



# Grid Implementation Plan 2017-2022

**Strategic Environmental Assessment (SEA)  
SEA-Related Monitoring Report**

**Final Monitoring Report  
December 2022**

## Who are EirGrid – and what do we do?

EirGrid is responsible for the safe, secure and reliable supply of electricity – now and in the future.

We develop, manage and operate the electricity transmission grid. This grid brings power from where it is generated to where it is needed throughout Ireland. We use the grid to supply power to industry and businesses that use large amounts of electricity. The grid also powers the distribution network and supplies the electricity you use every day in homes, businesses, schools, hospitals and farms.



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## Foreword

### **EirGrid is delighted to publish this Strategic Environmental Assessment (SEA) Monitoring Report, in relation to our 2017-2022 Grid Implementation Plan.**

EirGrid operates and develops the electricity transmission grid in Ireland. This includes interconnection with neighbouring grids and the wholesale electricity market. The grid brings power from generators to the ESB distribution network that supplies every home, farm and business in Ireland. The grid also delivers power directly to businesses that use large amounts of electricity. EirGrid ensures electricity is always available at the most economic price – today, tomorrow and for decades to come.

Electricity can be generated from renewable sources like wind and solar power. These sources of clean energy will soon replace dirty fuels like coal and oil. To prepare for this change, EirGrid must make the electricity grid stronger and more flexible.

EirGrid's work to transform the electricity system is the foundation of the Government's Climate Action Plan; the proposed energy transition is a cornerstone of Ireland's response to climate breakdown. Our ultimate ambition is for a renewables-based power system, while maintaining an affordable, secure, and reliable power system.

Strategic Environmental Assessment (SEA), as set out in European SEA Directive 2001/42/EEC applies to a wide range of public plans and programmes including energy plans. EirGrid has statutory obligations as a competent authority for the Strategic Environmental Assessment (SEA) of its plans, which includes monitoring obligations.

We have worked closely with Ireland's Environmental Authorities, and particularly the Environmental Protection Agency and the EPA's research partners in University College Dublin to produce this report. The objective is to identify the real environmental effects of implementing our Grid Plan, identify data gaps and opportunities, and take appropriate remedial action by way of positive policy and process changes to our forthcoming Grid Plan 2023-2028.



**Michael Mahon**  
Chief Infrastructure Officer,  
EirGrid

## Acknowledgements

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# Summary

## EirGrid

EirGrid plc. (EirGrid) is the national electricity Transmission System Operator (TSO). The transmission system relates to the high-voltage electricity network, also known as the national grid (or 'The Grid'), which refers to 110 kilovolt (kV), 220 kV, 275 kV and 400 kV infrastructure. In its role as TSO in Ireland, EirGrid operates and maintains a safe, secure, reliable, economical and efficient transmission system, and develops key infrastructure projects, which are vital for the socio-economic development of the country with due regard for the environment.

## EirGrid's Grid Implementation Plan

EirGrid's Grid Implementation Plan for the period 2017-2022 (the IP) identified, strategically, the parts of the transmission system likely to be developed over that period. Strategic Environmental Assessment (SEA), as set out in the SEA Directive 2001/42/EEC applies to a wide range of public plans and programmes including energy plans. EirGrid has statutory obligations as a competent authority for the Strategic Environmental Assessment (SEA) of its plans, .

## SEA Monitoring

Article 10 of the SEA Directive requires the competent authority to monitor the significant environmental effects of implementing a plan/programme, or modification to same to, inter alia, identify at an early stage unforeseen adverse effects and undertake remedial action where required.

This report presents EirGrid's monitoring of the IP. The overarching aims of monitoring were those identified in the Environmental Protection Agency's (EPA) *2020 Guidance on SEA Statements and Monitoring*. Specifically, the overarching aims were to

- I. Identify the real effects of the Plan (including unforeseen effects)
- II. Propose remedial mitigation measures (i.e. recommendations for the next plan cycle), where mitigation measures have not been implemented or were not effective and
- III. Identify data gaps,

The monitoring framework in the SEA Environmental Report for the IP delivered these aims. Across 10 environmental themes, and 13 Strategic Environmental Objectives (reflecting Key Environmental Issues in the SEA), the monitoring framework identified 22 Indicators to assess IP effects.

## Data Sources and Monitoring Scope

Data sources on IP effects included project documents (including Environmental Impact Assessment Reporting), construction-phase monitoring reports, the output of EirGrid's complaints procedure, and analyses using a Geographic Information System (GIS). GIS Analyses included numbers of residences within 50m of new overhead line projects, numbers of projects intersecting 'Zones of Notification' for national monuments, and changes in water quality over time in catchments intersected by significant projects during the plan cycle<sup>1</sup>. Consultee inputs included iterative EPA engagement, and input to interim findings by an SEA Environmental Advisory Group in April 2021.

<sup>1</sup> Although this analysis was limited by the time periods for recent EPA water quality, both of which overlapped the plan cycle. As a consequence, water quality could not be compared before, and during the plan.

## Monitoring Results

Monitoring of 50 projects included all new assets<sup>2</sup> and, and all major and notable projects in the IP.

IP performance was successfully measured under 7 of 10 environmental themes; and 14 of 21 indicators<sup>3</sup>. Data gaps and/or indicator scope<sup>4</sup> prevented comprehensive analysis for 3 themes, and 7 indicators. Recommendations will address these issues for the next plan. There was no evidence of significant (adverse) effects from the IP in terms of noise, electromagnetic fields (EMF), geology/soils, or climate change.

Significant negative residual effects were identified across 7 themes (Population, Human Health and the Economy, Biodiversity, Landscape, Cultural Heritage, Land-Use, and Tourism & Recreation). Only five residences are located within 50m of the 4 new overhead lines (totalling 191 km) in the IP; demonstrating success of EirGrid routing principles. EirGrid's Public Engagement Team, and specifically project inputs from Agricultural and Community Liaison Officers, and EirGrid's Community Benefit Policy has had a significant positive effect on Population and Human Health.

No projects had adverse effects on the integrity of European sites reflecting effective Appropriate Assessment. Most projects resulted in at least some local level residual adverse effects on species and habitats, such as from net habitat loss, and/or temporary construction disturbance.

Significant negative residual landscape impacts were identified from 2 new overhead line projects on 1 historic designated landscape, and 1 scenic viewpoint. Residences were significantly visually impacted by 3 projects. Undergrounding of 7 projects (totalling 189 km) significantly reduced landscape impacts in other areas.

There was no loss to entries in the Records of Monuments and Places (RMPs); GIS analyses confirmed intersection with 'Zones of Notification' for RMPs on 7 projects. There were naturally localized land use changes on all new station projects. Overhead line projects do not generally alter land use after construction, nor do underground cables as cables are buried.

One consistent data gap was that project-level construction-phase monitoring reports were typically not available for review (with the exception of 1 project).

There was insufficient data available to fully determine effects on water quality<sup>5</sup>, and certain material assets (due to the unavailability of suitable metrics<sup>6</sup>).

## Remedial Action: Recommendations for the Next Plan Cycle

Recommendations are proposed to remedy or refine data collection, fill data gaps, improve monitoring and implementation of environmental mitigation, and to enhance future SEA monitoring. Remedial mitigation measures to influence EirGrid's forthcoming Grid Implementation Plan for 2023-2028, and relevant projects progressed thereunder.

The feasibility of EirGrid's recommendations will be subject to further consultation with the relevant experts in ESB, and where applicable, pilots may be considered to trial their effectiveness prior to roll out across all projects.

<sup>2</sup> A new asset comprises new infrastructure, either on either brownfield, or greenfield sites, and contrasts with alterations, upgrades or extensions to existing infrastructure.

<sup>3</sup> Gaps in the following themes (# Indicators): Land-use (1), Water (3), Material Assets (2).

<sup>4</sup> Material Assets MAI<sub>2</sub>-T<sub>2</sub> "Number of significant impacts on existing and planned infrastructure".

<sup>5</sup> The two latest reporting periods for EPA WFD water quality data (2013-2018; and 2016-2021) overlap the plan, and each other. As a consequence. It was not possible to compare water quality before the plan (i.e. 2013-2016), and during plan implementation (2017-2022).

<sup>6</sup> There was no data available on compaction of farm lands following EirGrid development, nor an accurate means of measuring the potential impact of EirGrid projects on existing or planned infrastructure, which is not assessed in project reporting.

If feasible and effective, recommendations will increase the two-way flow of information from project Environmental Impact Assessment (and similar) to plan level SEA in support project scale of the principle of ‘tiering’ advocated by the EPA. Recommendations include:

- Future SEA monitoring to incorporate findings of internal interviews with EirGrid Agricultural and Community Liaison Officers and other relevant Subject Matter Experts (SMEs) to add qualitative data to future baseline data.
- New requirements intending to plug the gap in available project-level monitoring reports, inserted by way of requirements in EIAR and similar reporting, whereby Contractors will be obliged to share such reports with EirGrid Planning and Environmental Unit.
- Establishing a process whereby EirGrid requests the licence no. of the appointed project archaeologist from ESB on future projects to enable access to archaeological monitoring reports from the Database of Irish Excavation Reports.
- Further reducing residual biodiversity impacts on future projects by (i) embedding a Nature Inclusive Design requirement into project scopes, (ii) requiring a five year landscape aftercare plan to ensure effective landscaping establishment, (iii) agreeing a planting specification to allow selective hedge reinstatement over underground cables, and (iv) retrofitting bird diverters on certain overhead line uprate projects (of which pilots were being implemented in 12 counties at the time of writing).

This SEA Monitoring report is available on EirGrid’s website, following The Environmental Protection Agency’s best practice recommendations for knowledge sharing.

## 1.0 Introduction

### 1.1 Role of EirGrid

EirGrid plc. (EirGrid) is the national electricity Transmission System Operator (TSO). The transmission system relates to the high-voltage electricity network, also known as the national grid (or ‘the grid’), which refers to 110 kilovolt (kV), 220 kV, 275 kV and 400 kV infrastructure. In its role as TSO in Ireland, EirGrid operates and maintains a safe, secure, reliable, economical and efficient transmission system, and develops key infrastructure projects, which are vital for the socio-economic development of the country with due regard for the environment.

### 1.2 EirGrid’s Grid Implementation Plan

The Grid Implementation Plan for the period 2017-2022 (the IP) identified, at a strategic level, the best understanding of the transmission system likely to be developed over the period 2017-2022.

The IP Identified the issues, policies and objectives to be addressed in developing the grid. It also took account of the approved Transmission Development Plan (TDP) 2016-2026, as at the time this was the most up-to-date official list of projects envisaged to be developed over that ten year period.

The final IP, and the associated environmental commitments were adopted by EirGrid in December 2018 and are available on the EirGrid website:

### 1.3 Overview to Strategic Environmental Assessment

Strategic Environmental Assessment (SEA), as set out in the SEA Directive 2001/42/EEC applies to a wide range of public plans and programmes including energy. EirGrid has statutory obligations as a competent authority for the Strategic Environmental Assessment (SEA) of its plans, which includes monitoring obligations.

In adopting the IP and in accordance with the SEA Directive, EirGrid as competent authority took account of:

- The Environmental Report informing the SEA Statement (‘The SEA ER’);
- The Natura Impact Report which concluded no adverse effects on European sites (required under Article 6 of the EU Habitats Directive 92/43/EEC);
- Submissions and observations made to EirGrid during consultation (under article 13), and;
- Any consultations under SEA Directive Article 14, during preparation of the IP before its adoption.

## 1.4 SEA Monitoring Overview

The Environmental Protection Agency (EPA) has provided a definition of monitoring, which is relevant to the SEA monitoring process (Box 1).

### Box 1: What is Monitoring?

The EPA (2015) define monitoring as “*the periodic or continuous observation of environmental indicators and of other parameters that may affect the environment for any changes that may occur over time, in order to confirm/test predictions made with respect to likely effects and identify adverse changes that may require remedial action*”.

### Box 2: Legal Basis for SEA Monitoring

Article 10 of the SEA Directive states [emphasis added in **bold**]:

*The competent authority shall monitor the significant environmental effects of implementation of the plan or programme, or modification to a plan or programme in order, inter alia, to **identify at an early stage unforeseen adverse effects and to be able to undertake appropriate remedial action** and, for this purpose, existing monitoring arrangements may be used, if appropriate, with a view to avoiding duplication of monitoring.*

Annex II of the SEA Directive requires the Environmental Report to describe “*the measures envisaged concerning monitoring in accordance with Article 10*”.

The EPA also has statutory obligations, along with four other ‘Environmental Authorities’ specified in the SEA Regulations. The EPA is required to be consulted in all cases at the SEA screening, scoping and Environmental Report/draft plan stages. The EPA’s role as an SEA Environmental Authority focuses on promoting full integration of the findings of the SEA into plans and advocating that the key environmental challenges for Ireland are addressed. The EPA’s functions as an SEA Environmental Authority do not include approving or enforcing SEAs or plans.

In their second review of SEA effectiveness in Ireland, the EPA (2020a) declared that “monitoring remains the most significant gap in the [SEA] procedure”. In the EPA’s (2020b) *Guidance on SEA Statements and monitoring*, a key recommendation is for plan makers to publish the findings of SEA Monitoring on its website alongside plan documentation.

By publishing this Monitoring Report, EirGrid seeks to contribute to better practice, in response to this gap.

## 2.0 Consultation Inputs to SEA Monitoring

### 2.1 Environmental Protection Agency

As one of the five Environmental Authorities, and the lead authority on SEA research and guidance in Ireland, the EPA was initially consulted on 12 November 2019 in advance of other consultees, to seek advice on monitoring of the Plan. At this meeting, the EPA made the following observations and/or responses to EirGrid queries :

- EPA welcomes EirGrid’s pro-active role in SEA of its plans, including ongoing consultation on monitoring of the IP;
- EirGrid’s SEA of its previous Grid Implementation Plan (Grid25 Implementation Programme for the period 2011-2016), provided to the EPA as a case study was reported in a peer reviewed journal in 2019 (González et al., 2019).
- EirGrid’s monitoring should have regard for the final report by the EPA’s second cycle SEA Effectiveness study (published in 2020) along with associated Good Practice Guidance on SEA Monitoring;
- For the avoidance of doubt, remedial action, in the context of SEA monitoring indicators, refers to amendments to future plans, and not to amendments to existing projects;
- EirGrid should consider the timing of SEA monitoring outputs in light of the programme for EirGrid’s next IP iteration [i.e. the Grid Implementation Plan 2023-2027]; and,
- EirGrid should have regard for the United Nations’ Sustainable Development Goals (SDGs) which help drive the EPA’s Research Programme and consider incorporating the SDGs into SEA monitoring (see Section 3.3).

In November 2022, the EPA, and their academic partners in University College Dublin<sup>7</sup> were consulted on an earlier draft of this report. The comments were incorporated into a revised draft.

### 2.2 Environmental Advisory Group

Following the initial EPA consultation, an Environmental Advisory Group was consulted in April 2021, to invite comment on the interim SEA monitoring findings. The EAG comprised the following members (it is noted that the Heritage Council did not attend the April 2021 consultation):

- The EPA
- The National Parks & Wildlife Service;
- The Heritage Council;
- The Department of Housing, Local Government and Heritage (DHLGH) -
- The Regional Assemblies (East and Midlands)

The NPWS welcomed EirGrid’s SEA monitoring approach, noting that monitoring of plan-level impacts is not an established industry-wide practice in Ireland.

The DHLGH commented that the monitoring should ensure plan-level trends were assessed, not only those at project level. EirGrid confirmed that monitoring would assess strategic level trends but noted that assessment of project level monitoring reports were one of the data sources identified within the monitoring framework for the plan, within the published SEA ER and Statement.

The EPA queried if the monitoring report would be made publicly available and noted regard should be had for EPA guidance on SEA monitoring (EPA, 2020a). EirGrid confirmed the final report would

<sup>7</sup> Led by Associate Professor Ainhoa Gonzalez Del Campo, School of Geography.

be made available on EirGrid’s website in Q4 2022. The EPA also recommended EirGrid consult Failte Ireland (who are undertaking a number of SEAs associated with the Wild Atlantic Way and related tourist initiatives), and the Department of Agriculture , Food, and the Marine (DAFM) who are undertaking SEA monitoring of their ten year Food Vision 2030 Strategy<sup>8</sup>.

### 2.3 Failte Ireland

EirGrid subsequently consulted the Activities and Environment Officer of Failte Ireland in June 2021. Failte Ireland provided links to the Wild Atlantic Way Operational Programme (Failte Ireland 2015-2019), for which Fáilte Ireland prepared an Environmental Surveying and Monitoring Strategy. The purpose of this was to work with and stakeholders and partners to promote the sustainable development of the Wild Atlantic Way, and to be able to pre-empt and avoid environmental effects in the future should they occur. Each year, Failte Ireland commissioned consultants to produce baseline ecological survey and visitor observation survey reports, followed by a Macro Monitoring Report in which trends and changes in indicators were assessed.<sup>9</sup>

One innovative aspect of Failte Ireland’s SEA monitoring process is to build public-facing dashboards to report on key metrics<sup>10</sup>. EirGrid is developing a similar public-facing portal to share the results of this monitoring report, via an Arc GIS Storymap, which will be available on the EirGrid website. The link to the story map will be available alongside this monitoring report, once published at <https://www.eirgridgroup.com/about/in-the-community/environment/sea-and-aa-of-grid-implem/>

EirGrid is also exploring data analytics, through a workstream to embed environmental consenting requirements into EirGrid’s centralized Microsoft Online Project Management System, which is supported by dashboarding through Power Bi.

### 2.4 Department of Agriculture, Food, and the Marine

EirGrid consulted DAFM in April 2021, and again in September 2022 regarding the environmental monitoring of Food Vision 2030. Food Vision 2030 is a ten year Strategy for the Irish agri-food sector. An Environmental Working Sub-Group was established with representatives from relevant government departments and agencies (mirroring EirGrids EAG) to monitor any significant environmental effects of implementation of the strategy. The Environmental Monitoring Sub-Group has committed to report annually to the High Level Implementation Committee for the Food Vision Strategy who are responsible for monitoring implementation of Food Vision 2030. This aligns with EPA best practice advice (2020b) to start monitoring at plan implementation. As part of its work the group has identified potential data gaps and has recognised the importance of data access and sharing among the relevant authorities.

<sup>8</sup> <https://www.gov.ie/en/publication/c73a3-food-vision-2030-a-world-leader-in-sustainable-food-systems/>

<sup>9</sup> Available online at <https://www.failteireland.ie/Regional-experience-brands/Wild-Atlantic-Way/The-Wild-Atlantic-Way-Operational-Programme/Environmental-Surveying-and-Monitoring-Programme.aspx>. As the monitoring locations are focussed on specific tourist sites along the Wild Atlantic Way, it is not directly relevant to this SEA monitoring report.

## 3.0 Monitoring Objectives and Methods

A literature review of EPA and other relevant guidance on SEA monitoring informed the methods adopted (Appendix 1).

Given the geographically defined nature of EirGrid’s projects, a review of local project-specific effects was a key pillar of the approach informing the strategic level trends.

### 3.1 Overarching Aims of Monitoring

In parallel with EirGrid’s implementation of the monitoring framework from the SEA ER (Section 3.2), a number of overarching aims framed the SEA monitoring process. These overarching aims were identified from EPA guidance on SEA monitoring (EPA, 2020a), and are phrased as questions in Table 1.

**Table 1: Overarching Aims of EirGrid’s SEA Monitoring**

	<b>Overarching aim (EPA, 2020a)</b>	<b>Action to Deliver Aim</b>
1	What are the “Real” effects of implementing the plan?	Compare observed changes in monitoring indicators with the findings of the SEA, including baseline data.  Highlight any effects not foreseen in the SEA
2	Are there gaps in environmental data?	Identify and where possible fill knowledge gaps to inform the next plan cycle
3	Are any additional or remedial mitigation measures required (having reviewed level of implementation and effectiveness of SEA mitigation measures)?	Bring forward recommendations for additional mitigation into the next cycle of the plan, including measures for improving two-way project to plan information flow (so-called ‘tiering’ advocated by the EPA (2021b)).
4	Are new baseline data sources or trends available which would improve the next SEA cycle?	Embed new baseline datasets into the monitoring framework for the next cycle plan. And ensure that the next SEA refers to the previous SEA’s baseline so that changes/trends can be captured and reported upon.

### 3.2 SEA Objectives, Targets and indicators

A framework of monitoring objectives, targets and indicators were identified in the SEA ER for the plan across the 10 environmental themes assessed. These formed the basis of the monitoring approach and are set out overleaf.

### 3.3 Scope of Projects Monitored

#### 3.3.1 SEA Environmental Report

A total of 117 projects were included in the Plan, of which over 90% related to the modification or replacement of existing assets. The SEA ER excluded (but considered under in-combination assessment) all projects which had completed the planning process (including exempted development process) – Figure 1.

Figure 1: Approach to screening projects during SEA of the IP (from SEA Environmental Report, 2018)

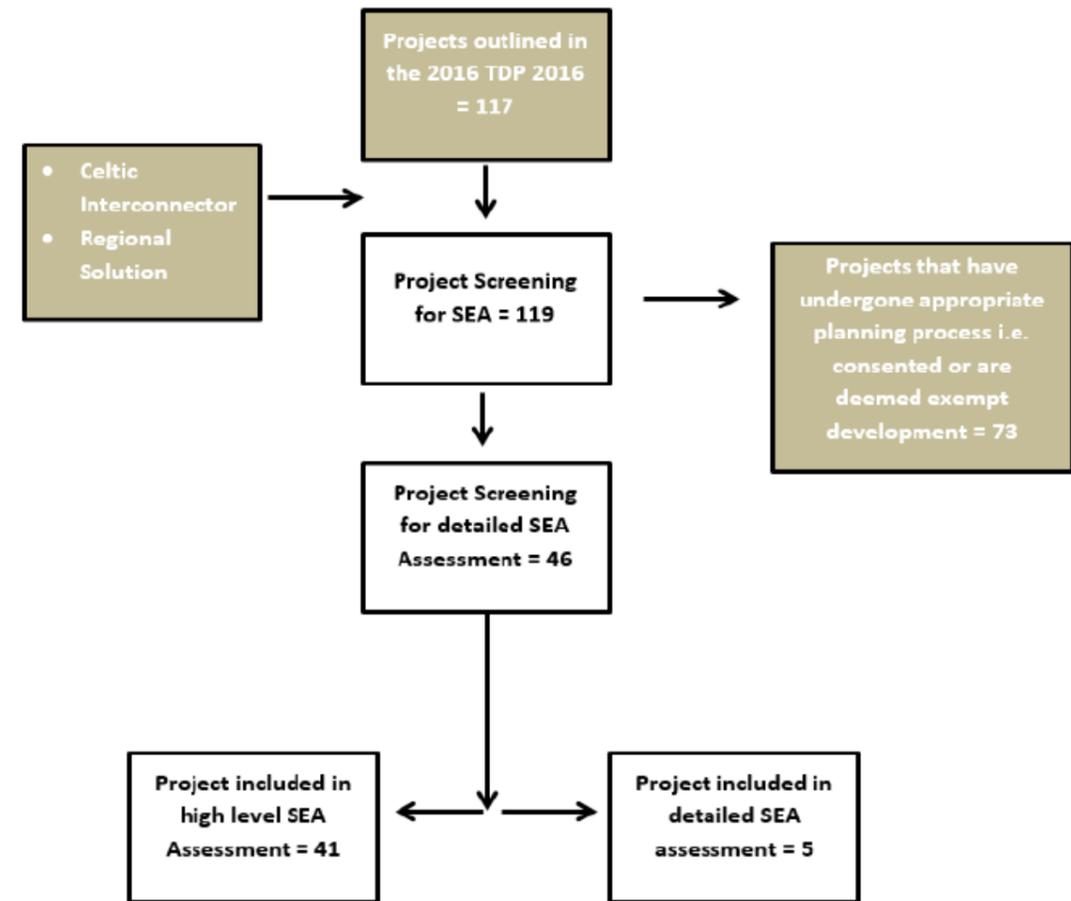
#### 3.3.2 SEA Monitoring

Of the 117 projects in the original plan, SEA monitoring focussed on projects requiring planning permission (N=50; Appendix 2), particularly those of scale, and included all new assets. The SEA monitoring objectives, targets and indicators, applied to these 50 projects, included in Appendix 2.

### Projects Requiring Planning Permission

Of the projects requiring planning permission, those which had completed the planning process provided a particularly useful source of monitoring data. The predicted effects of such projects are more readily identifiable than those in an earlier stage of development because:

- The scale, extent, location and (for linear projects) routing is known;
- Planning-phase environmental assessments are available which predict impacts; and,
- Construction or operation-phase environmental monitoring reports may be available to test



planning-phase impact predictions (if projects are advanced to the point of construction).

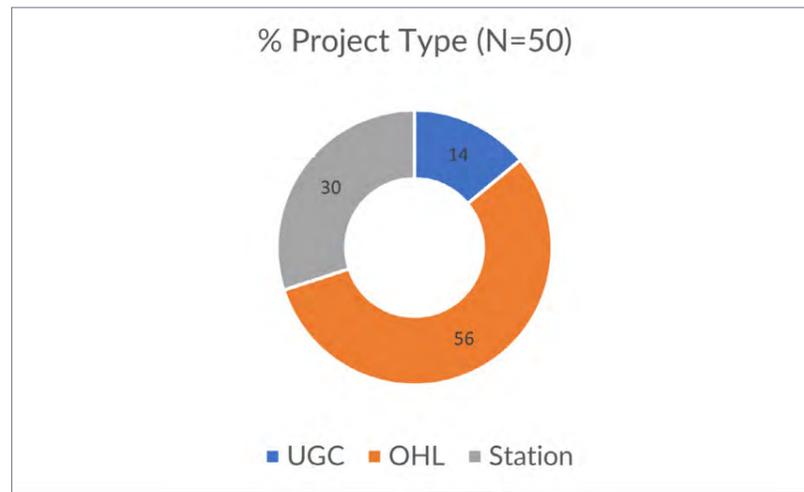
### New Assets and Projects of Scale

The projects requiring planning permission which were the focus of monitoring included:

- All new assets (new overhead lines, new underground cables, new stations)
- All 'Major Regional Projects' in the Plan
- All Other Notable Regional Projects in the Plan

Figure 2 shows the proportion of project types amongst the 50 projects subjected to detailed SEA monitoring. Most projects (65%) comprised Overhead Line Projects, of which four were new lines.

Figure 2: Primary Scope of Project Types subject to SEA Monitoring



Five projects were taken forward for more detailed assessment in the SEA ER. The technical scope of these projects has developed since IP adoption and the project status at time of writing is presented in Table 2. All these projects are included within the 50 projects subjected to SEA monitoring.



Table 2: Five Projects carried Forward for Detailed Assessment in SEA Environmental Report

Project *Regional Solution* in Plan	Key Elements of Confirmed Scope	Scope of Environmental Assessment Complete since SEA	Planning Status at Time of Writing [Green =Consented]
CPo816 North Connacht 100 kV Project	New 110 underground cable (c. 60 km) from Moy 110 kV Station (Mayo) to Tonroe 110 kV Substation (Roscommon) and upgrading of both stations	<ul style="list-style-type: none"> <li>Completed Screening for Environmental Impact Assessment</li> <li>Completed Planning and Environmental Considerations Report (PECR)</li> <li>Completed Appropriate Assessment (AA) Screening and Natura Impact Statement (NIS)</li> </ul>	Strategic Infrastructure Development (SID) Application under review
Celtic Interconnector Project	<p>New High Voltage Direct Current (HVDC submarine cable (500km) from Brittany-UK EEZ-Cork</p> <p>New HVDC onshore cable (32km) from landfall at Claycastle beach (Cork) to new Ballyadam Converter Station (Cork)</p> <p>New HV Alternating Cable (11km) from Converter Station to existing Knockraha 220 kV Station</p>	<ul style="list-style-type: none"> <li>Completed Environmental Impact Assessment Reports (EIAR) for planning application and foreshore licence</li> <li>Completed AA Screening and NISs for planning application and foreshore licence</li> </ul>	<ul style="list-style-type: none"> <li>SID granted</li> <li>Foreshore licence granted</li> <li>Construction est. to start end 2022 pending foreshore licence</li> </ul>
CPo835 Coolnaback – Portlaoise 110 kV Uprate	Uprating of existing 8 km 110kV line	<ul style="list-style-type: none"> <li>Environmental assessment not complete</li> </ul>	Project delayed
North-West Project	Project not progressed	N/A	N/A
CPo967 Laois Moneypoint Series Compensation (SC)*	New infrastructure on lands yet to be determined	Environmental assessment ongoing	Planning application not submitted at time of writing
CPo968 Dunstown SC (Kildare)*	New infrastructure on ESB lands adjacent to the existing 400 /220 kV substation in Dunstown	<ul style="list-style-type: none"> <li>Completed Screening for Environmental Impact Assessment</li> <li>Completed PECR</li> <li>Completed AA Screening Report</li> </ul>	Granted by Kildare County Council
CPo969 Oldstreet SC (Galway)*	New infrastructure on lands adjacent to the existing 400 /220 kV substation in Oldstreet	Baseline surveys ongoing in tandem with site selection	Not submitted
CPo970 Cross Shannon Cable Project*	4no. 400 kV submarine HVAC 2.8km in length across Shannon Estuary (Kilpadogue 220 kV to Moneypoint 400 kV stations)	<ul style="list-style-type: none"> <li>Completed Screening for Environmental Impact Assessment</li> <li>Completed PECR</li> <li>Completed AA Screening and NIS</li> </ul>	<ul style="list-style-type: none"> <li>SID granted</li> <li>Foreshore licence pending</li> </ul>

Project **Regional Solution* in Plan	Key Elements of Confirmed Scope	Scope of Environmental Assessment Complete since SEA	Planning Status at Time of Writing [Green =Consented]
CP0945 Great Island Kilkenny 110 kV Uprate*	Thermal uprating of existing 49 km 110 kV OHL including structure replacements	<ul style="list-style-type: none"> <li>Completed Screening for Environmental Impact Assessment</li> <li>Completed PECR</li> <li>Completed AA Screening and NIS</li> </ul>	Granted
CP0844 Great Island Wexford 110 kV Uprate*	Thermal uprating of existing 56 km 110 kV OHL including structure replacements	<ul style="list-style-type: none"> <li>Completed Screening for Environmental Impact Assessment</li> <li>Completed AA Screening Report</li> </ul>	Exempted development

The projects in Table 2 are mapped in Figure 3. Six of these were combined in the original IP within a 'Regional Solution' (encircled in red in Figure 3).

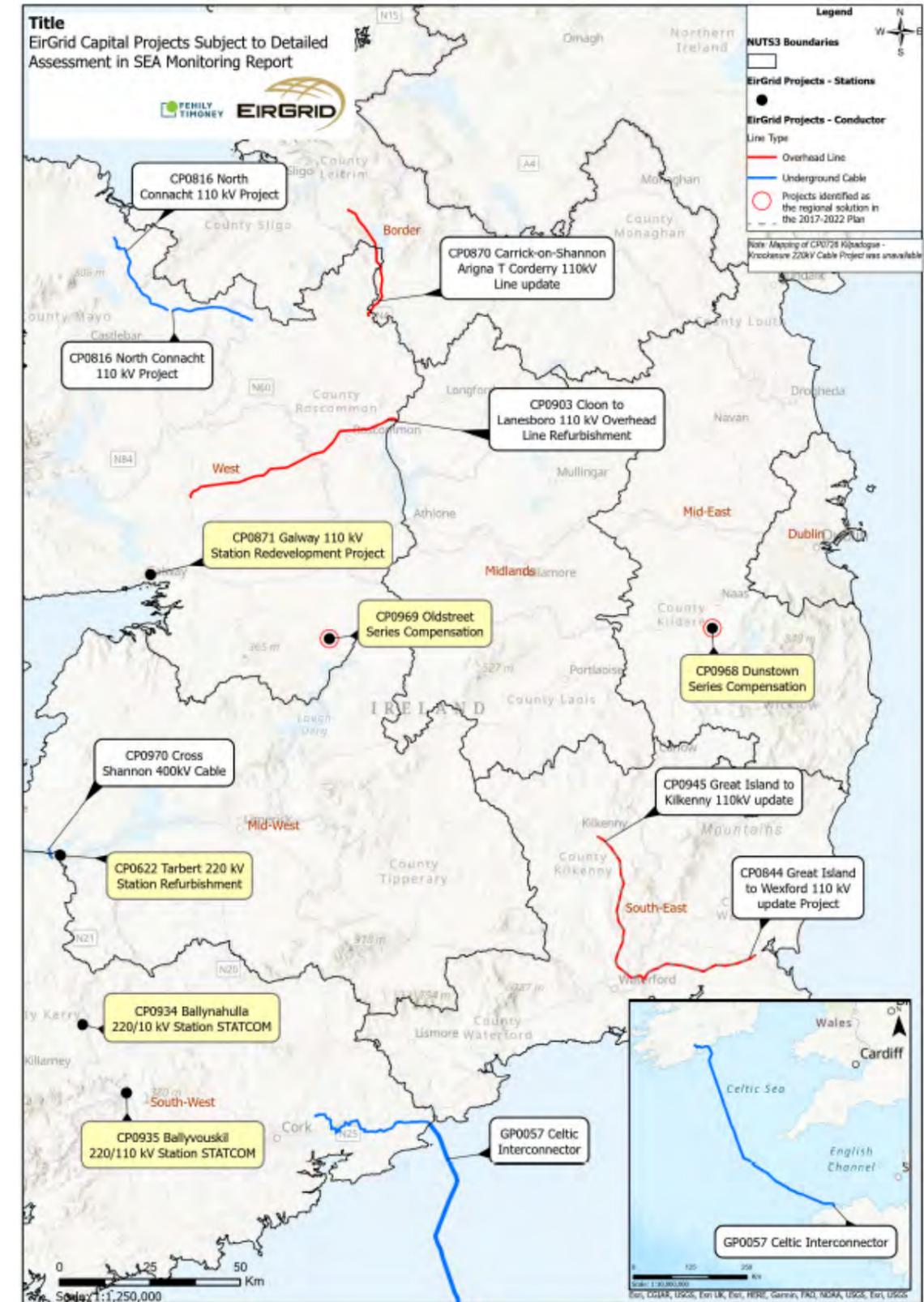


Figure 3: Projects subject to detailed assessment in SEA Environmental Report

The list of projects (N=50), which were the focus of SEA monitoring are presented in Appendix 2 and mapped in Figure 4, overlain on the regional boundaries adopted in the IP ( Nomenclature of Territorial Units for Statistics 3;NUTS 3). This list includes all projects of scale including all new assets, and all EIA projects.

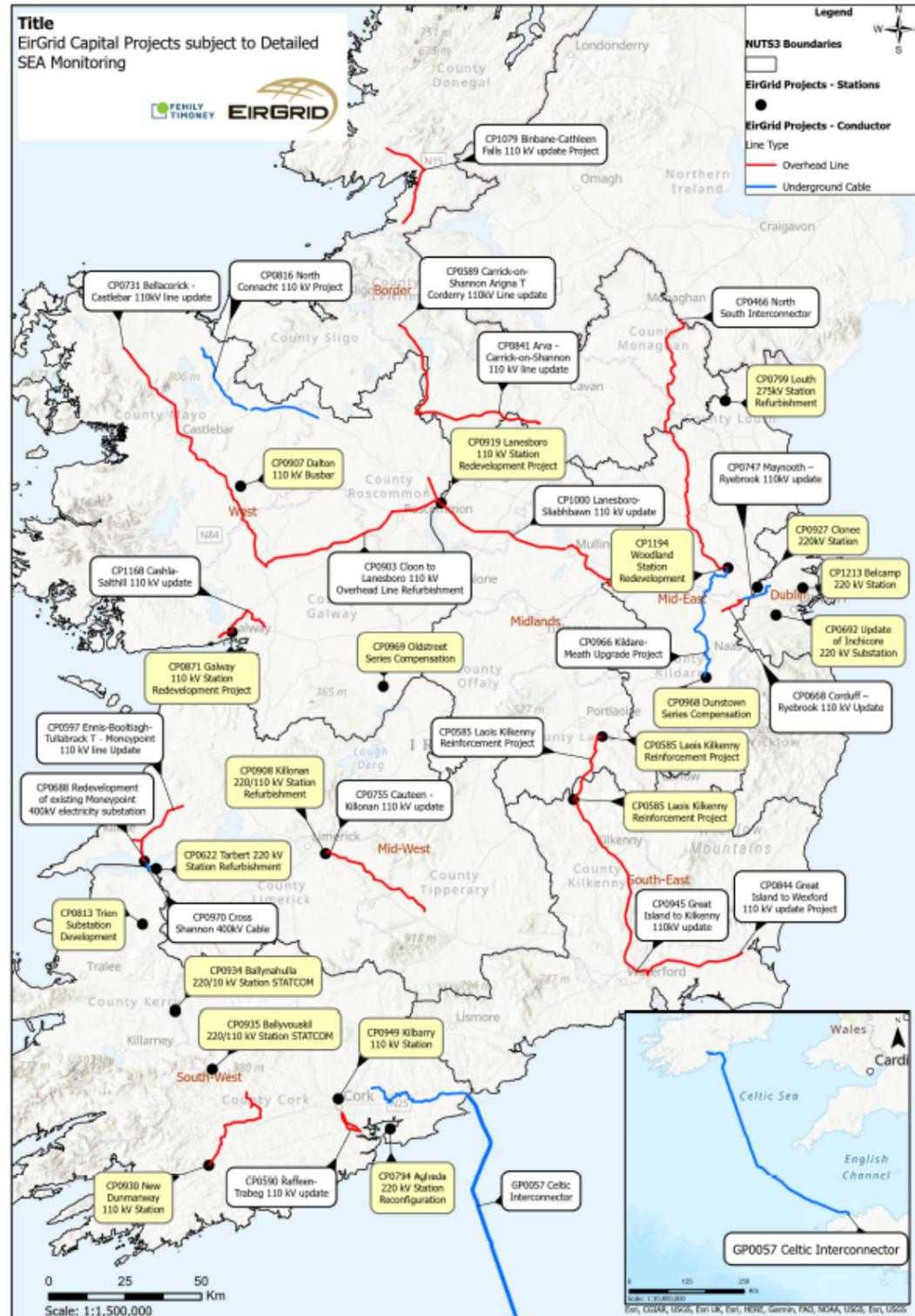


Figure 4: Projects subject to SEA Monitoring (50 no.)

### 3.4 Data on Plan Effects

#### 3.4.1 Sources of Data

The SEA Directive does not contain any technical requirements about the methods to be used for monitoring.

The SEA ER proposed these sources of data on IP effects within the SEA monitoring framework:

- Project-level monitoring including those required as a condition of planning;
- Project environmental reports<sup>10</sup>;
- The EirGrid Complaints Procedure accessible to the public online (Figure 5)<sup>11</sup>;
- Environmental monitoring reports for EirGrid Capital Projects constructed and/or under operation during the IP cycle; and
- In the case of the climate change indicator, consultation with EirGrid Operations to obtain data on the % electricity generation from renewable sources.

In addition, some qualitative data<sup>12</sup> were obtained through informal discussions with EirGrid’s Agricultural Liaison Officers, and Community Liaison Officers, where relevant. In this regard, more formalized interviews are recommended for the next IP cycle in Section 6.1.

#### 3.4.2 Review of Project Documents

The Monitoring process included a review of the project documents of 50 no. EirGrid Capital Projects, which were either:

- Major Regional Projects in the Plan; or
- Other Notable Regional Projects in the Plan.

Findings in project documents were reviewed against monitoring indicator targets. Project-specific environmental monitoring commitments were tabulated through review of project documents, and planning conditions (where available). Project monitoring reports were reviewed against SEA monitoring indicators.

Whilst not an SEA indicator, , the proportion of projects requiring EIA or AA (i.e. reported in Natura Impact Statement) was determined and is reported, as a measure of potential scale of impacts on the environment, and European sites respectively.

#### 3.4.3 GIS Analyses

For Cultural heritage, Water quality, and Population indicators, analyses were completed in an Arc Pro Geographic Information System as detailed in Table 3 below. Of note, the relevance of envisaged water quality analyses was limited (see next paragraph), since both recent EPA water quality datasets overlapped the plan<sup>13</sup>, and each other . As such, neither surface or ground water quality data could be compared for the periods before, and after plan implementation. The EPA’s 2016-2021 data will be a relevant baseline to inform the SEA of the forthcoming IP 2023-2028.

<sup>10</sup> Planning and Environmental Considerations Reports or EIARs (Celtic Interconnector only), Natura Impact Statements (where produced)

<sup>11</sup> <https://www.eirgridgroup.com/customer-and-industry/serving-our-customers/>

<sup>12</sup> For instance, post-construction observations on biodiversity/landscape mitigation, that landscaping aftercare may not adequate or appropriate, such as failure to mulch beneath hedgerows, leading to excessive grass growth, or failure to top newly planted shrubs.

<sup>13</sup> Both recent EPA water quality datasets partially overlap the IP period from 2017 to 2022 and each other; namely EPA WFD data for 2013-2018 and 2016-2021. The EPA Catchment Science and Management Unit advised that data was only available for these time periods and could not be extracted for periods before (i.e. 2013-2016) the plan.

Despite the above limitations, WFD water quality was assessed, for any New Asset projects which had substantive works during either the EPA 2013-2018 or 2016-2021 period. Only three projects satisfied this criterion, namely:

- CPo501 New Clashavoon-Dunmanway 110 kV Overhead Line Project Energized 2020; substantive work during 2016-2021 EPA dataset
- CPo596 New Kinnegad-Mullingar 110 kV Overhead Line Project Energized 2017; substantive work during 2013-2018 EPA dataset
- CPo829 New Clashavoon Macroom No. 1 110 kV Overhead Line Project Energized 2019; substantive work during 2013-2018 EPA dataset

A fourth project CPo596 (CPo585 Laois-Kilkenny Reinforcement Project) was also assessed. Significant elements of CPo596 are yet to commence construction (the new Ballyragget- Coolnabacky 110kV Overhead line) or have advanced enabling works, but not construction (Coolnabacky 400/110kV station). However substantive construction work for one element - the new 110 kV Ballyragget Station - was completed during the second EPA data period (2016-2021).

### 3.4.4 Customer Complaiints Procedure

The database of complaints received under the Customer Complaints Procedure <https://www.eirgridgroup.com/customer-and-industry/serving-our-customers/> was reviewed in 2019, and again in 2022, for any actual or perceived environmental issues.

Table 3 : GIS Analyses undertaken in SEA Monitoring

SEA Theme and Monitoring Objective	GIS analysis	Projects Subject to Analysis
Cultural Heritage (CH1_I1) Number of developments occurring which result in full or partial loss to entries to the Records of Monuments and Places and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	Project intersection with Zone of Notification boundary for Records of Monuments and Places <sup>14</sup>  Where no zone of notification available, does project intersect a 50m* offset from the vector point [*figure to be informed by an average of polygon width across notification data]	Applicable to 13 no. new assets from Appendix 2 only as above
Cultural Heritage (CH1_I1) Number of developments occurring which result in full or partial loss to entries to the RPSs/NIAs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	Project intersection with entries in the Record of Protected Structures <sup>15</sup>	Applicable to 13 no. new assets from Appendix 2 only as above
Population, Human Health and Economy (PHH1_I3): Number of existing dwellings within 50m of new overhead transmission line development.	Project intersection with polygon for residences in OSI Prime2 Data (OSI, 2022)  Residences are those polygon features with 'FUNC_ID'=Residence.	Applicable to 4 no. new overhead line assets from Appendix 2: <ul style="list-style-type: none"><li>• CPo585 Laois Kilkenny Reinforcement Project</li><li>• CPo466 North-South Interconnector</li><li>• CPo596 New Kinnegad-Mullingar 110 kV Project</li><li>• CPo501 Clashavoon-Dunmanway 110 kV Project</li></ul>
Water (Surface) Water Framework Directive Status WFD Status of Rivers Intersected	Project intersection with WFD Rivers – compare WFD Status 2013-2018 with WFD Status 2016-2021 (EPA, 2022) <sup>16</sup>	Applicable to 4 no. New Assets (which pose greatest risk to water quality) where substantive construction completed during one of EPA data periods (either 2013-2018 or 2016-2021)
Water (Groundwater) Water Framework Directive WFD Status of GWB Intersected	Project intersection with WFD Groundwater Bodies – compare WFD Status 2013-2018 with WFD Status 2016-2021 <sup>21</sup>	Applicable to 4 no New Assets (which pose greatest risk to water quality) where substantive construction completed during one of EPA data periods (either 2013-2018 or 2016-2021)

<sup>14</sup> <https://data.gov.ie/dataset/national-monuments-service-archaeological-survey-of-ireland>

<sup>15</sup> <https://data.gov.ie/dataset/record-of-protected-structures9#:~:text=A%20Record%20of%20Protected%20Structures,the%20Development%20Plan%20review%20process>

<sup>16</sup> <https://gis.epa.ie/GetData/Download>

## Customer Complaints Procedure

In spite of our best efforts to provide a high quality service at all times, there may be occasions when the service provided does not meet the high standards that we set out for ourselves or that you as a customer might reasonably expect. It is always our intention to deliver a high standard of service to our customers. If, however, you feel that we have not performed to your satisfaction, we are happy to investigate the matter with the aim of quickly finding a resolution.

To make a customer complaint please follow the complaints procedure below by contacting our Customer & Stakeholder Manager.

Phone: (01) 2370100

Write to: Head of Customer and Stakeholder Relations, EirGrid Plc, The Oval, 160 Shelbourne Road, Dublin 4.

To help us resolve your complaint as quickly as possible please give us as much information as you can when you contact us. Our Customer & Stakeholder Manager will make every effort to resolve the matter there and then and if unable to resolve, our Customer & Stakeholder Manager will refer it on to our Director.

When we receive your complaint we will do the following:

- Write to you within five working days to acknowledge we have received your complaint;
- We will always deal with your complaint as quickly as we can. However, if we are unable to solve or settle your complaint within two weeks of receipt, we will write to tell you the progress we have made and when we aim to send you a full response;
- If we cannot solve or settle your complaint within four weeks of receiving it, we will write to you and explain why and will tell you when we expect to be able to do so, if at all;
- If at any stage you are not satisfied with our action or explanation, you can ask for us to refer your complaint to the Director.

For queries relating to an information request under the Data Protection or Access to Information Acts or Regulations, please go to our [Contact](#) page.

Our Stakeholder Complaints Process is available [here](#).

Figure 5: Screenshot of public webpage summarizing EirGrid Complaints Procedure

### 3.4.5 Project Level Monitoring Reports

From the list of 50 projects listed in Appendix 2, the following were identified:

1. Residual impacts in project documents (where completed), and
2. Committed environmental monitoring reporting during construction across key themes (noise, biodiversity, water, cultural heritage).

A monitoring commitment was only deemed to apply where an explicit reporting requirement was stated.

### 3.5 Environmental Trends and Baseline Data

The EPA (2022a) advise that SEA should utilise environmental trends using most recent and up-to-date environmental data. The key sources informing the environmental trends in Section 4.0 are shown below in **Box 3**.

#### Box 3: Key Sources of Environmental Trend Data

- Central Statistics Office’s Census 2022 – Preliminary Results (CSO, 2022)
- EPA’s database of SEA-relevant spatial information sources (EPA, 2022a)
- EPA State of the Environment Report (EPA, 2020)
- National Parks & Wildlife Service Article 17 Reporting (NPWS, 2019)

### 3.6 Story Map of Monitoring Process

A scrolling ‘Storymap’ was produced using Arc GIS Storymap Application to visually narrate the SEA monitoring process and results. This will be available online on the EirGrid Website, alongside this report, once published.

<https://www.eirgridgroup.com/about/in-the-community/environment/sea-and-aa-of-grid-implem/>

## 4.0 Baseline and Trends

Baseline environmental data (2018) predicted future environmental trends at the time of the SEA (from 2018), and actual trends during the IP lifetime (assessed in 2022) across the ten SEA themes are presented in Table 4.

Table 4: Summary Change in Environmental Baseline across SEA Themes

SEA Theme	Baseline in SEA ER (2018)	Predicted Trend in SEA ER (2018)	Actual Trend (2022) Key metrics/events in bold
Population, Human Health, Economy	<p><u>Population</u> The population is on the increase (currently 4.7 million) a trend within most counties in Ireland.</p> <p><u>Health</u> Overall, the health of the population is generally ‘Good’ to ‘Very Good’ based on a recent national health survey.</p> <p><u>Economy</u> The Irish economy is undergoing recovery since the “crash” of 2008.</p>	<p><u>Population</u> The population of Ireland is projected to increase to over five million by 2031.</p> <p><u>Health</u> Life expectancy in Ireland has increased and with an ageing population, the health of Ireland will continue to place pressure on the health care systems.</p> <p><u>Economy</u> Investment in infrastructure will continue through the governments Capital Investment Plan.</p> <ul style="list-style-type: none"> <li>• The government has targeted 200,000 additional jobs by 2020.</li> </ul>	<p><u>Population</u></p> <ul style="list-style-type: none"> <li>• The 2022 census was released in June 2022. It established that Ireland’s population was 5,123,536 (<b>first time exceeding 5M</b>).</li> <li>• This was a <b>7.6% increase</b> on 2016 census data available at the time of the SEA.</li> </ul> <p><u>Health</u></p> <ul style="list-style-type: none"> <li>• <b>COVID pandemic</b> had a significant effect on the Irish population, with a total of 7,782 deaths up to 17 August 2022 (peaking toward the end of the IP cycle in Feb 2021).</li> <li>• Hospitalization numbers were greatest in the 75-84 age group (Government of Ireland, 2022a).</li> </ul> <p><u>Economy</u></p> <ul style="list-style-type: none"> <li>• The <b>COVID pandemic</b> affected 96% of businesses to some degree.</li> <li>• Employment rate increased significantly from 2017 to 2019, before dropping sharply due to the pandemic.</li> <li>• Irish <b>economy experienced recovery in 2021</b> following easing of health restrictions.</li> <li>• However <b>Russia’s invasion of Ukraine</b> is having significant impacts on the global economy, and in July 2022 reached 9.1 the highest level in 38 years</li> </ul>
Biodiversity	<p><u>Protected Sites</u> There are several international and national protected sites in Ireland. Habitats and Species Almost 80% of European protected habitats are in inadequate or bad status. Over 50% of protected species are at favourable status. Invasive species can have a significant negative effect on wildlife and habitats.</p>	<p>Land-use change such as urbanisation, are likely to continue to pose risks to habitats and species.</p> <p>Continued conservation initiatives and legislation will help protect biodiversity resource going forward. Invasive species are likely to remain threat to biodiversity.</p>	<ul style="list-style-type: none"> <li>• At a global level, <b>no 2020 Aichi Biodiversity targets met</b> (Secretariat of the Convention on Biological Diversity, 2022).</li> <li>• The EU Biodiversity 2030 strategy launched in 2020 (EC, 2020)</li> <li>• In 2022, EC adopted a proposal for a new <b>Nature Restoration Law</b> (to apply across member states by EU Regulation)</li> <li>• Irish government declared a <b>national climate and biodiversity emergency</b> in 2019. <ul style="list-style-type: none"> <li>• European <b>habitats declined further</b> to 85% in adequate/bad status (NPWS, 2019).</li> <li>• Overall number of European protected species status in favourable status improved slightly to 57% (NPWS, 2019).</li> </ul> </li> <li>• However many biodiversity metrics show continuing declines. (EPA, 2020b)</li> </ul>

SEA Theme	Baseline in SEA ER (2018)	Predicted Trend in SEA ER (2018)	Actual Trend (2022) Key metrics/events in bold
Landscape and Visual Amenity	There is no national level landscape mapping for Ireland.  There are several county level protected landscape features in Ireland	The existing landscape is not expected to change significantly in the immediate future.  As part of the National Landscape Strategy a National Landscape Character Assessment will be developed.	<ul style="list-style-type: none"> <li>Data on <b>national trend unclear</b>.</li> <li><b>National Landscape Character Assessment not developed</b>.</li> <li>The Marine Institute <b>completed national Seascape Character Assessment</b> to support implementation of National Marine Planning Framework and National Landscape Strategy.</li> </ul>
Cultural Heritage -	There are a number of national level protected cultural heritage feature in Ireland. These are afforded strict protection under national legislation.	Existing cultural heritage is not expected to change significantly in the immediate future	<ul style="list-style-type: none"> <li>No known cause for significant change in baseline.</li> <li>A new <b>National Heritage Plan – Heritage Ireland 2030</b>, was published by the Department of Housing, Local Government and Heritage in February 2022 (DHLGH, 2022).</li> <li>The Heritage 2030 plan provides a shared island framework for the protection, conservation, promotion, and management of Irelands heritage out to 2030 and beyond</li> <li>Budgets since 2020 have secured <b>significant additional heritage investment</b>, alongside <b>Investing in Our Culture, Language and Heritage 2018–2027 secured capital investment of c. €1.2 billion</b> in Ireland’s culture, language and heritage as part of Project Ireland 2040.</li> <li>Themes and objectives of the Heritage 2030 plan include supporting conservation through communities, partnering, and education.</li> </ul>
Geology and Soils	Ireland consists of a central limestone plain that is surrounded by coastal mountains. Soil quality in Ireland is regarded as generally good.  There is no legislation solely directed to soil protection in Ireland	Soil loss and degradation is recognised as a major challenge across Europe	<ul style="list-style-type: none"> <li>2017 to 2019: 57% of Teagasc soil samples had an optimum ; a <b>significant improvement</b> on 34 % from 2014 to 2016.</li> <li>CORINE land cover data (2018) for Ireland supports previous findings that <b>‘soil sealing’ is the main soil quality pressure</b> in Ireland due in part to the dense road network in what is a sparsely populated country</li> <li>Artificial/sealed soil surfaces increased by 65 % 1990, with little change since 2012.</li> <li>In 2021, the EC published an <b>EU soil strategy for Europe</b> (EC, 2022). This sets out a framework and concrete measures to protect and restore soils and ensure that they are used sustainably. It sets a vision and objectives to achieve healthy soils by 2050, with concrete actions by 2030. It also announces a new Soil Health Law by 2023 to ensure a level playing field and a high level of environmental and health protection.</li> </ul>

SEA Theme	Baseline in SEA ER (2018)	Predicted Trend in SEA ER (2018)	Actual Trend (2022) Key metrics/events in bold
Land Use	The total land area of Ireland is almost 7 million hectares and agriculture accounts for two-thirds of this landmass cover.  The main changes to land use in Ireland have seen a decrease in agricultural land and peatland areas and an increase to forested land and artificial areas.  Forested areas cover about one-tenth (9.2%), much of which consists of commercial plantation of conifers, owned by Coillte.	Initiatives such as Food Harvest 2020 aim to increase Irish agri-food export by 2020.  The Irish Government has made a commitment to increase the forest area to 17% of the total land area by 2030  There are numerous national Assets such as roads, rail, port and airport in Ireland.  • Electricity generation includes gas, coal, hydro, thermal, pumped storage generation and wind generation.	<ul style="list-style-type: none"> <li>Ireland’s Food Vision 2030 states that <b>between 2010 and 2020, the value of agri-food exports increased by 60%</b> (Government of Ireland, 2022c).</li> <li>2013-2018 (EPA, 2020b): Agricultural lands (dominant land use) and wetland areas (second dominant land use) decreased, with <b>most significant increases in semi-natural vegetation</b>.</li> <li>Nationally, there <b>needs to be a concerted effort to fully implement the commitments of the National Peatlands Strategy</b> and the National Raised Bog SAC Management Plan 2017-2022 (DCHG, 2018). Rewetting degraded peatlands will help eliminate and reduce losses of carbon.</li> <li><b>Ireland’s Forestry Strategy 2022-2030</b> (DAFM, 2022) states more than <b>11.6 % of the area of Ireland, the highest it’s been in over 350 years</b></li> </ul>
Material Assets & Infrastructure	There are numerous national Assets such as roads, rail, port and airport in Ireland.  Electricity generation includes gas, coal, hydro, thermal, pumped storage generation and wind generation.	Investment in infrastructure will continue through the governments Capital Investment Plan	<ul style="list-style-type: none"> <li>The revised National Development Plan (NDP) 2021-2030 brings public investment to approximately 5 percent of Gross <b>National Income which is well above the recent EU average</b> of 3 percent of GDP.</li> <li>The latest Investment Projects and Programmes Tracker and the MyProjectIreland interactive map provide details on capital projects under the National Development Plan 2021-30 (NDP). As of Q2 2022, the Tracker focuses on over 270 projects and 140 programmes, including almost <b>100 projects in excess of €50 million</b> (Government of Ireland, 2022b).</li> <li>There are key challenges facing Ireland in developing its material assets and infrastructure, such as Covid-19 recovery, housing, the UK’s decision to leave the EU, energy requirements and the climate and biodiversity emergency (Government of Ireland, 2022b).</li> <li><b>EirGrid was designated by the Department of Environment, Climate, and Communications DECC as offshore system operator and asset owner in 2021</b> (DECC, 2021). Ownership will rest with EirGrid regardless of whether the grid has been developed by individual renewable energy projects or EirGrid.</li> <li>Transmission system assets to be owned by EirGrid will include the high voltage transmission circuits and associated onshore and offshore transmission infrastructure connecting offshore generation sites to the existing onshore transmission system, as well as any necessary offshore reinforcements to accommodate electricity flows (DECC, 2021).</li> </ul>

## 5.0 Monitoring Results

### 5.1 Project Documents

Four projects in the Plan<sup>18</sup> (3% of 116 projects) required EIA, following screening in accordance with Irish legislation<sup>19</sup>.

Of the 50 projects in Appendix 2, AA Screening was completed for all projects, including 26 no. projects (52%) for which a Natura Impact Statement was produced.

### 5.2 Project Monitoring Commitments

A monitoring commitment within an EirGrid project document or planning commitment was only counted, if an explicit reporting requirement was stated.<sup>20</sup> The total number of formally reported project monitoring commitments are summarized in Table 5, across SEA monitoring themes.

Table 5: Number of Explicit Reporting Requirements at Project Level (N=50 Projects)

SEA Theme	Projects (N=50) with Monitoring <u>and</u> Explicit Reporting Requirements <sup>21</sup>
Population, <i>Human</i> Health, Economy (including noise, EMF)	1 (<1%)
Biodiversity	14 (36%)
Landscape and Visual Amenity	0
Cultural Heritage -Archaeology & Architectural	21 (54%)
Geology and Soils	0
Land Use	0
Material Assets & Infrastructure	0
Water	7 (18%)
Tourism	0
Climate Change	0

SEA Theme	Baseline in SEA ER (2018)	Predicted Trend in SEA ER (2018)	Actual Trend (2022) Key metrics/events in bold
Water	The current quality of water in Ireland is considered among the best in Europe but there is still improvement needed.  Between 2010 and 2012, 53% of monitored river water bodies were classified as being at high or good ecological status,  Flooding, particularly from fluvial and coastal sources, is an increasing problem in Ireland.	Ireland will continue to seek improvements in water quality  Several flood management projects rolled out across the country as outlined under the recent Flood Risk Management Plan	<ul style="list-style-type: none"> <li>Overall trend (2013-2018) for % of waterbodies in <b>High or good status was unchanged</b> (53%), with slight improvement to 54% for the period 2016-2021 (EPA, 2022c) However, this means <b>nearly half of Irish surface water bodies failing to meet EU Water Framework Directive objectives</b></li> <li>Overall, 91% of groundwater bodies are in good chemical status and nearly all are in good quantitative status (EPA data for 2016-2021<sup>17</sup>).</li> <li>Coastal waters had highest percentage of waters in good or better ecological status (80%) followed by rivers (53%), lakes (50.5%) and <b>estuaries (38%), with the worst water quality.</b></li> <li>OPW review (OPW, 2021) through InterDepartmental Flood Policy Coordination Group and National 'Floods' Directive concluded <b>no new, additional flood measures needed as of 2021.</b></li> <li>Work by OPW is complete or underway to deliver protection to 80% of properties identified for protection in FRMPs.</li> </ul>
Tourism	International tourism has increased in recent years with approximately 25 million passengers passed through Dublin airport in 2015.	Tourism numbers are expected to increase into the future	<ul style="list-style-type: none"> <li><b>Tougher financial conditions cause difficulty for tourism</b> to the island of Ireland this year. The European Commission has cut its forecasts for European growth in 2022, as the <b>war in Ukraine disrupts supply chains and drives up energy commodity costs.</b></li> <li>The air access picture for summer 2022 is positive, with data from OAG showing <b>air seat capacity to the island of Ireland expected to be at 91% of the level seen in July 2019.</b></li> <li>Latest data from the CSO reported a total of 1,477,000 arrivals to air and sea ports in the Republic of Ireland during the month of April 2022 (this includes residents of the Republic of Ireland and Northern Ireland, as well overseas visitors). Hotel occupancy on the island of Ireland was 78% for the month of April 2022, just -1% below the same month in 2019 (Tourism Ireland, 2022) .</li> <li>Domestic tourism declined significantly (number trips), and typically in the region of 50% across all counties, from 2021 to 2019, as would be expected given Covid 19 restrictions (Fáilte Ireland, 2022).</li> </ul>
Climate Change	Ireland's Green House Gas (GHG) emissions, per capita were the tenth highest in Europe in 2014.	The report outlines that to achieve the 2020 emissions targets (20% below 2005 levels), continuous reductions are required.	<ul style="list-style-type: none"> <li>EPA (2022): <b>More urgency needed to deliver climate mitigation and adaptation</b> to meets international obligations to reduce greenhouse gas (GHG) emissions.</li> <li>While Ireland's GHG emissions, with full implementation of the Climate Action Plan 2021 (Government of Ireland, 2021), are projected to decrease by an annual average reduction of 3 per cent between 2021 and 2030, <b>further measures are required to meet national and EU ambitions to keep the global temperature increase to 1.5°C.</b></li> <li><b>Government raised commitment for offshore wind from 5GW to 7GW</b></li> <li>In 2022, <b>Government agreed pathway to 51% reduction in economy-wide emissions</b> including 25% reduction from agriculture (Government of Ireland, 2022d)</li> </ul>

<sup>17</sup> <https://www.epa.ie/our-services/monitoring--assessment/freshwater--marine/groundwater/>

<sup>18</sup> Includes EIA projects added subsequently (subjected to SEA compliance checks in annual Environmental Assessment Reports), such as CP1029 for which an EIA was undertaken of a new 220 kV GIS station and two new 220 kV circuits connecting the station to the existing Maynooth to Woodland 220 kV Overhead line (requiring Horizontal Directional Drilling of the River Rye Special Area of Conservation).

<sup>19</sup> The European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296/2018) amended the Planning and Development Act 2000 and the Planning and Development Regulations 2001 in order to transpose into Irish Law the provisions of the EIA Directive 2014/52/EU.

<sup>20</sup> Unless an environmental monitoring requirement explicitly specifies a monitoring report to a named recipient, it is possible that only visual ad-hoc monitoring is undertaken, and/or monitoring results are not formally recorded in a meaningful way which will inform the SEA monitoring process.

<sup>21</sup> Monitoring requirement specifying a reporting requirement, either within project documents, or planning conditions.

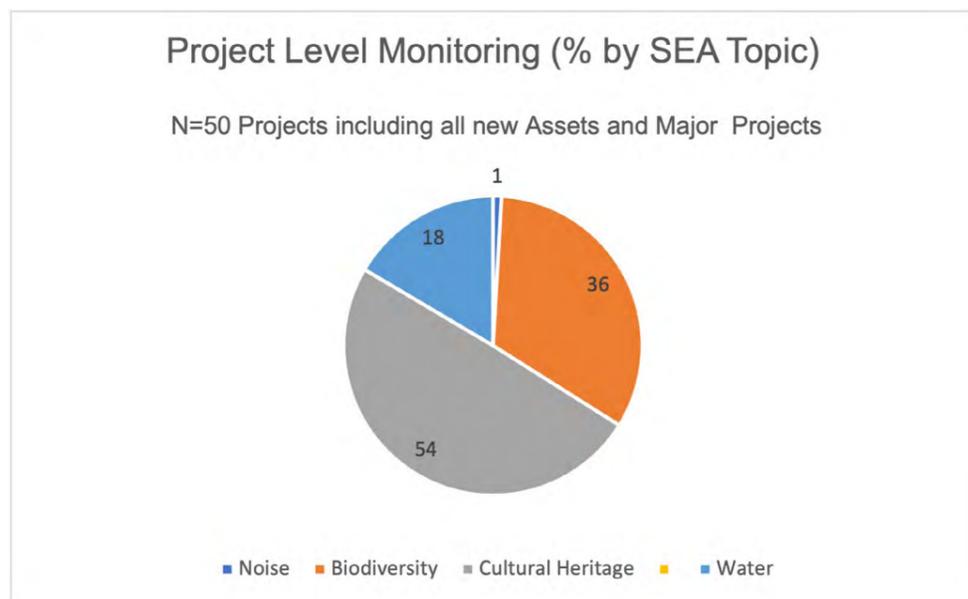


Figure 6: Project-Level monitoring Commitments (% by SEA Topic)

### 5.3 Key Findings: Project Monitoring Reports

- From the monitoring commitments identified, two biodiversity monitoring reports, one water quality monitoring report, and one noise monitoring report were obtained.
- Other monitoring reports were not available on planning authority portals in any instances.

### 5.4 Key Results of Monitoring Against Indicators

Key outcomes of the monitoring against the indicators in Section 3.2 are reported in this section and summarized in Section 5.5. To assist the reader, the tabulated SEA monitoring objectives, targets, and indicators for each theme are repeated under each theme along with the results.

#### 5.4.1 Population, Human Health & the Economy

Table 6: SEA Monitoring Objectives, Targets, and Indicators: Population, Human Health and Economy

Objective	Target	Indicator
<b>PHH1:</b> To minimise the proximity of development to concentrations of population and to mitigate potential effect of development in order to reduce actual and perceived environmental effects.	<b>PHH1_T1:</b> Noise levels emanating from the proposed development following commissioning, when measured externally at a noise sensitive location shall not exceed recommended guideline values.	<b>PHH1_I1:</b> Maximum noise level emanating from the installation at the façade of any near sited residential properties shall not exceed levels specified in the EPA’s Guidance Note for Noise (NG4).
	<b>PHH1_T2:</b> Ensure compliance with all authoritative international and national guidelines for Extremely Low Frequency (ELF) EMF exposure.	<b>PHH1_I2:</b> Compliance with all authoritative international and national guidelines for ELF EMF exposure.
	<b>PHH1_T3:</b> Avoid where possible routing of overhead transmission line infrastructure within 50m of existing dwellings.	<b>PHH1_I3:</b> Number of existing dwellings within 50m of overhead transmission line development.

### Monitoring Results (PHH1\_T1): Noise

- No exceedances identified, and no complaints via EirGrid Complaints Procedure.
- Review of project documents indicates that EirGrid/EirGrid’s consultants do not propose noise monitoring as standard, post-consent during construction or operation.
- Typical planning conditions seek compliance with specified noise limits, including BS5228 noise standard.
- In many cases, noise monitoring is conditioned with planning consent, and required to be included within a Construction and Environmental Management Plan. However no explicit reporting requirement to a named recipient is stated (e.g. for reports to be submitted to the planning authority).
- Noise monitoring was completed on one project, although this was in response to legal proceedings, and no noise monitoring was conditioned on the project in the question.
- In that case, the noise report commissioned concluded that the specific noise level from the facility at each measurement location remained below the day and night time limits as outlined by An Bord Pleanála.
- Desk and field evidence (Box 4) presents strong evidence that:
  - 110 and 220 kV overhead lines are not likely to result in significant noise impacts in their vicinity;
  - 400 kV overhead lines do produce significant ‘corona noise’ (audible cracking or hissing) effects under certain conditions (especially at night under humid or wet conditions); and
  - Noise effects are likely from boundaries of substations (110, 220, and 400 kV), such that minimum setback distances are recommended from sensitive receptors (e.g. dwellings).

#### Box 4: Evidence for Noise effects from high voltage transmission projects

EirGrid commissioned an independent literature review and field study on the noise effects of high voltage transmission development, published as part of the EirGrid Evidence Based Studies Series (EirGrid, 2016).

The literature review confirms that the level of noise impact likely from electricity transmission lines increases with the increase of the voltage strength of the line.

Much of the literature indicates that “corona noise” (audible cracking or hissing) only becomes a significant issue from 350-500 kilovolts (kV) and above. This would suggest that significant “corona noise” impacts may not be likely for 110 kV and 220 kV transmission lines and that the potential for more significant impacts may only relate to 400 kV lines.

Field studies on 400 kV overhead lines provided evidence which showed that these lines do produce significant corona noise effects under certain conditions (especially at night under humid or wet conditions).

Noise measurement surveys completed at 110 kV, 220 kV and 400 kV substations recorded steady state noise levels in the vicinity of the boundaries of these substations. To avoid any noise impacts at sensitive receptors, it is recommended that in the design and siting of new substations: a minimum distance of 5m is maintained between a 110 kV substation and the land boundary of any noise sensitive receptor. A distance of 20m is to be maintained between a 220 kV substation and the land boundary of any sensitive receptor. A minimum distance of 150m is to be maintained between a 400 kV substation and the land boundary of any noise sensitive receptor.

### Monitoring Results (PHH1\_T2): Electromagnetic Fields

- No exceedances identified, and no complaints via EirGrid Complaints Procedure.
- There is no EMF monitoring in project documents, or planning conditions, noting the statutory obligation for EMF lies within the EPA and the Health and Safety Authority with DECC responsible for policy.
- The scientific evidence indicates that EMF do not cause adverse health effects in humans when properly designed and constructed (see Box 5).

#### Box 5: Evidence base for EMF effects, and Monitoring Obligations

Independent and authoritative international panels of scientific experts have reviewed studies on possible health effects from EMFs.

These have concluded, based on the weight of the evidence available, that the power frequency of **electric and magnetic fields encountered in normal living and working conditions do not cause adverse health effects in humans when properly designed and constructed.**

These form the basis for guidelines published by the International Council on Non-Ionising Radiation Protection (ICNIRP, 2020) with regard to EMF, to which EirGrid and ESB Networks have strict regard in the design and operation of the transmission system.

The EPA is the statutory agency with remit to provide advice and guidance on exposure of public to EMF.

The Health & Safety Authority has the statutory remit to regulate workplace EMF exposure.

The Department of Environment, Climate and Communications is responsible for National policy including adherence to EU Directives based on exposure limits to EMF recommended ICNIRP.

### Monitoring Results (PHH1\_T3): OHL Route proximity to Dwellings

- Numerous upgrades / and refurbishments of overhead line projects are included in the IP, however these projects relate to long-existing overhead lines, where the proximity to dwellings is already fixed.
- New overhead lines were identified for four projects; results of GIS analyses are presented in Table 7 on the confirmed alignments, although construction is ongoing for two of these projects.
- In summary, five residences were located within 50m of new OHLs, which totalled 191 km.

Table 7: Number of existing dwellings within 50m of new overhead transmission lines

Project (*Construction complete)	Voltage and length of new line	Number of residences within 50m
CP0466 North-South Interconnector	400 kV; 100.5 km	3
CP0501 Clashavoon – Dunmanway 110 kV overhead line project circuit*	110 kV; 40 km	1
CP0585 Laois Kilkenny Reinforcement Project	110 kV; 26 km	0
CP0596 New Kinnegad-Mullingar 110 kV circuit*	110 kV; 24 km	1
	Total Length New OHL: 191 km	Total Residences: 5 (Or 1 residence per 38 km)

### Positive population impacts: EirGrid's Public Engagement and Community Benefit Policy

- Whilst not relevant to specific monitoring indicators, a variety of EirGrid initiatives have positive impacts on population, human health and the economy.
- EirGrid's Public Engagement team includes EirGrid Community Liaison Officer roles (5 no. during the Plan cycle) to engage with communities and identify key concerns which may require project mitigations (e.g. re-routing of transmission infrastructure).
- In 2022, EirGrid published an enhanced Community Benefit Policy (EirGrid, 2022b) as part of its new Public Engagement Strategy. Implementation of the policy, provide direct benefits to communities who are closest to new transmission infrastructure.
- Funding is provided under three streams: community, sustainability, and biodiversity.
- Specific requirements for applicants under each stream were being developed at the time of writing; for example, biodiversity projects funded by the scheme will align with the Community Foundation for Ireland Guidance for Community Biodiversity Action Plans.
- Funds, which are proportional to the scale of the project, support local good causes, help communities transform their area, and provide the opportunity to each community to become or remain a 'sustainable energy community'.
- The community benefit scheme becomes live once a project receives planning permission.
- The community benefit for each project is managed by the project team. This team supports the setup of a local Community Forum (Box 6);
- At the time of writing, community forums had been initiated on six projects, all of which are new assets subjected to SEA Monitoring.
- All projects continue to be assessed under EirGrid's Social Impact Assessment methodology to ascertain fewer tangible impacts to community, residents and other stakeholders.

### Positive population impacts: EirGrid's Public Engagement and Citizens Energy Road Shows

- In 2022, EirGrid embarked on a year-long series of citizens roadshow events (Photograph 1) to inform local communities on EirGrid's plans to future-proof the electricity grid and provide information including microgeneration, retrofitting grants, and regional development issues.
- The roadshows follow on from the 2021 Shaping Our Electricity Future consultation programme during which EirGrid sought views and inputs from all sectors of society and industry about grid development.

Photograph 1 EirGrid Citizens Energy Road Show (Arklow, September 2020)



**Box 6: EirGrid Community Benefit Policy – Positive Effects on Population, Human Health**

This box sets out the key elements of EirGrid’s revised Community Benefit Policy, and the Community Forum which is the delivery vehicle for funding under the policy.

A local Community Forum is established for each qualifying project. Each community forum will develop a strategy for their community. The Community Forum will:

- Ensure communities are at the heart of the decision making over the project lifetime.
- Provide relevant input and key local knowledge to assist the project team in decision making.
- Work with community groups and organisations to build trust, identify local needs, grow partnerships and deliver on local projects.
- Provide governance and transparency around the implementation of Community Benefit.
- Receive regular updates from EirGrid team members on project delivery.
- Advise EirGrid on the most effective approach to communicating the wider community.

**The role of the forum in relation to the Community Benefit**

The Community Forum provides advice and guidance on all aspects of the Community Fund.

This includes:

- Working with EirGrid in identifying organisations and potential projects to ensure maximum impact of the community benefit in the area.
- Identifying partnership and collaboration opportunities.
- Agreeing the criteria and parameters of the fund.
- Accessing proposals for discussion and consideration.
- Inputting key local knowledge around area needs and priorities.
- Provide feedback at key stages in the process.

Each forum is independently chaired.

- Irish Rural Link are Chairing Laois Kilkenny and the Celtic Interconnector
- Development Perspectives are Chairing North Connacht and Kildare Meath.
- M-CO Chaired the forum on Clashavoon Dunmanway.
- Adjust – Harriett Emerson Chairing the East Meath North Dublin

Each Forum is unique with core group working principles and a terms of reference.

5.4.2 Biodiversity, Flora and Fauna

Table 8: SEA Monitoring Objectives, Targets, and Indicators: Biodiversity, Flora and Fauna

Objective	Indicator
<b>B1:</b> Ensure compliance with the Habitats Directive with regard to protection of designated European Sites including Article 10.	<b>BI_I1:</b> Number of EirGrid projects subject to Imperative Reasons of Overriding Public Interest (IROPI).
	<b>BI_I2:</b> *Number of Adaptive Management requirements post project completion.  *(i.e. number of recorded instances of additional mitigation implemented during construction, as reported in project-specific monitoring reports).
<b>B2:</b> Avoid significant impacts on protected habitats, species, environmental features or other sustaining resources in and outside designated Wildlife Sites (including but not limited to NHAs and pNHAs).	<b>B2_I1:</b> Number of significant impacts post mitigation on relevant habitats, species, environmental features or other sustaining resources resulting from development provided for by the Grid IP.
	<b>B2_I2:</b> Number of Adaptive Management requirements post project completion*  (i.e. number of recorded instances of additional mitigation implemented during construction, as reported in project-specific monitoring reports).

- No complaints via EirGrid Complaints Procedure.
- Biodiversity monitoring reports obtained for a single overhead line uprate project
- Other projects proposed monitoring without specific written reporting and/or agency as recipient.

**Monitoring Results (B1\_I1): Projects subject to Imperative Reasons of Overriding Public Interest**

- No projects were subject to the Article 6(4) IROPI procedure, and as such none had adverse effects on the integrity of any European sites.
- IROPI remains a rarely used procedure in Ireland (two projects as of 2022), and no EirGrid project has ever been the subject of an IROPI application.

**Monitoring Results (B1\_I2): Adaptive Management for Other Biodiversity (Project Completion.)**

- As biodiversity monitoring reports were only obtained for a single project, success against meeting this indicator could not be assessed across the Plan. The adaptive management measures in Box 7 were reported in the monitoring report obtained for one overhead line uprate project.

**Monitoring Results (B2\_I1): Significant Residual Biodiversity Impacts (Post Mitigation)**

- Non-standard Reporting of residual impacts is variable across projects, and leads to uncertainty as to true residual impacts.
- No international, national, or county scale impacts were predicted in project documents (N=50 projects including all new assets); although in a small number of cases, there were direct impacts to Annex 1 habitats designated under the EU Habitats Directive.
- Local scale impacts are commonly reported in project documents, including the representative selection identified in Table 9.

- A data gap across projects is that project documents generally do not specify the geographic scale of the impact or its significance and net losses of locally important habitats (e.g. scrub, neutral grassland) are not always quantified.
- Anecdotal comments from EirGrid Agricultural Liaison Officer indicates failed landscaping establishment on some projects which can subsequently affect biodiversity, flora and fauna. This may be due to a number of factors, which can include failure to suppress weed growth, top newly planted whips in winter, or watering in during dry weather.
- There are significant positive effects from the Biodiversity Enhancement pilots being developed by EirGrid and ESB in 12 counties at the time of writing<sup>22</sup>, including the East West Interconnector Biodiversity Project<sup>23</sup> (Appendix 3)

**Box 7: Adaptive Mitigation reported in biodiversity monitoring report for one overhead line uprate project**

Deterioration of rubber ground protection (Durabase (Terra Firma) from frequent tracking necessitated novel use of tractor mounted sweeper to prevent littering of sensitive areas from mat shavings; mat fragments still had to be manually picked up by hand after mat removal.

The use of newer mats that were subject to less wear and tear in the past would prevent this issue together with careful and complete interlocking of the mats

Additional silt controls also installed by contractors on an iterative structure by structure basis in consultation with the project ecologists and hydrologist.

Installation of downstream silt traps in response to a burst water mains and field bridge damage

Timber clearance conducted as part of non-project related line maintenance works was coordinated in communication with project contractors and ecologists in order to best suit access route requirements and associated ecological mitigation e.g. at AM11, removal of longstanding fruit trees for angle mast construction works was kept to a minimum under ecological supervision,

At sensitive sites, use of mats or plywood was essential for storage of excavated turves and under-burden in order to achieve tidy reinstatement of turves and under-burden at bog sites.

**Table 9: Sample of some significant negative residual biodiversity impacts from EirGrid Projects**

Project Type	Sample Projects	Biodiversity Feature Impacted	Predicted Residual Biodiversity impact in Project Documents
All projects	N/A	Local aquatic species and habitats	Residual surface water pollution following mitigation, for instance following extreme weather events and/or during HDD from bentonite or mud break out
	N/A	Local value habitats	Disturbance and permanent loss of localized habitat extents
	N/A	Protected mammal, reptile and amphibian species	Residual temporary disturbance during construction, following mitigation.
New Underground Cable Project	Celtic Interconnector	Trees within native oak-ash-hazel woodland	Arboricultural assessment indicates potential for loss of 14 trees dependent on final location of cable trench
		Disturbance to priority Annex 1 calcareous grassland habitats	Risk of reduction in species diversity or vegetation structure despite mitigation and monitoring
		Bee orchids (not protected; Least Conservation Concern) in recolonizing bare ground	Permanent loss of bee orchids within formerly developed land
		Scrub and wet grassland habitats	Permanent net loss of habitat extents (not quantified)
	CPo816 North Con-nacht 110 kV Project	Native hedgerows (none species-rich)	Permanent loss of habitat extents (64 m)
		Semi-natural habitats including peatlands	Risk of reduction in species diversity or vegetation structure despite mitigation and monitoring
New Over-head Line Project	CPo466 North-South Interconnector Project	Birds, particularly swans and geese	Residual bird collision following installation of bird diverters
	CPo585 Laois Kilkenny Reinforcement Project		
New or Refurbished Station Project	Various	Local value habitats	Residual permanent loss of local value habitats

<sup>22</sup> See details on EirGrid biodiversity pilots at <https://www.eirgridgroup.com/about/in-the-community/environment/biodiversity-initiatives/index.xml>

<sup>23</sup> <https://www.eirgridgroup.com/the-grid/projects/biodiversity-project/whats-happening-now/>

### 5.4.3 Landscape, Visual and Amenity

Table 10: SEA Monitoring Objectives, Targets, and Indicators: Landscape, Visual and Amenity

Objective	Target	Indicator
<b>L1:</b> Avoid significant adverse impacts on landscape character and designations.	<b>L1_T1:</b> No avoidable impacts on the landscape resulting from development provided for by the Grid IP.	<b>L1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.
<b>L2:</b> Avoid or minimise adverse visual effects on residential receptors.	<b>L2_T1:</b> No avoidable impacts on the landscape resulting from development provided for by the Grid IP.	<b>L1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

#### Monitoring Results (L1\_T1): Designated Landscape Impacts

- Four new overhead line projects were identified in the IP.
- Whilst all of these projects will have significant residual visual impacts, for instance to unscreened properties, scenic viewpoints, or cycle routes, only one project (CPo466 North South Interconnector) will have significant effects on designated landscape features (Table 11).

Table 11: New Overhead Line Projects –Residual Landscape Impacts (Designated Features)

Project name and number	Length of Overhead Line	Significant Residual Impact <u>Designated Landscape Features</u>	Details from Project Documents
CPo466 North South Interconnector (400 kV)	100 km	Yes	Significant effect on Brittas, Co. Meath (Historic Designated Landscape with main features substantially present within 5km of development)  Significant effect on Scenic Viewpoint 86 (Meath)  No significant residual effects on scenic viewpoints or other designated landscape features within 5km of development (up to 10km for elevated viewpoints)
CPo501 New Clashavoon – Dunmanway 110 kV overhead line project	40 km	No	No significant residual effects – avoided through routing
CPo596 New Kinnegad-Mullingar 110 kV Overhead Line Project	24 km	No, but significant from the Royal Canal Way	No significant residual effects on Areas of High Amenity Value (Lough Owel and Lough Ennel)  No significant residual effects on designated scenic viewpoints. or former demesnes.  Views from the Royal Canal Way will experience moderate visual effects for a path length of approximately 200 metres in close proximity to the line
CPo585 Laois Kilkenny Reinforcement Project – New 110 kV Line element	26 km	No	No significant residual effects– avoided through routing
<b>Total</b>	<b>190 km</b>		

- Undergrounding of seven new assets (totalling 189 km) has significantly reduced landscape impacts in other areas (Table 12), relative to an overhead option.
- There remain largely temporary landscape impacts from hedgerow and tree removal at a local scale (e.g. for the temporary removal of hedgerows before re-instatement, to facilitate use of ‘passing bays’ to enable traffic flow when laying cables in roads).

**Table 12: New Underground Cable Projects, which avoid significant residual landscape Impact**

Project name and number	Length of Underground Cable
CPo197 New Cushaling - Thornsberry 110 kV circuit	2 km
CPo726 Kilpadogue-Knockanure 220 kV Cable Project	20 km
CPo816 North Connacht 110 kV Project	59 km
CPo829 New Clashavoon – Macroom No. 1 110 kV circuit	9 km
CPo966 Kildare-Meath Upgrade Project	53 km
CPo970 Cross Shannon 400kV Cable	2.8 km
GPo057 Celtic Interconnector	43 km
<b>Total</b>	<b>189 km</b>

**Monitoring Results (L1\_T2): Landscape Impacts to Residential Receptors**

- Three of four new overhead line projects identified in the IP were predicted to have significant residual effects on residential receptors, according to project documents (Table 13).



**Table 13: New Overhead Line Projects –Residual Landscape Impacts (Residential Features)**

Project name and number	Length of Overhead Line	Significant Residual Impact: Residential Receptors	Details from Project Documents
CPo466 North South Interconnector (400 kV)	100 km	Yes	Significant effects on un-screened properties within 500m  Significant; reducing to not significant beyond 600- 800m  Significant effects on outskirts of settlements Dunderry and Robinstown
CPo501 New Clashavoon – Dunmanway 110 kV overhead line project	40 km	No	No significant residual effects.  PECR extract: “Generally avoided concentrations of residences; limited effects on settlement centres”
CPo596 New Kinne-gad-Mullingar 110 kV Overhead Line Project	24 km	Yes	Slight to Moderate effects from a small number of properties in the vicinity of Curraghmore and Irishtown
CPo585 Laois Kilkenny Reinforcement Project – New 110 kV Line element	26 km	Yes	Significant effects to residences in: <ul style="list-style-type: none"> <li>• Zone D: Boleybeg Cross Roads to eastern environs of Timahoe</li> <li>• Zone E Eastern environs of Timahoe to Money – Cool-nabacky Environs</li> </ul>
<b>Total</b>	<b>190 km</b>		

#### 5.4.4 Cultural Heritage

**Table 14: SEA Monitoring Objectives, Targets, and Indicators: Cultural Heritage**

Objective	Target	Indicator
<b>CH1:</b> Avoid impacts upon archaeological heritage (including entries to the RMP) and architectural heritage (including entries to the RPS and NIAHs).	<b>CH1_T1:</b> No developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	<b>CH1_I1:</b> Number of developments occurring which result in full or partial loss to entries to the RMP and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.
	<b>CH1_T2:</b> No developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	<b>CH1_I2:</b> Number of developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.

#### Monitoring Results (CH1\_T1): Loss to Records of Monuments and Places

- There were no full or partial loss to entries in the Records of Monuments and Places in project documents.
- Table 15 summarizes the numbers of instances, where new assets intersected with the Zones of Notification (ZoN) of RMPs. The intersection with a ZoN does not indicate a full or partial loss to the monument, simply that the National Monuments Service must be notified in advance of any excavation works. Overhead lines are designed such that structures avoid and conductors oversail RMPs; while archaeological monitoring attaches to underground cables intersecting ZoNs.

**Table 15: Instances where new assets intersected with the Zones of Notification of entries to the Record of Monuments and Places**

Project name and number	New Asset Description and Length where applicable	Number of Intersections with ZoNs of RMPs
North South Interconnector	New 400 kV OHL (100 km)	6
Kinnegad-Mullingar OHL	New 110 kV OHL (24 km)	5
Celtic Interconnector	New UGC (43 km onshore; 500 km sub-marine)	34
Laois Kilkenny Reinforcement Project	New 110 OHL (62 km) and 2 no. new 110 kV stations	3
New Clashavoon – Dunmanway 110 kV UGC	New 110 kV OHL (40 km)	2
North Connacht 110 kV Project	New 110 kV UGC (60 km)	17
Kildare-Meath Upgrade Project	New 400 kV UGC (53 km)	15
New Clashavoon – Macroom No. 1 110 kV UGC	New 110 kV UGC (9 km)	1
		<b>Total 83</b>

#### Monitoring Results (CH1\_T2): Loss to Records of Protected Structures

- There were no full or partial loss to entries to Records of Protected Structures.
- GIS Analyses confirmed no intersections between RPSs (for which data was available) and new assets.
- There was no RPS GIS data available for Kilkenny, and as such RPS intersections could not be analysed for the one new asset in this county (CP0595 Laois Kilkenny Reinforcement Project).
- The EIAR for CP0585 confirmed “no profound or significant impacts on the archaeological, architectural, or cultural heritage along the proposed route”, and additionally the report
- Specified extensive archaeological investigations prior to construction.

#### 5.4.5 Geology, and Soils,

**Table 16: SEA Monitoring Objectives, Targets, and Indicators: Geology and Soils and Land Use**

Theme	Objective	Target	Indicator
<b>Geology and Soils</b>	<b>GSL1:</b> To avoid or minimise effects on mineral resources or soils.	<b>GSL_T1:</b> No avoidable impacts on mineral resources or soils resulting from development provided for by the Grid IP.	<b>GSL1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.
<b>Land use</b>	<b>LU1:</b> To avoid or minimise effects on existing land use.	<b>LU1_T1:</b> No avoidable impacts on the land use resulting from development provided for by the Grid IP.	<b>LU1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

#### Monitoring Results: Geology and Soils (GSL1), and Land Use (LU1\_T1)

- Project documents were reviewed from all new assets (N=13).
- No residual impacts were predicted on soils and geology in project documents.
- No monitoring commitments were identified, to verify these predictions.
- Significant residual impacts on land-use were predicted in project documents for two overhead lines, and two station projects (Table 17).

**Table 17: New Assets –Residual Geological and Land Use Impacts (Significant impacts in orange rows)**

Project name and number	New Asset Description and Length where applicable		Residual Impact in Project Documents	Residual Impact in Project Documents
	OHL: Overhead Line		Geology (GSL_T1)	Land-Use
	UGC: Underground Cable		(LU1_I1)	
CPo466 North South Inter-connector (400 kV)	New OHL (100 km)		Not significant	Significant (moderate adverse) effects on 6% of lands due to potential restriction of farm yard development during construction.  Significant (moderate adverse) effect (0.5%) at construction materials storage yard (soil damage).
CPo501 New Clashavoon – Dunmanway 110 kV overhead line project	New OHL (40 km)		Not significant	Not significant
CPo596 New Kinnegad-Mullingar 110 kV Overhead Line Project	New OHL (24 km)		Not significant	Not significant
CPo585 Laois Kilkenny Reinforcement Project – New 110 kV Line element	New OHL (26 km) and 2 new 110 kV stations		Not significant	Slight residual effect to land use from change from agricultural land use at new Ballyragget and Coolnabackly substations
CPo197 New Cushaling - Thornsberry 110 kV circuit	New UGC (2.3 km)		Not significant	Not significant
CPo726 Kilpadogue-Knockanure 220 kV Cable Project	New UGC (20 km)		Not significant	Not significant
CPo816 North Connacht 110 kV Project	New UGC (59 km)		Not significant	Not significant
CPo970 Cross Shannon 400kV Cable	New UGC 2.8 km		Not significant	Not significant
GPo057 Celtic Interconnector	New UGC 43 km onshore 500 km submarine		Not significant	Not significant
CPo927Clonee 220 kV Station	New Station		Documents not readily available	Significant effect: change from agricultural use
CPo930 New Dunmanway 110 kV Station	New Station		Not significant	Significant effect: change from agricultural use

5.4.6 Water

**Table 18: SEA Monitoring Objectives, Targets, and Indicators: Water**

Objective	Target	Indicator
<b>W1:</b> Prevent impact upon the status of surface and groundwater in line with the objectives of the WFD as outlined in the River Basin Management Plans.	<b>W1_T1:</b> Not to cause deterioration in the status of any surface ground water or affect the ability of any surface ground to maintain or achieve ‘good’ status.	<b>W1_I1:</b> Classification of Overall Status as indicated by the EPA.  <b>W1_I2:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

**Monitoring Results (W1\_I1a): WFD Status of Rivers Intersected by New Assets**

- Refer to Section 3.4.3 for details on methods, and limitations of analyses.
- Three New Asset projects were subjected to analysis which had all completed substantive construction during one of the EPA data periods (2013-2018 or 2016-2021).
- Figure 7 overleaf displays the WFD for the period 2013-2018, and 2016-2021, by calculating the length of each project within WFD Catchments of Good, High, Moderate or Poor Status
- The key results from Figure 7 are summarized in Table 19, with details included in the tables on Figure 7.
- Table 19 shows that , water quality has variously improved, or deteriorated, following or during construction of the EirGrid new asset projects assessed.
- Overall, in Ireland, as per sectoral Phosphorous analyses in River Basin Management Plans, surface water WFD Status is not likely to be at risk from construction of development projects (which include significant mitigation, imposed as a condition of planning), but overwhelmingly from agriculture, as well as hydromorphological changes, forestry and urban waste water.
- As such, the trends in water quality to either improve, or deteriorate during or following project construction are not predicted to be influenced by construction of these projects.

**Table 19: Monitoring Results (W1\_I1a): WFD Status of SW Basins Intersected by New Assets ( which had completed substantive construction during one of EPA data periods (2013-2018 or 2016-2021)).**

Project	EPA Data Period with Substantive Construction Activity	% Project Crossing different WFD Eco Status	
		2013-2018	Change in 2016-2021
CPo501 Clashavoon – Dunmanway 110 kV circuit	2013-2018	Majority Good (71%) None Poor	<u>Improvement</u>
CPo585 Laois Kilkenny Reinforcement Project	2016-2021	Majority Good (82%) Poor 10%	Good reduced (64%) but Poor also reduced to 0%
CPo596 New Kinnegad-Mullingar 110 kV Overhead Line Project	2013-2018	Majority Moderate (74%) Poor 21%	<u>Deterioration</u> Majority Poor (95%)
CPo829 New Clashavoon – Macroom No. 1 110 kV circuit	2016-2021	100% Good	<u>Deterioration</u> 100% Moderate

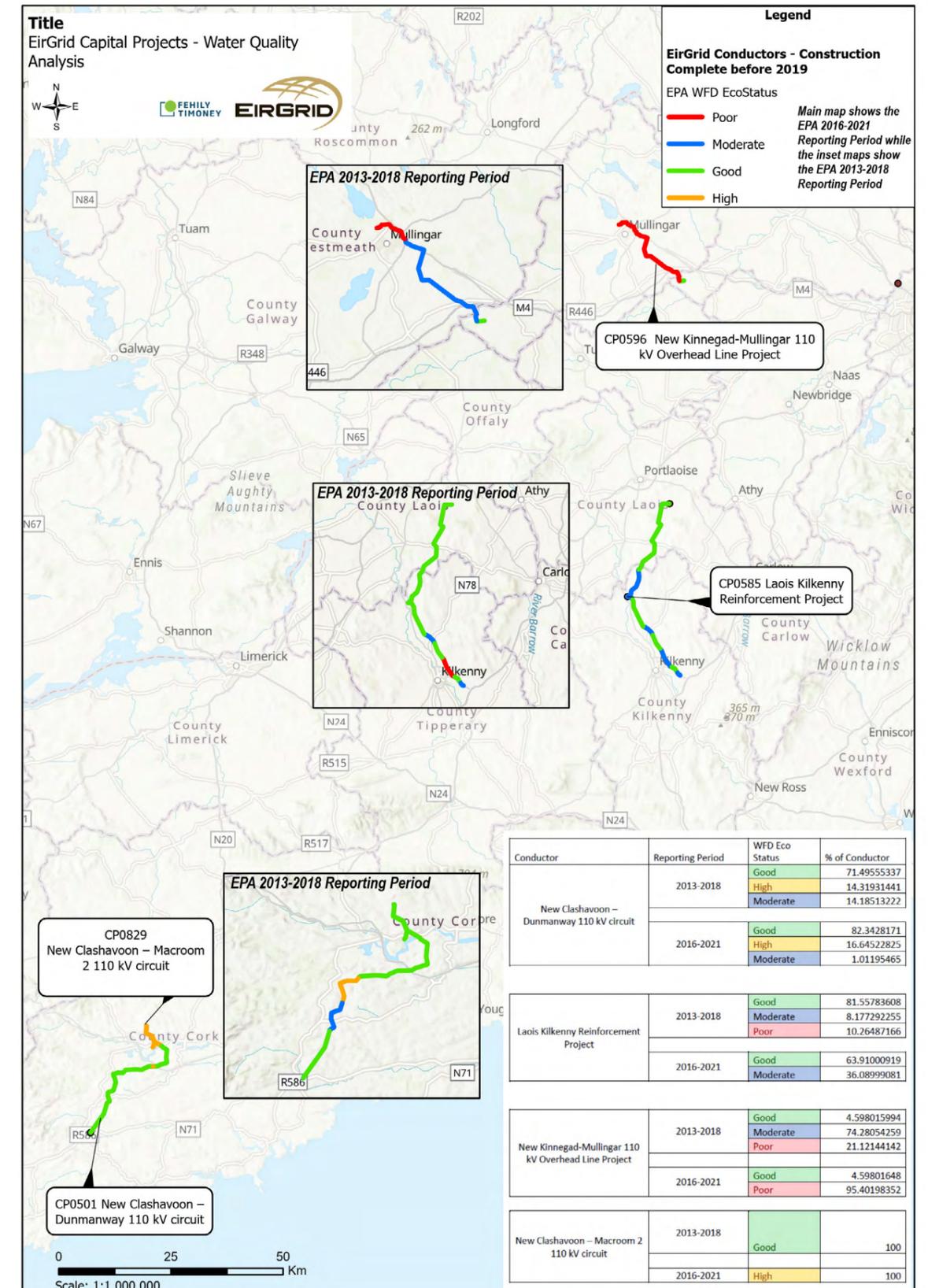
**Monitoring Results (W1\_1b): WFD Status of Groundwater Bodies Intersected by New Assets**

- Refer to Section 3.4.3 for details on methods, and limitations of analyses.
- As for W1\_1b (WFD Rivers), three New Asset projects were subjected to analysis, all of which had all completed substantive construction during one of the EPA data periods (2013-2018 or 2016-2021).
- Table 20 shows that Groundwater Body status remained unchanged before and after substantive construction of the selected new asset projects.
- Overall, in Ireland, groundwater bodies of poor status are not at risk from construction of development projects, but largely the significant pressures from historical contamination from mines, landfills, and industrial point sources (EPA, 2022d).
- Notwithstanding, as predicted in the environmental assessments for these three projects, there is no evidence of negative adverse effects on Ground Water Body WFD (Eco) Status, from any EirGrid New Asset projects.

**Table 20: Monitoring Results (W1\_1b): WFD Status of GW Bodies Intersected by New Assets ( which had completed substantive construction during one of EPA data periods (2013-2018 or 2016-2021)).**

New Asset Project	Ground Water Body NAME	2013-2018 Chemical GW Status	2016-2021 Final GW Status	Change
CP0829 New Clashavoon – Macroom No. 1 110 kV circuit	Ballinhassig West	Good	Good	None
	Ballinhassig East	Good	Good	None
	Ballinhassig West	Good	Good	None
	Bandon	Good	Good	None
	Ballinhassig East	Good	Good	None
CP0585 Laois Kilkenny Reinforcement Project	Timahoe Gravels	Good	Good	None
	Durrow	Poor	Poor	None
	Clifden	Good	Good	None
	Kilkenny	Good	Good	None
	Kilkenny-Ballynakill Gravels	Good	Good	None
	Ballingarry	Good	Good	None
CP0596 New Kinnegad-Mullingar 110 kV Overhead Line Project	Bagenalstown Upper	Good	Good	None
	Inny	Good	Good	None
	Athboy	Good	Good	None
	Waste Facility (Woo71-02)	Good	Good	None
CP0501 New Clashavoon – Dunmanway 110 kV circuit	GWDTE-Lough Owel Fens & Mires (SAC000688 & SAC000692)	Good	Good	None

**Figure 7: Water Quality Analysis for any EirGrid (New Asset) Projects substantively constructed during either EPA WFD dataset period**



### Monitoring Results (W1\_1b): Significant Residual Impacts (Surface and Groundwater)

A single water quality monitoring report was available for an overhead line uprate project. This reported on chemical and biological water quality monitoring of 22 no. water quality monitoring sites, in 11 watercourses. This report did not identify any significant residual impacts arising from the construction phase of the project. Minor incidents, which were adequately mitigated, included minor silt inputs to a river (following a burst water main and damaged bridge), and localized hydraulic oil leaks.

#### 5.4.7 Material Assets

Table 21: SEA Monitoring Objectives, Targets, and Indicators: Material Assets

Objective	Target	Indicator
<b>MAI1:</b> Minimise effects upon the sustainable use of the land, mineral resources or soils.	<b>MAI1_T1:</b> To minimise impacts on farming practices and the extent of soil compaction in greenfield sites.	<b>MAI1_I1:</b> The impact on farming practices and extent of soil compaction in greenfield sites. <b>MAI1_I2:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.
	<b>MAI1_T2:</b> To consider the use of existing transmission infrastructure before new build.	<b>MAI1_I2:</b> The use of existing transmission infrastructure before new build.
<b>MAI2:</b> Minimise effects upon the existing and planned infrastructure.	<b>MAI2_T1:</b> No significant impacts on existing and planned infrastructure.	<b>MAI2_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

### Monitoring Results (MAI1\_I1 and MAI1\_I2): Residual Impact on Farming

- Cannot be accurately measured with existing available datasets; currently no evidence of significant adverse impact.
- EirGrid Agricultural Liaison Officers (5 no. during IP lifecycle) play a fundamental role in reducing impacts on farming across all EirGrid projects, by agreeing and negotiating site selection/ route alignment and construction with landowners.
- The majority of new Underground Cable assets are laid in public roads: CP0966 Kildare-Meath Upgrade Project (est. 85%); Celtic Interconnector (86%), CP0816 North Connacht (88%) which minimises impacts on farmlands.

### Monitoring Results (MAI1\_I2): Use of Existing Transmission Infrastructure before New Build.

- EirGrid’s Framework for Grid Development (EirGrid, 2017) considers existing infrastructure use on all projects at Steps one and two.

### Monitoring Results (MAI1\_I1): Residual Impact on Planned Developments

Cannot be accurately measured with existing available datasets.

As a general comment EirGrid approach to public engagement, including roles of Agricultural Liaison Officer role in agreeing and negotiating site selection/route alignment and construction accesses deemed to mitigate residual impacts below significant levels.

#### 5.4.8 Tourism & Recreation

Table 22: SEA Monitoring Objectives, Targets, and Indicators: Tourism & Recreation

Objective	Target	Indicator
<b>TR1:</b> Minimise effects upon the tourism and recreation amenities.	<b>TR1_T1:</b> No significant impacts on tourism and recreation amenities.	<b>TR1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.

### Monitoring Results (MAI1\_I1): Residual Impact on Tourism and Development

- Review of project documents for new assets indicates significant residual effects identified on 1 project (Celtic Interconnector; Table 23); albeit such impacts are temporary.
- Mitigation on the Celtic project included winter scheduling construction of the submarine cable landfall to minimise impact to beach users.

Table 23: New Assets –Residual Tourism and Recreation Impacts (Significant impacts in orange rows)

Project name and number	New Asset Description and Length where applicable	Residual Impact in Project Documents
		Tourism and Recreation
CP0466 North South Interconnector (400 kV)	New OHL (100 km)	Not significant
CP0501 New Clashavoon – Dunmanway 110 kV overhead line project	New OHL (40 km)	Not significant
CP0596 New Kinnegad-Mullingar 110 kV Overhead Line Project	New OHL (24 km)	Not significant
CP0585 Laois Kilkenny Reinforcement Project – New 110 kV Line element	New OHL (26 km) and 2 new 110 kV stations	Not significant
CP0197 New Cushaling - Thornsberry 110 kV circuit	New UGC (2.3 km)	Not significant
CP0726 Kilpadogue-Knockanure 220 kV Cable Project	New UGC (20 km)	Not significant
CP0816 North Connacht 110 kV Project	New UGC (59 km)	Not significant
CP0970 Cross Shannon 400kV Cable	New UGC 2.8 km	Not significant
GP0057 Celtic Interconnector	New UGC 43 km onshore 500 km submarine	Temporary to short-term negative impacts on tourism recreation and amenities as a result of the proposals due to potential disruption to access, and general disturbance
CP0927 Clonee 220 kV Station	New Station	Documents not readily available
CP0930 New Dunmanway 110 kV Station	New Station	Not significant

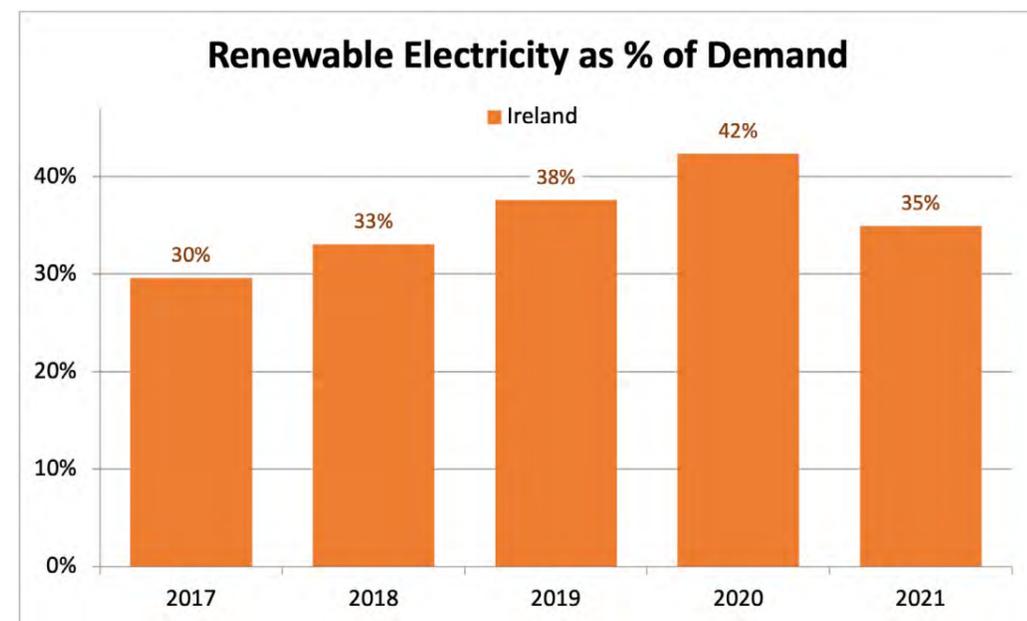
#### 5.4.9 Climate Change

**Table 24: SEA Monitoring Objectives, Targets, and Indicators: Climate Change**

Objective	Target	Indicator
<b>CC1:</b> Help to facilitate the achievement of higher level targets contained in the Government’s Energy White Paper, ‘Ireland’s Transition to a Low Carbon Energy Future 2015-2030’ and targets relating to the Kyoto Protocol.	<b>CC_T1:</b> Contribute towards an increase in electricity generation from renewable energy (ultimately 40% by 2020).	<b>CC_I1:</b> Percentage electricity generation from renewable energy.

**Monitoring Results (MAI1\_I1): Electricity generation from renewables facilitated by EirGrid**

- Grid successfully ran at between 70% and 75% variable renewable energy for a total of 232 hours during 2021/2022 trial.
  - EirGrid previously imposed a cap of 70% on the amount of variable renewable generation on the grid at a given time. In April 2022, this has now been raised to 75% following a successful 11-month trial.
  - Under the 2021 Climate Action Plan, the Government has raised the Renewable Energy ambition from 70% of generation, to up to 80%.
  - EirGrid is exploring further changes to operational practices to operate the power system with variable renewable energy levels of up to 95% and with significantly reduced numbers of conventional units online. The figure of 95% will be required to deliver on the Climate Action Plan ambition, within the next Plan cycle.
- Detailed system and renewable data is published online by EirGrid every 15 minutes on the EirGrid Smartgrid portal<sup>24</sup>.  
See Figure 8 for % renewable electricity as % of demand for the IP duration (excludes 2022 data, although this is available online).



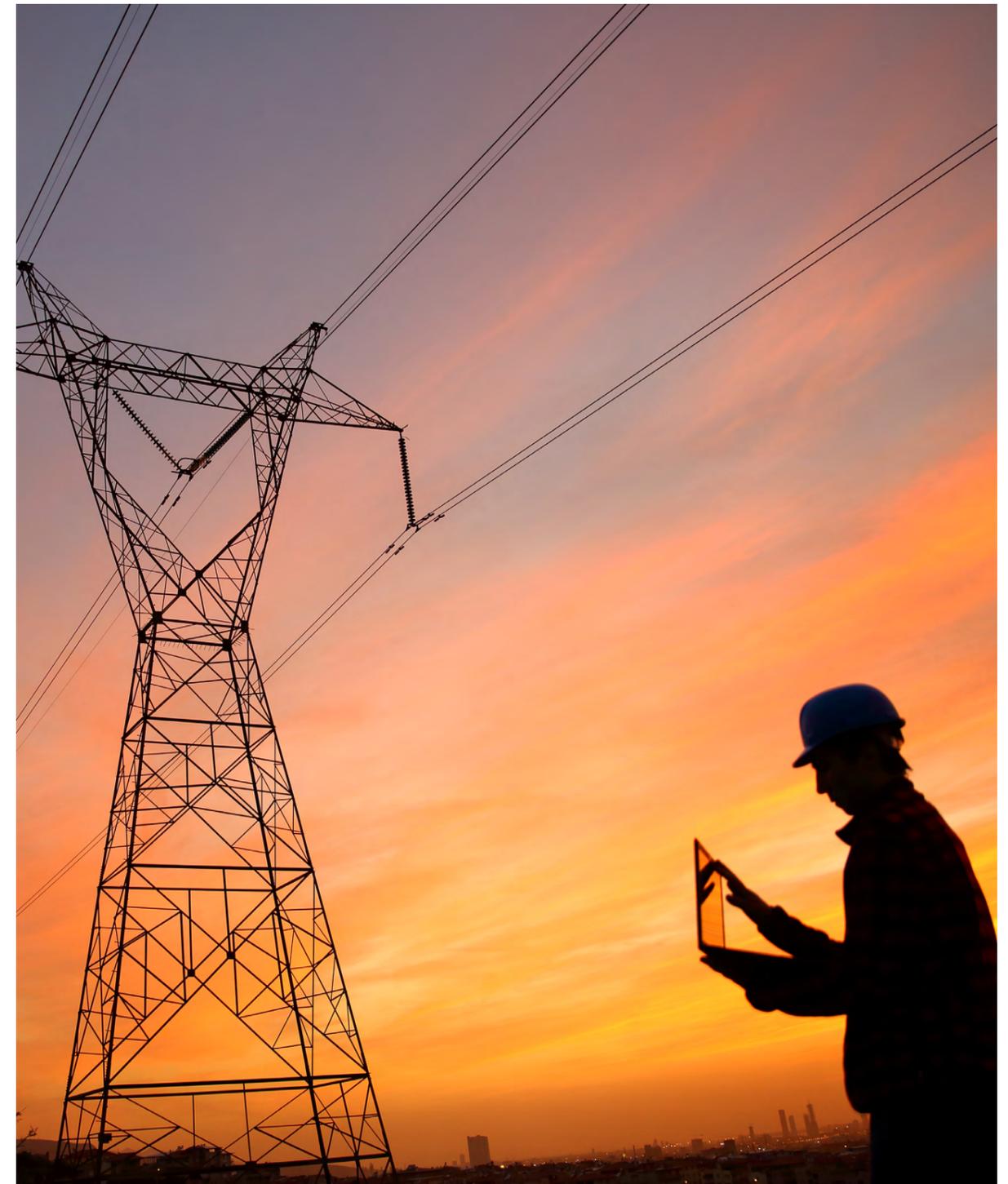
**Figure 8: Renewable Electricity as % of Demand (2017-2021) source: EirGrid <sup>25</sup>**

**5.5 Summary Monitoring Findings**

<sup>24</sup> <https://www.eirgridgroup.com/how-the-grid-works/renewables/>

<sup>25</sup> <https://www.eirgridgroup.com/how-the-grid-works/renewables/>

The summary results of monitoring SEA indicators against the 50 projects assessed are presented in Table 25 overleaf.



**Table 25: Summary of SEA Monitoring Against Indicators**

Theme	SEA Indicators	Summary of Findings (Gaps coloured grey )
Population, Human Health & the Economy	<b>PHH1_I1:</b> Maximum noise level emanating from the installation at the façade of any near sited residential properties shall not exceed levels specified in the EPA’s Guidance Note for Noise (NG4).	No confirmed exceedances or complaints.  Potential data gap, as monitoring commitments do not include for explicit reporting.
	<b>PHH1_I2:</b> Compliance with all authoritative international and national guidelines for ELF EMF exposure.	No confirmed exceedances or complaints
	<b>PHH1_I3:</b> Number of existing dwellings within 50m of new overhead transmission line development.	Very few residences (5 no.) located within 50m of three (of a total of four) new overhead line projects totalling 191 km in length.
Biodiversity, Flora & Fauna	<b>BI_I1:</b> Number of EirGrid projects subject to Imperative Reasons of Overriding Public Interest (IROPI).	No IROPI projects (N=0).
	<b>BI/2_I2:</b> Number of Adaptive Management requirements post project completion.  (i.e. number of recorded instances of additional mitigation implemented during construction, as reported in project-specific monitoring reports).	Data gap (N=1 project with available monitoring report)
	<b>B2_I2:</b> Number of significant residual effects	Various significant residual effects across projects – none likely above local level, although some project documents don’t state geographic level of significance
Landscape & Visual Amenity	<b>L1_I1:</b> Number of significant impacts remaining on designated landscapes post establishment of mitigation (i.e. residual impacts) from development provided for by the Grid IP.	Significant effects (N=2 new Overhead Line Projects):  1. CP0596 New Kinnegad-Mullingar 110 kV Overhead Line Project 2. CP0466 North South Interconnector (400 kV)
	<b>L1_I1:</b> Number of receptors i.e. people/properties affected by significant visual impacts post establishment of mitigation from development provided for by the Grid IP on properties.	Significant effects (N=3 new Overhead Line Projects):  1. CP0596 New Kinnegad-Mullingar 110 kV Overhead Line Project 2. CP0466 North South Interconnector (400 kV) 3. CP0585 Laois Kilkenny Reinforcement Project

Theme	SEA Indicators	Summary of Findings (Gaps coloured grey )
Cultural Heritage - Archaeology & Architectural	<b>CH1_I1:</b> Number of developments occurring which result in full or partial loss to entries to the Record of Monuments and Places (RMP) and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	No losses recorded in project documents.  Intersections with Zones of Notification of RMP on 9 new assets:  <ul style="list-style-type: none"> <li>• Celtic Interconnector (UGC)</li> <li>• Kildare-Meath Upgrade Project (UGC)</li> <li>• Laois Kilkenny Reinforcement Project (OHL)</li> <li>• New Clashavoon – Dunmanway 110 kV OHL</li> <li>• Clashavoon – Macroom No. 1 110 kV UGC</li> <li>• North Connacht 110 kV UGC</li> <li>• North South Interconnector (OHL)</li> <li>• Kinnegad-Mullingar 110 kV OHL</li> </ul>
	<b>CH1_I2:</b> Number of developments occurring which result in full or partial loss to entries to the RPSs/NIAHs and the context of the above within the surrounding landscape where relevant, resulting from development provided for by the Grid IP.	No losses recorded in project documents (where environmental assessments completed) and/or no intersections of new assets with RPS in GIS analyses
Geology and Soils	<b>GSL1_I1:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	No significant residual impacts predicted in project documents.
Land-use	<b>LU1_I1:</b> Area of land use change is greater or less than predicted from development provided for by the Grid IP.	Data gap: cannot be determined using available data. No predictions of significant impact in project documents.
Water	<b>W1_I1:</b> No deterioration to WFD waterbody Status as indicated by the EPA.	Data gap: Up-dated EPA data cannot be analysed by year, and the reporting periods for older and newest data overlap each other and the plan cycle (2013-2018, and 2016-2021).  Notwithstanding, analysis of national threats to surface and groundwater status indicates agriculture, and other sources are responsible for WFD status trends, not development projects, even collectively.
	<b>W1_I2/4:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	No significant residual impacts predicted in project documents.  Data gap nevertheless remains as water quality monitoring report available on single project.
	<b>W1_I3:</b> Classification of Overall Status as indicated by the EPA (Surface and Ground Water).	Data gap: Up-dated EPA data cannot be analysed by year, and the reporting periods for older and newest data overlap each other and the plan cycle (2013-2018, and 2016-2021).  Notwithstanding, analysis of national threats to surface and groundwater status indicates agriculture, and other sources are responsible for WFD status trends, not development projects, even collectively.

## 6.0 Remedial Mitigation for Next IP Cycle

Recommended remedial measures were identified for the next Plan. The feasibility of remedial mitigation will be subject to consultation with the relevant experts in ESB, and where applicable, pilots may be considered to trial effectiveness prior to roll out across all projects.

If feasible, these could improve information flow from project to plan levels (and vice-versa), supporting ‘tiering’ (EPA, 2021b). A specific tiering recommendation will be inserted as an objective in the next Plan, which requires all planning applications to be compliant with SEA environmental protection objectives and mitigation measures.

### 6.1 Data Gaps (Box 8)

#### Box 8: Recommendations to address data gaps

*Driver for R1:* Data gaps are discussed in Section 5 and summarized in Table 14 and Section 7.0. Whilst not a data gap per se, the SEA framework did not specify particular GIS datasets to inform analyses for certain themes (including Material Assets and Landuse). Future monitoring frameworks should define datasets for analyses clearly, including those in the EPA’s SEA Spatial Information Sources Inventory

**R1:** The monitoring framework for the next cycle plan will specify GIS workflows and datasets, to include the EPA’s latest inventory of SEA-relevant spatial data sources (see EPA, 2022a).

*Driver for R2:* EirGrid Agricultural Liaison Officers (ALOs) and Community Liaison Officers (CLOs) possess a lot of valuable qualitative information on actual or perceived impacts on projects (and trends across projects), but this information is not captured within any dataset.

**R2:** Future monitoring will include formalized interviews with EirGrid CLOs and ALOs (at the start and end of the plan cycle), to gather qualitative information on project impacts across environmental themes.

*Driver for R3:* Project level monitoring reports were typically not available, even where reports were specified. (except for two projects), to verify the predictions in project documents.

**R3:** In project documents (EIAR, PECR, AA reporting) EirGrid will insert, on a case-by-case basis, in response to significant predicated impacts, new requirements for the appointed Contractor to provide written monitoring reports to the EirGrid Planning and Environmental Unit, in addition to any prescribed bodies. This will increase the flow of information back to EirGrid from project to plan level to verify project level predictions, and refine mitigations proposed for future projects

*Driver for R4a:* Cultural heritage monitoring reports are available on a public website but cannot be accessed without licence details of appointed archaeologists.

*Driver for R4b:* No GIS data for County Kilkenny Record of Protected Structures.

**R4a:** On each future project, EirGrid will seek from ESB, the licence number of the licensed archaeologist carrying out project level monitoring, to enable EirGrid access to archaeological monitoring reports on the publicly accessible [www.excavations.ie](http://www.excavations.ie) website.

**R4b:** EirGrid will engage with Kilkenny County Council to seek GIS data for the County Kilkenny Record of Protected Structures

*Driver for R5:* A centralized GIS repository including project scope details is recommended by the EPA (2021b) and would streamline future SEA monitoring.

**R5:** The appointed SEA consultant for the next Plan will curate a centralized GIS database for all Capital Projects (updated at least quarterly).

Theme	SEA Indicators	Summary of Findings (Gaps coloured grey)
Material Assets & Infrastructure	<b>MAI1_T1:</b> The impact on farming practices and extent of soil compaction in greenfield sites.	Data gap: cannot be determined using available data; indicator not fit for purpose, and will be revised in future monitoring frameworks
	<b>MAI1_T2:</b> Number of significant impacts post establishment of mitigation from development provided for by the Grid IP.	Data gap: cannot be determined using available data; indicator not fit for purpose, and will be revised in future monitoring frameworks
	<b>MAI2_T1:</b> The use of existing transmission infrastructure before new build.	EirGrid’s framework for grid development (EirGrid, 2017) considers existing infrastructure use on all projects at steps one and two.
	<b>MAI2_T2:</b> No significant impacts on existing and planned infrastructure.	Data gap: cannot be determined using available data; indicator not fit for purpose, and will be revised in future monitoring frameworks
Tourism & Recreation	<b>TR1_T1:</b> No significant impacts on tourism and recreation amenities and use.	Short-term residual effects on one project.  Significant positive effects from roles of EirGrid Community Liaison Officers (EirGrid Public Engagement Team).
Climate Change	<b>CC_I1:</b> Percentage electricity generation from renewable energy facilitated by EirGrid	Grid successfully ran at between 70% and 75% variable renewable energy for a total of 232 hours during 2021/2022 trial

## 6.2 Standardized Reporting of Residual Effects (Box 9)

### Box 9: Standardized Reporting of Residual Effects

*Driver for R6:* Reporting of residual effects varies across different environmental topics, and for instance residual effect of biodiversity significance is not always reported at a geographic frame of reference as per CIEEM guidance (CIEEM, 2018) and net losses of local habitats are often not quantified.

**R6:** EirGrid will, through technical guidance and project level review of expert consultant outputs, standardize residual impact reporting in PECR/EIAR across projects and consultant authors, such that biodiversity effects will be reported at a geographic scale of reference with net habitat loss areas quantified.

## 6.3 Reduction of Certain Residual Effects (Box 10)

### Box 10: Reduction of Residual Effects (Biodiversity and Landscape)

*Driver for R7:* Collisions with powerlines are considered to be rare events. Nonetheless, where rare or protected species occur, impacts could be significant (EirGrid, 2016). There is an opportunity to reduce (legacy) bird strike risk on certain existing overhead line projects being uprated, by retrofitting bird flight diverters (Photograph 3) at likely hotspots for collision risk identified from desktop and field data.

**R7:** On certain existing overhead line projects being uprated, EirGrid will propose retrofitting wires with bird flight diverters (following ESB specification), at locations predicted to be potential high risk collision areas, based on expert ecological judgement (i.e. spans oversailing Special Protection Areas, significant wetlands, or other significant bird habitats).

*Driver for R8:* There are residual habitat loss effects across projects, particularly new assets. The Irish government declared a biodiversity emergency in 2019.

**R8:** EirGrid will, in consultation with ESB (as primary onshore asset owner), NPWS, IFI and other relevant stakeholders, embed a Nature Inclusive Design/Biodiversity Enhancement requirement in each project scope of station, and uprate projects, unless Nature Inclusive Design unfeasible for factors outside EirGrid control.

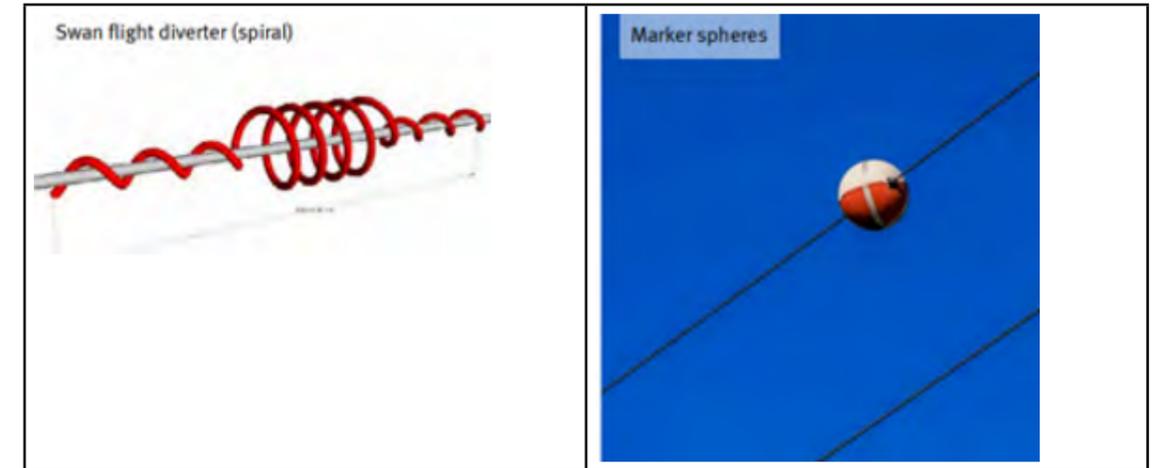
*Driver for R9:* EirGrid's current functional specification for underground cables (EirGrid, 2021) does not explicitly provide for planting over underground cables in suitable situations. There are residual habitat loss effects on underground cable projects, where off-road cables break through existing hedges.

**R9:** In collaboration with ESB, EirGrid will seek to develop a specification for planting over cables, to minimise residual habitat loss on underground cable projects.

*Driver for R10:* Anecdotal information from EirGrid Agricultural Liaison Officers (ALOs) indicates landscape planting (including hedgerows) may not always be correctly established, leading to ineffective mitigation for biodiversity and landscape screening.

**R10:** EirGrid will specify across future project documents (in collaboration with ESB) that Contractors deliver five year aftercare plans for landscaping, and (for hedging) adhere to Teagasc hedgerow planting guidelines (2021). Project documents will specify landscaping vegetation monitoring reports are provided to EirGrid's Planning and Environmental Unit, in addition to prescribed bodies.

Photograph 2: Types of Bird Diverters Recommended on EirGrid Projects (Source: EirGrid Ecology Guidelines)



## 6.4 Linking Project and Plans through Tiering (Box 11)

### Box 11: Linking Project and Plans (Tiering)

*Driver for R11:* The EPA recommend Including an objective in the Plan that requires all planning applications to be compliant with the SEA's strategic environmental protection objectives and mitigation measures would ensure that tiering takes place.

**R11:** A bespoke objective will be included in the next Plan to link SEA and project level assessments by imposing SEA mitigation and SEA monitoring recommendations on all future planning applications.

## 7.0 Concluding Review of Monitoring Aims

### 7.1 What are the “Real” Effects of Implementing the Plan?

IP performance was successfully measured under 7 of ten environmental themes; and 14 of 21 indicators) Data gaps and/or indicator scope prevented comprehensive analysis for 3 themes, and 7 indicators. Recommendations will address these issues for the next plan. There was no evidence of significant (adverse) effects from the IP in terms of noise, electromagnetic fields (EMF), geology/soils, or climate change.

Significant residual effects were identified against four themes (Population, Human Health and the Economy), from a small number of projects. These are summarised as follows:

- Population, Human Health and Economy: Very few residences within 50m of all new overhead lines (5 residences across 191 km of line). EirGrid’s six step development process, informed by iterative public and statutory consultation minimised impacts on high density settlements.
- Biodiversity: local level residual effects from many projects, no adverse effects on the integrity of European sites.
- Landscape; significant residual visual effects from new overhead lines on designated landscapes (1 project), and residential properties (3 projects).
- Cultural Heritage: No confirmed full or partial loss to entries in the Records of Monuments and Places; GIS analyses confirmed intersection with Zones of Notification for Records of Monuments and Places on 7 new assets; no intersections with Records of Protected Structures.
- Land use: significant land use changes on all new assets (e.g. localized loss of agricultural land).
- Tourism and Recreation: significant short-term effects on the Celtic Interconnector project only.

### 7.2 Are there Gaps in Environmental Data?

Project-level monitoring reports were not available for review (with the exception of two projects), as planning portals did not contain copies of conditioned monitoring reports. Recommendations (R3 and R4a) have been made in this regard, so that EirGrid’s PEU receives written monitoring projects directly or for cultural heritage, via a public repository using licence numbers in future.

For contractual and/or administrative reasons, monitoring reports could not be readily obtained by other means. Theme-specific data gaps, and remedial measures are summarized in Table 26.

SEA Theme	Data Gap <sup>26</sup>	Remedial Actions to Address Gap for forthcoming Grid Plan 2023-2028
All	Whilst not a data gap per se, the SEA framework did not specify particular GIS datasets to inform analyses for certain themes (including Material Assets and Land Use). Future monitoring frameworks should define datasets for analyses clearly, including those in the EPA’s SEA Spatial Information Sources Inventory	<b>R1:</b> The monitoring framework for the next cycle plan will specify GIS workflows and datasets, to include the EPA’s latest inventory of SEA-relevant spatial data sources (see EPA, 2022a).
	Whilst not a data gap per se, EirGrid Agricultural Liaison Officers (ALOs) and Community Liaison Officers (CLOs) possess a lot of valuable qualitative information on actual or perceived impacts on projects (and trends across projects), but this information is not captured within any dataset	<b>R2:</b> Future monitoring will include formalized interviews with EirGrid CLOs and ALOs (at the start and end of the plan cycle), to gather qualitative information on project impacts across environmental themes.
	Project level monitoring reports were typically not available, even where reports were specified. (except for two projects), to verify the predictions in project documents.	<b>R3:</b> In project documents (EIAR, PECR, AA reporting) EirGrid will insert, on a case-by-case basis, in response to significant predicated impacts, new requirements for the appointed Contractor to provide written monitoring reports to the EirGrid Planning and Environmental Unit, in addition to any prescribed bodies. This will increase the flow of information back to EirGrid from project to plan level to verify project level predictions, and refine mitigations proposed for future projects
Population, Human Health, Economy (including noise, EMF)	Noise: monitoring was often a condition of planning consent, but reporting was typically not specified, such that it is unclear if noise monitoring reports are available. EMF: No gaps for EMF monitoring, noting role of EPA and other public authorities in the regulation of EMF.	Project-level monitoring reports may be stipulated as per R3. No additional measures recommended at this time.

<sup>26</sup> Gap in addition to unavailability of project level monitoring reports on planning portals or by other means

SEA Theme	Data Gap <sup>26</sup>	Remedial Actions to Address Gap for forthcoming Grid Plan 2023-2028
Biodiversity	The uncertainty regarding species and voltage-specific bird (and bat) collision rates with overhead lines (once corrected for scavenger removal and additionally post-installation of bird diverters) is clearly acknowledged in EirGrid Evidence-Based Studies (EirGrid, 2015, 2016b) However this gap has not been identified as a substantive concern on (mitigated) project documents, or by competent authorities, following routing. Also collision rates were not an indicator in the SEA monitoring framework	None recommended at this time. The findings of EirGrid's Evidence-Based Environmental Studies (EBES) are under continuous review, including a strategic EirGrid commitment to scope candidate updates to the EBES study package in 2023.
Landscape and Visual Amenity	No monitoring was conditioned as a consent of planning, and as such no monitoring reports, to assess, for instance, effectiveness of landscape screening where planted.	<b>R10:</b> EirGrid will specify across future project documents (in collaboration with ESB) that Contractors deliver five year aftercare plans for landscaping, and (for hedging) adhere to Teagasc hedgerow planting guidelines (2021). Project documents will specify monitoring reports are provided to EirGrid's Planning and Environmental Unit, in addition to prescribed bodies.
Cultural Heritage -Archaeology & Architectural	No GIS dataset is available for the Record of Protected Structures for county Kilkenny, and the data is not viewable on publicly available GIS viewers <sup>27</sup> . Project-level monitoring reports are available on the Database of Irish Excavations, but this requires the licensed archaeologists' license number which is not readily available.	<b>R4a:</b> On each future project, EirGrid will seek from ESB, the licence number of the licensed archaeologist carrying out project level monitoring, to enable EirGrid access to archaeological monitoring reports on the publicly accessible www.excavations.ie <b>R4b:</b> EirGrid will engage with Kilkenny County Council to seek GIS data for the County Kilkenny Record of Protected Structures

<sup>27</sup> <https://heritagemaps.ie/> and <https://maps.archaeology.ie/HistoricEnvironment/>

SEA Theme	Data Gap <sup>26</sup>	Remedial Actions to Address Gap for forthcoming Grid Plan 2023-2028
Geology and Soils	None	Project-level monitoring reports may be stipulated as per R3. No additional measures recommended at this time
Land Use	Predictions regarding area of land use change cannot be readily identified with existing datasets	<b>R1</b> will specify particular datasets to inform monitoring of future landuse indicators
Material Assets &Infrastructure	No substantive data available to quantify the impact on farming practices beyond land use change away from agriculture.	<b>R3</b> which will assist in capturing perceived or actual impacts to farming practices
Water	The lifetime of the IP (2017-2022), overlaps both recent sets of EPA water quality monitoring data (EPA data available for 2013-2018 and 2016-2021 only). The EPA Catchment Science and Management Unit advised that data was only available for these time periods and could not be extracted for periods before the plan (i.e. 2013-2016). As a consequence, water quality could not be readily compared before the plan (i.e. 2013-2016) and during plan implementation (i.e. 2017-2021).	The 2016-2021 data will be a suitable baseline data for the upcoming 2023-2028 Grid Plan. EirGrid will continue to engage with the EPA to explore options to obtain water quality data for defined monitoring periods, aligning with plan lifecycle.
Tourism	None	None
Climate Change	None	None

Table 26: Data gaps identified during SEA Monitoring Process

### 7.3 Are Additional or Remedial Mitigation Measures Required?

Yes, there are. The recommendations in Table 27 arising from monitoring will be incorporated into mitigation for the next cycle plan

Table 27: Summary Recommended Remedial mitigation measures for next IP Cycle (by theme)

Theme	Ref	Recommended Remedial mitigation measure
All	R1	The monitoring framework for the next cycle IP will specify GIS workflows and datasets, to include the EPA's latest Synthesis of Spatial Datasets (see EPA, 2022a).
	R2	Future monitoring will include formal interviews with EirGrid Community Liaison Officers, Agricultural Liaison Officers, and other relevant Subject Matter Experts to gather qualitative information on actual or perceived project impacts.
	R3	In future project documents, EirGrid will specify that appointed Contractors provide written monitoring reports to the EirGrid Planning and Environmental Unit, in addition to prescribed bodies. This will increase flow of information from project to plan level (principle of 'tiering') to verify project level predictions, and refine future mitigation future
	R5	To streamline future SEA monitoring EirGrid will curate a centralized GIS data repository for all Capital Projects, to include scopes of environmental assessments (EIA vs PECR; AA vs AA Screening).
	R6	EirGrid will standardize residual impact reporting in PECRs/EIARs to include residual biodiversity effects at a geographic scale of reference and quantification of net habitat loss areas. This will be achieved by issuing guidance to expert consultants, compliance with which is a contractual requirement
	R11	A bespoke objective will be included in the next IP to link SEA and project level assessments by imposing SEA mitigation on all future planning applications.
Cultural Heritage	R4a,b	a EirGrid will seek the licence number of the licensed archaeologist carrying out project level monitoring, to enable EirGrid access to archaeological monitoring reports on the publicly accessible <a href="http://www.excavations.ie">www.excavations.ie</a> website.  b EirGrid will engage with Kilkenny County Council to seek GIS data for the County Kilkenny Record of Protected Structures
Biodiversity	R7	On certain existing overhead line projects being uprated, EirGrid will propose retrofitting wires with bird flight diverters (following ESB specification), at potential high risk collision areas, based on expert ecological judgement (spans oversailing Special Protection Areas, significant wetlands, or other significant bird habitats). This is an example of Nature Inclusive Design, referred under recommendation R8.
	R8	EirGrid will embed a Nature Inclusive Design requirement in every project scope in response to the European and national policy imperative for action on biodiversity. These will be delivered in collaboration with ESB.
	R9	In collaboration with ESB, EirGrid will seek to develop a specification for planting over cables, to minimise residual habitat loss from underground cable projects.
Landscape (and biodiversity)	R10	On future projects, in collaboration with ESB, EirGrid Planning and Environmental Unit will specify that the appointed Contractor delivers a five year aftercare plan for landscaping and adhere to Teagasc hedgerow planting guidelines (2021).

### 7.4 Are New Baseline Data Sources or Trends Available to Improve the Next SEA?

EirGrid Community Liaison Officers (5 no. at time of writing) and EirGrid Agricultural Liaison Officers (4 no. at time of writing) could provide useful qualitative data on the actual or perceived impacts of projects across a variety of themes, including material assets (farming, other infrastructure developments, tourism, recreation). Recommendation R2 includes formalized interviews with ALOs and CLOs as a dataset for future monitoring.

The monitoring framework for the next cycle IP will identify which specific datasets in the EPA SEA-relevant data sources inventory (EPA, 2022a) should be used in GIS or other workflows for all indicators. This will include tourism, material assets (farming and other planned development) for which gaps were identified in this report.



## Abbreviations and Glossary

Abbreviation	Term	Description
-	Annex 1 of EU Habitats Directive 92/43/EEC	List of designated habitats which have been afforded protection under the Habitats Directive
-	European sites	Special Areas of Conservation and Special Protection Areas designated under the EU Habitats and Birds Directives
AA	Appropriate Assessment	Process to determine if plan or project will have adverse effects on the integrity of any European sites.
ALO	Agricultural Liaison Officer	EirGrid staff resource within Public Engagement, tasked with engaging with farmers and landowners.
CLO	Community Liaison Officer	EirGrid staff resource within Public Engagement, tasked with engaging with communities, and the oversight of EirGrid's Community Benefit Policy
CP	Capital Project	A high voltage electricity transmission project approved
EIA	Environmental Impact Assessment	Environmental Impact Assessment (EIA) is provided for in Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, which amends Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.
EIAR	Environmental Impact Assessment Report	Report prepared by a developer, and submitted to the Competent Authority to as part of the EIA Process
EPA	Environmental Protection Agency	One of the Statutory Authorities for SEA in Ireland
ER	Environmental Report	Outcome of the SEA process
ESB	Electricity Supply Board	See TAO
kV	Kilovolt	EirGrid is the Transmission System Operator responsible for the High Voltage electricity transmission network (110 kV, 220 kV ,400 kV)
NIS	Natura Impact Statement	Report to inform the Appropriate Assessment determination of a competent authority, required under Article 6 of the EU Habitats Directive
NUTS	Nomenclature of Territorial Units for Statistics	Nomenclature of Territorial Units for Statistics or NUTS is a geocode standard for referencing the subdivisions of countries for statistical purposes
OHL	Overhead Line Project	-
PECR	Planning and Environmental Considerations Report	Report produced by expert consultants on behalf of EirGrid, to accompany planning application for projects not requiring EIA.
RMP	Record of Monuments and Places	The Record of Monuments and Places is the most widely applying provision of the National Monuments Acts. It comprises a list of recorded monuments and places and accompanying maps on which such monuments and places are shown for each county.
RPS	Record of Protected Structures	The Planning and Development Act 2000 requires each planning authority to compile and maintain a RPS. The RPS is a mechanism for the statutory protection of the architectural heritage and forms part of each planning authority's development plan.
SEA	Strategic Environmental Assessment	Strategic Environmental Assessment of likely significant effects of plans, including monitoring obligations provided for under SEA Directive 2001/42/EEC. Applies to a wide range of public plans and programmes including energy.

Abbreviation	Term	Description
SME	Subject Matter Experts	EirGrid technical experts across a variety of technical and environmental topics
TAO	Transmission Asset Owner	ESB Networks, as the Transmission Asset Owner (TAO), is charged with constructing the transmission assets as specified by the TSO. ESB also has the role of Distribution System Operator (DSO); the distribution system refers to the lower-voltage network of 38 kV and 10 kV infrastructure
TDP	Transmission Development Plan	The TDP fulfils a licence obligation to the Commission for the Regulation of Utilities. It lists the committed projects and projects under development for the enhancement of the Irish transmission network over the next ten years.
TSO	Transmission System Operator	Entity (EirGrid) entrusted with transporting energy in the form of natural gas or electrical power on a national or regional level, using fixed infrastructure
UGC	Underground Cable Project	-
WFD	Water Framework Directive	EU Water Framework Directive 2000/60/EC sets out a system for the integrated and sustainable management of river basins so that the ecological quality of waters is maintained in at least a good state or is restored. The Directive lays down a six-yearly cycle of river basin planning
ZoN	Zone of Notification	The "zone of notification" is the area around each monument that is intended to be used for the purposes of notification of the National Monuments Service under Section 12 of the National Monuments Acts 1930 to 2004.

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## Appendix 1: Literature Review of SEA Monitoring Guidance

The table overleaf presents monitoring guidance across the literature review

Tabulated Recommendations in published guidance on key aspects of SEA monitoring., post plan adoption

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA Synthesis Report	2003	Synthesis Report on developing an SEA Methodology for Plans and Programmes in Ireland.	Yes	<ul style="list-style-type: none"> <li>• <b>Existing monitoring networks must be in place</b> to measure indicators, or resources made available for new monitoring networks.</li> <li>• <b>Quantitative indicators better than qualitative</b> (tangible, real data are easier to monitor). –</li> <li>• Qualitative indicators should not be discounted, and are sometimes indispensable</li> <li>• Where data is lacking, commit to collect as part of the monitoring.</li> <li>• <b>Monitoring programmes should commence when the plan is adopted.</b> Certain plans e.g. Waste Management Plans, will have their own monitoring requirements that can be integrated into SEA monitoring.</li> <li>• <b>It may be necessary to revise the monitoring programme</b> periodically to reflect new methods and baseline data.</li> <li>• Regular reporting of monitoring results should be timetabled to evaluate the plan.</li> <li>• Good practice to make results available to public and other agencies Important to use monitoring data as a means of verifying SEA predictions</li> </ul>
EPA SEA Process Checklist - Consultation Draft	2008	Consultation Draft of the Environmental Protection Agency's SEA Process Checklist to assist in undertaking a full SEA	Yes	Definitions of monitoring provided.
Strategic Environmental Assessment in Action (Therivel, 2010)	2010	Practical guide to SEA written by a practitioner for practitioners, including case studies and a 'toolkit' of SEA techniques.	Yes	<ul style="list-style-type: none"> <li>• Monitoring is typically done on an annual basis but it may be more ad-hoc or less frequent.</li> <li>• "Of the dozens of SEA reports that I looked at as part of writing this chapter, only about one-third included any monitoring section, and these were all between one and three pages long".</li> <li>• Given the relatively short history of SEA, there has been little experience with management responses to SEA monitoring findings.</li> <li>• In the short term, monitoring responses may: <ul style="list-style-type: none"> <li>-Identify significant unanticipated impacts</li> <li>-Restrict new development until further research is completed</li> <li>-Restrict some activities.</li> </ul> </li> <li>• In the longer term, responses may be to improve understanding between -strategic actions and their impacts</li> </ul>

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA Integrated Biodiversity Impact Assessment	2013	Step-by-step guidance on integrating processes for biodiversity impact assessment.	Yes	<ul style="list-style-type: none"> <li>• Any monitoring scheme should aim to <b>improve the evidence base</b></li> <li>• Monitoring scheme should fit the scale and scope of the proposal</li> <li>• Monitoring to be <b>spatially specific where feasible.</b></li> <li>• <b>Map monitoring locations.</b></li> <li>• The Habitats Directive does not include any monitoring requirement, although a consenting authority may impose such a requirement.</li> <li>• Mechanisms to automatically update the monitoring database are advised.</li> <li>• AA and SEA/EIA teams should meet/exchange info on mitigation/monitoring.</li> <li>• Maintain dynamic communication between proponent, stakeholders, and assessment teams. [i.e. consultants]</li> <li>• Combine SEA and EIA monitoring where feasible.</li> <li>• <b>Incorporate expert opinion of NPWS and others</b> and amend monitoring as appropriate, to include information on existing monitoring datasets.</li> <li>• Specific indicators required for monitoring of effects on European site integrity.</li> <li>• <b>Include hydrological monitoring under the WFD RBD</b> plans for water-dependent habitats as appropriate.</li> <li>• Monitoring to <b>include flexibility</b> without impairing scientific integrity (adjust what and how to measure).</li> <li>• Data collection to include zone of influence, where applicable.</li> <li>• <b>Positive and negative changes</b> and trends on indicator values should be used to inform future policies and objectives and make amendments in the implemented plan/.</li> <li>• <b>Incorporate monitoring values into existing spatial datasets as attribute values</b> (e.g. biological river quality values). Where monitoring results reflect changes in geographical extents (of habitats or designated sites), create new spatial datasets.</li> <li>• Compare monitoring maps with baseline maps.</li> <li>• Monitoring conservation status of designated sites is important linkage between SEA and AA (monitoring is not a statutory requirement for AA).</li> </ul>

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA SEA Resource Manual	2015	Step by step guide to the SEA and plan-making process with a view to promoting integration between the key stages of both processes.	Yes	<ul style="list-style-type: none"> <li>Links to monitoring reports provided for South Dublin County Council (2012) and Grangegorman Strategic Plan (2012), and SDCC monitoring system; albeit SDCC outputs no longer available online.</li> <li><b>Dos of SEA Monitoring</b> Do <b>contact the Environmental Authorities</b> as they may be able to assist with advice and data Do <b>think about future improvements</b> to the plan and the process Do remember your objectives and indicators Do remain open to change if needed</li> <li><b>Don'ts of SEA Monitoring</b> Don't be afraid to <b>use simple approaches</b> Don't lose sight of the SEA objectives</li> <li>Monitoring should be a <b>useful and cost effective process</b>. It should be comprehensive without being unmanageable; rigorous but <b>not complicated</b> and meaningful without being complex, esoteric or inaccessible.</li> </ul>
EPA Developing and Assessing Alternatives in SEA	2015	Guidance on methodologies to develop and assess alternatives in SEA.	Nothing additional to that above	N/A
EPA GISEA Manual - Improving the Evidence Base in SEA	2017	Guidance on how GIS can be used to improve environmental assessments.	Yes	<ul style="list-style-type: none"> <li><b>Record local issues and update any local changes</b> (e.g. on the boundaries of Natura 2000 areas or on river water quality) is essential.</li> <li>Presented web-based SDCC SEA monitoring system as best practice example.</li> <li><b>Use monitoring maps in the Monitoring Report</b> to inform the review of the plan/programme.</li> </ul>
SEA of Local Authority Land Use Plans - EPA Recommendations and Resources	2019	Key EPA recommendations for integrating environmental considerations into Local Authority land-use plans, along with links to relevant data sources & lists of key relevant plans.	Yes	<ul style="list-style-type: none"> <li>Consider <b>monitoring for both climate mitigation and climate adaptation</b> monitoring aspects, where relevant and appropriate.</li> <li>Reports on radioactivity monitoring of the Irish environment are also available at <a href="http://www.epa.ie/pubs/reports/radiation/">http://www.epa.ie/pubs/reports/radiation/</a></li> </ul>

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA Integrating Climatic Factors into SEA	2019	How to integrate climatic factors into Plans and associated SEAs. (2019 Update)	Yes	<ul style="list-style-type: none"> <li>For cyclical plans, <b>SEA of an earlier plan should allow review of changes</b> to the environment since the adoption of the previous plan.</li> <li>Monitor effectiveness of mitigation in reducing greenhouse gas emissions. Effectiveness of adaptation measures can be difficult to monitor, however whether adaptation measures are in place/are being implemented can be monitored.</li> <li>Consider how <b>latest climate change predictions</b> relate to significant effects of plan.</li> <li><b>Review updated baseline information available throughout the lifetime of the plan</b> at appropriate intervals to determine how effectively the plan is responding to climate change.</li> <li>A useful summary report, Monitoring &amp; Evaluation for Climate Change Adaptation: A Synthesis of Tools, Frameworks and Approaches (Bours et al., 2013) provides summaries of different models in relation to the use of climate indicators and monitoring and evaluation approaches for different scenarios.</li> </ul>
Towards a better understanding of SEA effectiveness in Ireland (Gonzalez et al., 2019)	2019	First peer-reviewed review of SEA effectiveness completed by University College Dublin and RPS Consulting Engineers on behalf of the EPA	Yes	<ul style="list-style-type: none"> <li>Need for evidence of more systematic effective, and realistic monitoring.</li> <li>Highlights <b>benefits of GIS platforms</b> to maximise SEA effectiveness.</li> </ul>
EPA SEA effectiveness review	2020	Second review of SEA effectiveness in Ireland	Yes	<ul style="list-style-type: none"> <li>Plan-makers must <b>commit to monitoring programmes</b> if future plan/programme cycles are to benefit from properly understanding environmental pressures.</li> <li>Establishment of monitoring systems requires investment</li> </ul> <p>Questions on monitoring informing SEA review reflect recommendations:  Has a monitoring programme of significant environmental effects of implementing the plan/programme been described?  Is this reflected in an objective/action in the plan/programme?  Does the monitoring programme allow unforeseen adverse effects to be identified?  Does the monitoring programme <b>address significant gaps identified in the baseline data</b>?  Are commitments put in place for this in the plan/programme?  Has the <b>frequency of monitoring</b> been specified in the monitoring programme?  Has provision been made to <b>produce regular monitoring reports</b> during the time period of the plan/programme?  Does the monitoring programme <b>use existing monitoring arrangements</b> where appropriate?  Have <b>thresholds/trigger levels been assigned</b> that will trigger remedial action?  Is the <b>remedial action</b> identified?  Are <b>responsibilities for identifying and responding to unforeseen adverse effects</b> of implementation of the plan/programme clearly defined?  Are <b>provisions in place to make the results and interpretation of the monitoring programme available to the designated environmental authorities</b> and the public?</p>

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA SEA Monitoring Guidance	2020	First EPA guidance focussed on SEA monitoring process	Yes	<ul style="list-style-type: none"> <li>Although not a statutory requirement, producing and <b>publishing monitoring reports is recommended good practice</b></li> <li><b>Publish monitoring on plan-makers' websites</b> alongside the plan/ programme and SEA-related documentation</li> <li><b>Provide training and capacity building</b> on SEA Statements and monitoring for SEA practitioners, consultants and plan-makers</li> <li>Advocates for <b>creation of a national monitoring body</b> to work with local authorities and other plan-making authorities to ensure that monitoring takes place</li> <li>Advocates for <b>increasing frequency of national monitoring datasets</b> (e.g. annually); noting EPA water quality datasets are currently only collected every 3-4 years.</li> <li>Advocates for <b>innovation in monitoring approaches</b> (e.g. web-based services, citizen science, remote sensing, etc.)</li> <li>Encourages plan-making authorities to <b>post specific monitoring requirements on Ecobroker</b> (<a href="https://ecobroker.ucd.ie/">https://ecobroker.ucd.ie/</a>)</li> </ul>
EPA Good Practice SEA Energy Sector	2021	Good practice note on SEA for the Energy Sector	Yes	<ul style="list-style-type: none"> <li>Useful summary of EPA (2020); albeit monitoring guidance is not specific to the energy sector</li> </ul>
EPA SEA Pack	2022	Overview of key SEA stages, key resources, SEA process checklists, worksheets to use when preparing an SEA.	Yes	<ul style="list-style-type: none"> <li>The significant environmental monitoring under the Water Framework Directive should fulfil most if not all of the requirements with respect to water quality</li> </ul>
DHLGH SEA Guidelines for Regional Assemblies and Planning Authorities	2022	Advice on carrying out SEA in the land-use planning sector regional, county and local plans, including Regional Spatial and Economic Strategies, County or City Development Plans, variations of Development Plans, Local Area Plans and Planning Schemes for Strategic Development Zones.	Yes	<ul style="list-style-type: none"> <li>Interventions when monitoring thresholds are exceeded may include, for example, <b>actions taken at the project-level decision-making stage to intervene at a local level or raising awareness of a particular environmental issue</b> in a specific location.</li> <li>In some case, the <b>relevant environmental agencies may need to be notified (if monitoring shows declining trends in a particular aspect</b>, which is also the responsibility of another agency, for example, fish populations and Inland Fisheries Ireland).</li> <li>The <b>process of monitoring should begin at the start of plan implementation (usually just after adoption)</b> and should continue over the entire period of the adopted plan. This is important as the results of monitoring may indicate a need for immediate remedial action (for example, unforeseen loss of habitat, lack of transport capacity). Monitoring throughout the lifetime of the adopted plan will also mean that the next review phase will commence with an awareness of how the environment was affected by the previous plan and highlight where improvements may be justified.</li> <li><b>If it has not been possible to monitor a particular indicator, an explanation should be provided.</b></li> </ul> <p><b>End cycle plan to include recommendations</b> on how the next plan may address shortcomings or unforeseen effects on the environment.</p>

Publication Title	Year	Summary Description	Specific monitoring advice included?	Summary of Guidance on Monitoring Post-adoption (Bold emphasis to highlight key recommendations)
EPA SEA Spatial Information Sources Inventory	2022	Provides a list of available environmental datasets for many environmental criteria.	No – but extensive list of geographic datasets can inform monitoring	N/A

## Appendix 2: List of Projects from IP Subject to SEA Monitoring

CP	Name	New Asset (includes all from Plan)	Primary Scope of Consented Projects/Projects of Scale		
			Underground Cable Project	Overhead Line Project	Station Project
CP0197	New Cushaling - Thornsberry 110 kV circuit	✓	✓	-	-
CP0466	North South Interconnector	✓	-	✓	-
CP0501	New Clashavoon – Dunmanway 110 kV Overhead line Project	✓	-	✓	-
CP0585	Laois Kilkenny Reinforcement Project	✓	-	✓	✓
CP0596	New Kinnegad-Mullingar 110 kV Overhead Line Project	✓	-	✓	-
CP0726	Kilpadogue-Knockanure 220 kV Cable Project	✓	✓	-	-
CP0816	North Connacht 110 kV Project	✓	✓	-	-
CP0829	New Clashavoon – Macroom No. 1 110 kV Underground Cable Project	✓	✓	-	-
CP0927	Clonee 220 kV Station	✓	-	-	✓
CP0930	New Dunmanway 110 kV Station	✓	-	-	✓
CP0966	Kildare-Meath Upgrade Project	✓	✓	-	-
CP0970	Cross Shannon 400kV Cable	✓	✓	-	-
GP0057	Celtic Interconnector	✓	✓	-	✓
CP0589	Carrick-on-Shannon Arigna T Corderry 110kV Line Uprate	-	-	✓	-
CP0590	Raffeen-Trabeg 110 kV Uprate	-	-	✓	-
CP0597	Ennis-Booltiagh-Tullabrack T - Moneypoint 110 kV line uprate	-	-	✓	-
CP0622	Tarbert 220 kV Station Refurbishment	-	-	-	✓
CP0668	Corduff – Ryebrook 110 kV Uprate	-	z	✓	-
CP0688	Redevelopment of existing Moneypoint 400kV electricity substation.	-	-	-	✓
CP0692	Uprate of Inchicore 220 kV GIS Substation	-	-	-	✓
CP0848	Castlebar-Cloon 110 kV Uprate Project	-	-	✓	-
CP0870	Carrick-on-Shannon Arigna T Corderry 110kV Line Uprate	-	-	✓	-
CP0871	Galway 110 kV Station Redevelopment Project	-	-	✓	✓

CP	Name	New Asset (includes all from Plan)	Primary Scope of Consented Projects/Projects of Scale		
			Underground Cable Project	Overhead Line Project	Station Project
CP0903	Cloon to Lanesboro 110 kV Overhead Line Refurbishment	-	-	✓	-
CP0907	Dalton 110 kV Busbar	-	-	-	✓
CP0908	Killonan 220/110 kV Station Refurbishment	-	-	-	✓
CP0919	Lanesboro 110 kV Station Redevelopment Project	-	-	-	✓
CP0934	Ballynahulla 220/10 kV Station STATCOM	-	-	-	✓
CP0935	Ballyvouskil 220/110 kV Station STATCOM	-	-	-	✓
CP0945	Great Island to Kilkenny 110kV Uprate	-	-	✓	-
CP0949	Kilbarry 110 kV GIS Station	-	-	✓	✓
CP0968	Dunstown Series Compensation	-	-	✓	✓
CP0969	Oldstreet Series Compensation	-	-	✓	✓
CP1000	Lanesboro-Sliabhawn 110 kV Uprate	-	-	✓	-
CP1017	400 kV Voltage Uprate Trial	-	-	✓	-
CP1078	Lanesboro-Mullingar 110 kV Uprate Project	-	-	✓	-
CP1079	Binbane-Cathleen Falls 110 kV Uprate Project	-	-	✓	-
CP1168	Cashla-Salthill 110 kV Uprate	-	-	✓	-
CP1194	Woodland Station Redevelopment	-	-	-	✓
CP1213	Belcamp 220 kV Station	-	-	✓	✓
CP0731	Bellacorick - Castlebar 110kV line uprate	-	-	✓	-
CP0747	Maynooth – Ryebrook 110kV Uprate	-	-	✓	-
CP0755	Cauteen - Killonan 110 kV Uprate	-	-	✓	-
CP0756	Cauteen - Tipperary 110kV Line Uprate	-	-	✓	-
CP0763	Clashavoon to Tarbert 220 kV OHL Uprate	-	-	✓	✓
CP0794	Aghada 220 kV Station Reconfiguration	-	-	-	✓
CP0799	Louth 275kV Station Refurbishment	-	-	-	✓
CP0813	Trien Substation Development	-	-	-	✓
CP0841	Arva - Carrick-on-Shannon 110 kV line uprate	-	-	✓	-
CP0844	Great Island to Wexford 110 kV Uprate Project	-	-	✓	-

Appendix 3: Positive Biodiversity Impact: EWIC Biodiversity Project and Biodiversity Enhancement Pilots



Photograph 3a-c: East West Interconnector Biodiversity Project (See also Appendix 3)



Botanical monitoring of new meadow mowing regime



Hand removal of Perennial Weeds



Cessation of Herbicide in Meadow

