

Celtic Interconnector

Project Update
2017



The current. The future.



Co-financed by the European Union
Connecting Europe Facility



Who are EirGrid - and what do we do?

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

We develop, manage and operate the electricity transmission grid. This 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. This supplies the electricity you use every day in your homes, businesses, schools, hospitals and farms.

What is the Celtic Interconnector?

As part of our role we are also mandated to explore and develop opportunities to interconnect the transmission grid with the transmission grids in other countries.

The Celtic Interconnector is a proposed electrical link which if built will enable the movement of electricity between Ireland and France. We have been working with our counterpart in France, Réseau de Transport d'Électricité, to investigate the feasibility of an interconnector between our two countries.

Project of Common Interest

The European Commission views interconnection as key to a more integrated European electricity system. They have designated the Celtic Interconnector as a Project of Common Interest (PCI). The Commission has invested €3.9 million to date and up to €4 million has been approved for ongoing and future studies.

Benefits for Ireland

The Celtic Interconnector will bring many benefits, including:

- Ability to import and export 700 MW (megawatts) of electricity, the equivalent of supplying power to around 450,000 homes,
- Enhanced security of supply for Irish electricity users. It will provide Ireland's only energy connection to an EU Member State once the United Kingdom leaves the EU,
- Apply downward pressure on the cost of electricity to consumers in Ireland,
- Help facilitate Ireland's transition to a low carbon energy future,
- Provide a direct fibre optic communications link between Ireland and France.

The Technology

The Celtic Interconnector will use High Voltage Direct Current (HVDC) technology for the subsea transfer of electricity. The main elements of the Celtic Interconnector are illustrated below:

- A submarine circuit, approximately 500km in length placed on or beneath the seabed between France and Ireland,
 - A landfall point where the submarine circuit comes onshore,
 - A HVDC land circuit between the landfall and a converter station. As this will be HVDC, it is proposed to use an underground cable for this element,
 - A converter station, to convert the electricity from HVDC to High Voltage Alternating Current (HVAC), which is used on the transmission grid. This station does not need to be in close proximity to the connection point on the grid,
 - A HVAC land circuit between the converter station and the connection point to the grid. This circuit can be underground cable or overhead line.
- However as it is HVAC there are limits to the length of cable that can be installed underground,
- A connection point to an existing substation on the transmission grid.

Figure 1 shows the Celtic Interconnector Project Elements.



What have we learnt?

Figure 2 shows the location and electrical connectivity of connection points.



Connection Point

We started by looking for feasible connection points on the transmission grid that the Celtic Interconnector could connect to on the south and east coast. The connection point must be able to accommodate the export and import of 700 MW of power to and from France.

The Knockraha substation in East Cork and the Great Island substation in West Wexford were identified based on their connectivity in the Irish

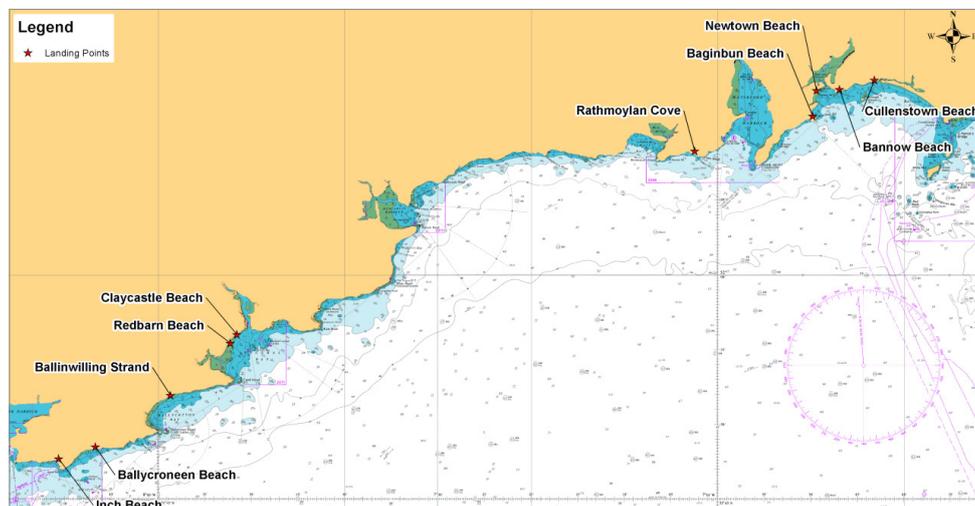
transmission grid and their location along the south coast of Ireland.

We conducted a high-level analysis of the potential impact of the Celtic Interconnector on the transmission grid. **The assessment showed that the East Cork connection point can accommodate the additional power flows significantly better than the connection point at West Wexford.** Connection in West Wexford will likely require significant upgrading of existing grid infrastructure, and/or the construction of new circuits.

Land Studies

We undertook studies to ascertain whether the project is feasible from an onshore perspective. These studies sought to determine whether there are feasible locations for the various elements of the Celtic Interconnector for each of the potential connection points, considering technical, environmental and planning constraints.

Figure 3 shows the feasible landfall locations.



Ten feasible landfall locations were identified; five in East Cork and five in West Wexford as detailed in Figure 3 on page 4. A number of feasible converter station locations and land circuit routes were also identified. **These studies concluded that there are feasible options in both East Cork and West Wexford for the various elements of the interconnector.**

A further assessment considered the landfall locations from a wider marine and land perspective. It concluded that **all ten identified landfall locations are feasible with East Cork locations performing better than West Wexford.**

Marine Route Investigation

A study was conducted to identify and assess viable offshore route options between the south coast of Ireland and the north west coast of France. The study considered matters including the shortest reasonable route between the two countries and potential engineering and environmental constraints.

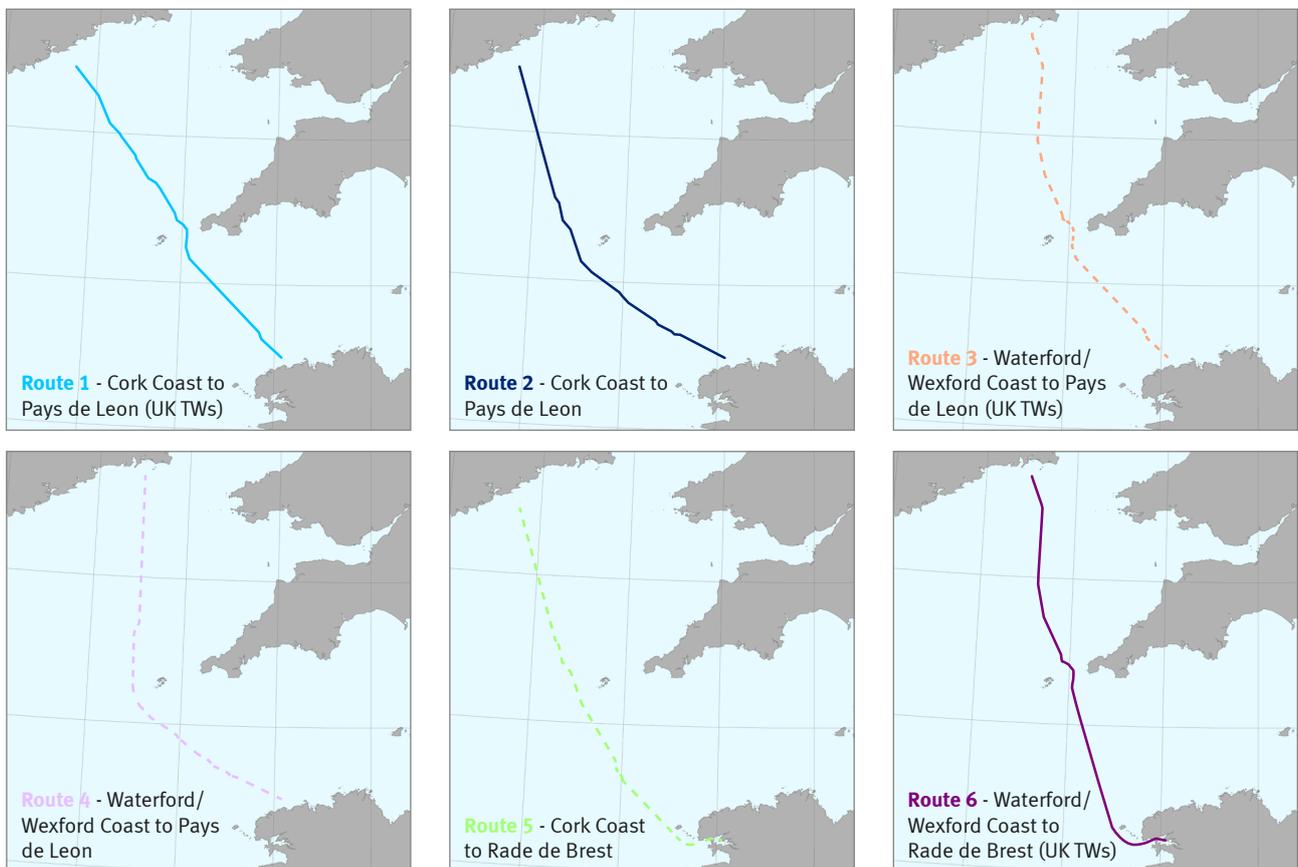
Of the routes identified, **the two preferred marine routes were from the East Cork area to North Brittany in France, laid out as Route 1 and 2 below.** One of these routes runs inside UK territorial waters (UK TWs) while the other runs outside. Route 2 below runs outside UK territorial waters, and while not the shortest was considered the

best performing route. This is because it is least constrained overall and avoids UK territorial waters, which would introduce additional time and enduring cost to the project.

A detailed marine survey of this route was undertaken. This mapped and sampled the seabed, and analysed the environmental habitats along the route. **It concluded that Route 2 to East Cork was feasible with no major constraints identified.**

The detailed marine survey included two potential branch connections towards two of the identified East Cork landfall locations. To expand our understanding of the seabed near the shore, we intend to carry out additional marine surveys to some of the landfall locations already identified.

Figure 4 shows marine routes that have been identified between Ireland and France.



Social Impact Assessment

EirGrid is committed to assessing the social impact of all of its projects. This process will identify any social issues that may arise from a project’s development, and will seek to prevent them from happening.

A high level Social Impact Assessment Baseline Report has been prepared examining issues such as the geographical setting, the environment, communities and amenities of East Cork and West Wexford. **The report does not identify the Celtic Interconnector as having a greater social impact in either region.** At this early stage both options are generally comparable. This report is a living document that will be built upon with input from communities, landowners and other stakeholders.



Supporting Documentation

To learn more about these studies you can access them on our website at: <http://www.eirgrid.com/the-grid/projects/celtic-interconnector/the-project/>

Study	Report title
Land Study Report 1	Celtic Interconnector Feasibility Study – Converter Station Site & Route Identification in Ireland
Land Study Report 2	Celtic Interconnector Project – Land Report
Marine Route Investigation	Celtic Interconnector Project – Route Investigation Report
Connection Point	Celtic Interconnector Feasibility Study – Network Analysis
Social Impact Assessment	Social Impact Assessment Baseline Report

What is happening now?

Following a review of our consultation processes, we are now following a step by step approach to planning the grid. This approach will facilitate engagement and consultation with our stakeholders and the public which will help us to explore options fully and make more informed decisions.

The Celtic Interconnector project is currently at Step 2 of our six step approach.

Step 1 How do we identify the future needs of the electricity grid?	<h2>Step 2 At a glance</h2> <h3>What's happening?</h3> <p>Our studies have concluded that the Celtic Interconnector is feasible. The best performing option is to connect to France via East Cork. During this step we have arrived at a shortlist of options. These options consist of identified landfall locations in East Cork and a connection point at the existing Knockraha substation. The other elements of the project, including the converter station location options have not yet been shortlisted.</p> <h3>How long will this take?</h3> <p>We plan to confirm a short list of options for the landfall locations and connection point before the end of 2017.</p> <h3>What can you influence?</h3> <p>We want your feedback on what we have learnt to date. By providing feedback you can influence the shortlist of options we take forward to the next step. We welcome your feedback on all that we have studied to date.</p> <h3>How can I get involved?</h3> <p>At this stage we will talk to elected representatives, regional and community groups, farming and fishing organisations. It is important to provide an opportunity to feedback on the shortlist of options we have identified and to incorporate feedback into our decision, where possible.</p> <p>If you wish to submit feedback on this project, please contact the Project Manager, on +353 (0)1 237 0212, or Customer Relations on +353 (0)1 237 0472. Alternatively you can email celticinterconnector@eirgrid.com. We can advise on how best to contribute your views.</p> <h3>What have we decided at the end of this step?</h3> <p>We will confirm the shortlist of landfall locations and connection point.</p>
Step 2 What technologies can meet these needs?	
Step 3 What's the best option and what area may be affected?	
Step 4 Where exactly should we build?	
Step 5 The planning process	
Step 6 Construction, energisation and benefit sharing	

Future Plans

Once we proceed into Step 3, we will look to narrow our shortlist of options to one best performing option. We will consult with landowners, local communities, organisations and elected representatives seeking their input as we carry out further investigations to identify the best landfall location and converter station site. In Step 4 we will determine where exactly we should build. No decision has been made to build the Celtic Interconnector. Should the project proceed a decision to commence construction would happen in around 2020. If the project goes ahead, the interconnector could go live in 2025/26.

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