DeepWind
Cables Subgroup

To download the updated attendee list use the QR code or go to:
https://www.offshorewindscotland.org.uk/deepwind-cluster/deepwind-downloads/

Subgroup Workshop

11th April, 2024

Wi-Fi
Carnegie_Conference
Password – xk2reDDbPhvb

Business Development Economic Agencies SE/HIE/SOSE

- Supply chain development
  - Supply capacity (down the tiers) Offshore Wind Growth Partnership
  - Cross sector - High Value Manufacturing
  - Process efficiency

- Innovation
  - ORE Catapult
  - Innovation support (UK)

- Maritime in Offshore Wind
  - CLV/USV/repair

High Value Manufacturing - david.crawford@scotent.co.uk +44 141 343 7935
Category Manager Cables -leonore.frame@scotent.co.uk +44 141 468 5742

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Dunfermline

11th of April

offshore wind Scotland

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Image source – Dean Boyce, SSE Renewables

Workshop Introduction

DeepWind
North of Scotland Offshore Wind Cluster

Liam Moore

Background

Liam Moore – Senior Engineer for 2H Offshore

Over 5-years experience completing Offshore Structural Analysis

- 1.5 years dedicated to the Renewable Sector

Floating wind project set to produce Hydrogen using a FOWT

- Installation Analysis
- Installation Procedure
- Quality Assurance

Worked on studies that analysed numerous floater, mooring and power cable configurations to be used in a ScotWind floating wind project

- Mooring Design and Analysis
- Power Cable Design and Analysis
- Fully Coupled Modelling and Analysis

Site Project Engineer for a fixed wind monopile template

- Interface engineering
- Scope management

About 2H Offshore

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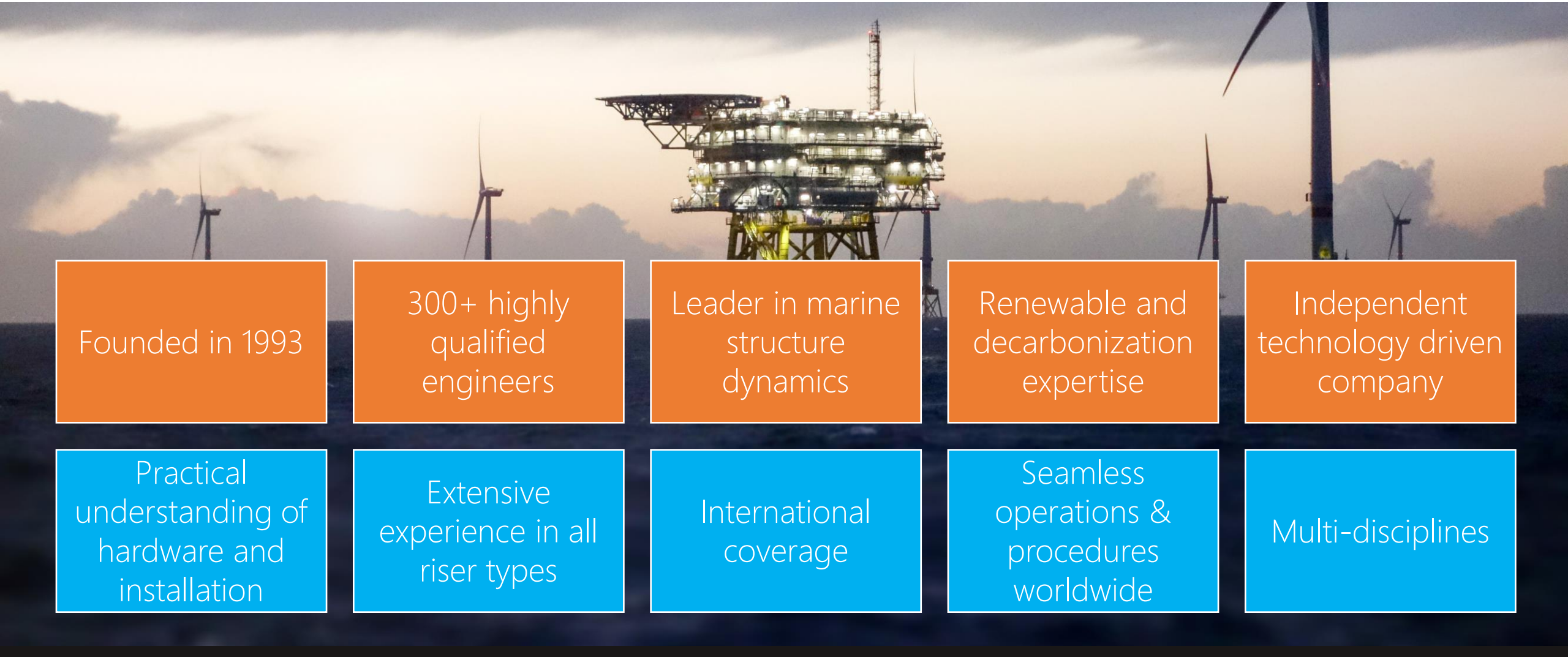

- Founded in 1993
- 300+ highly qualified engineers
- Leader in marine structure dynamics
- Renewable and decarbonization expertise
- Independent technology driven company

- Practical understanding of hardware and installation
- Extensive experience in all riser types
- International coverage
- Seamless operations & procedures worldwide
- Multi-disciplines

2H Principal Technical Offerings

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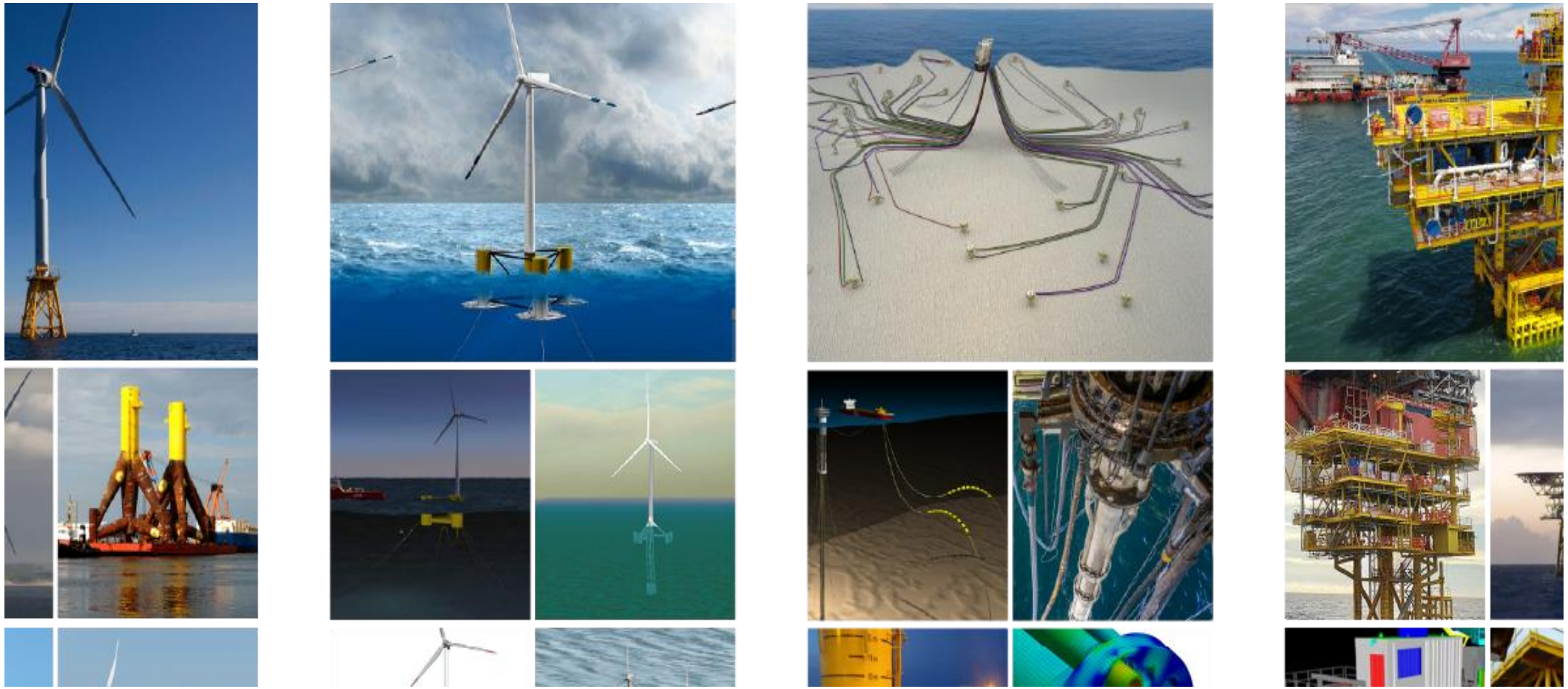
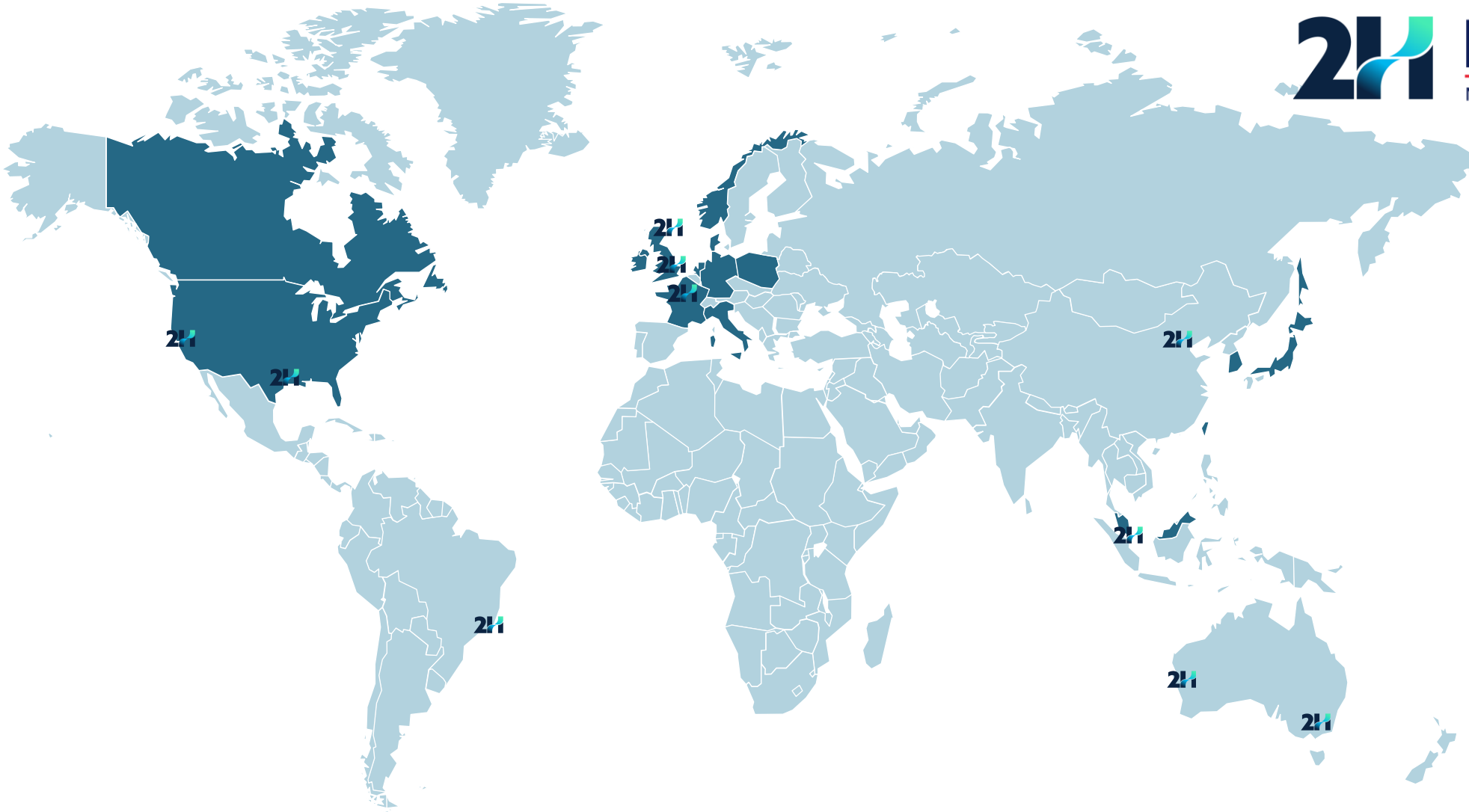
North of Scotland Offshore Wind Cluster



Independent and specialist energy engineering & design services for offshore structures

2H Offshore – Offshore Wind Track Record



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Europe

- **Atlantic France** : AO2, AO4, AO5, AO7, AO11
- **Mediterranean Sea :** France AO6, Italy Hannibal, Nurax, Orda
- **Baltic Sea :** Poland
- **Celtic sea :** Nisa, Coding, Shelmalere & inis
- **Scotland :** Ossian, MuirMohr, Kincardine, Seagrean, Near Na Gaothie, Donreay, Borwik, Moary East, Berwick, N1
- **Netherland:** HKW

North America

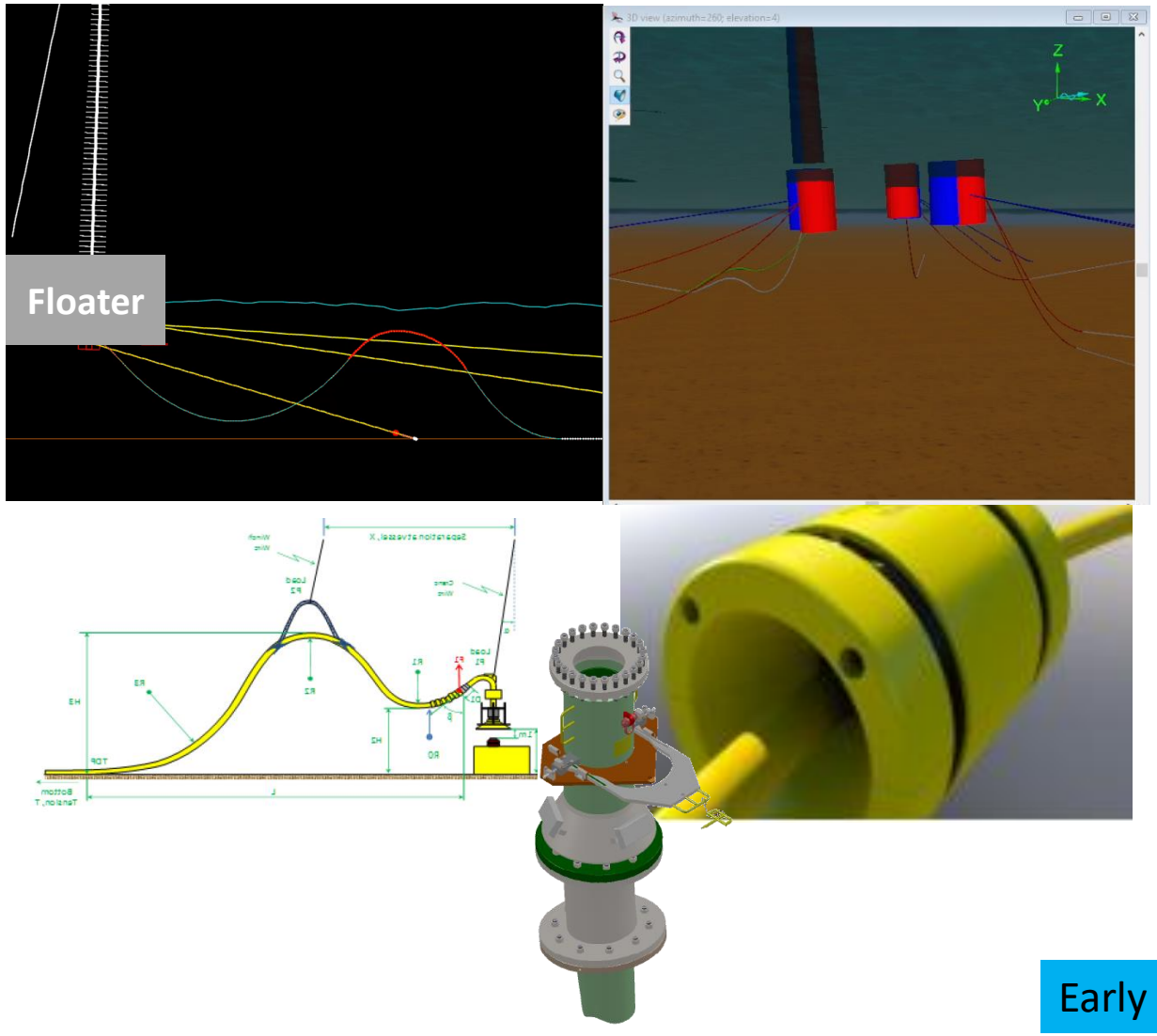
- **USA West Coast :** California Lease, Morro Bay
- **USA East Coast :** Ocean Wind,
- **Canada :** Newfoundland

Asia Pacific

- **Taiwan :** Greater Chanhua, Winds of September
- **Japan :** Aomori, Wakayama
- **Malaysia :** Baram

Office locations

Cable & Ancillary Component Engineering



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- Feasibility assessment through detailed design
- Global configuration & design
- Dynamic analysis
  - Strength
  - Fatigue (1st and 2nd order, VIV)
  - Clearance/clashing analysis
- Installation engineering
- Ancillary specification and design
  - Buoyancy modules
  - Bend stiffeners
  - Hang-off / J-tube arrangement
- On-bottom stability
- Free span analysis
- Cable routing / burial
- Sand waves mitigation

Early & Integrated Floater, Cable and Mooring System Design Is Key!

Image credit – First Subsea

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Programme – Morning

Cable Manufacturers Session 1

- 11.20 Scottish infrastructure projects – **Nathan Marr, NKT**
- 11.40 Dynamic Cable systems – **Graham Agnew, Oceaneering**

Technology Session 1

- 12.00 Dynamic cables for FOW: T&I and T2P– **Nigel Robinson, Apollo Engineering**
- 12.15 Q-Connect – quick connection & release systems– **Richard Yemm**, **Quoceant**

12.30-13.30 - Networking Lunch

Image credit – First Subsea

Programme – Afternoon

Cable Manufacturers Session 2

- 13.30 Hunterston Cable Facility Update – **Alan Mathers**, **XLCC**
- 13.50 New Cable Factory at Nigg – **Mike Engelbrecht**, **Sumitomo Electric Industries**
- 14.10 Cables **- Colin Henvey, Nexans**

Technology Session 2

- 14.30 Cable Connectors – **Jonny Barnett**, **First Subsea**
- 14.45 Cable Installation Vessel –**Norman Skillen**, **Jan de Nul**
- 15.00 Networking break – coffee and tea
- 15.20 Manufacturers Panel Q&A session with speakers
- 15.40 Technology Panel Q&A with speakers

- 16.00 End of event

Workshop Introduction

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North of Scotland Offshore Wind Cluster

Dr Qi Tang

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MANCHESTER 1824

offshore wind Scotland

Scottish & Southern Electricity Networks

IET The Institution of Engineering and Technology

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132 Members

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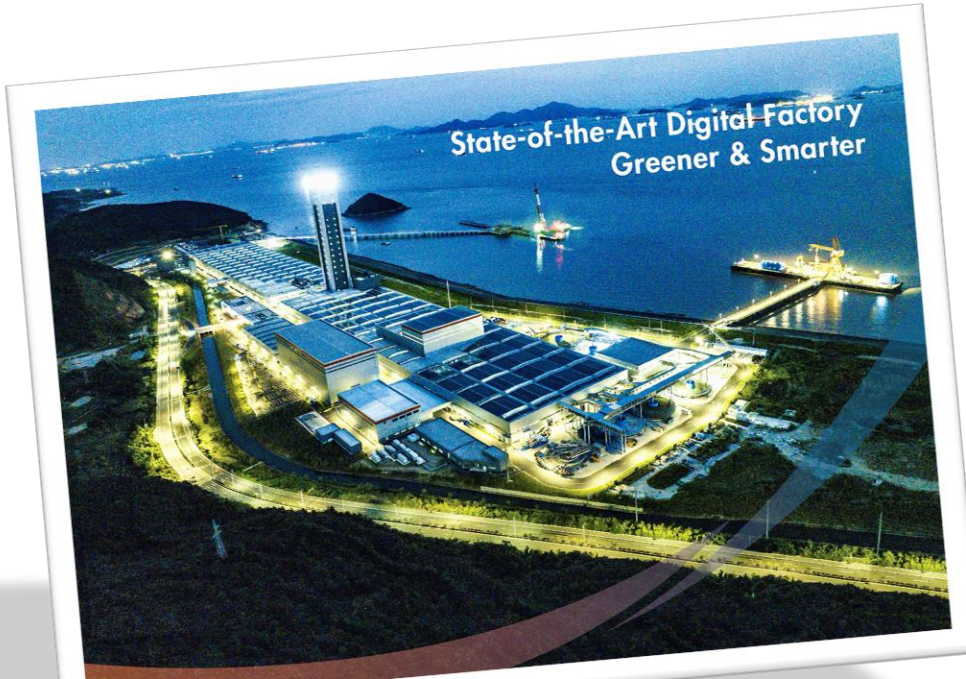
- **3 Subsea Cable Projects in Scotland**
- **Partnership with XLCC in Hunterston**
- **Exploring more Scotland Opportunities**



Holistic Network Design

April 2024 Update

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Image source – national grid ESO

Holistic Network Design and Beyond 2030

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- Phase 1 - Plan for connecting 23GW of offshore wind to Great Britain with over 11GW of it in Scotland
- To be delivered by 2030 and cost £32bn
- Phase 2 – Beyond 2030 to add a further 21GW of offshore wind
- To be delivered in the 2030s and cost an additional £30bn
- The Centralised Strategic Network Plan will be published in 2026

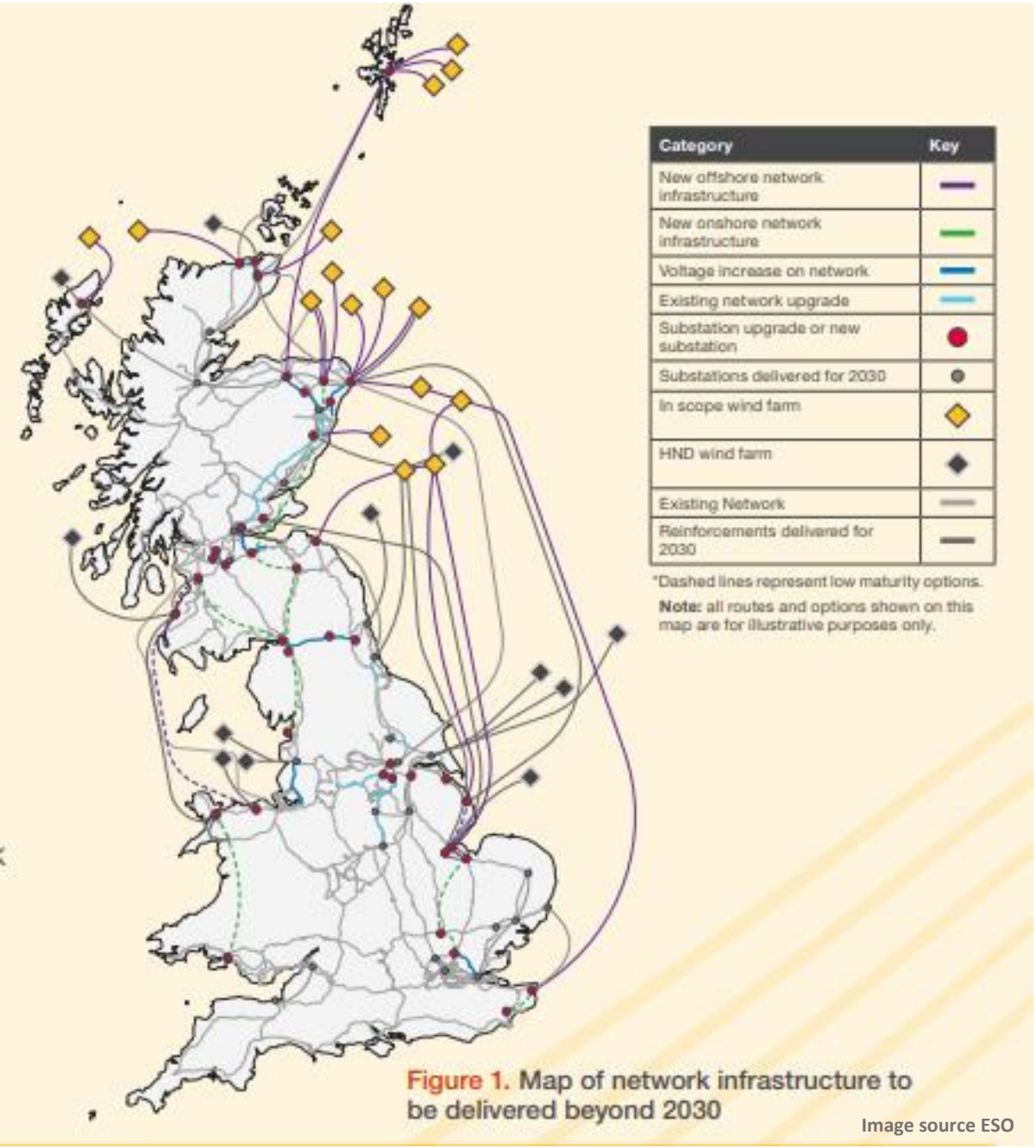

Figure 1. Map of network infrastructure to be delivered beyond 2030

Image source ESO

Beyond 2030

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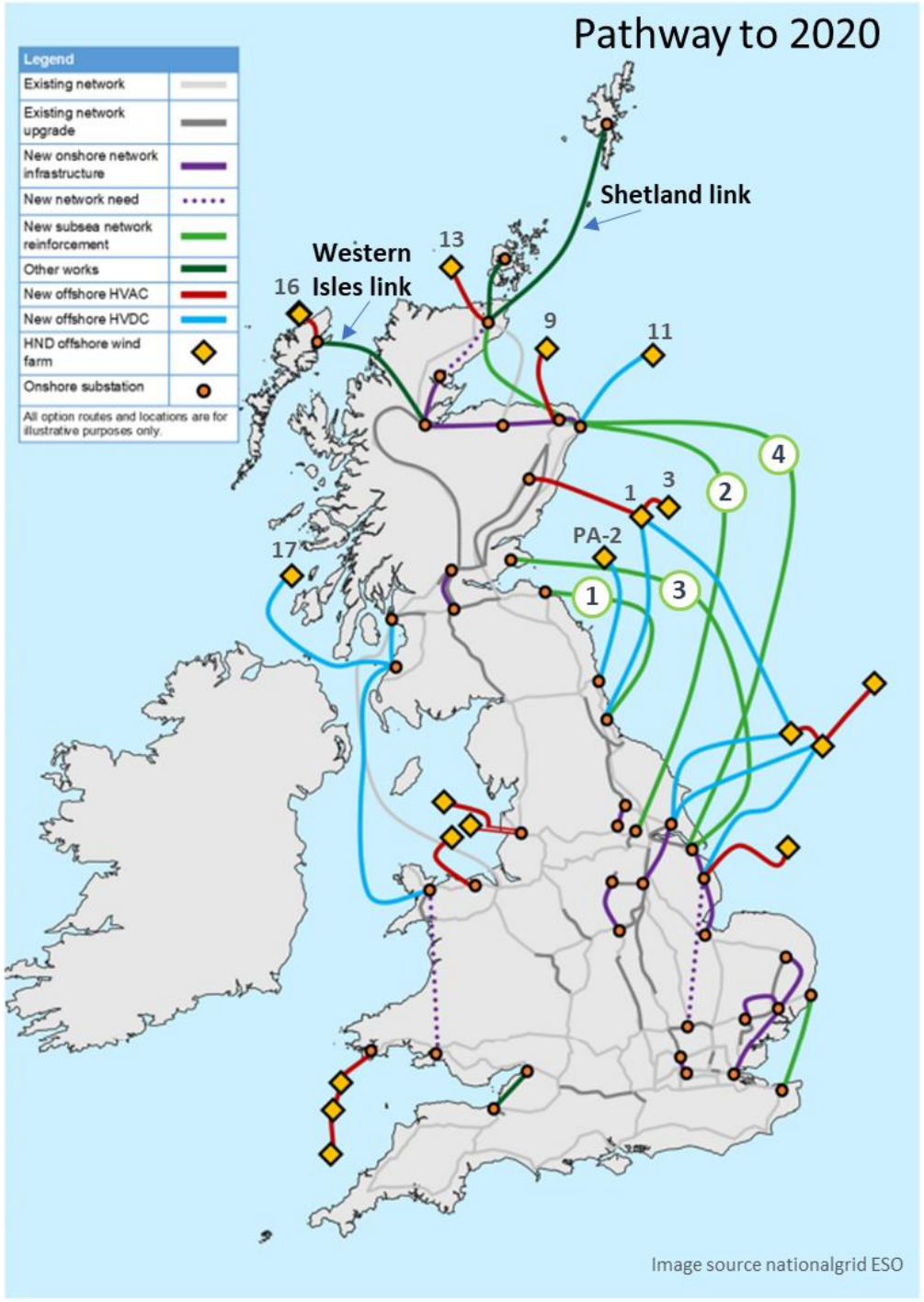
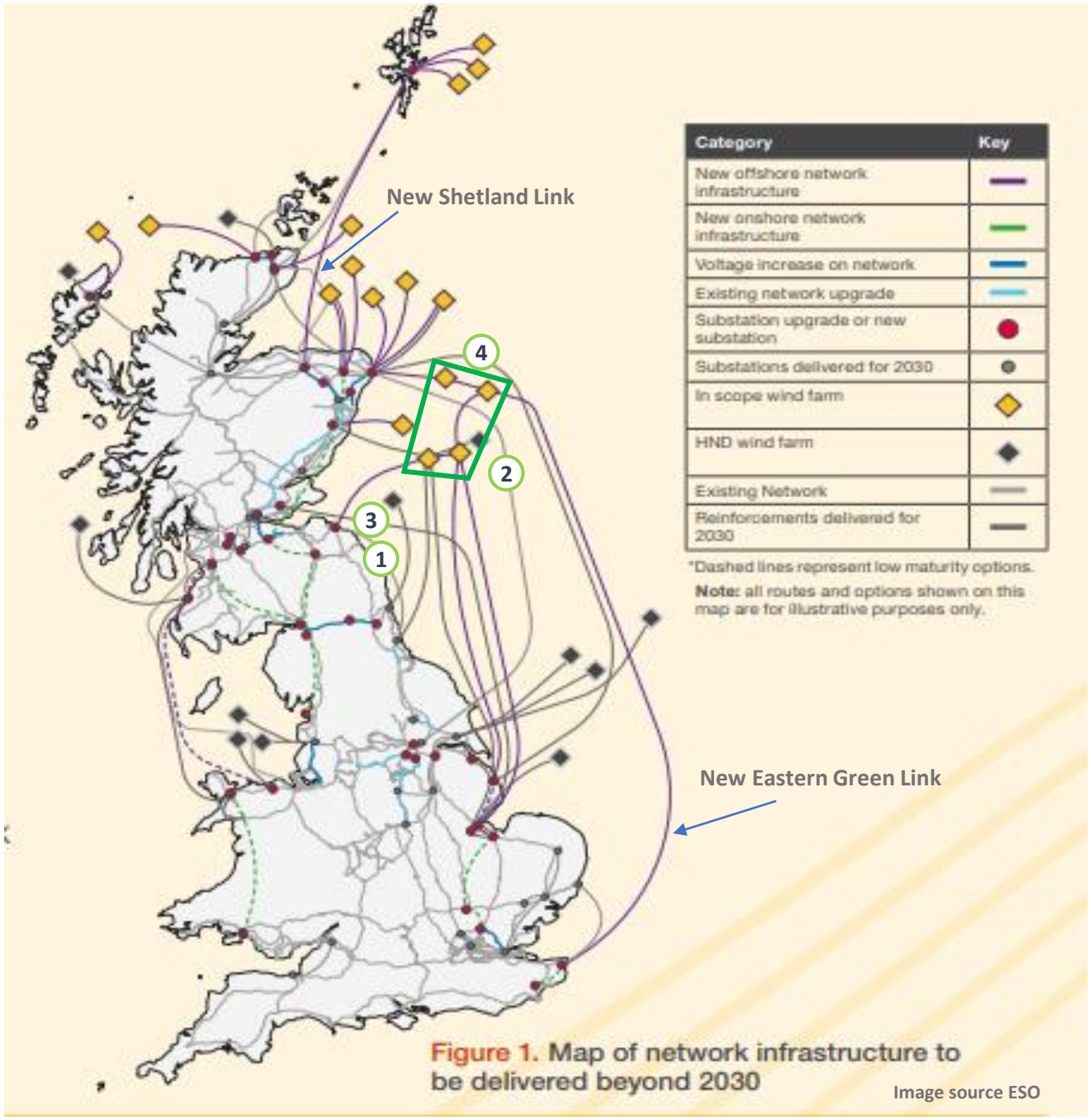
- These recommendations will see all the other ScotWind projects connected to the UK grid
- This plan does not include the INTOG projects or the Crown Estate Round 5 projects in the Celtic Sea
- A further plan to connect these is expected in 2025


Pathway to 2020
Legend
Existing network
Existing network upgrade
New onshore network infrastructure
New network need
New subsea network reinforcement
Other works
New offshore HVAC
New offshore HVDC
HND offshore wind farm
Onshore substation
All option routes and locations are for illustrative purposes only.
Shetland link
Western Isles link
16
13
9
11
4
2
1
3
PA-2
17
1
3
Image source nationalgrid ESO


New Shetland Link
4
2
3
1
Category
Key
New offshore network infrastructure
New onshore network infrastructure
Voltage increase on network
Existing network upgrade
Substation upgrade or new substation
Substations delivered for 2030
In scope wind farm
HND wind farm
Existing Network
Reinforcements delivered for 2030
*Dashed lines represent low maturity options.
Note: all routes and options shown on this map are for illustrative purposes only.
New Eastern Green Link
Figure 1. Map of network infrastructure to be delivered beyond 2030
Image source ESO