

La liaison électrique entre la France et l'Irlande Connecting the electricity grids of Ireland and France

# Lessons Learned from The Celtic Interconnector

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Co-financed by the Connecting Europe Facility of the European Union



#### So what is the Celtic Interconnector?







## Why is the project being developed?



#### **EirGrid**

EirGrid is the Irish electricity Transmission System Operator (TSO) and is responsible for ensuring a safe, secure and reliable supply of electricity, across the island of Ireland.

EirGrid develops, manages and operates the electricity transmission grid.

EirGrid is mandated to explore and develop opportunities to interconnect the Irish transmission system with other systems.

EirGrid operates the East West Interconnector.





# Rte

RTE is the French Transmission System Operator:

>105 000 km of high and ultra-high voltage lines spanning the whole of France and 2,710 substations

Existing interconnection with Belgium, Great Britain, Italy, Spain, Switzerland





# Competition

Increased electricity trading & downward pressure on electricity prices







Co-financed by the European Union

**Connecting Europe Facility** 

# **Security of Supply**

Additional supply of power and increased diversification

## **Sustainable Energy**

Facilitates transition to low carbon future

# **Telecommunication**

# Provision of direct fibre connection to continental Europe

- Strong fibre infrastructure at each end
- Fibre connectivity in Ireland dependent on 'land bridge' services via the UK which can impact on performance, security and availability
- Model established with East West
  Interconnector



Source: Telegeography, Analysys Mason





#### European Context



**Project of Common Interest** 

European Commission

Has significant impact on achieving affordable, secure and sustainable energy for EU citizens.



Co-financed by the European Union Connecting Europe Facility



Source: E-Highway2050

#### An overview of the Celtic Interconnector



#### **Project Overview**



# Landfall - Claycastle Beach, Youghal









# The HVDC Onshore Route







# HVDC typical trench width ca. 0.8m

## HVDC Off-Road Cable Route (Killeagh)





## HVDC Off-Road Cable Route Castlemartyr







# HVDC Cable Route in the area of Midleton



## Converter Station Site Ballyadam



## Converter Station Site Ballyadam

# Typical Converter Station Layout (EWIC)





# HVAC Route to Knockraha Substation





# HVAC typical trench width approx. 2m

# Marine Route

- 497 km.
- Avoids UK TWs.
- Avoids SPAs.
- Variable seabed geology.
- No major constraints.
- 18 in service cable crossings.
- Max water depth of 100 110m.







# **Overview of the offshore works**

Aluminium XLPE cables (laid jointly with FO)





Cable protection by Trenching, preploughing/jetting, or rock placement)





#### Other works

Geophysical/ UXO Surveys

Pre-lay Grapnel Run

Crossings preparation (mattresses)

Boulder removal

# Cable laying



- Launch 2021
- Length 149.9m, EirGrid •
  - Width 31m
  - Main cable turntable: 10 000 t

# **Contract Signatures November '22**





#### **EPC Procurement and Contractors**

## SIEMENS COCIGY

**Solution Solution Solution Solution Solution Solution** 

- Ballyadam Converter Station (Ireland)
- AC Cable Sealing End Compound
- Ar Merzher Converter Station (France)

- HVDC submarine cable (497 km)
- HVDC land cable (France)
- HVDC land cable (Ireland)
- HVAC land cable Ireland
- Fibre optic cable (repeatered system)
- Supplier events January 2020
- OJEU notice Q4 2020
- ITN launch April 2021
- 2 x EPC Contracts



## **Construction Phase**

2023	2024	2025	2026
<ul> <li>Design (Cable and Converter)</li> <li>Manufacturing of IR AC cable</li> <li>Trenching and ducting of land DC cables and land HVAC cables in Ireland.</li> <li>Converter station Civils commencement</li> </ul>	<ul> <li>Commence manufacturing of offshore cable</li> <li>Installation and jointing of AC and DC land cables</li> <li>Converter station installations progress</li> </ul>	<ul> <li>Offshore marine installation campaigns 1 &amp; 2</li> <li>Submarine cable protection campaigns 1 &amp; 2</li> </ul>	<ul> <li>Offshore marine installation campaigns 3 and 4</li> <li>Submarine cable protection campaigns 3 &amp; 4</li> <li>Commissioning tests</li> <li>Interconnector system tests</li> <li>Trial Operation period commences</li> </ul>



### **The Planning and Consenting Process**



# EirGrid's Framework for Grid Development

Step 1 How do we identify the future needs of the electricity grid? 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





# Key Project Delivery Milestones

34

Quarter	- Submit all key planning consent files in Ireland and LIK: July 2021									
H2 2021	- Receive consent and comprehensive decision in UK: November 2021									
H1 2022	<ul> <li>Start submitting CRU consents in Ireland: Jan 2022</li> <li>Receive planning consents in Ireland and France: April 2022</li> </ul>									
H2 2022	<ul> <li>Receive CRU consents in Ireland: July 2022</li> <li>Receive comprehensive decision in Ireland and France: Q3 2022</li> </ul>									
H1 2023	- Sign EPC Contract and commence construction works across whole project: Q1 2023									
H2 2023	- Commence manufacture of cable: Q4 2023									
H1 2024	<ul> <li>Commence installation of the offshore cable: Q2 2024</li> </ul>									
H2 2024	— Complete construction of onshore cable in Ireland and France: Q1 2025									
H1 2025	— Complete installation of offshore cable: Q2 2025									
H2 2025										
H1 2026	— Complete construction of converter stations in Ireland and France: Q1 2026									
H2 2026	— Complete commissioning tests: Q4 2026									
H1 2027	- Celtic Interconnector is fully operational: Q1 2027									



Connecting Europe Facility

# Key Planning Milestones in Ireland





## What's Happening Now?



#### **Onshore and Offshore Planning**

- Initial agreement for phased discharge of Conditions of ABP Approval by CCC in June 2023
  - Phase 1 site investigation and enabling works
  - Phase 2 400kV AC main works
  - Phase 3 320kV DC and Stations main works
- Section 146B modification requests to ABP
  - Regarding additional infrastructure (Cable Sealine End compound) at Knockraha 220kV substation, and proposed new vehicular access to the CSE compound
- Historic, Archaeological Heritage and Miscellaneous Provisions Act 2023 signed into law in October 2023
  - Provides that development with a Foreshore Licence that was subject to EIA/AA (as per Celtic) does not need a separate Planning Permission under the Maritime legislation.
- Review of Offshore Development Proposal and Licence Conditions
  - Review commenced to confirm specific quantities of materials etc., licenced in the offshore, as well as specific designs of aspects of the offshore development.
  - Review commenced to confirm need for discharge of conditions and/or other commitments required to occur prior to commencement of development.



#### **Communications During Construction**



Celtic Interconnector Newsletter (page 1) Quarterly publication Online and in print Issue 1 - October 23'



Key facts Leaflet - for distribution to stakeholders at cable works information days.

HVDC Land Cable



Project Signage at Ballyadam.



V

Text alert service for stakeholders. Text INTER to 50115



#### **Joint Communications Activity**

2023		September	October	November	December	January	
Project Communications.	RTE			Newsletter no.9 - November Updates/beginning of works/ interview with regioanl President Loig Chesnais- Girard		Newsletter no.10	
	RTE	Press Briefings - local re.ducting / landfall etc.	Landfall works beginning - local comms - completed	Media Operation - re.Landfall and marine cable preparation.			
	RTE	photos documentary		photography			
	EirGRid	Project Comms to begin.	Project Comms Continue: #Project Info Days x 2 #Newsletter #text alerts #Letters #Radio Alerts	Roadworks begin 01/11 - media announcement -		Newsletter no.2	
	EirGrid	1st phase of Community Benefit Fund (CBF) closes (€960k)		Projects announced Pre Christmas			
Joint Communications	Joint		Irish CIDAC team in Brest 11/10	#PCI Information days 28/29 November #Commencement of works event in Dublin.		Communities Cooperation agreement - TBC*	
Coordination with RTE/EirGrid communication team Recurrent update on Celtic page on RTE website, EirGrid website + celticinterconnecteur.eu Social media animation : twitter & Instagram							

EirGrid Ree Le réseau de transport d'électricité

#### **Ballyadam Geotechnical Design Resolution**

Design progressing based on a 2m void spanning capacity following risk reduction meeting in October.

Borehole data from 2023 survey indicating a 'soft spot' identified under the proposed transformer area which requires additional ground stabilisation mitigation.

Settlement calculations showed excessive settlement results without additional soil stabilization measures

#### CIDAC steps;

- CMC Design report prepared
- Analysis of need and optimum mitigation
- Determine impact on overall site design approach
- Intended commencement of works on 06/12/2023.

#### **Controlled Modulus Columns (CM**



A specially designed auger displaces the soil laterally, with limited spoil or vibration. During extraction, a column is developed by grouting through the stem of the displacement auger







#### **Construction Phase**





## Lessons Learned From the Celtic Interconnector



# Lessons learned

- Collaboration is key
- Clarity of legislative processes and policy support
- Strategic Planning integrated Project Development Strategies and Consultation & Engagement Strategies
- Structured approach and process Framework for Grid Development
- Early engagement with communities and stakeholders
- Knowledge and information sharing between stakeholders, including prescribed bodies and consenting authorities
- Flexible and open approach to consideration of alternatives
- Clear milestones and targets (including financial)





# Thank You

