

Environmental Appraisal Report of the Transmission Development Plan 2016-2026



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1. Introduction

EirGrid plc (EirGrid) is the national electricity Transmission System Operator (TSO). In our role as TSO in Ireland, we operate and maintain a safe, secure, reliable, economical and efficient transmission system. We develop, with due regard for the environment, key infrastructural projects which are vital for the socio-economic development of the State.

The Transmission Development Plan (TDP) 2016-2026 presents all the transmission projects that are currently progressing for the period 2016-2026. It is likely that, given the continuously changing nature of electricity requirements, new developments will emerge that could impact the plan as presented. These changes will be identified in future studies and accommodated in future development plans which will also be subject to an Environmental Appraisal.

This Environmental Appraisal Report (EAR) has been prepared to ensure that the TDP 2016-2026 is in accordance with the provisions of the Strategic Environmental Objectives as detailed in the Strategic Environmental Assessment (SEA) for the Grid25 Implementation Programme (IP) 2011-2016.

The Grid25 IP 2011-2016 was subject to SEA (Directive 2001/42/EC of the European Parliament and of the Council of Ministers, of 27 June 2001, on the Assessment of the Effects of Certain Plans and Programmes on the Environment). The Grid25 IP 2011-2016 was also subject to Appropriate Assessment under the provisions of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC). The IP is a practical overview of how the early stages of Grid25 are to be implemented and identifies those parts of the transmission system that are envisaged as likely to be developed over the period 2011-2016.

A commitment of the SEA was to conduct an environmental appraisal of each subsequent TDP, to identify any updates to these documents since the publication of the Grid25 IP and to assess ongoing monitoring measures and targets as set out in the SEA. This process is illustrated in Figure 1.1. Note that the annual assessment of monitoring measures and targets will form a separate report to this Environmental Appraisal Report of the TDP.

A commitment of the SEA (2012) was also to conduct a review of any new Grid Implementation Plan. The 2011-2017 Plan is nearing the end of its life cycle and a new plan based on a revised Grid strategy is being developed. Strategic Environmental Assessment and (the requirements for) Appropriate Assessment will be undertaken for the new implementation plan.

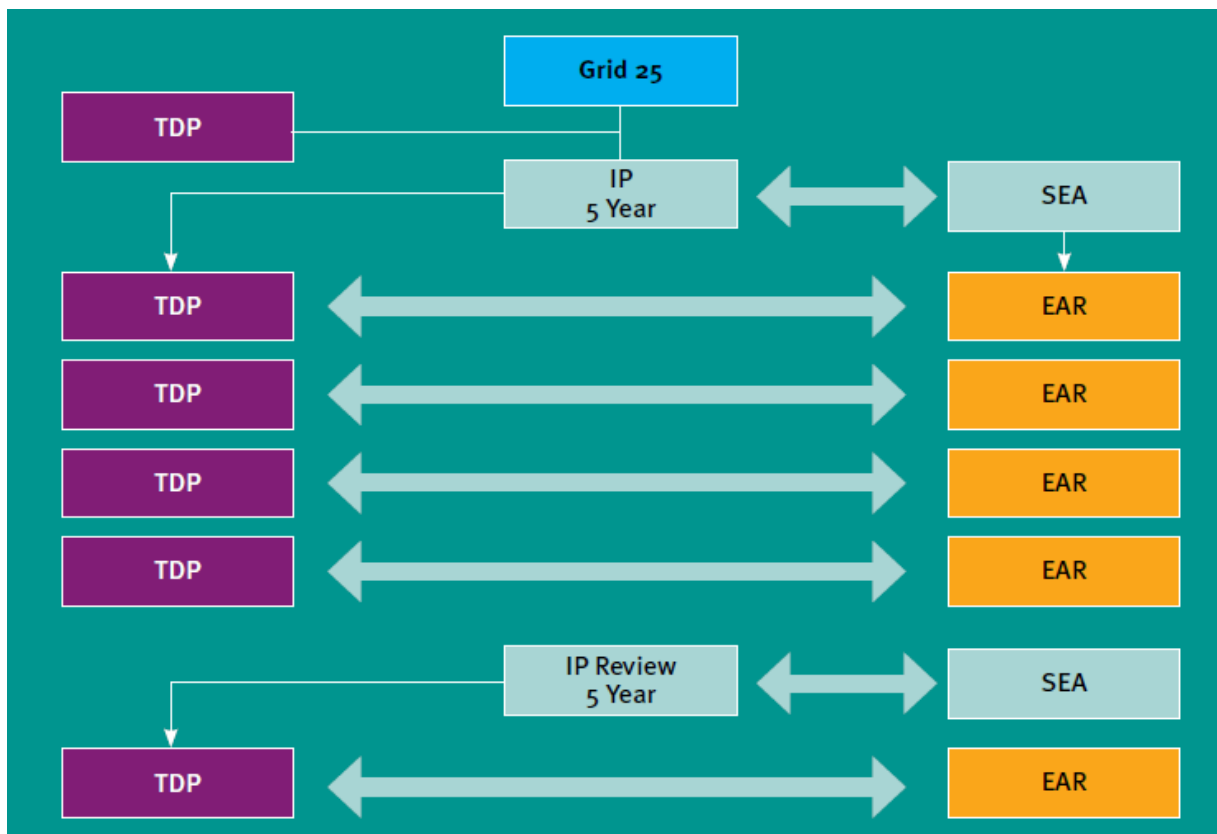


Figure 1.1 Process of Environmental Appraisal of TDPs

2. Update on Projects in TDP 2016-2026

To ensure adequate security of electricity supply, further market integration, and the integration of renewable energy sources (RES), it is necessary to provide ongoing and timely reinforcement of the Irish 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 changes that have occurred since 31st March 2015 (data freeze of TDP 2015) are summarised in Table 2.1. Twenty projects have been completed since TDP 2015, 1 active TDP 2015 project has changed in scope and 1 active TDP 2015 project has been put on hold. Thirteen new projects have been introduced since TDP 2015. It is these 13 new projects (Table A1.1 Appendix 1) that are examined in this report. Note that the data freeze date is 31 March 2016.

Description of Projects	No. of Projects
Total TDP 2015 projects	138
New projects introduced since TDP 2015	(+) 13
Projects completed since TDP 2015	(-) 20
Active TDP 2015 projects which have changed in scope ¹	(-) 1
Active TDP 2015 projects put on hold	(-) 1
Inactive projects in TDP 2016	(-) 13
Total Active Projects in TDP 2016	116

Table 2.1: Summary of Changes since TDP 2015

The TDP includes 116 projects that are currently in progress. These projects are categorised as either “New Build”, “Uprate/Modify” or “Refurbish/Replace” projects.

New Build projects: are projects that involve the construction of new stations or new circuits. This category also includes projects that involve the installation of new equipment in existing stations.

An example of a new build project is the installation of new transformers or new reactive support devices within existing stations.

Uprate/ Modify projects: are projects that involve the uprating of existing assets. An example of an uprate project is changing equipment to increase the capacity rating of circuits or busbars.

This category also includes projects that involve the modification of existing assets.

An example of a modification project is the installation of new couplers or new bays in existing stations. Reconfiguration of existing stations is also included in this category.

¹ One inactive TDP 2015 project has also changed in scope

Refurbish/ Replace projects: are projects that involve the maintenance of existing stations or existing circuits. This category also includes projects that involve the replacement of existing assets. For example, the replacement of stations at or close to the end of their useful life or replacement and upgrading of protection in existing stations.

Table 2.2 summarises the active 116 projects into their respective categories.

Project Category	No of Projects
New Build	34
Uprate/Modify	60
Refurbish/Replace	20
Other	2
Total	116

Table 2.2 Summary of Active Projects by Category

3. Examination and Evaluation of New Projects against Strategic Environmental Objectives

3.1 Strategic Environmental Objectives

The SEA of the Grid25 IP set out ten Strategic Environmental Objectives (SEOs). SEOs are methodological measures against which the potential environmental effects of the TDP can be examined. The SEOs are set out under a range of environmental topics (see Table 3.1). The SEOs are used as standards against which the provisions of the TDP can be evaluated. This is in order to help identify areas in which potential significant impacts may occur. The new projects as set out in the TDP 2016-2026 are evaluated against these SEOs in Section 3.6.

SEO Code	Strategic Environmental Objective
B1	To ensure compliance with the Habitats Directive with regard to the protection of Natura 2000 Sites and Annexed habitats and species ²
B2	To ensure compliance with Article 10 of the Habitats Directive with regard to the management of other environmental features – which by virtue of their linear and continuous structure or they function, act as stepping stones – which are of major importance for wild fauna and flora and essential for the migration, dispersal and genetic exchange of wild species
B3	To avoid significant impacts on relevant habitats, species, environmental features or other sustaining resources in Wildlife Sites ³
L1	To avoid significant adverse impacts on the landscape, especially with regard to those arising from impacts on the factors which comprise the Landscape Constraints Rating Map ⁴
CH1	To avoid unauthorised impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPSs)
C1	To help to facilitate the achievement of higher level government targets contained in the Government’s Energy White Paper Delivering a Sustainable Energy Future for Ireland – the Energy Policy Framework 2007-2020 and relating to the Kyoto Protocol
HH1	Minimise proximity of development to concentrations of population in order to reduce actual and perceived environmental effects
W1	To prevent impacts upon the status of surface waters in line with the recommendations outlined in the River Basin Management Plans
W2	To prevent pollution and contamination of groundwater in line with the recommendations outlined in the River Basin Management Plans

MS1	To minimise effects upon the sustainable use of land, mineral resources and soil
<ul style="list-style-type: none"> · ‘Annexed habitats and species’ refers to those listed under Annex 1, II and IV of the EU Habitats Directive and Annex I of the EU Birds Directive · ‘Wildlife Site’ is as defined in the Planning and Development Act 2000 · The Landscape Constraints Rating mapping factors are: <ul style="list-style-type: none"> *Elevation > 200m; *Forestry landcover areas; *Slope > 30 degrees *Lakes and estuaries; and *Other Natural Landcover Types 	

Table 3.1: Strategic Environmental Objectives as set out in the Grid 25 IP 2011-2016 SEA

3.2 Planned Network Developments- Regional Perspective

Planned projects are categorised under three planning areas as per the following map.

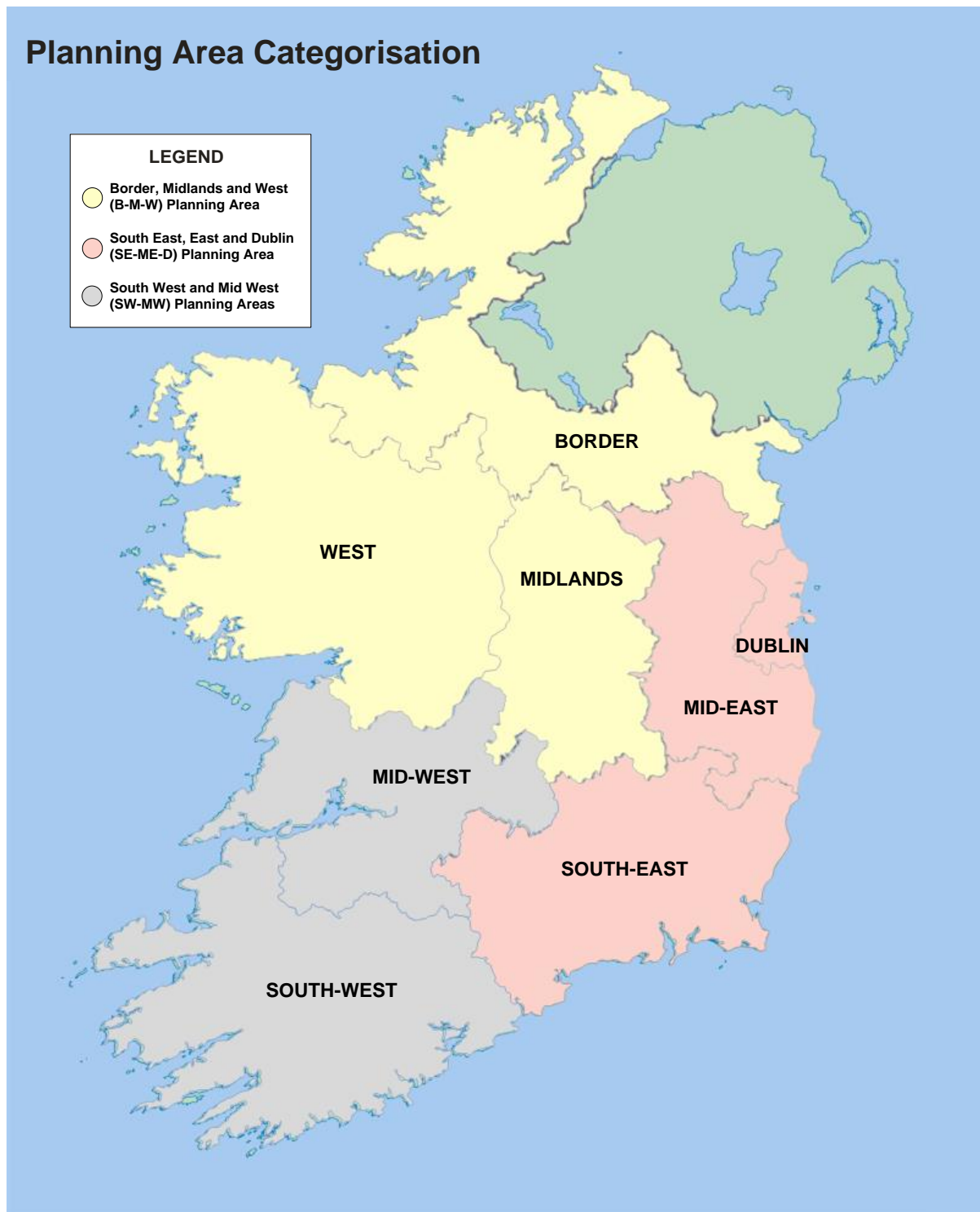


Figure 3.1 Illustration of the three Planning Areas

A summary of active projects per region is presented in Table 3.2. Sections 3.2 to 3.5 examine new projects (i.e. projects not listed in the previous TDP 2015-2025) on a regional basis. The known environmental sensitivities of the region and any likely issues arising in each area are presented as defined in the Grid25 IP Environmental Report.

Active Projects by Planning Area	
Planning Area	No. of Active Projects
Border, Midlands and West (B-M-W)	39
South-West and Mid-West (SW-MW)	38
South-East, Mid-East & Dublin (SE-ME-D)	33
National Projects ²	6
Total	116

Table 3.2 Summary of Active Projects by Planning Area

3.2.1 Border, Midlands and West Planning Area

Within the Border, Midlands and West Planning Area there are 3 new projects in TDP 2016-2026. These projects are listed in Table 3.3. Two of these projects are proposed uprate/modification projects and are related to works that are required within existing substations. The refurbishment of the Flagford-Louth 220 kV overhead line is also listed for commencement in 2017. This refurbishment is across a number of counties including Roscommon, Leitrim, Longford, Cavan, Meath, Louth.

Environmental Sensitivities

The Border region contains some of Ireland’s most important energy resources as well as high concentrations of environmental sensitivities.

In the Midlands area, environmental sensitivities increase along a diagonal axis from a very robust south-east to an increasingly sensitive north-west due to the presence of the Shannon system of rivers, lakes and wetlands.

² These involve multiple individual projects at various locations across the country.

The West area contains some of the country’s highest concentrations of environmental designations – many of international and national significance.

Likely Issues Arising

For line uprate/ modification projects and refurbishment projects, potential environmental issues can occur if works are required within ecologically sensitive areas. The project listed in Table 3.3 do not occur within areas of ecological sensitivity and no significant environmental issues are considered likely to occur in delivering these projects.

The public planning and appropriate assessment requirements for each project will be determined and prepared in accordance with best practice. It is the case that projects cannot be granted permission if adverse effects on the integrity of a European Site (Natura 2000 site) are likely to occur.

CP No	Project Title	Project Type	ECD
CP0951	Garvagh 110 kV Station Redevelopment	Uprate/ Modify	2017
CP0976	Portlaoise 110 kV Station – Uprate two DSO Transformers	Uprate/ Modify	2017
CP0867	Flagford - Louth 220 kV Refurbishment Project	Refurbish/ Replace	2018

Table 3.3: New Projects in the Border, Midlands and West Areas (extracted from the TDP 2016-2026)

3.2.2 South-West and Mid-West Planning Area

Within the South-West and Mid-West Planning area, there are 7 new projects detailed in the TDP 2016-2026. Of these, six projects are new build and one is uprate/modify. These projects are detailed in Table 3.4. Four of the proposed new build projects include the installation of new equipment within existing substations. Security of supply and renewable energy sources (RES) integration are the drivers of these projects. Two of the proposed new build projects involve the

construction of new substations for the connection of windfarms, RES integration is the driver of these projects. The update/modify project involves works within an existing substation/ minor extensions of an existing substation. RES integration is the driver of this project.

Environmental Sensitivities

In the South-West area in general, sensitivity increases towards the coastal areas, with increased sensitivity along the major rivers that cross this area. The Mid-West area contains a number of very sensitive landscapes. The Burren and Galway Bay would be sensitive to development. The Hills of Clare also contain extensive areas of sensitivity and significance. The Shannon Estuary and the Lower Shannon contain highly sensitive and significant ecological, cultural and scenic resources.

Likely Issues Arising

In the South-West area, potential conflicts could occur in the development of new infrastructure or upgrading of existing lines where routes cross ecologically and scenically sensitive areas – principally located on bog landscapes – but also in upland, lake, wetland and river habitats. There is a high concentration of Natura 2000 sites located in the South and Mid-West and in the absence of sensitive routing, difficulties could emerge with regard to meeting the provisions of the Habitats Directive.

The public planning and appropriate assessment requirements for each project will be determined and prepared in accordance with best practice. It is the case that projects cannot be granted permission if adverse effects on the integrity of a European Site (Natura 2000 site) are likely to occur.

CP No	Project Title	Project Type	ECD
CP0926	Slievecallan 110 kV Station – New Station	New Build	2017
CP0930	Barnadivane 110 kV Station – New Station	New Build	2017
CP0941	Moneypoint 110 kV Station – New 110V GIS Transformer Bay	Uprate/ Modify	2017
CP0933	Thurles 110 kV Station – New Statcom	New build	2020
CP0934	Ballynahulla 110 kV Station – New Statcom	New build	2020
CP0935	Ballyvouskill 110 kV Station – New Statcom	New build	2020
CP0936	Knockanure 110 kV Station – New Reactor	New build	2018

Table 3.4: New projects in the South-West and Mid-West areas (extracted from the TDP 2016-2026)

3.2.3 South-East, Mid-East and Dublin Planning Area

Within the South East, Mid-East and Dublin Planning Area, there are three new projects detailed in the 2016-2026 TDP. Of these, one project is a new build project and two are uprate/modify projects. These projects are detailed in Table 3.5. The new build project involves the construction of a new substation for the connection of a new transmission connected demand customer. The two uprate/modify projects are largely within the confines of existing substations. These projects facilitate the connection of more demand and windfarms.

Environmental Sensitivities

The environmental resources of the South-East comprise upland areas, river valleys and coastal areas. The lowlands generally have a high capacity to sustainably absorb development.

In the Dublin and Mid-East areas there is a mixture of areas of environmental sensitivity and areas with high levels of urbanisation. Extensive areas of industrial peatlands are located in the

midlands, there are extensive upland areas and forestry in the south-east and the coast contains areas of ecological, scenic and cultural significance.

Likely Issues Arising

There is a low potential for any significant effects to arise given the nature of the projects and the known environmental sensitivities of the area. Two of the proposed projects are related to existing transmission assets and within existing substations. One is a new build project in the Greater Dublin Area.

The public planning and appropriate assessment requirements for each project will be determined and prepared in accordance with best practice. It is the case that projects cannot be granted permission if adverse effects on the integrity of a European Site (Natura 2000 site) are likely to occur.

CP No	Project Title	Project Type	ECD
CP0927	Clonee 220 kV Station – New 220 kV Station to supply a demand load	New Build	2017
CP0928	Cloghran Phase 3, Cloghran 110 kV Station – 2 New Transformers and cables	Uprate/Modify	2016
CP0915	Cauteen 110 kV Station – Busbar expansion and station development	Uprate/Modify	2017

Table 3.5: New projects in the South-East, Mid-East and Dublin areas (extracted from the TDP 2016-2026)

3.3 Evaluation of Planned Network Developments (new to TDP 2016-2026) against Strategic Environmental Objectives

As detailed in tables 3.3-3.5, there are three types of new reinforcement projects in the TDP 2016-2026 – new builds, refurbishment/replacement projects and uprate/modifications projects.

The integration of renewable energy sources is a key driver in new projects detailed for the Border, Midlands and West planning area and the South West and Mid-West planning area. This will be achieved through new build, uprate/modification and refurbishment projects. This key

driver is in accordance with SEO C1 (to help facilitate the achievement of higher government targets in relation to Energy policy) and is likely to improve this SEO in the longer term.

By making improvements to the existing transmission system through upgrades/modifications and refurbishment/replacements, potential impacts to the receiving environment can be minimised. The utilisation of existing assets would have a neutral impact on SEOs related to landscape (L1), ecological connectivity (B2), population centres (HH1) and sustainable land use (MS1). Potential issues can arise where (existing) transmission infrastructure assets are located in sensitive areas such as sites designated for nature conservation (B1, B3), areas of significance for cultural heritage (CH1) and or sensitive water catchments (W1, W2). In general, these issues can be identified early in the project planning process and mitigation measures developed to ensure that no significant effects arise.

The impact of any new build project is a function of the project type and the sensitivities of the environment in which it is to be developed. There is the potential for impacts on a range of environmental factors. However, with proper planning and robust environmental assessment, significant effects (and conflicts with SEOs) can be mitigated in the vast majority of cases. Certain new build projects have the potential to conflict with the SEO related to landscape. The application of mitigation through avoidance (of sensitive landscape areas), sensitive routing and screening may not be sufficient in all instances to remove significant effects on localised landscapes. A high level review of the new projects listed on the 2016-2026 TDP indicates that there is unlikely to be any potential for significant residual impacts post mitigation for any of the new build projects proposed as all are within existing substations.

Table 3.7 summarises the evaluation of SEOs against the three different types of reinforcement projects. Mitigation measures as detailed in the SEA Environmental Report, which remain relevant for this environmental appraisal of the TDP, are presented in Appendix 2.

Reinforcement Type	Likely to improve status of SEOs	Neutral impact on status of SEOs	Potential conflict with status of SEOs –mitigation possible to avoid significant effects	Potential conflict with status of SEOs – potential for significant residual impacts (post mitigation)
New Build	C1		B1, B2, B3, CH1, HH1, W1, W2, MS1	
Refurbish/ Replace	C1	L1, B2, HH1, MS1	B1, B3, W1, W2 CH1	
Uprate/ Modify	C1	L1, B2, HH1, MS1	B1, B3, W1, W2, CH1	

Table 3.6: Summary evaluation of planned network developments (new to TDP 2016-2026) in relation to Strategic Environmental Objectives (SEA of Grid 25 IP 2011-2016)

All new build projects will be subject to environmental assessment as part of the planning process for these projects.

Refurbishment/replacement and uprate/modification projects are generally considered to be exempted development under Sections 4(1)g and 4(1)h of the Planning and Development Act. Where there is potential for significant effects on a European Site, this exempted development status is lost and planning permission must be sought, accompanied by a Natura Impact Statement. As a Public Authority, we undertake screening for Appropriate Assessment for all planned network developments.

4 Conclusion

The TDP 2016-2026 has been examined in terms of the provisions of the SEA of the Grid25 Implementation Programme. Thirteen new projects are detailed in TDP 2016-2026 which are new/additional to those projects detailed in the Grid25 IP and the TDP 2015-2025. Therefore, to ensure consistency with the provisions of the SEA, these projects have been examined against the strategic environmental objectives as detailed in the Environmental Report (2012). These projects consist of new builds, refurbishment/replacement projects and uprates/modification projects.

These three categories of projects (as they relate to the project listed) have been assessed against the Strategic Environmental Objectives from the SEA and it has been determined that following the implementation of mitigation measures the SEOs will be achieved.

Environmental assessments, as part of Environmental Reports or Environmental Impact Assessments in respect of specific projects, will seek to minimise and where possible avoid significant effects on the natural environment and landscape.

Appendix 1: New Projects in TDP 2016-2026

This table contains the New Projects in TDP 2016-2026

CP No	Project Title	Project Type	ECD (as at the Data Freeze Date)
CP0951	Garvagh 110 kV Station Redevelopment	Uprate/ Modify	2017
CP0976	Portlaoise 110 kV Station – Uprate two DSO Transformers	Uprate/ Modify	2017
CP0867	Flagford - Louth 220 kV Refurbishment Project	Refurbish/ Replace	2018
CP0926	Slievecallan 110 kV Station – New Station	New Build	2017
CP0930	Barnadivane 110 kV Station – New Station	New Build	2017
CP0941	Moneypoint 110 kV Station – New 110V GIS Transformer Bay	Uprate/ Modify	2017
CP0933	Thurles 110 kV Station – New Statcom	New build	2020
CP0934	Ballynahulla 110 kV Station – New Statcom	New build	2020
CP0935	Ballyvouskill 110 kV Station – New Statcom	New build	2020
CP0936	Knockanure 110 kV Station – New Reactor	New build	2018

CP0927	Clonee 220 kV Station – New 220 kV Station to supply a demand load	New Build	2017
CP0928	Cloghran Phase 3, Cloghran 110 kV Station – 2 New Transformers and cables	Uprate/ Modify	2016
CP0915	Cauteen 110 kV Station – Busbar expansion and station development	Uprate/ Modify	2017

Table A1.1: New Projects in TDP 2016-2026

Appendix 2: Mitigation Measures

Mitigation Measure Code	Mitigation Measure Title	Status update
EMM1	Full Integration of Planning and Environmental Considerations in EirGrid's Transmission System Planning	Has already occurred; changes will continue to be implemented.
EMM2	Preparation of Strategic Environmental Constraints Mapping	Complete. Will be updated on an ongoing basis, as appropriate, to include most up-to-date, relevant environmental data.
EMM3	Preparation of Evidence-based Environmental Guidelines	In progress.

EMM ₄	Consideration of the Broadest Possible Range of Alternatives in all Future Energy Transmission Strategies	In progress, Draft Revised Grid Development Strategy published which outlines the new approach to Grid Development
EMM ₅	Preparation of Transmission Development Plan Environmental Appraisal Report	Ongoing.
EMM ₆	Ongoing Co-operation in preparation of Renewable Energy Generation Guidelines and Strategies	Ongoing
EMM ₇	Integrating Offshore Grid connectivity requirements and environmental considerations in EirGrid's Strategic Environmental Framework (SEF)	Commenced
EMM ₈ (A to K)	Other measures integrated into the IP	Measures to be adhered to for new projects as relevant and as appropriate. Measures to be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Environmental Design Guidelines

EMM8 Other Measures Integrated into the IP

Mitigation measures described below have been worded to facilitate direct transcription and incorporation into the Implementation Programme.

Note that the following mitigation measures will be extended and augmented by the output from the Environmental Benchmarking Studies and Evidence-Based Design Guidelines described above.

EMM8A Biodiversity and Flora and Fauna

EMM8A(i) Designated European and National Sites of Nature Conservation Interest

Every effort will be made to avoid designated sites of conservation importance. However, where this is not possible, routing will be selected to ensure no significant impacts on the integrity of the site. Restricted working areas will be imposed to ensure minimal disturbance to sensitive habitats.

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 bogland areas. Aerial access will be considered - for both materials and workforce - in exceptionally sensitive sites.

Ecological monitoring will be undertaken at sensitive sites during construction as appropriate. Such sites will be identified on a case by case basis.

EMM8A(ii) General Habitat Loss and Disturbance

- Where possible, direct habitat loss within designated sites will be avoided.
- 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 bogland areas. Aerial access will be considered - for both materials and workforce - in exceptionally sensitive sites.
- Use of bog-mats to minimise the impact of heavy machinery on vegetation and soils.
- Minimise extent of works areas.
- 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 as near as possible to its former condition.

EMM8A(iii) Bogs and Peatland areas

- Areas of deep and active peat shall be avoided.
- Detailed peat slip risk assessments should be carried out for all proposed developments in areas where peat substrates occur.

- Construction machinery should 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.
- 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 possible re-seeding with native species to stabilise the peat and accelerate recovery of the vegetation.

EMM8A(iv) 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.
- On the advice of relevant ornithological experts and agencies bird warning devices shall be put in place where crossings of sensitive flight corridors cannot be avoided.

EMM8A(v) Bats

- The removal of bat commuting and foraging habitat shall be avoided where possible during the construction and operation phase of infrastructure.
- Where the removal of commuting or foraging habitat cannot be avoided alternative habitat should be established prior to such habitat removal.
- Trees scheduled for felling as part of site clearance shall be checked by a bat specialist for the presence of bats.
- Where bats are noted to be within a tree prior to felling operations, it will be necessary to postpone felling to create the opportunity for bats to cease usage. If bats do not leave a tree or building within a reasonable time frame, it may be possible for a bat specialist to seek to exclude the bats (or otherwise remove them to safety). This shall be carried out by a qualified bat specialist with written permission from the National Parks and Wildlife Section of the Department of Arts, Heritage and the Gaeltacht by way of a licence to derogate from

the protection afforded bats by Irish and EU law. All licences shall be in place prior to felling procedures as to destroy a roost without a licence is an offence.

EMM8A(vi) Otters

- Destruction of active otter holts shall be avoided
- 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) should be used within 20m of active, but non-breeding, otter holts. Light work, such as digging by hand or scrub clearance should also not take place within 15m of such holts, except under licence.

EMM8A(vii) Other protected species

- The breeding and resting sites of protected species shall be avoided during the appropriate seasons.
- Heavy machinery shall not be used within 30m of an occupied badger sett.
- A derogation licence from the respective Wildlife Acts³ shall be sought – and works shall not be commenced without such consent where it appears that protected flora and fauna species are likely to be unavoidably disturbed.

EMM8A(viii) Protected Surface Water or Riparian Habitats

In all cases where works have the potential to impact on protected surface water or riparian habitats, the Inland Fisheries Ireland document Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites shall be adhered to.

Development of transmission infrastructure adjacent to designated fisheries shall be carried out in consultation with Inland Fisheries Ireland to minimise the potential effects on designated surface waters.

EMM8A(ix) Freshwater Pearl Mussel Catchments

- Action measures as outlined in the Sub Basin Management Plans shall be taken into account where development is considered adjacent to areas associated with Freshwater Pearl Mussels.

³ Referenced statutory obligation

- In the vicinity of waters that sustain populations of Freshwater Pearl Mussels the following additional mitigation measures shall be employed;-
 - There shall be no Stream crossing by machinery.
 - Silty water will be collected in settlement ponds prior to discharge to watercourse.
 - Buffering strips will be provided near watercourses.

EMM8A(x) Fisheries

- All works adjacent to designated fisheries waters will be done in consultation with Inland Fisheries Ireland.
- All works involving open cut crossings shall be conducted during the period 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 have been completed.
- Works in the vicinity of a watercourse shall be carried out with reference to a water quality protection 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 [].
 - 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.

EMM8A(xi) Mature Trees

Where construction work is required close to trees, the National Joint Utilities Group ‘Guidelines for the Planning Installation and Maintenance of Utility Services in Proximity to Trees’ (NJUG 10) will be followed.

EMM8A(xii) Hedgerows

All disturbed hedgerows will be re-planted as soon as possible after construction, using Irish nursery stock and indigenous species. Planting will be maintained until vigorous re-growth has been established. Where hedges of particular value are encountered the extent and duration of the works shall be minimised. For species-rich banks, turf will be stripped and stored separately for replacement on re-instatement.

EMM8B Water Resources

EMM8B(i) Accidental spillage of fuel chemicals or sewage causing pollution to water or ground

- Develop, implement and enforce a Water Pollution Prevention and Environmental Emergency Response Plan for all work sites [See also o]. This should include good site practices as described in the Good Practice Guidance notes proposed by EA/SEPA/EHS.

EMM8B(ii) Suspended solids & sediment deposition

- Precautions shall be put in place to avoid or minimise the generation and release of sediments⁴ into all watercourses.

EMM8B(iii) Physical Damage to watercourses

- Develop, implement and enforce a code of best practice for construction and reinstatement methods to be used for unavoidable construction works in the vicinity of watercourses.

EMM8B(iv) Flooding

- Within known floodplains measures shall be taken to avoid any potential impact of construction or existence of the works on the capacity for floodwater storage.
- Damage to any flood defence embankments shall be immediately repaired to a standard equal to or better than the existing embankments.

⁴ Sediments in this instance include all soils including peat.

- EirGrid shall carefully examine development proposals to ensure consistency with the requirements of The Planning System and Flood Risk Management: Guidelines for Planning Authorities (DEHLG, 2009)⁵.
- EirGrid shall engage with planning authorities at an early stage, utilising arrangements for pre-planning application consultation with regard to any flood risk assessment issues that may arise.
- EirGrid shall carry out a site-specific flood risk assessment, as appropriate, and comply with the terms and conditions of any grant of planning permission with regard to the minimisation of flood risk.

EMM8C Soils and Geology

EMM8C(i) Geological Features

- Site investigations shall be undertaken at intervals and specific locations along the power circuit route. This information shall be used to plan sitework operations to anticipate, avoid or minimise construction impacts arising from disturbance of sub-surface conditions.
- Cut and fill operations should be avoided unless absolutely necessary.
- Route selection and lower tier assessments should consult Geological Survey of Ireland as appropriate in relation to geological heritage sites either recommended for NHA or County Geological Site designation.

EMM8C(ii) Soil

- Height of stockpiles should be limited to less than 3 m and storage time will be minimised.
- Material handling and reinstatement operations should follow good practice to avoid inadequate or over compaction of the materials.
- Route selection and lower tier assessments for peatland areas should consider relevant government guidelines on development in these areas as well as relevant datasets

⁵ Referenced statutory obligation

including the Geological Survey of Ireland's landslide dataset and Teagasc's subsoils dataset.

EMM8C(iii) Mineral Resources

The power circuit shall be routed to avoid disturbance to existing or planned operations of areas of extraction and licensed mineral reserves.

EMM8C(iv) Contaminated Land

- A ground investigation may be undertaken to survey, analyse and assess the areas where there is a potential for this risk to arise.
- Following this, method statements shall be prepared to deal with any area of contaminated ground.

EMM8C(v) Bedrock

- Route selection and lower tier assessments should consider Geological Survey of Ireland's bedrock data as appropriate in order to anticipate engineering difficulties.
- Route selection and lower tier assessments should consider Irish National Seabed Survey data and INFOMAR survey data as appropriate to anticipate the nature and depth of stable substrate for offshore projects foundations and connection to onshore grid.

EMM8D Cultural Heritage

- Where the proposed route is in close proximity to archaeological sites the working area shall be kept to a minimum.
- Pre-construction works shall be carried out in those unrecorded areas identified as having archaeological potential.
- There will be full implementation of an Archaeological Plan including, pre-construction works, watching brief and excavation.
- Where previously unrecorded finds are uncovered during construction, adequate archaeological investigation and recording will be carried out before construction works in these areas are continued.

EMM8E Landscape and Visual

Routes shall be selected according to the following criteria;-

- Avoidance of areas designated as being of scenic sensitivity or significance.
- Avoidance of areas that would disproportionately impinge upon sensitive landscape features – such as prominent skyline ridges, shores, river crossings.
- Avoid areas that would disproportionately impinge upon sensitive areas or sites of cultural or historic significance – including monuments, listed and protected structures and their contexts and sites.
- Route selection and lower tier assessments should consider (as appropriate) data from the landscape character assessments contained in the development plans of local authorities.

EMM8F Noise

In relation to noise sensitive receptors, the constraints mapping shall identified areas of high building density and therefore any route corridors selected shall attempt to minimise impacts on built up areas.

EMM8G Liquid Effluent and Spillages

Portable toilets will be provided at the site offices. They will be emptied regularly by a specialist contractor as appropriate.

EMM8H Solid Wastes

Waste Management Plans will be prepared as part of the overall project design. This will identify likely waste arisings, approximate quantities and appropriate handling and disposal methods.

EMM8I Construction of New Substations and Extension of Existing Substations

EMM8I(i) The construction of new substations can have a significant impact particularly where the area is undeveloped. Site selection needs to ensure sensitive landscapes and habitats are avoided. Opportunities for natural screening from topography and vegetation should be maximised and used wherever possible as this will provide the best opportunity for integrating the facility into the existing landscape.

EMM8I(ii) It will be important to ensure that substations are not located within the floodplain of major watercourses, which could impact on the access and functioning of the substation. Also, it will also be important to ensure that new substation locations avoid designated conservation sites and sensitive habitats.

EMM8I(iii) Where existing substations need to be extended it will be important to ensure the extension does not impact on any nearby built up areas and that the extension is appropriately designed to ensure adequate integration with the existing environment. The scale of the extension should be suited to the surrounding area and should not be inappropriate given the size of the existing facility and its surroundings.

EMM8J Reinforcement of the Transmission System in the Regions⁶

EMM8J(i) Midlands Region

The Midlands Region is transected by many kilometres of major and minor grid infrastructure as well as having a significant concentration of junctions and substations - many associated with existing or former power stations. These routes and sites offer strong precedent that should be re-used wherever possible. It should be recognised that large areas of cut-over peat lands may not be suitable low-resistance routing options as many of these sites are nearing the end of production and most if not all will shortly be reinstated as peat land sites that are likely to be deemed to be sensitive - if not protected - habitats.

New major grid projects in this Region will be challenged when trying to identify optimum crossing points over the sensitive Shannon system. Existing crossing points should be re-used or intensified wherever possible. Such crossing points should be identified and secured in regional and county development plans as a matter of urgency - they are nationally significant economic assets.

EMM8J(ii) South-East Region

Larger scale grid developments in the South East Region should parallel coastal plains and major river systems - ideally occupying the transitional foothills - without encroaching on either the more sensitive uplands or the immediate environs of rivers and coasts.

Most major routes within this region follow the transition between uplands and lowlands and cause little adverse environmental effect. If future development continues this general pattern there is a low potential for significant effects to arise.

⁶ Note that no specific measures are stated here for the Border and West Regions; all other mitigation measures apply as relevant.

EMM8J(iii) Mid-West Region

Major grid development works in the Mid-West Region should re-use or closely follow established routings or areas with established precedent of large-scale infrastructural and industrial development. New works should parallel the coasts and rivers - which contain dense corridors of anciently established settlement - while avoiding more sensitive upland interiors. High levels of rural dwellings in some areas may require sub-optimal proximity to some environmental sensitivities, such as cultural heritage.

EMM8J(iv) South-West Region

If new grid development continues patterns of following the strongly east-west trending river valleys in the South-West Region there is a low potential for significant adverse effects on the environment. Major grid developments should be confined to the more environmentally robust centre and east of this region.

The development of new transmission lines between Moneypoint and Cork City would need to carefully consider ecological and visual impact issues, especially in upland areas. Alternatives should consider the reuse of existing power and transport links.

EMM8J(v) Dublin & Mid-East Region

It would be useful to integrate with Development plans - both at Regional and County level - to identify infrastructure corridors - ideally paralleling the existing and emerging major road and rail corridors that will develop in the Dublin and Mid-East Region during the period to 2025. It would also be of merit, for working in existing and emerging urban and peri-urban areas, to clearly identify criteria that would lead to determining when and where to underground electricity infrastructure. Land Use Plans for Urban Areas should be encouraged to specifically zone land for sub-stations and to protect existing strategic corridors from inappropriate development.

Urban areas should be encouraged to specifically zone land for sub-stations and to protect existing strategic corridors from inappropriate development.

EMM8K National and EU Legislation and Plans/Programmes

Where grid related development is proposed, EirGrid will seek to contribute towards the protection of environmental features, as relevant and appropriate to EirGrid's responsibilities and obligations under national and EU environmental legislation and including those which relates to specific regional/national plans/programmes for particular aspects of the

environment e.g. Catchment Flood Risk Assessment and Management Study Plans, River Basin District Management Plans and Fresh Water Pearl Mussel Sub Basin Management Plans⁷.

⁷ Referenced statutory obligation