

## The Joint Committee on Social Protection, Community and Rural Development and the Islands

Wednesday 6<sup>th</sup> December 2023

### Water and Energy Connections in Rural Areas and the Islands

#### Introduction

Cathaoirleach, members of the Committee, thank you for the invitation to today's meeting. My name is Nicholas Tarrant, and I am the Managing Director of ESB Networks. I am joined by my colleague Alan Rossiter, who is responsible for three of our six regions across Ireland and is heavily involved in the delivery of housing and other connections as part of our wider programme of work. We welcome the opportunity to speak to you today on electricity infrastructure together with the key role that ESB Networks plays in the connection of housing and enabling the delivery of the Government's Housing for All targets. I am going to briefly introduce ESB Networks and cover some summary points on connections, and mention some examples of our work in Gaeltacht areas and on the Islands.

1. ESB Networks is part of ESB Group, a commercial semi-state company, which is overseen by an independent regulator, the Commission for the Regulation of Utilities (CRU) since 1999.
2. ESB Networks works to meet the needs of all 2.4m Irish electricity customers. **We neither generate nor sell electricity. Our role is to design, build, own, operate and maintain the electricity distribution network and, as transmission asset owner, to design, build and maintain the onshore electricity transmission network.** There is approximately 180,000 km of electricity network in Ireland.
3. Our capital expenditure in 2022 was €869m across all our work programmes, including network connections. This is part of an overall €4.4b investment programme under our Price Review Five (PR5) regulatory contract set by CRU in 2020 for the period 2021-25.
4. We have approximately 3,700 employees. This is a number that is increasing as we have a growing programme of work to meet the needs of the country and all electricity customers. We have recruited over 650 people in all parts of Ireland since January 2022, including doubling of our apprentice intake to 96 per annum. We are also very proud to note that 25pc of our latest intake of apprentice Network Technicians are female. We are a national organisation that is woven into the fabric of communities across the country.
5. We are committed to continuing to grow our delivery capability to enable further increases in housing connections and infrastructure delivery over the years ahead.
6. We have a central role in the delivery of the Climate Action Plan 2023, by connecting renewable generation, enabling the electrification of heat and transport and in other areas such as electricity demand flexibility, enabling the home retrofit programme and installing smart meters across Ireland.
7. We launched our Networks for Net Zero Strategy in January 2023. This aligns fully with the Irish Government's Climate Action Plan targets. It also sets out our plans to help deliver a Net Zero future for Ireland.
8. **In 2022 we completed over 33,800 domestic connections in addition to over 5,000 business connections. This was an increase of 36% when compared to 2021.** In the first ten months of 2023, we completed 27,852 new domestic connections to the electricity network. This is 3.2%

ahead of the number at the same period in 2022. Further details are provided later in this submission.

9. **ESB Networks is supporting the connection of renewable energy across the electricity transmission network and at all voltages on the distribution network. We have approximately 76,000 registered microgeneration projects and are processing over 700 per week.** For larger renewable connections, where a developer seeks the ability to export electricity, ESB Networks carries out a technical assessment and quotes the developer for the costs associated with upgrading the network to enable this electricity to be exported. This is in line with regulated connection policy.
10. We support innovation and climate action projects in Gaeltacht areas and the islands. Appendix Two contains details of our Dingle project which tested the development of low carbon technologies in partnership with the local community. Another example is where we are also working in partnership with Údarás na Gaeltachta on the REACT project on Inis Mór. We have included a brief description of this project in Appendix Two. We have also included some examples of the work that we undertake on both the Islands and in Gaeltacht areas to support these communities.

We engage with stakeholders and customers nationally to collaborate with them to deliver this programme of work. The provision of infrastructure and electricity network connections for housing has always been a key area for our business and will continue to be for the future as we support the Government's Housing for All programme. We rely on our relationships with landowners in rural communities, which we value very highly, to deliver projects across the country.

The requirements for housing, a growing economy and delivering on Ireland's Climate Action Plan will necessitate a major and sustained investment in the electricity network. This can only be achieved by having skilled people, a robust supply chain, and public support for this growing programme of work over the years ahead.

*Nicholas Tarrant*

MD, ESB Networks

## Appendix One: Housing Connections Delivery

ESB Networks is divided into six geographical regions, which are shown in the attached map. Our connections are categorised based on connection type. G1 connections are for large developments and are split between apartments and housing schemes. Rural domestic connections are typically for one-off homes in rural areas. We classify these as G2 connections. These include several connection types that do not classify as new dwellings. These include family apartments (granny flat maisonettes) and properties that have reconnected after being disconnected for greater than two years and require a new Meter Point Registration Number (MPRN). It also includes new farm connections below a certain threshold. These three categories accounted for 33% of G2 connection numbers in 2023.

The overall delivery for 2022 shows an increase of 51% in G1 connections for year-end 2022 versus 2021. We have also delivered an overall increase of 36% in the combined total of multi-unit and one-off domestic connections. Apartment connection numbers grew by 74% on 2021. The growth was most significant in Dublin and along the east coast, which are covered by our North-East and South-East Regions.

New Connections	Actual	Actual	Actual	Actual	Jan to Oct
Volume Complete	2019	2020	2021	2022	2023 Incl
G1 Apartments	4,147	4,445	5,619	9,785	9,099
G1 Housing Schemes	13,232	12,193	11,167	15,541	12,599
G2 Rural Domestic	8,048	8,060	8,082	8,488	6,154
<b>Totals</b>	<b>25,427</b>	<b>24,698</b>	<b>24,868</b>	<b>33,814</b>	<b>27,852</b>
% Difference on Previous Year		-2.9%	0.7%	36.0%	

Table 1: New Domestic Connections 2019 to 2023

New Connections Finished	Jan to Oct	Jan to Oct	Year on
G Type	2022 Incl	2023 Incl	Year %
			Diff
G1 Apartments	7,912	9,099	15%
G1 Housing Schemes	12,116	12,599	4%
G2 Rural Domestic	6,951	6,154	-11%
<b>Totals</b>	<b>26,979</b>	<b>27,852</b>	<b>3%</b>

Table 2: New Domestic Connections year on year Comparison Summary

Division	G Type	Oct '23 Grand Total	Oct '22 Grand Total	% Change 23 vs 22
Central	G1 Apartments	364	420	-13.3%
	G1 Housing Scheme	2,183	1,944	12.3%
	G2 Rural Domestic	1,118	1,369	-18.3%
<b>Central Total</b>		<b>3,665</b>	<b>3,733</b>	<b>-1.8%</b>
North East	G1 Apartments	2,631	1,746	50.7%
	G1 Housing Scheme	3,775	3,853	-2.0%
	G2 Rural Domestic	792	901	-12.1%
<b>North East Total</b>		<b>7,198</b>	<b>6,500</b>	<b>10.7%</b>
North West	G1 Apartments	337	272	23.9%
	G1 Housing Scheme	917	920	-0.3%
	G2 Rural Domestic	1,464	1,597	-8.3%
<b>North West Total</b>		<b>2,718</b>	<b>2,789</b>	<b>-2.5%</b>
South Central	G1 Apartments	400	292	37.0%
	G1 Housing Scheme	1,057	1,066	-0.8%
	G2 Rural Domestic	1,011	1,151	-12.2%
<b>South Central Total</b>		<b>2,468</b>	<b>2,509</b>	<b>-1.6%</b>
South East	G1 Apartments	5,070	4,693	8.0%
	G1 Housing Scheme	2,742	2,412	13.7%
	G2 Rural Domestic	726	740	-1.9%
<b>South East Total</b>		<b>8,538</b>	<b>7,845</b>	<b>8.8%</b>
South West	G1 Apartments	297	489	-39.3%
	G1 Housing Scheme	1,925	1,921	0.2%
	G2 Rural Domestic	1,043	1,193	-12.6%
<b>South West Total</b>		<b>3,265</b>	<b>3,603</b>	<b>-9.4%</b>
<b>Oct '23 Grand Total</b>		<b>27,852</b>	<b>26,979</b>	<b>3.2%</b>

**Table 3 New Domestic Connections by region year on year comparison**

As of October 31<sup>st</sup> 2023, there was a 3% increase in our combined total for G1 and G2 connections (27,852) when compared to the same period in 2022 (26,979). We have significant initiatives underway to transform our ability to connect new homes and facilitate low carbon generation. This includes streamlining our design and quotation process and recruiting significant additional internal and external resources to facilitate new connections.

**Regional Map with associated 34 ESB Networks Customer Planner Groups**



## Appendix Two: Case Studies

### A. The Dingle Project

This three-year €5m project was established in 2018. It focussed on the deployment and assessment of the impact and role of a range of new technologies, and associated customer behaviours in the development of a smart resilient, low carbon electricity network. One of the reasons for selecting Dingle was its relative isolation at the end of a peninsula, the dispersed nature of much of the residential customer network and the fact that demand fluctuates very significantly between winter and summer as the tourist population increases. The renewable and clean energy enabling technologies installed at trial participants' properties included:

- Air Source Heat Pumps
- Electric Vehicles, Smart EV chargers and bi-directional (Vehicle2Grid ) chargers
- Home Energy Monitoring Systems
- Residential-scale battery energy storage systems
- Solar PV Systems

The project also trialled several smart energy devices on the electrical network with a view to testing how these could enhance reliability. ESB Networks collaborated with local communities to explore both the impact and the capabilities of new low carbon technologies on the distribution network.

The outcomes of the project are published on ESB Networks' website and were disseminated through a series of reports and recorded webinars, see [ESB Networks' Dingle Project Webinar Series](#). The project outcomes were primarily understanding and learning what needed to be achieved in the following areas to deliver a net zero ready distribution network:

- Greater understanding of the emerging Consumer Values in the low carbon transition.
- The requirements for supporting individuals and businesses on their energy transformation.
- Smart EV Charging & Vehicle to Grid technologies: what works now, what policy changes are needed for deployment at scale, and insights into trial participants' behaviours and attitudes.
- Residential/domestic scale flexibility: An overview of the test-bed infrastructure, the main use-cases examined and learnings and insights emerging.
- Engaging a rural community on energy transformation: The role of the Community Engagement Manager and the effectiveness of local initiatives in supporting change.
- The Active Energy Citizen: The learnings from social research into the effectiveness of ESB Networks Dingle Project in diffusing sustainability behaviours across a rural community.
- The Five Dingle Ambassadors: Local citizens, sharing real experiences of using low carbon technologies in their day to day lives.
- Improving the reliability of the electricity network for all our customers: Overview of the innovative capabilities of the overhead electricity network in Dingle.

The insights gained from the Dingle project have also been reflected in our [National Network Local Connections Programme](#), which involves delivering these changes on a national level over the years ahead.

## B. The REACT Project supporting Inis Mór (Oileáin Árann/ Aran Islands)

The REACT project aims to assess the self-sustainability of island communities that adopt renewable energy technologies. REACT consists of a consortium of 24 partners from 11 countries with island community representatives, regional authorities, DSO/ESCO, technology providers, academia and Research and Technology Organisations (RTOs).

The project is aiming to develop a technical and business model to demonstrate that the large-scale deployment of renewable energy sources and storage assets coupled with an Information and Communication Technology (ICT) platform to enable an integrated and digitalised smart grid can bring economic and environmental benefits to their local energy communities.

## C. Examples of other investment and Initiatives underway

- **Improving reliability of the network**
  - **Achill Island Loop Project.** This project aims to provide a second Medium Voltage (MV) feed to the island, thereby enhancing network resilience by enabling power to be provided by an alternative route in the event of an outage on the primary MV feed. Onshore work has been largely completed. ESB Networks has been engaged initially with the Department of Housing, Local Government and Heritage and, more recently, the Chief State Solicitors Office (CSSO) on the terms of the Foreshore Licence to complete the installation of offshore subsea cables.
  - **Árainn Mhór / Arranmore Island-** completed a condition assessment of cable (installed in 1982 and 2003) – the cable is judged to be in good condition. ESB Networks also has a cable route burial survey underway with the survey planned for completion before year end.
  - **Valentia Island** has 800 ESB Networks customers. 52 sets of lightning arrestors were recently installed on the main overhead line feeding Valentia Island, making the network more resilient to lightning strikes.
  - The **Irish West Coast** has the highest relative decay hazard score for wood poles in Europe (The Scheffer Index, Brischke et al 2017). The climatic criteria causing this decay also impacts on steel structures, conductors, hardware, insulation, and electrical equipment. To mitigate this accelerated decay, ESB Networks have a clearly defined specification for material and design standard to be applied in these coastal regions. Numerous trials are currently ongoing to improve the performance and ensure future resilience.
- **Converting network from 10 kV to 20kV operation**
  - ESB Networks plans to convert approximately 5,000km of 10kV network to 20kV operation over the next two years. Increasing the operating voltage will allow for greater network capacity.
  - In 2023, ESB Networks converted 137km of 10kV network on the west Dingle peninsula to 20kV operation. In addition, 213 transformers increased from 15kVA to 33kVA capacity with 122 poles changed.
- **Asset Replacement and Refurbishment work**

Please see below a brief overview of some of the major works completed and underway in rural and Gaeltacht areas:

- Achill – Newport 38kV line: Major refurbishment completed. This project replaced 69 38kV poleset structures. We also replaced hardware on a further 81 poleset structures, thereby significantly enhancing the reliability of the 38kV circuit.
  - Convoy 38kV station: Recently completed station with associated transformer asset replacement and significant substation flood mitigation works in the Donegal area. This will significantly enhance network resilience in the area.
  - Dingle 38kV: Recent asset replacement investment to improve continuity in station by upgrading the 38kV busbar and work to facilitate a future second 38kV feed, thereby enhancing network resilience by enabling power to be provided by an alternative route in the event of an outage on the primary 38kV feed.
  - Dungloe 38kV Station: Complete refurbishment of existing station with a fully modular 38kV station and associated transformer updates. This project is currently at Capital approval stage. On completion, it will significantly improve reliability in the area and allow for the associated MV network to be upgraded to 20kV.
  - An Spidéal / Spiddal 38kV station: In progress with provision of a second 5MVA transformer and new modular MV and control room. This will significantly enhance network resilience and double the station capacity in the area.
  - South Kerry re-conductoring project: multi-million-euro project ongoing and due for completion in the first half of 2024. Replace and uprate 69km of overhead line including replacement of 170 poles. This will significantly enhance network resilience and capacity in the area.
  - Woodford 38KV Station: Full new modular station with transformer updates nearing completion in the Killarney area. The completion of this project enhances the network resilience in the area and doubles the transformer capacity from 10MVA to 20MVA.
- **Oileáin Árann / Aran Islands 2016 Subsea cable repair**
    - Following 3<sup>rd</sup> party damage to the main cable feeding the Aran islands, ESB Networks rapidly delivered a temporary diesel generator to the island. Having restored power supplies, ESB Networks then completed a [world first](#) technique for repairing the cable in-situ.