
Environmental Appraisal Report

Transmission Development Plan

Northern Ireland

2025-2034



Contents

1.0 Introduction	4
2.0 Framework for Grid Development	6
3.0 Policies and Objectives	9
3.1 Environmental Policies and Objectives	9
3.2 Strategic Environmental Objectives	12
4.0 Update on Projects in TDPNI 2025-2034	14
5.0 Evaluation of New and Amended Projects	18
5.1 New SONI Network Development Projects	18
5.1.1 Lisburn Upgrade	18
5.1.2 Drumnakelly – Tandragee Uprate	18
5.1.3 Cam Substation Extension	18
5.1.4 Kilroot Transmission Substation	18
5.1.5 Fermanagh Upgrade	19
5.1.6 Fermanagh and West Tyrone Transmission Cluster	19
5.1.7 Belfast Power Flow Control	19
5.1.8 Tamnamore Land Purchase	19
5.2 Amended SONI Network Development Projects	19
5.2.1 Connect West	19
5.2.2 Energising Belfast	20
5.2.3 Newry Reinforcement	20
5.2.4 North Sperrin Transmission Cluster	20
5.3 New or Amended NIE Networks Asset Replacement Projects	21
5.3.1 Castlereagh - Rosebank	21
5.3.2 Strabane – Omagh Fibre Replacement	21
5.3.3 Ballylumford – Hannahstown 275kV Refurbishment	21
5.3.4 Hannahstown – Castlereagh 275kV Refurbishment	21
5.3.5 RP7 110kV Overhead Line and Cable	21
5.3.6 RP7 275kV Overhead Line and Cable	21
5.4 Evaluation of New and Amended Projects against SEOs	22
5.4.1 Upgrading and Refurbishment of Transmission Lines	22
5.4.2 New Build Transmission Lines and Substations	23
5.5 Mitigation	24
6.0 Conclusion	27
Appendix A: Detailed Evaluation of Projects	28
Appendix B: SEA Mitigation Measures	42
Appendix C: HRA Mitigation Measures	48



Figures

Figure 2-1 SONI's Grid Development Process 6

Figure 4-1 Illustration of the Northern Ireland planning areas..... 15

Tables

Table 3-1 Environmental Policies and Objectives as set out in the TDPNI 2023-2032 9

Table 3-2 Strategic Environmental Objectives as set out in the SEA of the TDPNI 2023-2032 13

Table 4-1 New Network Development Projects in the TDPNI 2025-2034 15

Table 4-2 Amended Network Development Projects in the TDPNI 2025-2034 16

Table 4-3 New and Amended NIE Networks Asset Replacement Projects in the TDPNI 2025-2034..... 17

Table 5-1 Summary Evaluation of the New and Amended Projects in the TDPNI 2025-2034 24

1.0 Introduction

SONI, as Transmission System Operator (TSO), plays an important role in the economy of Northern Ireland. Through the provision of a secure electricity supply, SONI is responsible for ensuring that the lights stay on for homes and businesses across the region. Access to a reliable supply of electricity is not just important for existing consumers, it is also crucial to attracting investment – and progress towards targets set out in the Department for the Economy's Energy Strategy for Northern Ireland and the Climate Change Act (Northern Ireland) requires further development of the electricity transmission system. Thus, in order to ensure continued secure, reliable, economic and sustainable electricity supply, SONI must continue to plan investment in the Northern Ireland transmission network.

The Transmission Development Plan for Northern Ireland (TDPNI) 2025-2034 is the plan for the development of the Northern Ireland transmission network and interconnection over the ten years from 2025. This ten-year plan presents projects that are expected to be needed for the operation of the transmission network. In addition, future needs that may drive future potential projects are also discussed. The TDPNI is an annual rolling plan, updated each year to reflect the continuously changing nature of electricity requirements.

The TDPNI 2023-2032 was subject to Strategic Environmental Assessment (SEA) in accordance with the Environmental Assessment of Plans and Programmes Regulations (Northern Ireland) 2004 (S.R. 280/2004), which implements the EU SEA Directive (Directive 2001/42/EC), and to Appropriate Assessment in accordance with the Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, which implements the EU Habitats Directive (Directive 92/43/EEC).

This Environmental Appraisal Report (EAR) has been prepared to ensure that the TDPNI 2025-2034 is in accordance with the provisions of the adopted TDPNI 2023-2032 and associated SEA. The implementation plan details the policies and objectives that drive a sustainable approach to grid development and together with Strategic Environmental Objectives, and mitigation measures developed through SEA, ensure significant environmental impacts are avoided, wherever possible.

A commitment of the SEA process is to conduct an environmental appraisal of each TDPNI. Each TDPNI subsequent to the 2023 Plan will contain an Environmental Appraisal to monitor the impacts of the TDPNI, in line with the adopted environmental monitoring from the SEA. The appraisal identifies any updates to the programme of projects as set out in the TDPNI 2023-2032 and examines these projects against the Strategic Environmental Objectives adopted in the TDPNI 2023-2032. The TDPNI does not set out a framework for project consent. It sets out the network

investment needs and the projects that have been identified as required to meet the needs of the Northern Irish transmission system with the approval of the Utilities Regulator (UR). Individual projects will be subject to further environmental assessment, including screening for Appropriate Assessment (AA) under the relevant planning requirements.

As the timeframes for all the potential developments in the TDPNI are currently not defined, the EAR will assess these options for potential impacts in the short term (construction phase), the medium term (re-establishment), 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.

This report has been prepared in accordance with Article 22 of European Directive 72/2009 and Condition 40 of the SONI TSO Licence.

2.0 Framework for Grid Development

A key focus in the development of transmission system development projects is on matters of proper planning and sustainable development. This requires a careful balancing of the technical need for a project and the solutions that best resolve a given issue with appropriate and adequate opportunities for public participation in the project development process. It must also include significant emphasis and focus on the environmental impact of the project, primarily in respect of the EU Habitats Directive, but also in terms of social impact.

SONI has been proactive in developing a clear, structured processes for the planning and development of electricity transmission infrastructure. This includes the technical development of projects in conjunction with matters of planning and the environment, public affairs, administrative, financial and corporate governance.

The SONI-NIE Networks Joint Programme Management Office has oversight of project development. Its expert staff are experienced in the areas of ecology, public planning, wayleaving and landowner engagement. These experts are assigned to all SONI projects, to advise project managers and their project teams and assist with ensuring a consistent approach to the sustainable planning and development of all projects.

The planning of grid development projects by SONI is done under a three-part process, illustrated in Figure 2-1. Asset replacement projects are progressed separately by NIE Networks. The process includes stakeholder and public participation in the development of projects.



Figure 2-1 SONI's Grid Development Process

Part 1: Planning: Identifying the optimum solution and what area may be affected

When a potential breach of the standards is identified, SONI will study the potential breach in detail including an assessment of any related issues. Consistent with good practice and as set out in the Transmission System Security and Planning Standards (TSSPS¹), SONI may seek to identify means of managing a potential breach operationally, and put into place any changes to operational practice as may be required. However, in cases where such operational mitigation strategies would lead to unacceptable cost or risk for customers, SONI will prepare plans to develop the transmission system.

When SONI identifies the need to bring forward a transmission project, we must consider how it is best delivered. This means assessing a number of solutions and narrowing these down based on their technical viability, deliverability, cost, potential impact on the environment and on those living and working in the general area where the project may be located.

The steps in planning are to first identify a long list of options across a range of different approaches and technologies. Existing equipment may be up-rated or the transmission system may be augmented with new substations and new overhead line and underground cables. The use of flexible AC transmission systems (FACTS) and High Voltage Direct Current (HVDC) will also be considered where appropriate and depending on the need identified. The long list of options will be subject multi-criteria analysis including at a high level, environmental and cost-benefit assessments to identify a shorter list of potential options.

SONI will then consider the short list in greater detail. Studies undertaken may include sensitivity analysis to assess the performance of the options against different generation and demand assumptions. Where expedient external consultants will be engaged to assist. The process culminates with a recommendation for a preferred solution and tiering to establish the level of stakeholder engagement and consultation required. At this stage SONI will engage with the Utility Regulator with regard to cost recovery.

Depending on the nature of the project, SONI will seek to engage with key stakeholders before progressing the recommendation further. SONI will consider the stakeholder engagement findings and review plans accordingly before progressing further. SONI will also publicise the results of the stakeholder engagement process and its decision.

¹ Transmission System Security and Planning Standards can be found at <https://cms.soni.ltd.uk/sites/default/files/publications/Transmission-System-Security-and-Planning-Standards-June-2023.pdf>

In parallel with the stakeholder engagement phase and recognizing that the Utility Regulator is also a key stakeholder, SONI will seek approval from the Utility Regulator to recover costs via its regulated income, and will then progress the project to the outline design stage. This stage will identify any study areas for identification of new substations or corridors for overhead line and/or cable routes.

Part 2: Outline Design: Identifying where the project will be built

SONI manages the pre-construction outline design of transmission projects once the need has been identified (part 1). This also includes consultation with the Transmission Owner (TO), NIE Networks. The projects can involve the development of new or extended substations and new or up-rated overhead lines or cable circuits to be operated at 110 kV and above.

SONI is responsible for preparing documentation required to apply for planning consent for the development of the projects - this entails developing the design to the level required for obtaining planning consent including any necessary environmental reports or assessments, and consultations with stakeholders and landowners to obtain the right to gain access and install transmission equipment on their lands.

Part 3: Consents: Planning application to project handover to NIE Networks

SONI submits planning applications with the relevant planning authority. SONI is also responsible for submitting any other consent applications that may be required, e.g. Marine License with the relevant consenting authority. The planning authority will make a legally binding decision on the project. It may grant full planning permission, grant permission on the basis that we make changes, or refuse permission. SONI is also responsible for the acquisition of any wayleaves, easements, access rights, land options, leases and any other legal rights required for the installation of the new infrastructure.

Following receipt of planning and landowner consents the project is handed over to NIE Networks for detailed design. This includes a review by NIE Networks of the SONI functional specification (outline design and consents) and preparation of a design specification. Separate pre-construction work for NIE Networks will include tendering and procurement. Following receipt and review of the design specification from NIE Networks, SONI issues a Transmission Project Instruction and enters into a Project Agreement with NIE Networks. NIE Networks then delivers the project.

3.0 Policies and Objectives

SONI has a legal responsibility to comply with planning law, including all relevant environmental legislation. In practice, this means that environmental issues inform the decision-making process when it comes to developing the grid in Northern Ireland. Each TDPNI is subject to SEA as outlined in Section 1.0.

The planning and environmental considerations are embedded into the Framework for Grid Development and every grid development project that SONI undertakes in order to ensure that environmental issues are at the forefront of decision-making. Early involvement in projects allows potential environmental issues to be identified and avoided or managed in the course of project development.

3.1 Environmental Policies and Objectives

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 are detailed in Table 3-1. Each of these environmental policies and objectives was assessed against Strategic Environmental Objectives in the SEA for the TDPNI 2023-2032.

Table 3-1 Environmental Policies and Objectives as set out in the TDPNI 2023-2032

Topic	Policy			Objective
General	ENVP1	To promote best environmental practice in the design and appraisal of transmission development projects.		
Biodiversity	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.	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.
	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 and National Nature Reserves.		
	ENVP4	To protect NI priority species and habitats and other species protected under legislation in the development of any transmission infrastructure and to preserve key ecological linkage features.	ENVO2*	To regularly monitor, document, and report specific actions taken for biodiversity restoration and enhancement under ENVP5.

Topic	Policy			Objective
	ENVP5	To go beyond nature protection and seek funding, or other mechanisms to deliver site-specific, measurable and lasting biodiversity restoration and enhancement on suitable projects to fulfil the 'Biodiversity Duty' attaching by law to public authorities in Northern Ireland.		
Climate Change	ENVP6	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	ENVP7	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.
Landscape	ENVP8	To have regard to the Northern Ireland Landscape Character Assessment 2000, and the Northern Ireland Seascape Character Assessment in the design and appraisal of its transmission development projects.	ENVO4	To protect landscapes through the sustainable planning and design of transmission infrastructure and to have regard to important landscape designations including AONBs and the World Heritage Site.
Cultural	ENVP9	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.		
	ENVP10	To protect archaeological material when planning transmission infrastructure, by avoidance or by best practice mitigation measures.		
Water	ENVP11	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.	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.
	ENVP12	To promote the use of sustainable urban drainage systems in any new developments where it is appropriate.		
	ENVP13	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.		
Air Quality	ENVP14	To preserve and maintain air quality in accordance with good practice and relevant legislation in the proposed construction of its transmission projects.		
	ENVP15	To ensure appropriate dust suppression during construction works.		

Topic	Policy			Objective
Tourism	ENVP16	To consider the potential impact upon tourism in the planning of transmission projects.	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.

3.2 Strategic Environmental Objectives

The SEA of the TDPNI 2023-2032 set out nine Strategic Environmental Objectives (SEOs), shown in Table 3-2. SEOs are methodological measures against which the potential environmental effects of the TDPNI can be examined. These were developed in the context of broader environmental protection objectives set at both international and national level and also took into account the context of potential for effects associated with the TDPNI.

The SEOs are set out under a range of environmental topics. The SEOs guide sustainable grid development and are used as standards against which the provisions of the TDPNI can be evaluated. This is in order to help identify areas in which potential significant impacts may occur. The new or amended projects included in the TDPNI 2025-2034 are evaluated against these SEOs. These SEOs will be used as part of a Monitoring Framework for the wider TDPNI with targets, indicators and data sources specified through the SEA process.

Table 3-2 Strategic Environmental Objectives as set out in the SEA of the TDPNI 2023-2032

Topic	Objective		Sub-Objective	
Biodiversity, Flora & Fauna	1	Avoid damage to, and where possible enhance, biodiversity, flora and fauna.	A	Preserve, protect, maintain and, where possible, enhance internationally protected species and habitats.
			B	Preserve, protect, maintain and, where possible, enhance national and local nature conservation sites, protected habitats and species, and other known species of conservation concern.
Population & Human Health	2	Minimise the risk to, and provide benefit for, the community and human health.	A	Minimise disruption and displacement to the local population, while providing robust transmission infrastructure.
			B	Minimise risks to human health and social deprivation, while providing robust transmission infrastructure.
Geology, Soils and Land use	3	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.	A	Minimise damage to the function and quality of the soil resource in the study area in construction and operation of transmission infrastructure.
Water	4	Avoid impacts on the status or quality of water bodies and avoid interaction with areas of flood risk.	A	Support the objectives of the WFD and Marine Strategy by avoiding damage to, or deterioration of, water status, quality and resource.
			B	Support the objectives of the Floods Directive by avoiding interactions with coastal, pluvial or fluvial flood extents.
Air	5	Minimise risk to local air quality and contribute to improving regional emissions	A	Minimise risk to local air quality and contribute to improving regional pollutant emissions
Climatic Factors	6	Adaptation of infrastructure to potential climatic change and reduction of GHG emissions from the energy supply sector in line with national commitments.	A	Adaptation of infrastructure to potential climatic change.
			B	Contribute to a reduction in GHG emissions from the energy supply sector in line with national commitments.
Material Assets & Infrastructure	7	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.	A	Provide new, robust electrical transmission infrastructure with minimal disruption to other assets and infrastructure.
Cultural, Architectural & Archaeological Heritage	8	Protect, conserve and enhance the historic environment and cultural heritage.	A	Protect International, National and Local Heritage Designations, and areas of heritage potential, and their settings.
Landscape & Visual	9	Protect the character and quality of landscapes / seascapes or visual amenity.	A	Minimise the potential for negative impacts on the character and quality of landscapes / seascapes or visual amenity.

4.0 Update on Projects in TDPNI 2025-2034

To ensure adequate security of electricity supply, further market integration, and the integration of renewable energy sources, it is necessary to provide ongoing and timely reinforcement of the Northern Ireland electricity transmission system. These reinforcement needs can be divided into the following categories:

- Reinforcements to support changes in, or connection of, new demand;
- Reinforcements required to support changes in, or connection of, new generation;
- Reinforcements related to interconnection;
- Reinforcements to facilitate inter-regional power flows; and
- Reinforcements to address the condition of existing assets.

The TDPNI 2023-2032 included 35 network development projects and 41 asset replacement projects.

The TDPNI 2025-2034 has defined a list of the potential projects that could be developed within the timeframe of the report. These are detailed in Appendix A.. There are 45 network development projects and 105 NIE Networks asset replacement projects, which SONI has assigned to broad groups according to the nominal voltage, equipment type and nature of asset replacement work and the Regulatory Period for which capital approval for a given work item was awarded.

The project types in the TDPNI can be broadly categorised as follows:

- **New Build** – projects that involve the construction of new substations or new circuits. This category also includes projects that involve the installation of new equipment in existing substations.
- **Uprate / Modify** – projects that involve the uprating of existing assets e.g., changing of equipment to increase the capacity of circuits between stations, or busbars within existing stations.
- **Refurbish / Replace** – projects that involve the refurbishment of existing substations or circuits, or the replacement of existing assets.
- **Combination** – projects that involve a combination of the categories above.
- **Other** - projects that do not neatly fit into the above categories.

Power flows on the transmission network are not contained within specific localities. Therefore, from a transmission planning viewpoint, it is more appropriate to represent planning areas that best reflect the conditions and power flows on the transmission network. For this purpose, we refer to two

planning areas in Northern Ireland: North and West; and South-East. The regions and planning areas that best reflect the conditions and power flows on the transmission network are illustrated in Figure 4-1.



Figure 4-1 Illustration of the Northern Ireland planning areas

There are 13 SONI network development projects that are new to the TDPNI 2025-2034 and therefore were not considered in the environmental appraisal carried out as part of the SEA process for the TDPNI 2023-2032. These are listed in Table 4-1.

Table 4-1 New Network Development Projects in the TDPNI 2025-2034

No.	Project Title	Status	Type	Region
1	Tremoge 10/33 kV Second Transformer	Added	New Build (Within Station)	N&W
2	Rasharkin 110/33 kV Second Transformer	Added	New Build (Within Station)	N&W
3	Kells 110/33 kV Cluster Second Transformer	Added	New Build (Within Station)	S-E
4	Cam Cluster 2 nd 110/33 kV Transformer	Added	New Build (Within Station)	N&W

5	Coleraine Transformer Replacement	Added	New Equipment (Within Station)	N&W
6	Lisburn Upgrade (formerly Hannahstown – Lisburn – Tandragee Redevelopment)	Added	New Build (Station/Line)	S-E
7	Drumnakelly – Tandragee Uprate	Added	Uprate/ Modify (Line)	S-E
8	Kilroot Transmission Substation	Added	New Build (Station)	S-E
9	Fermanagh Upgrade	Added	New Build (Line)	N&W
10	Fermanagh and West Tyrone Transmission Cluster	Added	New Build (Station)	N&W
11	Belfast Power Flow Control	Added	New Build	S-E
12	Tamnamore Land Purchase	Added	New Build	S-E
13	Cam Substation Extension	Added	New Build (Within Station)	N&W

Several of the SONI network development projects have been amended since the TDPNI 2023-2032, including a change in name or scope. These changes are shown in Table 4-2.

Table 4-2 Amended Network Development Projects in the TDPNI 2025-2034

No.	Project Title	Status	Type	Region
1	Coolkeeragh – Strabane Upgrade (formerly Coolkeeragh – Killymallaght – Strabane 110 kV Uprate)	Name Change	Uprate/ Modify (Line)	N&W
2	Connect West (formerly Mid Tyrone Reinforcement)	Name Change. Change in Scope – change to preliminary preferred option of 275kV	New Build (Line, Station)	N&W
3	Energising Belfast	Scope less detailed in TDPNI	New Build (Line)	S-E
4	Armagh Upgrade (formerly Drumnakelly and Armagh Reinforcement)	Name Change	New Build (Line, Station)	S-E
5	Coolkeeragh 275/110 kV Transformer 1 Cabling Uprate (formerly Coolkeeragh T1 Transformer cabling uprate)	Name Change	Uprate/ Modify (Station)	N&W
6	Newry Reinforcement	Change in Scope – to include new switching station option near Banbridge	New Build (Station)	S-E
7	North Sperrin Transmission Cluster	Change in Scope - change to preliminary preferred option of 275kV	New Build (Station)	N&W

There are also NIE Networks asset replacement projects that are new to the TDPNI 2025-2034, and projects that are now specific in their category and location. These projects are listed in Table 4-3.

Table 4-3 New and Amended NIE Networks Asset Replacement Projects in the TDPNI 2025-2034

No.	Project Title	Status	Type	Region
1	Castlereagh – Rosebank Tower Line Removal	Not assessed in TDPNI 2023	Other	S-E
2	Strabane-Omagh Fibre Replacement	Added	Refurbish / Replace	N&W
3	Ballylumford-Hannahstown 275 kV Refurbishment	Not noted individually in TDPNI 2023	Refurbish / Replace	S-E
4	Hannahstown-Castlereagh 275 kV Refurbishment	Not noted individually in TDPNI 2023	Refurbish / Replace	S-E
5	RP7 110 kV Overhead Line and Cable	Specific categories / locations now approved	Refurbish / Replace	N&W S-E
6	RP7 110kV Switchgear and 110/33 kV Transformers	Specific categories / locations now approved	Refurbish / Replace	N&W S-E
7	RP7 275 kV Overhead Line	Specific categories / locations now approved	Refurbish / Replace	N&W S-E
8	RP7 275kV Switchgear and 275/110 kV Transformers (including 22kV tertiary windings and shunt-connected equipment)	Specific categories / locations now approved	Refurbish / Replace	N&W S-E
9	RP7 Transmission Protection and Control	Specific categories / locations now approved	Refurbish / Replace	N&W S-E

5.0 Evaluation of New and Amended Projects

5.1 New SONI Network Development Projects

The new SONI network development projects have been outlined in Section 4.0 and Table 4-1 of this report, and these are further described and evaluated in Appendix A. A number of these potential projects have been screened out of requiring evaluation 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. The following list of projects has been evaluated, as the type and/or scale of the works involved have the potential for impacts, which should be further considered.

5.1.1 Lisburn Upgrade

The driver for this project is security of supply, additional capacity and new connections. Due to demand growth in the Lisburn area there is a need to provide additional capacity to reinforce the existing substation which supplies Lisburn and surrounding area. Several options will be assessed in this project including additional transmission circuits and/or a new grid supply point and associated bulk supply point. Estimated completion: TBC (Conceptual Project).

5.1.2 Drumnakelly – Tandragee Upgrade

The drivers for this project are renewable integration and security of supply. These circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor. Estimated completion: TBC (Conceptual Project).

5.1.3 Cam Substation Extension

The driver for this project is to ensure a larger substation site can be accommodated at Cam Cluster and the turn-in of the second 110 kV circuit in the vicinity (Coleraine - Limavady) can be implemented, thus providing a more secure long-term arrangement and security of supply. This project proposes to turn in both circuits associated with Cam cluster via new underground cable sections from new cable sealing end towers adjacent to the existing overhead line arrangements. Estimated completion: 2030.

5.1.4 Kilroot Transmission Substation

The drivers for this project are renewable integration and security of supply. There is a need to reinforce the existing 275 kV substation at Kilroot. Several options will be assessed in this project including a switching site. Estimated completion: TBC (Conceptual Project).

5.1.5 Fermanagh Upgrade

The drivers of this project are renewable integration and security of supply. The Enniskillen - Dromore circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor. Estimated completion: TBC (Conceptual Project).

5.1.6 Fermanagh and West Tyrone Transmission Cluster

The driver of this project is RES integration and new connections. As part of the transmission cluster policy it is proposed to establish a cluster substation in the Fermanagh/West Tyrone area to connect new renewable generation to the transmission system. This project would propose the construction of a new cluster substation including connection to the nearby network. Estimated completion: TBC (Conceptual Project).

5.1.7 Belfast Power Flow Control

The driver of this project is security of supply, given the projected demand growth in the centre of Belfast. Upon completion of the Energising Belfast project, there will be a risk of congestion on the Hannahstown – Donegall cable circuits under certain conditions. This project would require a land purchase local to the existing Donegall Main substation to facilitate installation of power flow control devices to balance power flows in Belfast. Estimated completion: TBC (Conceptual Project).

5.1.8 Tamnamore Land Purchase

This project comprises acquisition of land adjoining the existing Tamnamore substation. This will lead to addition of new transmission bays to facilitate connections via eventual substation extension and/or reconfiguration. Estimated completion: 2027.

5.2 Amended SONI Network Development Projects

The amended SONI network development projects have been outlined in Section 4.0 and Table 4-2 of this report, and these are further described and evaluated in Appendix A. A number of these potential projects have been screened out of requiring evaluation as the amendment comprises a change in name only. The following list of projects has been evaluated, as the scope of the works has been changed from that assessed in the SEA for the TDPNI 2023-2032 and the type and/or scale of the works involved have the potential for impacts, which should be further considered.

5.2.1 Connect West

Due to the increase in the renewable generation in the north and west there is a need to address expected overloads in the grid between Omagh and Tamnamore. Several options will be assessed in this project

[Title]

including:

- uprating the existing 110 kV circuits,
- construction of a new 110kV circuit from Dromore to Tamnamore, and
- construction of a new 275 kV circuit from Tamnamore or Turleenan to Dromore, which would require the extension of the existing Dromore 110 kV switching site to establish a 275/110 kV substation.

Estimated completion: 2037.

5.2.2 Energising Belfast

The driver for this project is security of supply. The existing conductor on the Castlereagh – Carnmoney 110 kV double circuit is due for replacement as a result of the age and condition of the assets. This project will install a fourth interbus transformer at Castlereagh and establish new high-capacity 110 kV cable connections between Hannahstown and Castlereagh substations through Belfast city centre, including the construction of new GIS switching sites, which will be interconnected. This will enable removal of the existing 110 kV double circuit between Carnmoney and Castlereagh. Estimated completion: 2032.

5.2.3 Newry Reinforcement

The driver of this project is security of supply. Due to demand growth in the Newry area there is a need to provide additional capacity to reinforce the existing substation which supplies Newry and surrounding area. Several options will be assessed in this project including:

- a new 110/33 kV bulk supply point to the North of Newry;
- one or more new 110 kV overhead lines from Tandragee;
- a new switching site in the Banbridge area.

Estimated completion: 2038.

5.2.4 North Sperrin Transmission Cluster

The driver of this project is RES integration and new connections. As part of the transmission cluster policy it is proposed to establish a 275/110 kV cluster substation near to the existing Coolkeeragh – Magherafelt 275 kV double circuit corridor in the North Sperrin region to connect new renewable generation to the transmission system. This project would propose the construction of a new 275/110 cluster substation and the associated circuit reconfigurations into the site.

Estimated completion: TBC (Conceptual Projects).

5.3 New or Amended NIE Networks Asset Replacement Projects

The new and/or amended NIE Networks asset replacement projects have been outlined in Section 4.0 and Table 4-3 of this report, and these are further described and evaluated in Appendix A. number of these potential projects have been screened out of requiring evaluation 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. The following list of projects has been evaluated, as the type and/or scale of the works involved have the potential for impacts, which should be further considered.

5.3.1 Castlereagh - Rosebank

The redundant 110 kV double circuit overhead line from Castlereagh to Rosebank will be removed due to obsolescence, the connection having been replaced with underground cable. Estimated completion: 2027.

5.3.2 Strabane – Omagh Fibre Replacement

The fibre optic connection between Strabane and Omagh will be replaced. Estimated completion: 2028.

5.3.3 Ballylumford – Hannahstown 275kV Refurbishment

The 275 kV circuits between Ballylumford and Hannahstown will be refurbished owing to the age and condition of the existing assets. Estimated completion: 2030.

5.3.4 Hannahstown – Castlereagh 275kV Refurbishment

The 275 kV circuits between Castlereagh and Hannahstown will be refurbished owing to the age and condition of the existing assets. Estimated completion: 2031.

5.3.5 RP7 110kV Overhead Line and Cable

Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include tower and foundation assessments and remedial works, insulator, damper and steelwork replacement, pole replacement, tower painting and cable refurbishment and decommissioning. Estimated completion: 2031.

5.3.6 RP7 275kV Overhead Line and Cable

Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include conductor sampling and replacement, tower and foundation assessments and remedial works, insulator, damper and steelwork replacement, tower replacement and tower painting. Estimated completion: 2031.

5.4 Evaluation of New and Amended Projects against SEOs

All projects that are new to the TDPNI 2025-3034, or that have been amended in scope have been appraised. As detailed in Section 4.0, the project types in the TDPNI include uprates/modifications of existing assets, refurbishment of existing assets and new build infrastructure including new circuits and substations. A high-level assessment of potential projects for their potential effects against SEA environmental topics and SEOs is detailed in Appendix A, based on project types (e.g., overhead transmission lines, underground cables, substations, restrings and refurbishments). As outlined in Section 1.0, this considers the potential for impacts to occur 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).

Where a modification, uprate, redevelopment or refurbishment, including installation of new equipment or structures, is taking place within the footprint of an existing station, the work required is small in scope and the potential for environmental effects should be limited to localised impacts.

5.4.1 Uprating and Refurbishment of Transmission Lines

By making improvements to the existing transmission system through uprates/modifications and refurbishment/replacements, potential impacts to the receiving environment can be minimised. Where transmission lines are being uprated or refurbished, there is potential for small-scale construction works, and potential for construction-phase impacts including, but not limited to, the following:

- Habitat removal or disturbance to species in the vicinity of the works and for access requirements,
- Disturbance to local residents from construction works, e.g. through noise or dust emissions,
- Impacts on water quality of hydrologically connected water bodies, e.g., through construction spills or sedimentation.

There is potential for short-term, temporary negative effects on the SEOs for Population and Human Health; Geology, Soils and Land use; Water; Air; Climatic Factors; Material Assets; Cultural Heritage; and Landscape and Visual Amenity, and short to medium-term, temporary negative effects on the SEOs for Biodiversity, Flora and Fauna during the construction phase. Depending on the receiving environment, there may be potential for impacts on designated sites, which would need to be considered through screening for Appropriate Assessment.

Following construction there will be minimal change operationally, and there are unlikely to be any further medium or long-term negative effects on SEOs following the work and subsequent re-establishment of the working areas. The utilisation of existing assets is expected to have neutral long-term effects on SEOs, including Biodiversity, Flora and Fauna; Geology, Soils and Land Use; and Landscape and Visual Amenity. The provision of upgraded infrastructure has the potential for medium to long-term positive effects on the

SEO for Material Assets. For projects that are associated with renewable integration, there is also the potential for medium to long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in greenhouse gas emissions from the energy supply sector and improvements in regional pollutant emissions.

5.4.2 New Build Transmission Lines and Substations

The impact of any new build project is dependent on the project type and the environmental constraints and sensitivities of the area in which it is to be developed. There is the potential for impacts on a range of environmental factors.

During the construction phase for new transmission lines and substations, there is the potential for construction-phase impacts including, but not limited to, the following:

- Direct loss of, or damage to habitats and land use in the footprint of new infrastructure and along access routes.
- Disturbance of species and local populations e.g., through construction noise, dust and traffic.
- Impacts on water quality of hydrologically connected water bodies, e.g., through construction spills or sedimentation.
- Temporary impacts on local air quality through construction emissions.
- Disruption of existing assets including power supply.
- Direct loss of, or damage to heritage assets.
- Temporary construction-phase visual impacts on local landscapes and the setting of heritage assets.

The development of new transmission lines and substations has the potential for short-term, temporary negative effects on the SEOs for Population and Human Health; Geology, Soils and Land use; Water; Air; Climatic Factors; Material Assets; Cultural Heritage; and Landscape and Visual Amenity, and short to medium-term, temporary negative effects on the SEOs for Biodiversity, Flora and Fauna during the construction phase. Depending on the receiving environment, there may be potential for impacts on designated sites, which would need to be considered through screening for Appropriate Assessment.

Following construction, there is potential for medium to long-term visual impacts and negative effects on the SEO for Landscape and Visual Amenity owing to the presence of new infrastructure during the operational phase. There is also potential for medium to long-term negative effects on the SEO for Cultural Heritage through changes in the setting of heritage assets. The potential for visual impacts may be localised and non-significant, however the significance of effects will be dependent on the sensitivity of the areas in which the new infrastructure will be located.

During operation, there is potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of this new and upgraded infrastructure. For projects that are associated with the integration of renewable energy sources to the transmission network there is also the potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as

renewable integration can contribute to a reduction in greenhouse gas emissions from the energy supply sector and improvements in regional pollutant emissions.

A summary of the potential effects of high-level project types against SEOs is shown in Table 5.1.

Table 5-1 Summary Evaluation of the New and Amended Projects in the TDPNI 2025-2034

Project Type	Duration (short- medium- long term)	SEO1A	SEO1B	SEO2A	SEO2B	SEO3A	SEO4A	SEO4B	SEO5A*	SEO6A	SEO6B*	SEO7A	SEO8A	SEO9A
New Build (Line)	s-t	-	-	-	-	-	-	-	-	-	-	-	-	-
	m-t	-	-	0	0	0	0	0	+	0	+	+	?	?
	l-t	?	?	0	0	0	0	0	+	0	+	+	?	?
New Build (Station)	s-t	-	-	-	-	-	-	-	-	-	-	-	-	-
	m-t	-	-	0	0	0	0	0	+	0	+	+	?	?
	l-t	?	?	0	0	0	0	0	+	0	+	+	?	?
Uprate/Modify (Line)	s-t	-	-	-	-	-	-	-	-	-	-	-	-	-
	m-t	0	0	0	0	0	0	0	+	0	+	+	0	0
	l-t	0	0	0	0	0	0	0	+	0	+	+	0	0
Refurbish/Replace (Line)	s-t	-	-	-	-	-	-	-	-	-	-	-	-	-
	m-t	0	0	0	0	0	0	0	+	0	+	+	0	0
	l-t	0	0	0	0	0	0	0	+	0	+	+	0	0
Uprate/Modify and Refurbish/Replace (Station)**	s-t	0	0	0	0	0	0	0	0	0	0	0	0	0
	m-t	0	0	0	0	0	0	0	+	0	+	+	0	0
	l-t	0	0	0	0	0	0	0	+	0	+	+	0	0

*For projects that are associated with renewable integration

**Works within substation site boundary

Description of Effect	
Potential for positive effects	+
Potential for negative effects	-
Uncertain Effects	?
Potential for Neutral effects	0

5.5 Mitigation

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

Refurbishment/replacement and uprate/modification projects are generally considered to be permitted development under relevant sections of the Planning Act. Where screening determines that EIA is required, this permitted development status is lost. Refurbishment and uprate projects will be subject to the inherent mitigation and, in particular, to construction best practice. New build projects will be subject to environmental assessment as part of the relevant planning process for these projects. The impact of any new build project and significance on SEOs will depend on the project type and the sensitivity of the environment in which it is to be developed. This can be considered further in the next SEA assessment which will take place in advance of the TDPNI for 2028-2037, when environmental sensitivities of the affected areas can be considered. Should projects that are identified as having potential for negative environmental effects advance ahead of

this, there should be further project level environmental assessment to determine the potential sensitivities in the area of the works and necessary 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. Some proposals 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 The Planning (Environmental Impact Assessment) Regulations (Northern Ireland) 2017. For all projects, 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, Water Framework Directive assessments, geotechnical investigations and heritage surveys, as determined necessary at the project stage. 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.

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

[Title]

identified. 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. To ensure mitigation effectiveness, monitoring should be undertaken by the Contractor's technical experts. Monitoring will be required as a minimum when identified in planning documentation. Monitoring may be additionally prudent, in case where novel materials or methods are employed. The results of monitoring should inform adaptive management, where required (i.e. altered mitigation methods). Monitoring reports should be provided to SONI, NIE Networks and the relevant statutory agencies.

As established in Biodiversity Policy ENVP5 and Objective ENVO2, biodiversity restoration and enhancement opportunities should be factored into the implementation of transmission development projects, wherever possible, and this should be monitored in order to ensure that the most appropriate and beneficial measures are being implemented.

The mitigation measures that have been put forward in the TDPNI, SEA and HRA processes are included in Appendix B and C and should also be referred to.

6.0 Conclusion

This Environmental Appraisal Report has considered the potential projects of the TDPNI 2025-2034 in terms of the provisions of the SEA of the TDPNI 2023-2032. There are 45 network development projects and 105 NIE Networks transmission asset replacement projects now in progress. There are SONI network development projects and NIE Networks asset replacement projects that are new to the TDPNI 2025-2034 and therefore were not considered in the environmental appraisal carried out as part of the SEA process for the TDPNI 2023-2032. There are also several network development projects that include a change in scope since the TDPNI 2023-2032. Therefore, to ensure consistency with the provisions of the most recent SEA, these new projects and amended projects have been examined against the Strategic Environmental Objectives as detailed in the SEA Environmental Report (2023).

These projects consist of new builds (new lines, new substations and additional infrastructure within stations and cable connections), refurbishment/replacement projects and uprate/modification projects of existing assets. These categories of projects (as they relate to the project listed) have been assessed against the Strategic Environmental Objectives from the SEA. The potential for negative effects on SEOs has been identified for some projects and mitigation has been recommended. The principal recommendation is for further environmental assessment of projects. This can occur as part of the SEA assessment to be undertaken in advance of the TDPNI 2028-2037, when environmental sensitivities of the affected areas can be considered. If projects advance ahead of this, there should be further project level environmental assessment to determine the potential sensitivities in the area of the works, with any recommended avoidance or mitigation measures applied to ensure that there are no significant negative environmental effects during construction or operation of the transmission infrastructure. This should include screening for appropriate assessment of the potential effects of the project in accordance with the Conservation (Natural Habitats, etc.) (NI) Regulations.

Appendix A: Detailed Evaluation of Projects

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
Network Development Projects									
Tremoge 10/33 kV Second Transformer	Renewable Integration	N&W	The driver for this project is renewable integration and facilitation of potential new connections. This project will involve the installation of a second 110/33 kV transformer at Tremoge Cluster which will enable connection of additional generation capacity at 33 kV.	TBC	New Build – new transformer within existing substation boundary	Yes	No	Very localised impacts only within existing sites.	N/A
Rasharkin 110/33 kV Second Transformer	Renewable Integration	N&W	The driver for this project is renewable integration and facilitation of potential new connections. This project will involve the installation of a second 110/33 kV transformer at Rasharkin Cluster which will enable connection of additional generation capacity at 33 kV (including transfer of generation connections from other points on the local 33 kV network).	2028	New Build – new transformer within existing substation boundary	Yes	No	Very localised impacts only within existing sites.	N/A
Coolkeeragh – Strabane Upgrade (formerly Coolkeeragh – Killymallaght – Strabane 110 kV Uprate)	Renewable Integration	N&W	The drivers for this project are security of supply and renewable integration. As a result of increasing growth in renewable generation in the northwest of NI there will be a need to uprate and reconfigure the 110 kV circuits between Coolkeeragh and Strabane (including Killymallaght). Several options will be assessed in this project including: uprating the existing 110 kV circuits, restoring the existing Coolkeeragh – Strabane 110 kV double circuit towerline, reconfiguring and uprating the existing 110 kV circuits, and establishing a second Killymallaght switching site, reconfiguring and uprating the existing 110 kV circuits (partially).	2036	Uprate, new build – substation, reconfiguration	Yes	Yes (name change)	Assessed in SEA 2023.	N/A
Mid Antrim Upgrade	Renewable Integration	N&W	The drivers of this project are security of supply and RES integration. As a result of increasing growth in renewable generation there will be a need to construct a second 110 kV circuit between the new 110 kV switching site at Terrygowan and Rasharkin 110/33 kV cluster substation. There will be further network reconfiguration to facilitate turning in existing 110 kV circuits to the Terrygowan site, and an uprate of the double circuit overhead line section between Kells and Terrygowan.	2030	New Build – new circuit, new switching station, circuit uprate	Yes	Yes	Assessed in SEA 2023.	N/A
North West 110 kV Reinforcement (formerly North West of NI reinforcement)	Renewable Integration, Security of Supply	N&W	The drivers for this project are security of supply and RES integration. As a result of increasing growth in renewable generation in the northwest and potential for voltage instability there will be a need to reinforce the 110 kV transmission system between Limavady and Rasharkin. As well as likely uprating of the 110 kV circuits from Coolkeeragh to Limavady, the new circuit options to be investigated as part of this project will include: a second 110 kV circuit from Coleraine – Rasharkin, and a 110 kV circuit from Cam – Rasharkin.	2037	New Build – new circuit, Uprate existing	No (site extension potentially required if progressing new circuit to Rasharkin from a given node)	Yes	Assessed in SEA 2023.	N/A
Connect West (formerly Mid Tyrone Reinforcement)	Renewable Integration	N&W	Due to the increase in the renewable generation in the north and west there is a need to address expected overloads in the grid between Omagh and Tamnamore. Several options will be assessed in this project including: uprating the existing 110 kV circuits, construction of a new 110kV circuit from Dromore to Tamnamore, and	2037	New Build – new circuit, substation extension	No (275kV circuit and substation build)	Yes (name change, change in scope)	Assessed in SEA 2023 as Mid-Tyrone Upgrade, however, scope has expanded to include potential for additional new circuit, uprated circuit and substation extension. Potential for impacts.	The development of new transmission lines and substation extension and uprating of transmission lines have the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
			construction of a new 275 kV circuit from Tamnamore or Turleenan to Dromore, which would require the extension of the existing Dromore 110 kV switching site to establish a 275/110 kV substation.						discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. The new build elements of the project (new transmission line and substation extension) have the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure during operation. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Strabane – Omagh 110 kV Uprate	Renewable Integration	N&W	The drivers of this project are RES integration. With increasing generation in the North West there is a risk of overload of the 110 kV circuits between Strabane and Omagh. This project will involve replacement of the conductor on the existing tower lines with new conductor of a higher rating.	TBC	Uprate	Yes	Yes	Assessed in SEA 2023.	N/A
East Tyrone Reinforcement Project	Load Related, Security of Supply	N&W	The driver for this project is security of supply. There is a need to reinforce the distribution system supplying the Dungannon and Cookstown areas, where demand is forecast to exceed the capacity of the existing 110/33 kV substation. This project will involve the construction of a second 110/33 kV substation at Dungannon adjoining the existing Dungannon Main site, along with the associated reconfiguration of the local 33 kV network to transfer demand to the new substation.	2030	New Build – new substation	No	Yes	Assessed in SEA 2023.	N/A
Carnmoney – Eden Reinforcement	Asset Replacement, Load Related, Security of Supply	S-E	The driver for this project is security of supply. The existing conductors are due for replacement as a result of the age and condition of the assets. This project will involve the refurbishment of the rural section of the existing tower line and replacement of the urban sections with a new underground cable and increasing the capacity of these circuits. A second 110/33 kV transformer will also be installed at Glengormley Main substation.	2031	Uprate, new underground cable section, new transformer within existing substation, circuit removal	Yes	Yes	Assessed in SEA 2023.	N/A
Energising Belfast	Load Related, Security of Supply, Asset Replacement	S-E	The driver for this project is security of supply. The existing conductor on the Castlereagh – Carnmoney 110 kV double circuit is due for replacement as a result of the age and condition of the assets. This project will install a fourth interbus transformer at Castlereagh and establish new high-capacity 110 kV cable connections between Hannahstown and Castlereagh substations through Belfast city centre, including the construction of new GIS switching sites, which will be interconnected. This will enable removal of the existing 110 kV double circuit between Carnmoney and Castlereagh.	2032	New Build – new underground cable, new switching sites, new transformer at existing substation, circuit removal	No	Yes – scope less detailed in previous TDPNI	Assessed in SEA 2023, however, scope has expanded to include the area west of Belfast with new cable connections to Hannahstown. Potential for impacts.	The development of new transmission lines has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. The development of new transmission lines has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Kells 110/33 kV Cluster	Renewable Integration	S-E	The driver of this project is RES integration. It is planned to establish a 110/33 kV cluster substation within the existing Kells 275/110 kV substation compound to connect new renewable generation. This will be connected to the existing Kells 110 kV substation via an underground cable.	2026	New Build – new cluster substation, underground cable	Yes	Yes	Screened out of assessment in SEA 2023 as planning approved.	N/A
Kells 110/33 kV Cluster Second Transformer	Renewable Integration	S-E	The driver for this project is renewable integration and facilitation of potential new connections. This project will involve the installation of a second 110/33 kV transformer at Kells Cluster which will enable connection of additional generation capacity at 33 kV.	2029	New Build – new transformer within existing substation boundary	Yes	No	Very localised impacts only within existing sites.	N/A
Tamnamore – Drumnakelly 110 kV Uprate	Renewable Integration, Security of Supply	S-E	The drivers of this project are renewable integration and security of supply. These circuits may be subject to overload under high wind generation conditions and may be operated out of service as a result. This project is to restrung these circuits with higher capacity conductor. For the A circuit, a new underground cable section will also replace sections of the existing overhead line which are no longer required.	2031	Uprate, new build (partial) – new underground cable	Yes	Yes	Assessed in SEA 2023.	N/A
Airport Road	Load Related, Security of Supply	S-E	The driver of this project is security of supply; the need for this project arises from the increasing load in the Belfast Harbour and city centre area. 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 and a new section of underground cable.	2027	New Build – new substation, new cable section, up-voltage existing overhead line	No	Yes	Screened out of assessment in SEA 2023 as planning approved.	N/A
Shunt Reactors - Castlereagh, Tandragee and Tamnamore	Load Related, Security of Supply	S-E	The driver of this project is security of supply. Further shunt reactors are planned to be installed at Castlereagh, Tandragee and Tamnamore substations in order to improve voltage regulation when the network is lightly loaded.	2031	New equipment within existing substation boundary	Yes	Yes	Very localised impacts only within existing sites.	N/A
Armagh Upgrade (formerly Drumnakelly and Armagh Reinforcement)	Load Related, Security of Supply	S-E	The driver of this project is security of supply. There is a need to reinforce the distribution system supplying Armagh city and the surrounding area due to increasing demand. It is also forecast that demand will exceed capacity at the existing Drumnakelly 110/33 kV substation. This project will involve establishing a new 110/33 kV substation at Armagh Central supplied by two new 110 kV circuits from Tandragee. This will require the extension of the existing Tandragee 110 kV substation to facilitate construction of new circuit bays. A new 33 kV underground cable between the existing Armagh Central and Armagh North substations is also required, including reconfiguration of the local 33 kV system.	2036	New Build – new circuit, new/extended substation at Armagh, substation extension at Tandragee	No	Yes (name change)	Assessed in SEA 2023.	N/A
Castlereagh 110 kV Switchgear Replacement	Fault Level Replacement s	S-E	The driver for this project is safety. Due to increasing fault levels it is planned to replace the 110 kV circuit breakers and current transformers at Castlereagh with uprated equipment.	2031	New equipment within existing substation boundary	Yes	Yes	Very localised impacts only within existing sites.	N/A
Tandragee 110 kV Switchgear Replacement	Fault Level Replacement s	S-E	The driver for this project is safety. Due to increasing fault levels it is planned to replace the 110 kV circuit breakers and current transformers at Tandragee with uprated equipment.	2029	New equipment within existing substation boundary	Yes	Yes	Very localised impacts only within existing sites.	N/A
North-South Interconnector	Security of Supply, Renewable	S-E	The drivers for this project are market integration, security of supply and renewable integration. This project involves construction of a new 400 kV circuit from the existing Woodland 400 kV station in	2031	New build – new circuit, new substation at	No	Yes	Screened out of assessment in SEA 2023 as planning	N/A

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
	Integration		County Meath (Ireland) to a proposed 400/275 kV substation at Turleenan in County Tyrone (Northern Ireland), where the existing Tamnamore – Tandragee 275 kV double circuit overhead line will be turned in. This project is needed to remove generation constraints within the Single Electricity Market (SEM).		Turleenan			approved.	
Moyle Interconnector Capacity Increase	Interconnection	S-E	The drivers for this project are market integration, security of supply and renewable integration. At present, full utilisation of the 500 MW capability of the Moyle Interconnector is prevented by the potential for network overloads in the event the loss of the 275 kV double circuit between Ballylumford, Ballycronan More and Hannahstown. This project will involve construction of a new dual 275 kV cable between Ballylumford and Ballycronan More and restoration of the 275 kV double circuit overhead line arrangement between Ballylumford and Hannahstown in order to secure operation of the Moyle Interconnector against this contingency.	2030	New build – new cable	Yes	Yes	Assessed in SEA 2023.	N/A
CVT Upgrade for Harmonic Measurement	Security of Supply	N&W / S-E	It is planned to augment Capacitor Voltage Transformers (CVTs) at a number of substation sites with equipment capable of accurately measuring the extent of harmonic distortion, improving power quality monitoring.	2026	New low voltage equipment within existing substations	Yes	Yes	Very localised impacts only within existing sites.	N/A
Magherafelt 275 kV Redevelopment	Load Related, Security of Supply	S-E	The driver for this project is security of supply. A re-appraisal of the original design using modern methods has found that the concrete structures at Magherafelt are not sufficient to meet expected mechanical loading under fault conditions. This project will address this issue through redevelopment of the existing substation or replacement. Options being considered are currently undergoing feasibility investigations.	2034-38	New structures within existing substations	Yes	Yes	Assessed in SEA 2023.	N/A
Castlereagh 275 kV Redevelopment	Security of Supply	S-E	The driver for this project is security of supply. A re-appraisal of the original design using modern methods has found that the concrete structures at Castlereagh are not sufficient to meet expected mechanical loading under fault conditions. This project will address this issue through redevelopment of the existing substation or replacement. Options being considered are currently undergoing feasibility investigations.	2034-38	New structures within existing substations	Yes	Yes	Assessed in SEA 2023.	N/A
Tandragee 275 kV Redevelopment	Security of Supply	S-E	The driver for this project is security of supply. A re-appraisal of the original design using modern methods has found that the concrete structures at Tandragee are not sufficient to meet expected mechanical loading under fault conditions. This project will address this issue through redevelopment of the existing substation or replacement. Options being considered are currently undergoing feasibility investigations.	2034-38	New structures within existing substations	Yes	Yes	Assessed in SEA 2023.	N/A
Kells 275 kV Redevelopment	Security of Supply	S-E	The driver for this project is security of supply. A re-appraisal of the original design using modern methods has found that the concrete structures at Kells are not sufficient to meet expected mechanical loading under fault conditions. This project will address this issue through redevelopment of the existing substation or replacement. Options being considered have completed feasibility investigation and a preferred option has been determined. This project will involve the construction of additional 275 kV diagonals and a phased rebuild of the existing 275 kV diagonals. This will also involve construction of new double terminal towers into the Kells 275 kV site and associated	2034-38	New structures within existing substations	Yes	Yes	Assessed in SEA 2023.	N/A

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
			circuit reconfigurations.						
Coolkeeragh 275 kV Redevelopment	Security of Supply	N&W	The driver for this project is security of supply. A re-appraisal of the original design using modern methods has found that the concrete structures at Coolkeeragh are not sufficient to meet expected mechanical loading under fault conditions. This project will address this issue through redevelopment of the existing substation or replacement. Options being considered are currently undergoing feasibility investigations.	2034-38	New structures within existing substations	Yes	Yes	Assessed in SEA 2023.	N/A
Coolkeeragh 110 kV Extension	Renewable Integration	N&W	The driver for this project is security of supply, renewable integration and new connections. This project will involve provision of additional 110 kV bays at Coolkeeragh through a double busbar extension. This will involve extending the existing substation compound and constructing new circuit bays.	2030	New build – extension of existing substation	No	Yes	Assessed in SEA 2023.	N/A
Coolkeeragh 275/110 kV Transformer 1 Cabling Uprate (formerly Coolkeeragh T1 Transformer cabling uprate)	Load Related, Security of Supply	N&W	The increase in wind generation in the north-west of Northern Ireland has resulted in an increase in power flows at Coolkeeragh. The project is to uprate the 110 kV cabling associated with 275/110 kV Transformer 1 in order to accommodate these flows. This project will likely be executed in parallel with the 275kV rebuild	TBC	Uprate/Modify	Yes	Yes (name change)	Very localised impacts only within existing sites.	N/A
Newry Reinforcement	Security of Supply	S-E	The driver of this project is security of supply. Due to demand growth in the Newry area there is a need to provide additional capacity to reinforce the existing substation which supplies Newry and surrounding area. Several options will be assessed in this project including: a new 110/33 kV bulk supply point to the North of Newry; one or more new 110 kV overhead lines from Tandragee; a new switching site in the Banbridge area.	2038	New Build – new circuit, new substation	No	Yes	Assessed in SEA 2023, however, scope has expanded to include the option of a new switching site in the Banbridge area Potential for impacts.	The development of a new switching station has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. Development of the new switching station has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Cam 110/33 kV Cluster	Renewable Integration	N&W	The driver of this project is RES integration. A new cluster substation will be looped in to the existing Coolkeeragh – Coleraine 110 kV circuit. This will enable connection of generation capacity at 33 kV.	2030	New build – new substation, circuit reconfiguration	No	Yes	Assessed in SEA 2023.	N/A
Cam Substation Extension	Renewable Integration	N&W	The driver for this project is to ensure a larger substation site can be accommodated at Cam Cluster and the turn-in of the second 110 kV circuit in the vicinity (Coleraine - Limavady) can be implemented, thus providing a more secure long-term arrangement and security of supply. This project proposes to turn in both circuits associated with Cam cluster via new underground cable sections from new cable sealing end towers adjacent to the existing overhead line arrangements.	2030	New build – new substation, circuit reconfiguration, new cable	No	Yes (previously described as Cam Cluster, turn-in of 2 nd circuit was alluded to – now made explicit and treated separately)	Potential for impacts.	Development of the new extended substation and associated cabling has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. Development of the substation extension has the potential for medium to long-term

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Cam Cluster 2 nd 110/33 kV Transformer	Renewable Integration	N&W	The driver for this project is renewable integration and facilitation of potential new connections. This project will involve the installation of a second 110/33 kV transformer at Cam Cluster which will enable connection of additional generation capacity at 33 kV.	2029	New Build – new transformer within existing substation boundary	Yes	No	Very localised impacts only within existing sites.	N/A
Coleraine Transformer Replacement	Asset Replacement	N&W	The two 60 MVA transformers at Coleraine are to be replaced with new units due to the age, condition and capacity of the existing units.	2028	New equipment within existing substation	Yes	No	Very localised impacts only within existing sites.	N/A
Limavady Transformer Replacement	Asset Replacement	N&W	The two 45 MVA transformers at Limavady are to be replaced with 90 MVA units due to the age, condition and capacity of the existing units.	2029	New equipment within existing substation	Yes	Yes	Very localised impacts only within existing sites.	N/A
Larne Main Transformer Replacement	Asset Replacement	S-E	The two 45 MVA transformers at Larne are to be replaced with 90 MVA units due to the age, condition and capacity of the existing units.	2026	New equipment within existing substation	Yes	Yes	Very localised impacts only within existing sites.	N/A
Lisburn Upgrade (formerly Hannahstown – Lisburn – Tandragee Redevelopment)	Security of Supply	S-E	The driver for this project is security of supply, additional capacity and new connections. Due to demand growth in the Lisburn area there is a need to provide additional capacity to reinforce the existing substation which supplies Lisburn and surrounding area. Several options will be assessed in this project including additional transmission circuits and/or a new grid supply point and associated bulk supply point.	TBC	New build – new substation, new circuits	No	No	Potential for impacts.	The development of new transmission lines and substation has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. Development of the new transmission lines and substation has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
North Sperrin Transmission Cluster	Renewables Integration	N&W	The driver of this project is RES integration and new connections. As part of the transmission cluster policy it is proposed to establish a 275/110 kV cluster substation near to the existing Colberg – Magherafelt 275 kV double circuit corridor in the North Sperrin region to connect new renewable generation to the transmission system. This project would propose the construction of a new 275/110 cluster substation and the associated circuit reconfigurations into the site.	TBC	New build – new substation	No	Yes, change in scope to preliminary preferred option of 275kV	Assessed in SEA 2023, however, the scope has been amended to a 275kV substation and the area expanded to include the Dungiven area. Potential for impacts.	Development of the new substation has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									necessary, may be required. Development of the new substation has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the area in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Ballylumford – Ballyvallagh Uprate	Renewables Integration, Security of Supply	S-E	The drivers for this project are renewable integration and security of supply. These circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor.	TBC	Uprate	Yes	Yes	Assessed in SEA 2023.	N/A
Drumakelly – Tandragee Uprate	Renewables Integration, Security of Supply	S-E	The drivers for this project are renewable integration and security of supply. These circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor.	TBC	Uprate	Yes	No	Potential for impacts.	The uprating of transmission lines has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Tamnamore Land Purchase	Renewable Integration	S-E	This project comprises acquisition of land adjoining the existing Tamnamore substation. This will lead to addition of new transmission bays to facilitate connections via eventual substation extension and/or reconfiguration	2027	New Build	No	Yes	Potential for impacts.	The purchase of land does not in itself have any potential for positive or negative effects on SEOs. However, the future development associated with this has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects from future construction on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. The future development of a new substation or other infrastructure has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									Material Assets, which is due to the provision of new and upgraded infrastructure associated with future development. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Coolkeeragh – Limavady Coleraine 110 kV Uprate	Renewable Integration	N&W	The drivers for this project are renewable integration and security of supply. These circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor. This project will be assessed alongside the 'North West 110 kV Reinforcement' project, including the feasibility of restringing the existing circuits.	TBC	Uprate	Yes	Yes	Assessed in SEA 2023.	N/A
Kilroot Transmission Substation	Renewable Integration, Security of Supply	S-E	The drivers for this project are renewable integration and security of supply. There is a need to reinforce the existing 275 kV substation at Kilroot. Several options will be assessed in this project including a switching site.	TBC	New build	No	No	Potential for impacts.	The proposed new development has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. Development of the new substation / infrastructure has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Fermanagh Upgrade	Renewable Integration, Security of Supply	N&W	The drivers of this project are renewable integration and security of supply. The Enniskillen - Dromore circuits may be subject to overload under high wind generation conditions. This project is to restring these circuits with higher capacity conductor.	TBC	New build	No	No	Potential for impacts.	The restring of transmission lines has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Fermanagh and West Tyrone Transmission Cluster	Renewable Integration	N&W	The driver of this project is RES integration and new connections. As part of the transmission cluster policy it is proposed to establish a cluster substation in the Fermanagh/West Tyrone area to connect new renewable generation to the transmission system. This project would propose the construction of a new 275/110 kV cluster substation including connection to the nearby 275 kV network.	TBC	New build	No	No	Potential for impacts.	The proposed new substation development has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. Development of the new substation has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure. There is also potential for medium and long-term positive effects on the SEOs for Air and Climatic Factors during operation, as renewable integration can contribute to a reduction in GHG emissions from the energy supply sector and improvements in regional pollutant emissions. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Belfast Power Flow Control	Load Related, Security of Supply	S-E	The driver of this project is security of supply, given the projected demand growth in the centre of Belfast. Upon completion of the Energising Belfast project, there will be a risk of congestion on the Hannahstown – Donegall cable circuits under certain conditions. This project would require a land purchase local to the existing Donegall Main substation to facilitate installation of power flow control devices to balance power flows in Belfast.	TBC	New build	No	No	Potential for impacts.	The purchase of land does not in itself have any potential for positive or negative effects on SEOs. However, the future development associated with this has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. The possibility of likely significant effects from future construction on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. The future development of new infrastructure has the potential for medium to long-term negative effects on the SEO for Landscape and Visual Amenity and Cultural Heritage due to the presence of new infrastructure. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of new and upgraded infrastructure associated with future development. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
Asset Replacement Projects ²									
Ballylumford Switchgear Replacement	Asset Replacement – Separate Capital Approval	S-E	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. The need for this project arises from the age, condition and obsolescence of the existing equipment as well as the potential for high short circuit currents in the event of a transmission fault.	2030	Uprate/Modify	Yes	Yes	Very localised impacts only within existing sites.	N/A
Castlereagh – Rosebank	Asset Replacement – Separate Capital Approval	S-E	The redundant 110 kV double circuit overhead line from Castlereagh to Rosebank will be removed due to obsolescence, the connection having been replaced with underground cable.	2027	Other	Yes	Yes	Potential for impacts.	Removal of the overhead line has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Strabane-Omagh Fibre Replacement	Asset Replacement – Separate Capital Approval	N&W	The fibre optic connection between Strabane and Omagh will be replaced.	2028	Refurbish/Replace	Yes	No	Potential for impacts.	The replacement of fibre optic cables has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Ballylumford-Hannahstown 275 kV Refurbishment	Asset Replacement – Separate Capital Approval	S-E	The 275 kV circuits between Ballylumford and Hannahstown will be refurbished owing to the age and condition of the existing assets.	2030	Refurbish/Replace	Yes	No – not called out individually	Potential for impacts.	Refurbishment of the 275kV circuits has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the

² For Asset Replacement works approved via NIE Networks's RP7 Price Control, categories and sub-categories of projects are available here: [Annex Q - Planned Network Investment Volumes and Allowances.pdf](#)

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
									harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
Hannahstown-Castlereagh 275 kV Refurbishment	Asset Replacement – Separate Capital Approval	S-E	The 275 kV circuits between Castlereagh and Hannahstown will be refurbished owing to the age and condition of the existing assets.	2031	Refurbish/Replace	Yes	No – not called out individually	Potential for impacts.	Refurbishment of the 275kV circuits has the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
RP7 110 kV Overhead Line and Cable ³	Asset Replacement – NIE Price Control Approval	N&W / S-E	Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include tower and foundation assessments and remedial works, insulator, damper and steelwork replacement, pole replacement, tower painting and cable refurbishment and decommissioning.	2031	Refurbish/Replace	Yes	Yes – though specific categories / locations now approved	Potential for impacts.	Maintenance works have the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There is potential for cumulative or in-combination impacts if work is undertaken at the same time in proximity. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEO for Material Assets, which is due to the provision of upgraded infrastructure. The significance of effects on SEOs will depend on the environmental sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential environmental sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
RP7 110kV Switchgear and 110/33 kV	Asset Replacement – NIE Price Control	N&W / S-E	Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include switchgear refurbishment and replacement,	2031	Refurbish/Replace	Yes	Yes – though specific categories / locations now	Very localised impacts only within existing sites.	N/A

³ The affected circuits are: Ballylumford – Ballyvallyagh, Ballyvallyagh – Kells, Ballyvallyagh – Larne, Castlereagh – Ballynahinch, Castlereagh – PSE, Castlereagh – Rathgael, Coleraine – Loguestown, Coolkeeragh – Coleraine, Coolkeeragh – Limavady, Coolkeeragh – Killymallaght, Coolkeeragh – Lisaghmore, Coolkeeragh – Strabane, Coolkeeragh – Springtown, Dromore – Enniskillen, Enniskillen – Aghyoule, Enniskillen – Coraclessey, Gort – Omagh, Hannahstown – Lisburn, Kells – Antrim, Kells – Ballymena, Kells – Creagh, Creagh – Tamnamore, Kells – Glengormley, Kells – Rasharkin, Killymallaght – Strabane, Tandragee – Lisburn, Rasharkin – Coleraine, Strabane – Letterkenny, Strabane – Omagh, Tamnamore – Gort Tandragee – Banbridge, Tandragee – Drumnakelly, Tandragee – Lisburn, Tandragee – Newry, Tandragee – Waringstown, Kells - Rasharkin, Rasharkin - Coleraine

Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
Switchgear ⁴	Approval		replacement of transformers and associated coolers, cable, etc. refurbishment of tap changers.				approved		
RP7 275 kV Overhead Line ⁵	Asset Replacement – NIE Price Control Approval	N&W / S-E	Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include conductor sampling and replacement, tower and foundation assessments and remedial works, insulator, damper and steelwork replacement, tower replacement and tower painting.	2031	Refurbish/Replace	Yes	Yes – though specific categories / locations now approved	Potential for impacts.	Maintenance works have the potential for short to medium-term, temporary negative effects on the SEOs for 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 during the construction phase. This could include direct loss or damage of habitats and land use, disturbance of species and local populations, construction impacts on water quality, construction air emissions, disruption of existing assets including power supply, and construction phase visual impacts on local landscapes and heritage assets. There is potential for cumulative or in-combination impacts if work is undertaken at the same time in proximity. There are unlikely to be any further medium or long-term negative effects following the works and subsequent re-establishment of the area affected. The possibility of likely significant effects on European sites cannot be discounted at the plan level assessment. Project level assessment including further evaluation and analysis, and the application of measures intended to avoid or reduce the harmful effects of the project on protected sites, as necessary, may be required. There is the potential for medium and long-term positive effects on the SEOs for Population and Human Health and Material Assets, which is due to the provision of upgraded infrastructure. The significance of effects on SEOs will depend on the sensitivity of the areas in which the works will occur. This can be considered further in the next SEA assessment in advance of the TDPNI for 2028-2037. Should this project advance ahead of this, there should be further project level environmental assessment to determine the potential sensitivities in the area of the works and necessary mitigation, to be informed by the mitigation described in Section 5.4 and Appendix B.
RP7 275kV Switchgear and 275/110 kV Transformers (including 22kV tertiary windings and shunt-connected equipment) ⁶	Asset Replacement – NIE Price Control Approval	N&W / S-E	Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include replacement of instrumentation transformers, filter banks and surger arrestors, transformer oil regeneration.	2031	Refurbish/Replace	Yes	Yes – though specific categories / locations now approved	Very localised impacts only within existing sites.	N/A
RP7 Transmission Protection and Control ⁷	Asset Replacement – NIE Price Control Approval	N&W / S-E	Works will be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system. Examples include installation of new protection relays, substation monitors and related equipment and both 275 kV and 110 kV	2031	Refurbish/Replace	Yes	Yes – though specific categories / locations now approved	Very localised impacts only within existing sites.	N/A
RP6 275kV Switchgear and 275/110 kV Transformers (including 22kV tertiary windings and shunt-connected equipment) ⁸	Asset Replacement – NIE Price Control Approval	N&W / S-E	Works due to be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system in RP6 have been carried forward to RP7. Examples include replacement of 275/110 kV transformers, replacement of 275kV instrument transformers, replacement of shunt reactors.	2031	Refurbish/Replace	Yes	Yes	Very localised impacts only within existing sites.	N/A
RP6 110kV Switchgear and 110/33 kV Switchgear ⁹	Asset Replacement – NIE Price Control	N&W	Works due to be undertaken to assess and maintain, or – where necessary, replace the assets comprising the NI transmission system in RP6 have been carried forward to RP7. Examples include	2029	Refurbish/Replace	Yes	Yes	Very localised impacts only within existing sites.	N/A

⁴ The affected substations are: Aghyoule, Antrim, Ballylumford, Ballymena, Ballynahinch, Banbridge, Belfast Central, Castlereagh, Coleraine, Coolkeeragh, Creagh, Cregagh, Donegal, Drumnakelly, Dungannon, Enniskillen, Finaghy, Hannahstown, Kells, Limavady, Lisaghmore, Lisburn, Loguestown, Magherafelt, Newry, Newtownards, Omagh, Rathgael, Rosebank, Springtown, Strabane, Tamnamore, Tandragee, Eden

⁵ The affected circuits are: Tandragee – Louth, Tamnamore – Tandragee, Magherafelt – Tamnamore, Ballylumford – Kells, Kells – Magherafelt, Kilroot – Kells, Castlereagh – Tandragee, Castlereagh – Kilroot, Kilroot – Tandragee, Hannahstown – Castlereagh

⁶ The affected substations are: Aghyoule, Antrim, Ballylumford, Ballymena, Ballynahinch, Banbridge, Belfast Central, Castlereagh, Coleraine, Coolkeeragh, Creagh, Cregagh, Donegal, Drumnakelly, Dungannon, Enniskillen, Finaghy, Hannahstown, Kells, Limavady, Lisaghmore, Lisburn, Loguestown, Magherafelt, Newry, Newtownards, Omagh, Rathgael, Rosebank, Springtown, Strabane, Tamnamore, Tandragee, Eden

⁷ The affected substations are: Banbridge, Belfast Central, Castlereagh, Creagh, Cregagh, Donegal, Drumnakelly, Enniskillen, Finaghy, Hannahstown, Kells, Lisburn, Newry, Omagh, Strabane, Tandragee, Ballylumford, Coolkeeragh, Magherafelt, Tamnamore

⁸ The affected substations are: Tandragee, Kilroot, Kells, Hannahstown, Castlereagh

⁹ The affected substations are: Donegal



Project	Type	Area	Detail	Completion Date	Project Category	Within Site Boundary / Circuit Corridor	In TDPNI 2023-2032	Assessment	Description
	Approval	/ S-E	110/33 kV transformer replacement.						

Appendix B: SEA Mitigation Measures

Environmental Appraisal Report

Potential Impact	Proposed Mitigation
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.	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. 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. 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 recolonisation of habitat. Restricted working areas should be imposed to ensure minimal disturbance to sensitive habitats.
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.	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.
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.	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.
4 - Increased rate of spread of invasive species during restring or line development works. Mobile construction equipment traversing through areas of invasive species, potentially carrying these species into new areas.	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.
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.	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.

Environmental Appraisal Report

6 - Construction phase disturbance impacts to marine or aquatic nursery and spawning grounds, such as noise / vibration pollution and physical habitat disturbance.	Consultation with DAERA Inland Fisheries and DAERA Marine and Fisheries Division at the detailed feasibility stage. Known marine spawning and nursery grounds should be avoided where 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.
7 - 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.
8 - 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 and Fisheries Division at the detailed feasibility stage. Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010¹⁰) should be followed for marine based cable laying activities. For SACs which have seals as a site selection feature, the following ranges should be used for when screening for either Harbour or Grey Seals: All SACs within 135km of the project should be screening for Grey Seals (<i>Halichoerus grypus</i>) and All SACs within 50km should be screened for Harbour Seals (<i>Phoca vitulina</i>)
9 - 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.
10 - 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.
11 - 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 (e.g., where disturbance of peat soils cannot be avoided, there should be some

¹⁰ JNCC, 2010. Handbook for Phase 1 habitat survey – a technique for environmental audit.

Environmental Appraisal Report

	consideration given to possible re-seeding with native species to stabilise the peat and accelerate recovery of the vegetation).
12 - 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.
13 - 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.
14 - 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.
15 - 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.
16 - 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.
17 - 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.

Environmental Appraisal Report

	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.
18 - 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.
19 - 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.
20 - 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.
21 - 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.
22 - 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.
23 - 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 agricultural lands.	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.
24 - 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.
25 - Permanent, direct loss of existing material assets, such as agricultural land, in the development footprint of new	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

Environmental Appraisal Report

transmission infrastructure, e.g., new substations.	any works should enable all impacts to be kept to a minimum over a short timescale. Adoption of Construction Best Practice.
26 - 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.
27 - 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.
28 - 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. All new archaeological discoveries are reported in line with legislative requirements. Site-specific surveys may need to be undertaken to prevent any loss to the marine archaeological resource.
29 - 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.
30 - 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.

Environmental Appraisal Report

Appropriate Assessment of individual projects will include timely consultation with relevant planning and environmental authorities, the evaluation of up to date mapping, designations and development plans, policies, and a consideration of any relevant sectoral guidance, such as EC Guidance on Energy Transmission Infrastructure and EU nature legislation (EC, 2018) and updated Ecology Guidelines for Electricity Transmission Project when published by EirGrid.

Where avoidance is not possible adverse effects on site integrity will be avoided through project specific mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation. Mitigation measures shall aim to ensure that no adverse effect on the integrity of a European site occurs.

Where impacts are identified at project level, appropriate mitigation will be developed to ensure the resulting impacts of the construction and operation of a project do not adversely affect the integrity of a European site in view of the site's conservation objectives. Best practice measures identified in EirGrid's benchmarking Evidence-Based Environmental Studies¹¹.

The following table presents the HRA mitigation measures that will be incorporated into future project specific HRAs and EclAs, where appropriate. This list of mitigation measures is not designed to be exhaustive and shall be supplemented by project and site-specific mitigation developed by project level Appropriate Assessment and Environmental Impact Assessment.

Potential Impact	Proposed Mitigation
1 - Habitat loss - General	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 will be avoided for new-build infrastructure and avoided where reasonably practicable for refurbishment of infrastructure within European sites. 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.
2 - Habitat loss – Invasive Species	There is the potential for non-native invasive species to be present in proximity to a future project. The introduction of invasive species into a European site can affect the conservation objectives for qualifying habitats or species, potentially adversely affecting the integrity of the European site (e.g., affecting species distribution and abundance and / or out

¹¹ <http://www.eirgrid.ie/about/in-the-community/environment/>

Environmental Appraisal Report

	competing native species). Invasive species survey will be undertaken as part of the suite of ecology surveys for projects arising from the TDPNI if appropriate and in accordance with EirGrid (2012). If invasive species are found to be present, an Invasive Species Management Plan will be prepared to outline control and or removal measures to ensure such species are not spread during construction or operation of any future projects.
3 - Habitat loss – Peatland Sites	Areas of deep and active peat shall be avoided, where possible. Detailed peat slip risk assessments shall be carried out as determined on a case by case basis for proposed developments in areas where peat substrates occur on sloped ground. Construction machinery shall be restricted to site roads and designated access routes. Machinery shall not be allowed to access, park or travel over areas outside development construction zones. Peat excavated during construction activity should not be stored (temporarily or otherwise) on areas of adjacent mire habitats or near flushes or drains. Temporary storage of spoil material excavated during the construction phase developments should be stored at suitable locations away from surface watercourses. All spoil material excavated during the construction phase should be reinstated following the completion of the construction phase of a proposed development. Where disturbance of peat soils cannot be avoided, there should be some consideration given to re-seeding with an appropriate range of native species of native or, wherever possible, local provenance to stabilise the peat and accelerate recovery of vegetation.
4 – Water Quality and Habitat Deterioration	In all cases where works have the potential to impact on protected surface water or riparian habitats within or upstream of a European site, measures must be put in place to manage and minimise the risk of escape of elevated levels of suspended solids or polluting substances into watercourses. Develop, implement and enforce an Erosion and Sedimentation Control Plan (ESCP) where risks are identified to downstream European sites. The ESCP must include sufficient pollution control measures to prevent run-off, silt, hydrocarbons or any other harmful substances or substrates from entering any surrounding surface waters. Storage facilities would contain and prevent the release of fuels, oils and chemicals associated with plant, refuelling and construction equipment into the environment. All protective coatings used would be suitable for use in the aquatic environment and used in accordance with best environmental practice. 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 NIEA Pollution Prevention Guidance (DAERA, 2016) and applicable CIRIA Technical Guidance (CIRIA, 2001; CIRIA, 2006) including methods and procedures to deal with any spills and the timely reporting of incidents. • There shall be no in-stream crossing by machinery. • Silty water will be collected in settlement ponds prior to discharge to watercourses. • Buffering strips will be provided near watercourses. • All works involving open cut crossings shall be carried out during the period of May to September to avoid interruption of salmonid spawning runs, spawning, incubation of eggs and the early developmental stages. • Where appropriate and practical, bank vegetation and bed material which has been removed shall be stored to facilitate its replacement when channel works in the vicinity of a watercourse have been completed. • Works in the vicinity of a watercourse shall be carried out with reference to a water quality protection or surface water management plan for each site which shall ensure that: • All necessary measures shall be taken to minimise the generation and release of sediments into all watercourses.

Environmental Appraisal Report

	• Levels of suspended solids in the river shall be monitored during the course of the works. • Precautions shall be put in place to avoid spillages of diesel, oil or other polluting substances.
5 – Disturbance and Displacement - Birds	Where feasible, site clearance involving the cutting or destruction of vegetation and hedgerows shall not take place in the bird breeding season between March 1st and August 31st inclusive. Mitigation measures to reduce disturbance effects on feature species birds may include but not be limited to: 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 overwintering birds between the months of November and March inclusive) Avoid working simultaneously with other projects which could also cause disturbance. Screening of works to reduce disturbance impacts. On the advice of relevant ornithological experts and agencies, conduct surveys where the risk of collision on migratory routes cannot be excluded at screening stage. Bird warning devices shall be put in place where crossings of sensitive flight corridors cannot be avoided and where a collision risk occurs. Surveys focusing on feature species which can move outside the confines of a European site shall be conducted to ensure any significant flight lines (e.g. regular flight lines for feature species birds related to, but outside of an SPA) or areas of supporting habitat (e.g. foraging areas for feature species birds in close proximity to, but out with an SPA; or otter holts out with an SAC, etc.) would be identified and avoided or appropriate mitigation measure put in place.
6 – Disturbance and Displacement – Otters	Works shall 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. No wheeled or tracked vehicles (of any kind) shall be used within 30m of non-breeding otter holts. Light work, such as digging by hand or scrub clearance shall also not take place within 30m of such holts, except as agreed with NIEA under licence.
7 – Disturbance and Displacement – Marine Mammals	Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise (JNCC, 2010) and appropriate legislation (i.e., The Habitats Regulations (as amended) and Wildlife (NI) Order 1985 (as amended)) will be followed for marine based cable laying activities.