



23

ETY COUNCIL

strial World

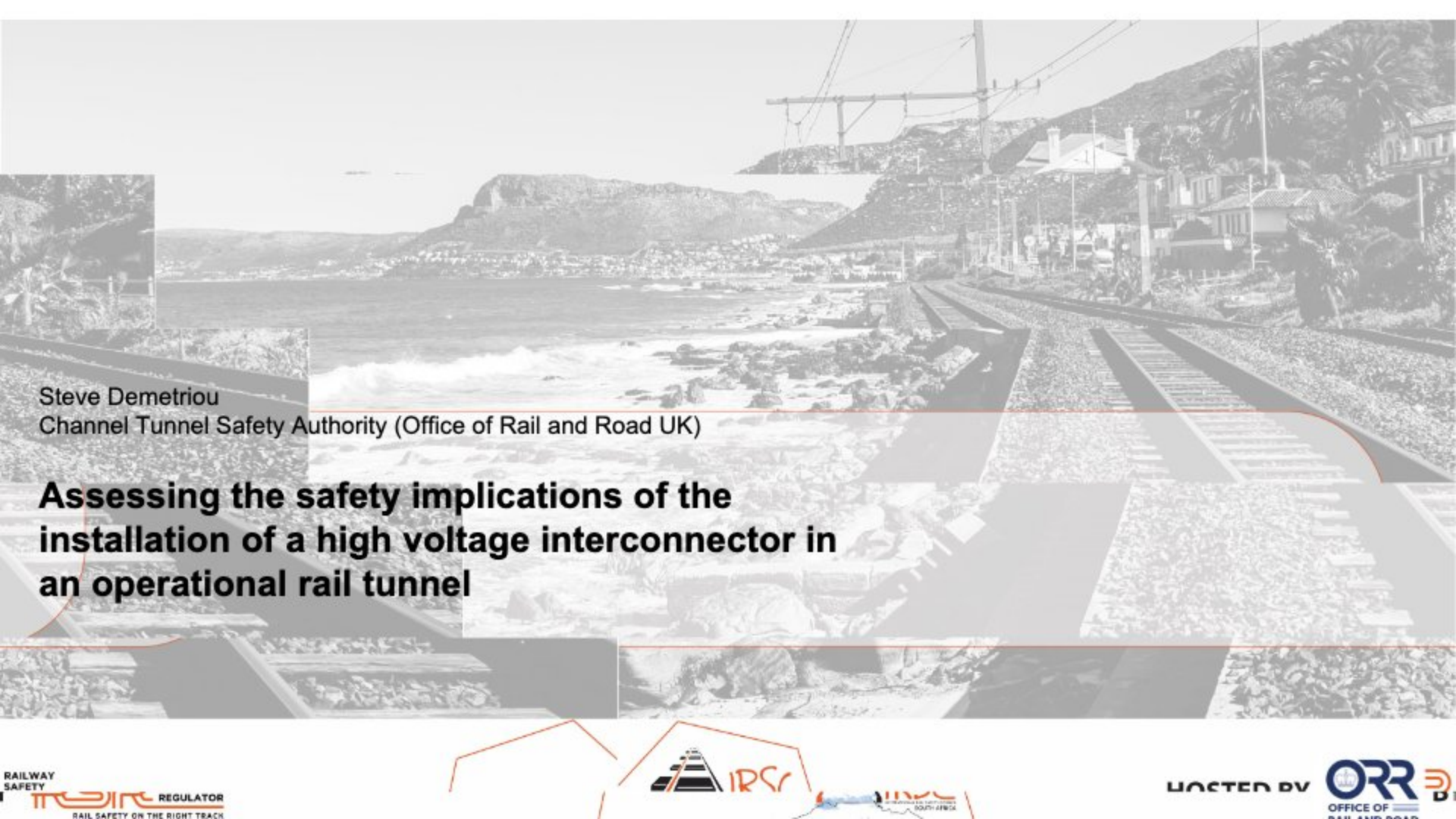
OCTOBER 1 - 6, 2023

IRSC 20

INTERNATIONAL RAILWAY SAF

"Reckoning Railwaying railway"

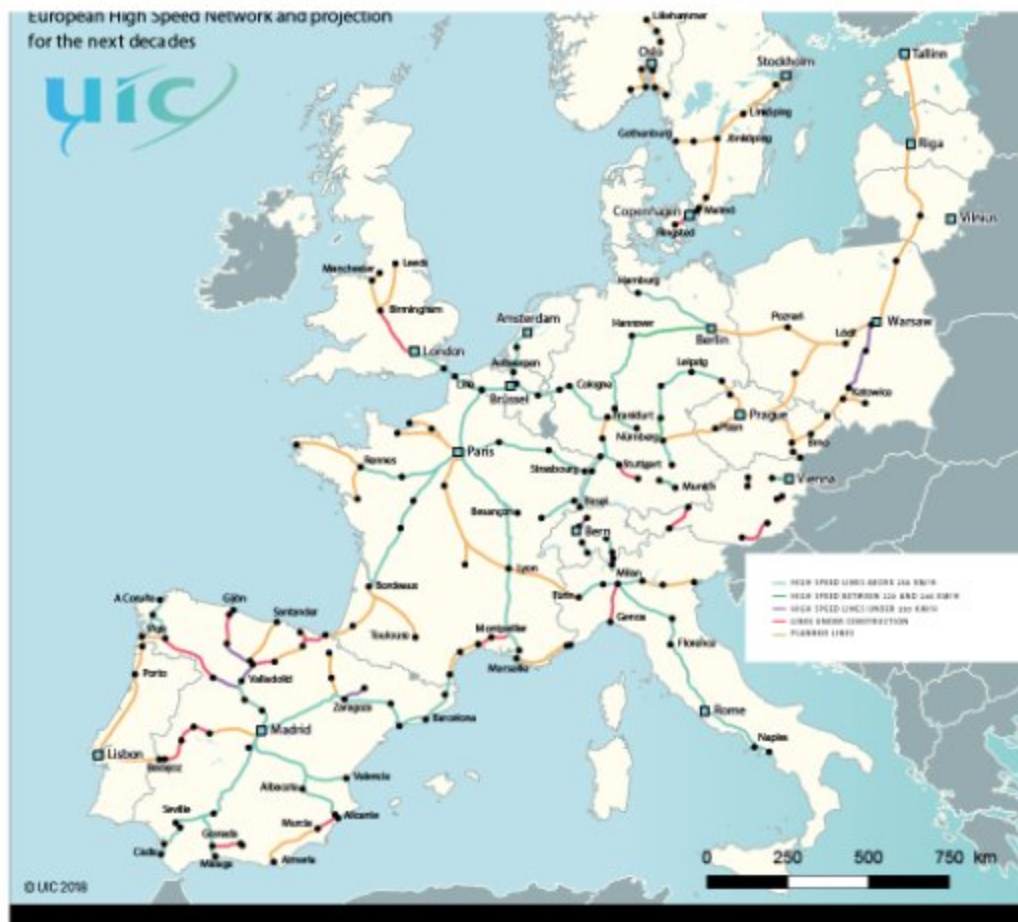
CAPE TOWN, O




Steve Demetriou
Channel Tunnel Safety Authority (Office of Rail and Road UK)

Assessing the safety implications of the installation of a high voltage interconnector in an operational rail tunnel

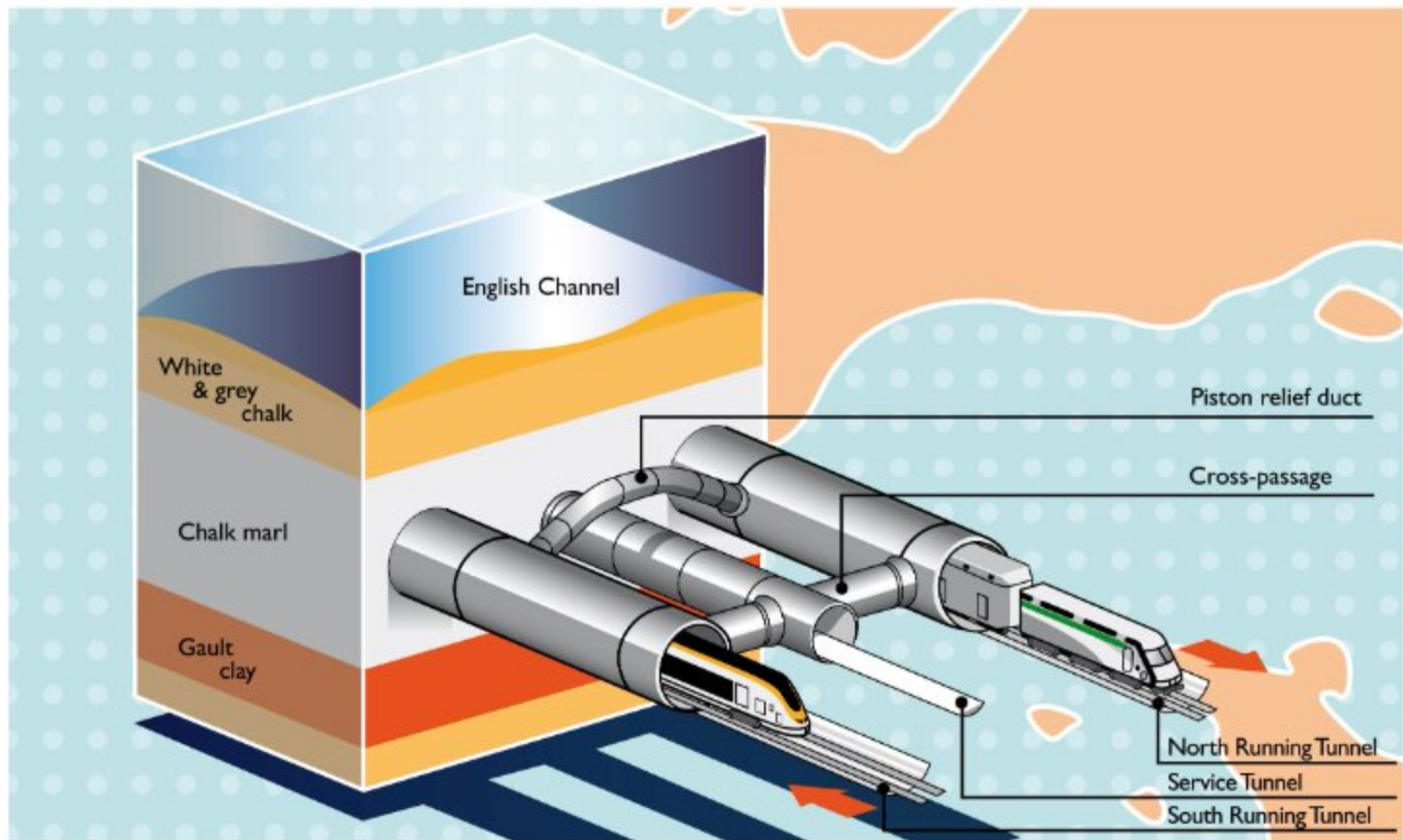
The Channel Tunnel - A vital link

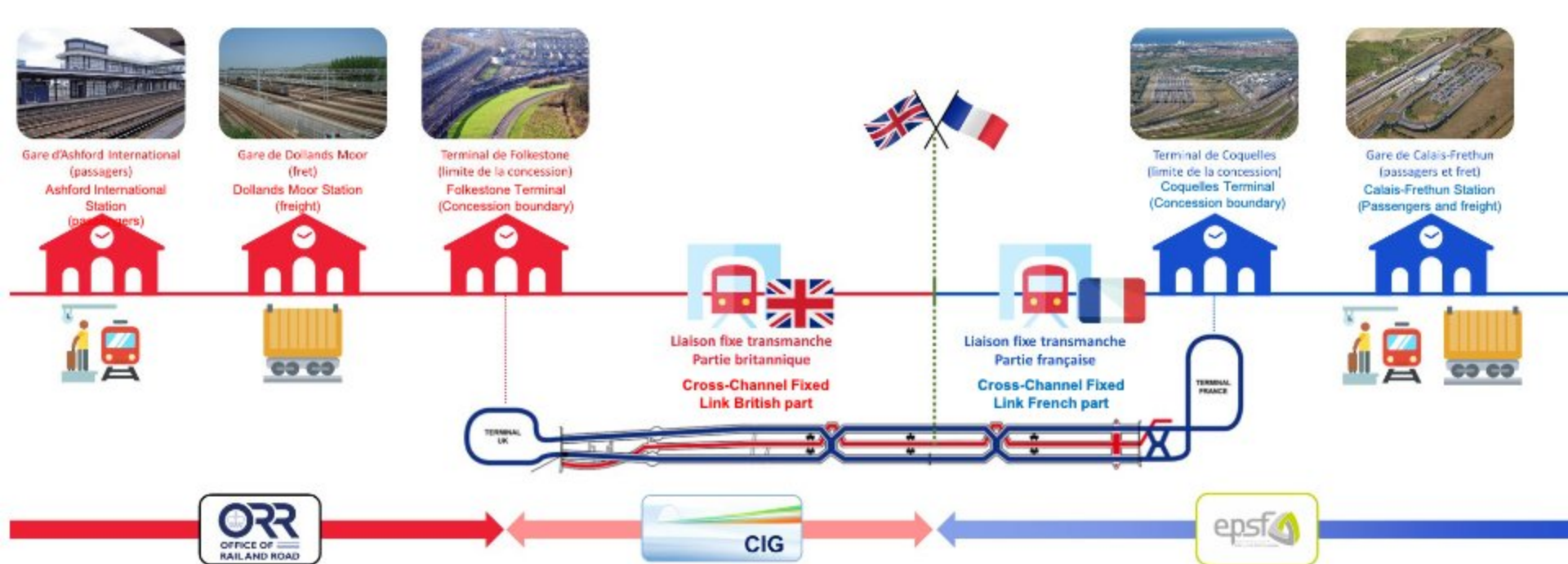




Open for Business

- Channel Tunnel officially opened by HM the Queen and President Mitterrand on 6 May 1994
- 19 May 1994 – first Tunnel commercial traffic
- Eurotunnel operate the concession





LES AUTORITÉS NATIONALES DE SÉCURITÉ
The National Safety Authorities



Previous incidents in the Channel Tunnel

🕒 18 November 1996
RT South, Interval 3
(France)

🕒 21 August 2006
RT North, Interval 4
(UK)

🕒 11 September 2008
RT North, Interval 6
(France)

🕒 29 November 2012
Emergency Sidings
(France)

🕒 17 January 2015
RT North, Interval 4
(France)





The 2008 fire

Key firefighting challenges

Transfer of personnel and equipment to the incident scene

Limited access for vehicles, equipment and people

Arduous conditions; extreme temperatures and high humidity

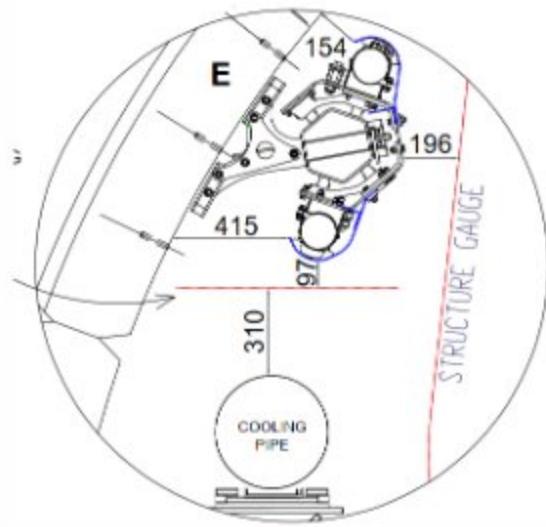
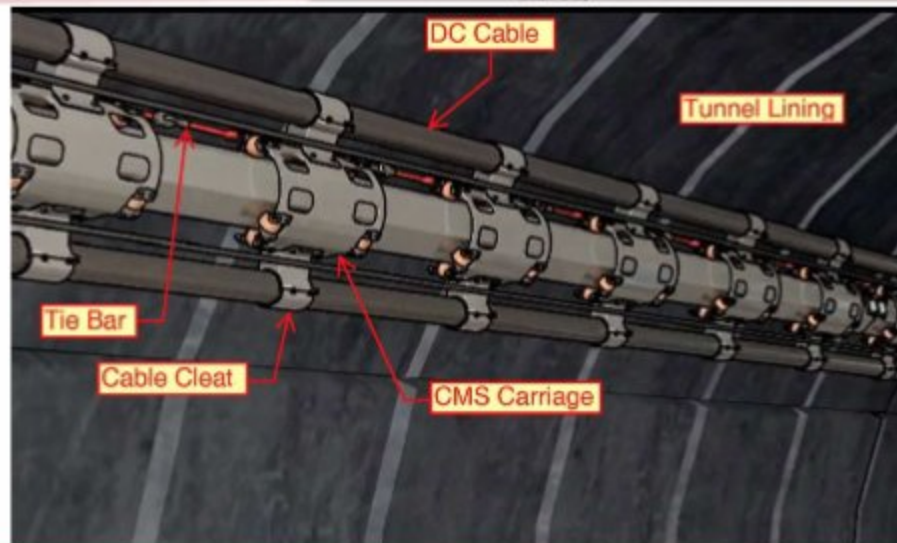
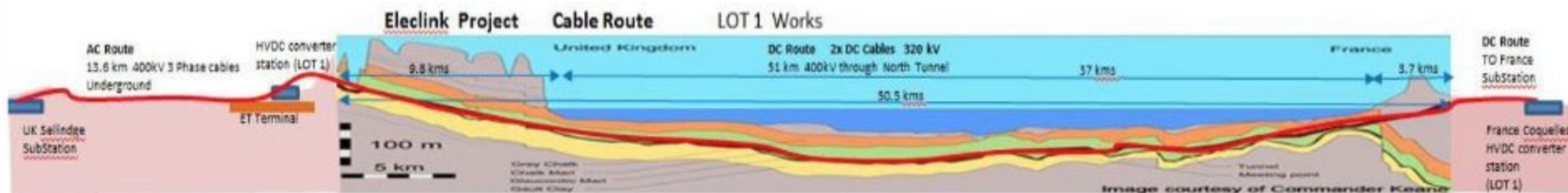
Communications; between UK services and binational

Long duration incidents; support and resilience



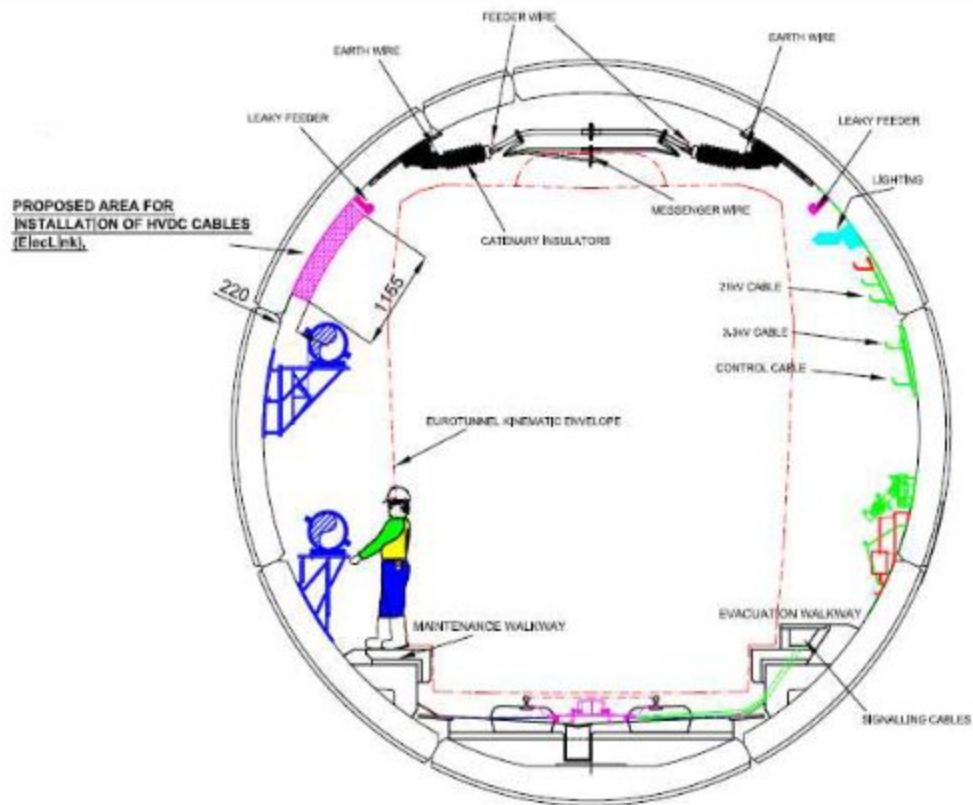


ElecLink Project



Sub-theme: Rail Infrastructure innovation in a changing world





RUNNING TUNNEL

Sub-theme: Rail Infrastructure innovation in a changing world





Sub-theme: Rail Infrastructure innovation in a changing world



Managing the Technical Assessment

Resourcing

- UK stakeholders – ORR railway inspectors, electrical specialists, emergency services, DfT.
- Administration – specific admin support contracted in.

External Expertise (UK)

- Office for Nuclear Regulation, DSTL, Edinburgh University, Frazer Nash Consultancy
- French external experts

Binational coordination

- Regular meetings/liaison with French delegation CTSA and EPSF
- Translation of key reports

Issues Log

- Record of all queries raised and proposer's response
- 264 points logged and subsequently closed

Key Areas of Focus



Energy released from faults

Internal fault, mechanical damage, fire

Extensive testing of the cable

Expert advice obtained



Electro Magnetic Compatibility (EMC)

Potential to affect safety systems in the Tunnels

Theoretical studies and practical tests

Emergency services equipment tested



Risk Assessment Methodology

Compliance with CSM RA

Managing out risk at the design stage

Project phases

Hazard Log



Fire safety

Cable fire tests

EN standards

Fire loading 5.2%



Emergency Scenarios

Fire

Derailment

Security Incidents

Emergency shut down procedures

ElecLink Project Conclusions

- CTSA/IGC first alerted to the project in 2011
- First working group meeting in 2016
- NSAs (IGC and EPSF) authorised revised SMS in February 2022
- IGC consent for the project confirmed in February 2022
- CTSA undertaking a debrief process to identify learning points
- Further monitoring of commercial operations

ElecLink – a Project Illustrated by Numbers

- **750 million** - Euros (2013) private capital funding for the project.
- **102,000** - metres of bespoke manufactured cable.
- **8,500** - brackets installed to secure the cable to the tunnel wall.
- **520** - technical safety dossier documents created or modified since January 2020.
- **264** – safety issues to monitor and resolve through the binationally agreed log.
- **132** - binational project meetings with Eurotunnel.
- **32** - expert reports to assess.
- **2** - Governments making a joint decision based upon the recommendations of;
- **1** binational team working to a common framework.
- **0** - other examples of this type of system in the World.



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