substation, to be reduced due to current land uses and surrounding features. This could be the case due to the presence of existing transmission infrastructure and other developments within the study area, meaning that the new transmission line would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the development of the new substation there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new substation take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new substation.

**F26. BALLYLUMFORD – CASTLEREAGH 110 KV CIRCUIT RESTRING****Discussion of Potential Impacts****Biodiversity, Flora & Fauna**

There is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts on Larne Lough SPA, ASSI, Ramsar site and shellfish water protected area, and associated species, including; Roseate Tern *Sterna dougalli*, Common Tern *Sterna hirundo*, Light-bellied Brent Goose *Branta bernicla hrota* and Sandwich Tern *Thalasseus sandvicensis*, during the restring, as the existing line crosses this site several times.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts on Belfast Lough SPA, Ramsar site, and shellfish water protected area, and associated species, including; Common Tern *Sterna hirundo*, Arctic Tern *Sterna paradisaea* and Bar-tailed Godwit *Limosa lapponica*, and Belfast Lough Open Water SPA, and associated species, including Great Crested Grebe *Podiceps cristatus*, during the restring, as there are pathways evident via several rivers that are crossed by the existing line upstream.

There is the potential for short term, temporary, indirect, construction phase, downstream sedimentation impacts North Woodburn Glen ASSI, Belvoir ASSI, Glynn Woods ASSI, Outer Belfast Lough ASSI and associated species, including Redshank *Tringa tetanus* and Black-tailed Godwit *Limosa limosa*, and Copeland Reservoir ASSI and associated species, including Dwarf Bladder-moss *Physcomitrium sphaericum* and Beaked Beardless-moss *Weissia rostellata*, during the restring, due to the presence of potential pathways.

There is the potential for short term, temporary, construction phase, direct disturbance and indirect sedimentation impacts on 19 SLNCs, four Salmonid Rivers and 16 Local Wildlife Sites, and species within them, during restring, as the existing circuit crosses these sites. There is the potential for short term, temporary, indirect, downstream sedimentation impacts on Ballymartin Water Lower Salmonid River and 12 SLNCs within the study area, during the restring, due to the presence of potential pathways.

There is the potential for short term, temporary, indirect, construction phase, sedimentation impacts on Swan Island Nature Reserve and Larne Lough Islands RSPB Reserve, during the restring, as there is a potential pathway via the Larne Lough which is crossed by the existing line.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the 110 kV circuits restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this restring has the potential for habitat loss impacts on Marne Lough SPA. There is also the potential for water quality and habitat deterioration impacts on Strangford Lough SAC, SPA and Ramsar Site, North Channel SAC, Belfast Lough SPA and Ramsar Site, Belfast Lough Open Water SPA, East Coast (NI) Marine SPA, and Larne Lough SPA and Ramsar Site, along with disturbance and displacement impacts on Larne Lough SPA. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites

### **Population & Human Health**

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to the populations of four main settlements in the study area, namely Belfast Urban Area, Newtownabbey Urban Area, Castlereagh Urban Area and Carrickfergus, as the existing circuit crosses these settlements.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts to people in the northern periphery of Lisburn and Greenisland, which are in close proximity to the existing circuit. There are unlikely to be any negative impacts to Whitehead or Larne, which are not in close proximity to the existing circuit.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people residing in the Upper West Belfast Peace Line area, as the existing line crosses this area. There are unlikely to be any negative impacts to populations of the other five peace lines areas within the study area, which are all at least 1km from the existing circuit.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the Upper Springfield (Whiterock) and Andersontown Neighbourhood Renewal Areas, as these socially sensitive areas are crossed by the existing line. There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the Ligoniel and Greater Shankill Neighbourhood Renewal Areas, as these socially sensitive areas are in close proximity to the existing circuit.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people residing in the poor perceived health areas within Belfast Urban Area, Castlereagh, Newtownabbey Urban Area and Carrickfergus, as the existing line crosses these areas.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations following the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct, construction phase impacts to several types of land uses within the study area, during the restring, which are crossed by the existing line, mainly being agricultural land and artificial surfaces, along with one intertidal flat area and several

forest and semi-natural areas.

There is the potential for short term, temporary, indirect impacts to one area of orchard during the restring, namely in the Ballyharry area, which is in close proximity to the existing line.

There is the potential for short term, temporary, interactions with two landslide deposit areas in the Knockagh and Loughview areas, and one unstable ground area in the Carnbrock area, during the restring, which are either crossed by or are within close proximity to the existing line.

There is the potential for short term, temporary, direct impacts to several ancient and long established woodlands and forest service sites in the southern Belfast area during the restring, along with indirect impacts to a long-established woodland in the Carnbrock area, as these sites are crossed by, or are within close proximity to the existing line.

There is the potential for short term, temporary interactions with seven potentially hazardous soils and activities within the study area during the restring, being one mineral working, one textile work, one engineering work, one road vehicle refuelling site and three manufacturing works, which are all in close proximity to the existing line.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to 14 sections of river within the study area, which are crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to one river water body of good ecological status, seven river water bodies of less than good ecological status, one coastal water body of good ecological status, namely Larne Lough Middle, one coastal water body of moderate ecological status, being Larne Lough South and three drinking water rivers, namely the Woodburn River, River Lagan and Copeland Water. However, the potential for these risks can be minimised by maintaining good working practices during the restring works.

There is the potential for difficult working conditions during the construction of the restring in the parts of Ballynahatty and Newtownabbey that have significant areas of 1% AEP fluvial flood risk and are crossed by the existing line. There is the potential for difficult working conditions during the construction of the restring in the parts of Newtownabbey, Craglee, Kilcoan and Ballytober that have significant areas of 0.5% AEP pluvial flood risk and are crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Ormeau Road AQMA and the Upper Newtownards Road AQMA due to the restring works, as these AQMAs are not in close proximity to the existing line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality in the M1 motorway and Westlink Corridor AQMA, during the restring, as the existing line crosses through this sensitive area. There are unlikely to be any further medium or long term impacts on air quality in the M1 motorway and Westlink Corridor following the restring.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the restring.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Ballynahatty and Newtownabbey areas, where there are significant areas of 1% AEP climate change fluvial flood risk within the vicinity of the existing line. There is the potential for difficult working conditions during the construction of the restring in the Newtownabbey, Craglee, Kilcoan and Ballytober areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to 11 sections of A road within the study area, and two sections of the M1 and M2 motorways, during the restring.

There are six areas where the existing 110kV line crosses the Phoenix Natural Gas pipeline. There is the potential for short term, temporary construction constraints during the restring in these areas.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV transmission lines are crossed by the 110 kV transmission line that is to be uprated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, direct and indirect disturbance to several SMR sites, three scheduled zones, four listed buildings, five industrial heritage sites, four defence heritage sites and five listed parks, gardens and demesnes, during the restring, which are all crossed by or in close proximity to the existing line.

There is unlikely be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs. Belfast Basalt Escarpment, Carrickfergus Farmed Escarpment, Castlereagh Slopes, Divis

Summits, Hummocky Lagan Lowlands, Islandmagee, and Lagan Parkland are particularly at risk for impacts during the development of the 110 kV restring, as the existing line crosses the Highly Sensitive to development LCAs.

There is unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area following the 110 kV restring.

There is the potential for short term, temporary, negative landscape and visual effects to Lagan Valley Area of Outstanding Natural Beauty during the the development of the 110 kV restring, as the existing line runs straight through the AONB.

There is unlikely to be any further medium or long term negative landscape and visual effects to Lagan Valley AONB following the 110 kV restring.

There is unlikely to be any short, medium or long term negative landscape and visual effects to the National Trust Lands within the study area, of Divis and Black Mountain, and Islandmagee, in the development of the 110 kV restring as neither property is in close proximity to the existing line.

#### **Additional Impacts**

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.

## **F27. DRUMNAKELLY AND ARMAGH DEVELOPMENT PLAN**

### **Discussion of Potential Impacts**

#### **Biodiversity, Flora & Fauna**

If a new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase, direct disturbance and sedimentation impacts on Marlacoo Lake SLNCI, if a new line is built across or within close proximity to this site. If a new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbance and sedimentation impacts on eight Local Wildlife Sites within the study area, if the new transmission infrastructure is developed over or in close proximity to these sites. However, these the potential for these risks can be minimised if there is a sufficient buffer zone between any new transmission infrastructure and these sites.

If a new substation is developed within 1% of the best environmental line there is the potential for short, medium and long term, permanent loss of non-designated, semi-natural habitats.

Construction and operation of a new transmission line has the potential to create a new vector for invasive species or increase their rate of spread; however this can be avoided provided that strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this project has the potential for water quality and habitat deterioration impacts on Lough Neagh and Lough Beg SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

### **Population & Human Health**

If a new substation is developed adjacent to Drumnakelly Main there is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the southern periphery of Craigavon. If a new substation is developed in Armagh there is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the southern periphery of Armagh. If a new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to the people in three main settlements within the study area, namely Richhill, Armagh and Craigavon, if the new line crosses these areas.

There is the potential for short term, temporary, indirect, construction phase disturbance impacts, such as noise and dust, to people that are within close proximity to the new substation or transmission line.

If a new transmission line is developed within 1 % of the best environmental line there is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to people in the Laurelvale and Edenvale areas, which are areas of lower perceived health. Construction of the new line across these areas should be avoided to minimise the potential of these impacts.

There is the potential for short, medium and long term, temporary and permanent, increased employment opportunities as a result of construction and maintenance activities relating to the new transmission infrastructure within the study area. There is the potential for medium and long term, permanent, indirect provision of more employment opportunities through impacts upon the supply chain, as a result of increased electricity supply.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the development of the new substation and transmission line.

### **Soils, Geology & Land use**

If a new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, such as soil compaction and loss of crops, mainly to agricultural land within the study area, along with small areas of urban fabric in the periphery of Armagh City and Richhill.

If a new substation is developed adjacent to Drumnakelly Main or in Armagh area there is the potential for short, medium and long term, permanent loss of pasture lands.

There are several areas of orchards within 1% of the best environmental line, mainly in the vicinity of Laurelvale, Milltown, Derryhale and Ballygroobany, along with eight long established woodland areas. Construction of the new transmission line over these sites has the potential for short and medium term degradation impacts and should be avoided.

There are three PPC sites and 69 potentially historically contaminated sites in the area that is within 1% of the best environmental line. Works crossing these sites in the short term could lead to temporary or permanent impacts on nearby soils and land use, as there is the potential to track contaminated materials further though the study area, therefore this should be avoided if possible.

There are several areas with difficult ground conditions within 1% of the best environmental line, including several areas of unstable ground, mainly in the vicinity of the Milltown and Hamiltonsbawn area, and one area of upland and steep slope topography, being in the Derryraine area. These areas should be avoided as the topographical conditions outlined could lead to access

difficulties during construction works.

### **Water**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase impacts, including sedimentation, pollution and damage to river banks, to 26 sections of river within the study area, if they are crossed by the new line.

If a new substation is developed adjacent to Drumnakelly Main there is the potential for short term, temporary, indirect, construction phase, sedimentation impacts to a section of the Annagh River, which is in close proximity to the existing Drumnakelly Main substation. However, the risk of sedimentation impacts can be minimised if there is a sufficient buffer between the Annagh River and the new substation.

If a new substation is developed in Armagh or Drumnakelly, and a new transmission line is developed within 1% of the best environmental line, there is the potential for short term, temporary, direct, construction phase sedimentation and pollution impacts to seven river water bodies which are of less than good ecological status. However, these risks could be avoided by maintaining good working practices during the construction of the substation and new transmission line.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Derryhale, Laurelvale and Cornasreeb areas, where there are significant areas of 1% AEP fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the vicinity of the Cornasreeb, Drumsavage and Derryhale areas, where there are significant areas of 0.5% pluvial flood risk. These flood risk areas could become inundated and lead to difficult working conditions during development of the new transmission line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the construction of the new substation and transmission line, if they are developed within 1% of the best environmental line.

### **Air**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary construction phase increases in local air emissions and reductions in local air quality within the Armagh City, Banbridge and Craigavon Borough Council AQMA, if the new line crosses through this sensitive air quality area.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas, which are crossed by or in close proximity to the new line, from the use of construction equipment during the development of the new transmission line. There is unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the development of the new transmission line.

### **Climatic Factors**

If the new substation and transmission line are developed within 1% of the best environmental line there are unlikely to be any short, medium or long term impacts on significant areas of GHG sequestering vegetation.

There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Derryhale, Laurelvale and Cornasreeb areas, where there are significant areas of 1% AEP climate change fluvial flood risk. There is the potential for difficult working conditions during the construction of the new line, if it is developed within 1% of the best environmental line, in the Cornasreeb, Drumsavage and Derryhale areas, where there are significant areas of 0.5% AEP climate change pluvial flood risk. However, climate change flood risk within the study area is not significantly different from the current day



scenario risk which is already scored under the Water section. Furthermore, ensuring that the 110 kV line in these flood risk areas is resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

If the new line is developed within 1% of the best environmental line there is the potential for short term, temporary, construction phase increases in local GHG emissions, in areas which are crossed the new line, from the use of construction equipment. There are unlikely to be any further medium or long term increases in local GHG emissions within the study area following the construction of the new line.

### **Material Assets & Infrastructure**

If the new transmission line is developed within 1% of the best environmental line there is the potential for short term, temporary, direct, construction phase disturbances, such as power supply disruptions and increased construction related traffic to three A Roads within the study area.

There are several existing 33 kV, 110 kV and 275 kV transmission lines that cross the area within 1% of the best environmental line. Development of the new transmission line within close proximity to these existing infrastructures should be avoided to minimise the potential for short term, temporary development constraints relating to the construction of the new line.

There are unlikely to be any further medium or long term impacts to existing infrastructure within the study area, following the construction of the new line, if it is developed within 1% of the best environmental line.

If the new substation and transmission line are developed within 1% of the best environmental line there is the potential for short term, temporary, direct disturbance impacts, such as loss of crops, to several types of agricultural land within the study area which are crossed by the 1% impact corridor.

There is the potential for moderate scale development of new electricity infrastructure within the study area, providing an increased supply of secure and reliable electricity, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

Within 1% of the best environmental line there are several known heritage sites, being 45 SMR sites, four scheduled zones, 17 listed buildings, 34 industrial heritage sites and the southern periphery of one area with a listed park, garden and demesne, namely The Palace in Armagh. Development of the new transmission line over or in close proximity to these sites has the potential for planning constraints as well as short, medium and long term impacts on, or the setting of, these heritage features and should be avoided.

### **Landscape & Visual Amenity**

If the new substation is developed adjacent to Drumnakelly Main and the 33 kV reinforcements are developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects to the Armagh Drumlins and Loughgall Orchard Belt, designated as High-Medium Sensitive to development, in the construction of the new substation and development of a new transmission line.

If the new substation is developed at Armagh and the new 110 kV circuits are developed within 1% of the best environmental line there is the potential for short, medium and long term, temporary and permanent, negative landscape and visual effects to the Armagh Drumlins and Loughgall Orchard Belt, designated as High-Medium Sensitive to development, in the construction of the new substation and development of a new transmission line.

### **Additional Impacts**

If a new substation is developed in Drumnakelly and a new 33kV transmission line is developed within 1% of the best environmental line there is the potential for the significance of short, medium

and long term, temporary and permanent, negative landscape and visual effects, resulting from the developments to be reduced due to current land uses and surrounding features. This could be the case due to the presence of existing 33 kV transmission lines and other developments within these parts of the study area, meaning that the new transmission line would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the development of the transmission line there is the potential for improved reliability and capability of the electricity supply, into the future. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on the population into the future, such as improved job security and more reliable functioning of services such as transport networks and energy supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the new transmission line take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the development of the new transmission line.

## F28. CASTLEREAGH – KNOCK 110 KV CABLES UPRATE

### Discussion of Potential Impacts

#### Biodiversity, Flora & Fauna

There is the potential for short term, temporary, direct disturbance and indirect sedimentation impacts on Hillfoot Scrub SLNCl and Local Wildlife Site, and associated species, during the restring, as the existing line crosses these sites. There is the potential for short term, temporary, indirect, downstream sedimentation impacts on Stormont SLNCl and Local Wildlife Site, during the restring, due to the presence of a potential pathway.

There are unlikely to be any further medium or long term negative impacts to International, National or locally protected areas and species within the study area following the 110 kV restring.

Construction of this 110 kV circuit restring has the slight potential to increase the rate of spread of invasive species, however this can be avoided if strict management protocols, including cleaning of equipment and machinery, are adhered to in construction.

The HRA of the TDPNI has determined that the development of this restring has the potential for water quality and habitat deterioration impacts on Belfast Lough SPA and Ramsar Site, Belfast Lough Open Water SPA, East Coast (NI) Marine SPA, and Strangford Lough SAC, SPA and Ramsar Site. The possibility of likely significant effects cannot be discounted for these European sites without further evaluation and analysis, or the application of measures intended to avoid or reduce the harmful effects of the potential projects on European sites.

#### Population & Human Health

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts, such as noise and dust, to populations within the Belfast Urban Area and Castlereagh Urban Area, which are both crossed by the existing circuit.

There are unlikely to be any negative impacts to the populations of the two Neighbourhood Renewal areas with the study area, as these socially sensitive areas are not within close proximity to the existing line.

There is the potential for short term, temporary, indirect, construction phase, disturbance impacts,

such as noise and dust, to people in the Knock area within Belfast Urban Area, and in the Carnamuck area within Castlereagh Urban Area, which are areas of perceived lower health, as both are within close proximity to the existing circuit.

There is the potential for short term, temporary, indirect disturbance impacts, such as noise and dust, to the local population that are within close proximity to the existing line, during the construction phase of the restring. There are unlikely to be any further medium or long-term negative impacts to local populations in the development of the 110 kV restring.

There is the potential for medium and long term provision of secure and reliable electricity, to meet future needs of the population, following the restring, from improvements to existing transmission infrastructure.

### **Soils, Geology & Land use**

There is the potential for short term, temporary, direct impacts to three land uses within the study area during the restring, being discontinuous urban fabric, urban green space and pastures, as they are crossed by the existing line

There are unlikely to be any interactions with topographically unsuitable areas as the existing line does not cross, and is not in close proximity to, any of the unstable ground or upland and steep slope areas identified within the study site.

There is the potential for short term, temporary interactions with four potentially hazardous soils and activities within the study area during the restring, being one mineral work, one road depot, one railway land and one road vehicle refuelling site, which are all in close proximity to the existing line.

There are unlikely to be any further medium or long term impacts to soils, geology or land uses in the study area, following the restring.

### **Water**

There is the potential for short term, temporary, direct impacts, including sedimentation, pollution and damage to river banks, to one section of river in the Knock area of the study area, which is crossed by the existing line, during the construction phase of the restring.

Construction of the restring has the potential for short term, temporary, direct sedimentation and pollution impacts to Connswater river water body, which is of poor ecological potential. However, these risks could be avoided by maintaining good working practices during the restring.

There is the potential for difficult working conditions during the construction of the restring in the Branziel region of Castlereagh that has a significant area of 0.5% AEP pluvial flood risk and is crossed by the existing line.

There are unlikely to be any further medium or long term impacts to water status and resource, or any interactions with coastal, pluvial, or fluvial flood risk areas within the study area, following the restring of the 110 kV line.

### **Air**

There is unlikely to be any increase in emissions or reduction in air quality in the Ormeau Road AQMA or the Normandy Court AQMA due to the restring works, as these AQMAs are not in close proximity to the existing line.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality in the Upper Newtownards Road AQMA, during the restring, as the existing line crosses through this sensitive area. There are unlikely to be any further medium or long term impacts on air quality in the Upper Newtownards Road AQMA following the restring.

There is the potential for short term, temporary increases in local air emissions and reduction in local air quality, in non-sensitive areas which are crossed by or in close proximity to the existing

line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term impacts on local air emissions and reductions in local air quality within the study area following the restring.

### **Climatic Factors**

There are unlikely to be any significant short, medium or long term impacts on GHG sequestering vegetation from this development as uprates are unintrusive and generally only involve agricultural type equipment moving across land.

There is the potential for short term, temporary increases in local GHG emissions, in areas which are crossed by or in close proximity to the existing line, from the use of construction equipment during the restring. There is unlikely to be any further medium or long term increases in local GHG emissions within the study area following the restring.

There is the potential for difficult working conditions during the construction of the restring in the Braniel region of Castlereagh, where there is a significant area of 0.5% AEP climate change pluvial flood risk within the vicinity of the existing line. However, climate change flood risk within the study area is not significantly different from the current day scenario risk which is already scored under the Water section. Furthermore, ensuring that the 275 kV line infrastructures in these flood risk areas are resilient to flooding will minimise the impacts of potential future flood events on transmission infrastructure within the study area.

### **Material Assets & Infrastructure**

There is the potential for short term, temporary, direct, construction phase disturbance impacts, such as power supply disruptions and increased construction related traffic to four sections of A road within the study area during the restring.

There is the potential short term, temporary difficulties during construction in the areas in which 33 kV lines are crossed by the 110 kV line that is to uprated.

There is the potential for short term, temporary, direct, disturbance to areas of agricultural land that are crossed by the existing 110 kV line, during the restring.

There is unlikely to be any further medium or long term impacts to material assets or infrastructure within the study area, following the restring.

There is the potential for the development of reinforced electricity infrastructure within the study area, following the restring of the existing circuit, with minimal disruption to other assets and infrastructure in the medium and long term.

### **Cultural, Architectural & Archaeological Heritage**

There is the potential for short term, temporary, direct disturbance to one SMR sites, namely Con O'Neill's Castle, and short term, temporary, indirect disturbance to three listed buildings, four industrial heritage sites and one defence heritage site, during the restring, which are all crossed by or in close proximity to the existing line.

There is unlikely to be any medium or long term impacts on, or the setting of, any known heritage features within the study area, following the restring.

### **Landscape & Visual Amenity**

There is the potential for short term, temporary, negative landscape and visual effects to the LCAs. Craigantlet Escarpment LCA is particularly at risk for impacts during the development of the transmission uprate, as the existing line crosses the Highly Sensitive to development LCA.

There is unlikely to be any further medium or long term negative landscape and visual effects to the Landscape Character Areas within the study area in the development of the uprate.

**Additional Impacts**

There is the potential for the significance of short term, temporary, negative landscape and visual effects in the study area, resulting from construction works during the restring, to be reduced due to current land uses and surrounding features. This could be the case due to the presence of existing transmission infrastructure and other developments within the study area, meaning that construction works during the restring would have less of a contrast to the current surroundings and thus would be less visually intrusive.

Following the restring there is the potential for improved reliability and capability of the electricity supply, into the future, within the study area. This reinforcement of electricity infrastructure will have secondary, positive impacts on other assets, which in turn has the potential to have positive impacts on people into the future within the study area, such as improved job security and more reliable functioning of services such as transport networks and gas supply.

A range of cumulative impacts have the potential to arise locally when construction activities associated with the restring take place at the same time as other developments in a specific location. However at this stage it is not known what other developments may take place at the same time.

There are unlikely to be any other additional secondary, cumulative, synergistic, permanent and temporary, positive or negative effects during or following the restring.