



# The Grid West Project



## Landowner Information Brochure - underground route option

Summer 2014





## What is the Grid West project?

The Grid West project will deliver 21st century energy infrastructure to the West of Ireland. Grid25 is EirGrid's strategy to develop and upgrade the electricity transmission network. By connecting the electricity generated by the region's huge renewable energy resources, the Grid West project will facilitate significant job creation and investment. It will contribute to national recovery and growth while at the same time allowing the region to attract inward investment that requires a strong reliable source of power. The Grid West project consists of a new high-capacity power connection, linking the north Mayo area to a strong point on the national grid.

## Where are we now?

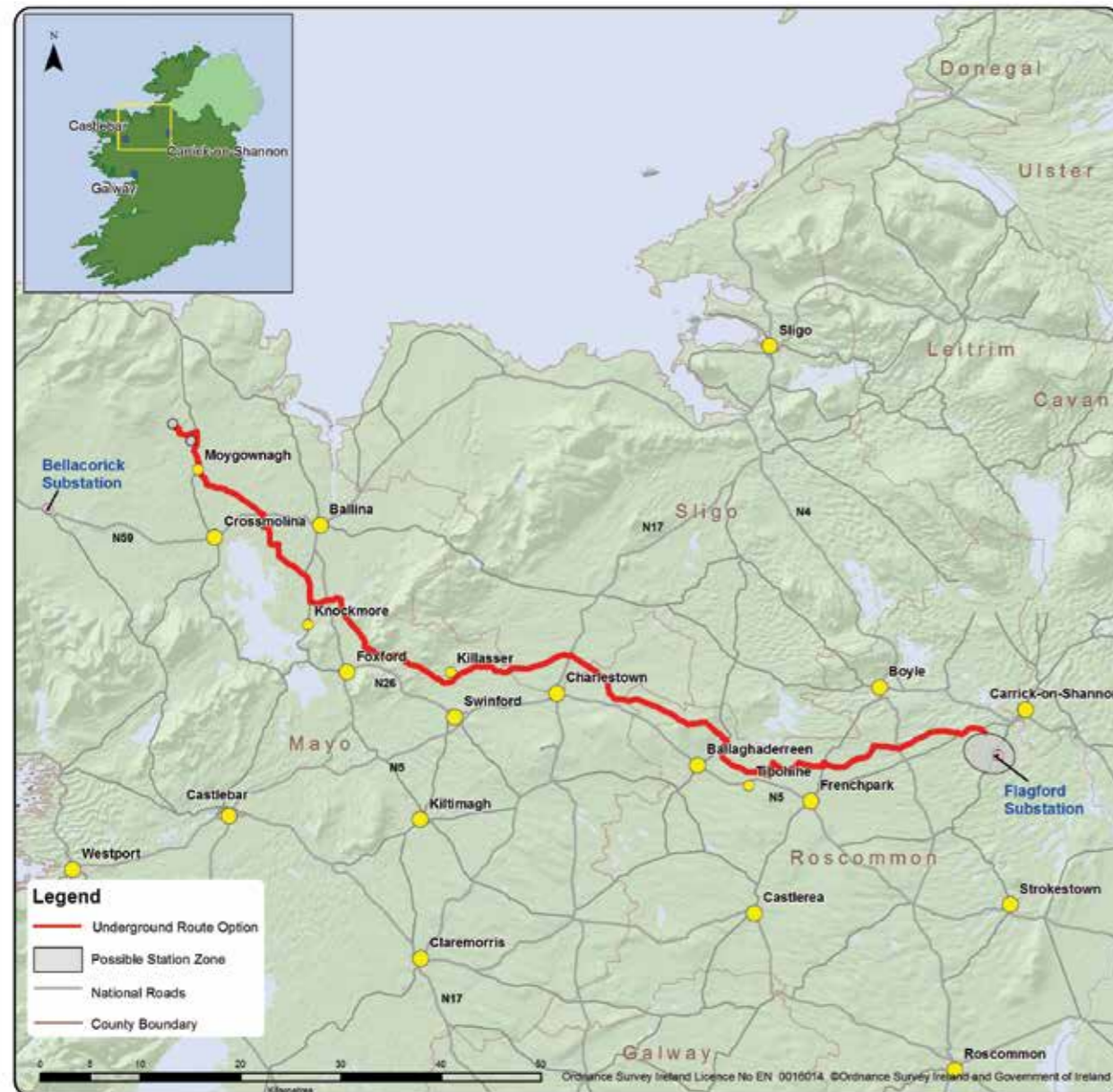
EirGrid launched the Grid West project in May 2012. Since then we have completed four rounds of public consultation, hosted 22 open days and engaged with members of the public and stakeholders through various fora. In October 2013, EirGrid announced details of an emerging preferred overhead route corridor option (overhead route corridor) for the Grid West project running from north Mayo to Flagford, Co. Roscommon.

EirGrid has been listening to all of the feedback received to date and will continue to do so. In response to this feedback in January of this year, EirGrid announced a commitment to undertake a comprehensive analysis of an underground option for the Grid West project.

Since then, we have, in consultation with local authorities in Mayo, Roscommon and Galway, as well as the National Roads Authority and other relevant agencies, identified a number of possible underground options from north Mayo to both Flagford, Co. Roscommon and Cashla, Co. Galway, including an emerging preferred underground option (underground option) which runs from north Mayo to Flagford, Co. Roscommon.

Feedback on the underground option and the overhead route corridor option, and the work we have conducted on both, will be combined to form a single report. This report, expected to be finalised towards the end of this year, will then be submitted to the Government-appointed Independent Expert Panel, who will review it to assess that both options are considered in a fair, objective and comparable way, in line with the terms of reference set out by the panel. Subject to their approval, the report will then be published for public consultation.

FIGURE 1 - UNDERGROUND ROUTE OPTION



Underground Route Selection Criteria
Length of route
Existing infrastructure
Road upgrade programme
Impact of diversions during construction
Social impact
Cultural heritage sites
Natura 2000 sites (SPA/SAC)*
*Special Protection Area (SPA) Special Area of Conservation (SAC)

## Development of an underground option

In order to provide a fully underground option for the Grid West project, it is not technically possible to use the same technology that is used for the rest of the electricity transmission system, i.e. high-voltage alternating current (HVAC).

A fully underground option will require the use of high-voltage direct current (HVDC) technology which needs different equipment for it to operate on the transmission system and will involve laying a power cable approximately 1 metre deep under the ground along the full route.

The main difference with this option is at the start and end points of the project where the construction of a converter station will be required. EirGrid has identified locations in north Mayo and Flagford in which these converter stations can be located.

The converter stations are comprised of a number of buildings and equipment, which convert the DC electricity to AC electricity (this is the type of electricity that is used in homes, offices, farms and industry).

The DC cable will run between the two converter stations, mainly along existing roads to reduce the environmental impact and for access and maintenance purposes. It will only leave the public road where necessary to cross infrastructure such as rivers and railway lines.

## What will be the impact of construction on local residents?

The route of the underground cable is being planned to avoid as many environmentally sensitive places as possible. It will run along local roads which is the preferred option for access and maintenance purposes. The cable itself will be installed using a technique called ducting. This means that the cables will be laid side by side in tubes in a trench approximately 1 metre wide and 1 metre deep.

Typically, the length of open trenches will be kept to a minimum of between 30 to 50 metres per day, depending on ground conditions. The ducting will then be covered in and the open section reinstated and landscaped on a daily basis. The electricity cables will be threaded through the ducts at a later stage once all trench preparation work is complete.

## Will there be traffic disruption?

For a project of this size, some disruption to traffic may occur during construction. However, EirGrid will work with local authorities and community groups to put traffic plans in place and to resolve any foreseeable problems. The ducting installation procedure will help to minimise disruption to existing roads users. During construction, local access to dwellings and businesses will be maintained. The works will move at approximately 30 to 50 metres a day, meaning people can reasonably expect to have work directly outside their house for limited periods of time only.

## Steps in landowner engagement

The Grid West project is consulting with all those potentially affected by the underground option and who live close to the proposed locations for converter stations near Moygownagh, Co. Mayo and Flagford, Co. Roscommon.

The only occasion when the route will divert from the public road is to facilitate the crossing of rivers and existing infrastructure. Where such crossings are required, the Grid West team will engage with affected landowners along the underground option as follows;

- Writing to all landowners with details of this project and a map showing how the underground option impacts upon land within their ownership.
- Meetings with landowners to confirm ownership of land and seek permission to conduct environmental and/or technical surveys where required.

### Proximity Allowance for those living close to Converter and Substations

In January of this year, EirGrid announced a series of Grid25 initiatives including proximity allowances, which also apply to those living close to converter stations. This represents a one-off payment to occupied residential properties (or those with full planning permission) within 200 metres of any rural substations or converter stations.

#### 1: Landowner Consultation (Current Phase)

The **initial landowner package** will include letters from EirGrid and EirGrid's agents, Tobin Consulting Engineering (TOBIN), the landowner brochure and a map showing the land requirements envisaged on their property for discussion.

TOBIN agents will seek to meet with any affected landowner to confirm ownership and to discuss the land requirements envisaged and concerns or suggestions the landowner may have regarding the project. In addition they may also seek to arrange access to lands for environmental and/or technical surveys.

#### 2. Publication and consultation on report to the Independent Expert Panel

Over the next number of months the project team will continue to examine both underground and overhead options. This work will be combined to form a single report, expected to be finalised towards the end of this year. The report will then be submitted to the Government-appointed Independent Expert Panel.

The panel will review the report to assess that both options are considered in a fair, objective and comparable way, in line with their terms of reference. Subject to the panel's approval, the report will then be published for public consultation.

The report will present all information in relation to an overhead option; including details of substations, tower types and locations. It will also present all information in relation to an underground option including substations and converter stations.

#### 3. Confirm the design

All public, community and stakeholder input with respect to both options will be considered as part of the ongoing work to find the best solution for the Grid West project. Following public consultation on the report, a decision, guided by government and regulatory policy, will be made on the final design of the Grid West project.

At this stage, the **second landowner package** will be issued to landowners, with a map showing the final route passing through their land, and this will form part of EirGrid's planning application to An Bord Pleanála. It is worth noting that this package will only issue to landowners, should the underground option be confirmed for the Grid West project and should the final route design cross lands within their ownership.

A similar process will apply to landowners impacted by an overhead route option, should that be the preferred option.

#### 4. Prepare the planning application to An Bord Pleanála

All directly affected landowners will receive notification of the date of planning application when submitted to An Bord Pleanála (expected Q3 2015).

## Construction of an underground cable

As described previously an underground cable would run mainly along existing roads to reduce potential environmental impact and for access and maintenance purposes.

The installation is carried out in four stages:

1. Preparation of a trench and installation of plastic ducts
2. Placement of power cable into the ducts
3. Filling of ducts with clay grout
4. Jointing of cable sections

### 1. Preparation of a trench and installation of plastic electricity ducts

Plastic ducting is first laid in the trench (Figure 2). The ducting is bedded on sand and is then surrounded by lean mix concrete. Public warning tiles are installed over the ducts to alert future construction workers when digging up the road.

Once this work is completed, the road is reinstated to the local authority requirements.

### 2. Installation of the cable in the ducts

The construction works associated with this stage are less disruptive than the initial laying of the plastic ducts. The cables are delivered to the site on a cable drum and stand (Figure 3) and are pulled through the ducts with the use of a cable winch (Figure 4).

For each section of cable, two working areas are required, one at each end. The first working area will be required for the cable drum and stand and the other for the motorised winch. Once the cable is installed the cable will be trimmed, sealed within the duct and the road reinstated. The installation of two 1200m cable sections takes approximately five working days.

FIGURE 2: INSTALLATION OF PLASTIC DUCTS



FIGURE 3: CABLE DRUM





FIGURE 4: INSTALLATION OF CABLE INTO THE DUCTS

### 3. Installation of clay grout in the ducts

Clay grout is used to fill the small remaining void surrounding the cable inside the plastic duct and is required to dissipate heat from the cables which helps to maintain their power capacity rating. The grout is prepared in a mixing plant and transported to site in the required quantities in a concrete mixer truck. The dry grout is then mixed with water in a mixing unit on site and pumped into the ducts. As part of the grouting process, small excavations will be required adjacent to the ducts (Figure 5) and some working space will also be required to accommodate the grout trucks. It is envisaged that a 1200m section of the route can be filled in one working day.



FIGURE 5: INSTALLATION OF CLAY GROUT IN THE DUCTS

### 4. The jointing of the cable sections

The individual sections of cable must be connected in a process called jointing. This work is carried out in containers, called jointing huts, by specially trained technicians in a controlled environment to ensure the reliability of each joint (Figure 6).

The jointing hut is approximately 3 meters wide and 6 meters long and has a removable floor. The jointing hut is placed over the cable ends, providing an enclosed work space with lighting, air conditioning and specialist tools for the jointing procedure. When the joint is complete, the jointing hut is removed and the joint is placed on a bed of sand. The cables are then surrounded and covered with a layer of sand and lean mix concrete and the road is then permanently reinstated to the local authority's requirements

Inspection manholes may be required depending on the cable type used.

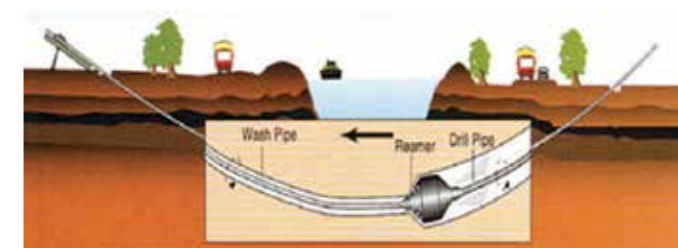
FIGURE 6: JOINTING OF CABLE SECTIONS



FIGURE 7: HORIZONTAL DIRECTIONAL DRILLING



PILOT DROP



PRE-REAMING



PULL-BACK

## Cable crossing of natural features and other infrastructure

A technique called Horizontal Directional Drilling (HDD) is used to avoid existing natural features such as ecologically sensitive rivers and existing infrastructure such as railway lines (Figure 7). It provides an effective means to cross beneath rivers or railway lines without excavation in the river bed or interfering with railway lines. It involves a steerable boring head which is pushed through the ground while being rotated. When the pilot bore hole is completed it is enlarged to the required diameter and then the cable duct is pulled into place.

## What does this mean for me?

EirGrid will update everyone living on the underground route option on how the project is progressing and explain what the impact is likely to be should it proceed to construction.

If you wish to receive general updates please contact the project team directly (contact details on the back page). If you wish to meet to discuss any questions you may have, please call into one of our information centres at Ballina or Ballaghaderreen or call to arrange an appointment.

If you are an owner of land which is crossed by the underground option, we will write to you directly and an EirGrid representative will call to discuss any requirements for environmental or technical surveys. In addition, please feel free to contact the project team directly with any queries you may have.

## EMF

There has been significant research into possible health effects from electrical power systems. Independent and authoritative international and national review panels of scientific experts have reviewed studies on possible health effects and have concluded that EMF in normal living and working conditions do not cause adverse health effects in humans.

None of the authoritative bodies responsible for the development of the international recommendations on EMF exposure considered it necessary or appropriate to limit the construction of AC or DC electricity infrastructure. Having reviewed the authoritative opinions, EirGrid will continue its policy of complying with the most up-to-date international and national standards and guidelines to which the entire network adheres.

Please see [www.eirgridprojects.com/yourhealth/](http://www.eirgridprojects.com/yourhealth/) for further information on health.

## About EirGrid

EirGrid is a state-owned company and is the national operator of the electricity grid. The national grid is an interconnected network of high-voltage power lines and cables, comparable to the motorways, dual carriageways and main roads of the national road network. It is operated at three voltage levels; 400kV, 220kV and 110kV and is approximately 6,400km in overall length. It is the backbone of Ireland's power system and is vital to ensuring that all customers - industrial, commercial and residential from both rural and urban areas have a safe, secure, reliable, affordable and efficient electricity supply.

## What is Grid25?

Grid25 is a major initiative to put in place a safe, secure and affordable electricity supply throughout Ireland, supporting economic growth and utilising our renewable energy resource to its maximum potential. Development of the grid is essential to provide a platform for renewed economic growth and regional development, and is vital if we are to effectively tap into our abundant renewable energy resources.

Grid25 will involve upgrading the high voltage system and an overall investment of approximately €3.2 billion in the period up to 2025. This new infrastructure is every bit as essential to the future growth of the country as any investment in road, rail and broadband.

## How do I find out more/ provide feedback?

EirGrid encourages you to participate in the consultation process. You can contact the project team or provide feedback through the following channels:

- **Telephone:** Lo-call 1890 94 08 02
- **Email:** [gridwest@eirgrid.com](mailto:gridwest@eirgrid.com)
- **Website:** [www.eirgridprojects.com/projects/gridwest](http://www.eirgridprojects.com/projects/gridwest)
- **Letter:** Grid West project office, EirGrid, PO Box 12226, Dublin 4
- **Visit a Grid West Information Centre in:**

**Ballina,** Bury Central, Bury Street, Ballina, Co. Mayo. (open Monday and Tuesday – 10 am to 6pm – except bank holidays)

**Ballaghaderreen,** The Square, Ballaghaderreen, Co. Roscommon. (open Wednesday and Thursday – 10 am to 6pm – except bank holidays)

**Castlebar,** EirGrid office, Linenhall Street, Castlebar Co. Mayo. (by appointment – call 1890 940 802)

You can also contact the Grid West project Community Liaison Officer through any of the above channels.

If you wish to receive text updates on the Grid West project generally text GridWest to 51444. For county specific updates (i.e. Mayo, Galway, Sligo, Roscommon or Leitrim) text the county name (e.g. Mayo) to 51444 (standard SMS rates apply).

