

Integrated offshore grid solutions

Louise Wilks



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Context of this work



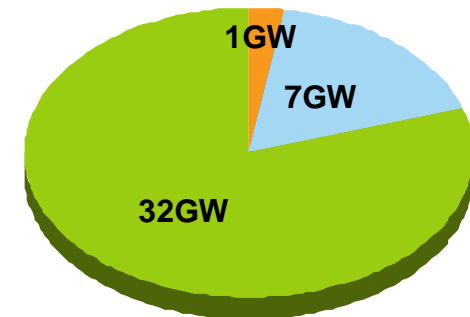
We are interested in establishing workable arrangements at the lowest costs for UK consumers such that:

- ◆ The potential deliverability of offshore wind is maximised
- ◆ Security of supply and network resilience are maximised
- ◆ The overall cost to consumers is minimised

◆ The scale of potential offshore wind necessitates reflection on the delivery challenges:

- ◆ Security of supply
- ◆ European interconnection
- ◆ Technology development
- ◆ Supply chain capability
- ◆ Planning consents
- ◆ Financing
- ◆ Skills

Offshore wind leased capacity*



Round 1 Round 2 Round 3

* Source: DECC website

http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/policy/offshore/wind_leasing/wind_leasing.aspx

Our integrated network solution has multiple benefits

~25% potential savings
for UK consumers

Reduces planning
consent issues

Better management & utilisation
of valuable resources

“Future proof” for network
evolution & greater European
integration

Other benefits include:

- ◆ Meeting / potentially exceeding developer timelines
- ◆ Strengthening security of supply
 - ◆ More resilient / reliable network
- ◆ Maximising deliverability:
 - ◆ Reduces supply chain pressures through lower asset volumes
 - ◆ Better secures resources to enable a step-up in UK supply chain capacity
 - ◆ Supports vital technology development
 - ◆ Facilitates a move towards standardisation
- ◆ Minimising environmental impact
- ◆ Strengthening UK role in EU energy
 - ◆ Enabler of a North Seas grid
 - ◆ Increased potential for UK to export excess wind power
 - ◆ Step towards engaging and influencing the EU landscape

Assumptions

Generation mix

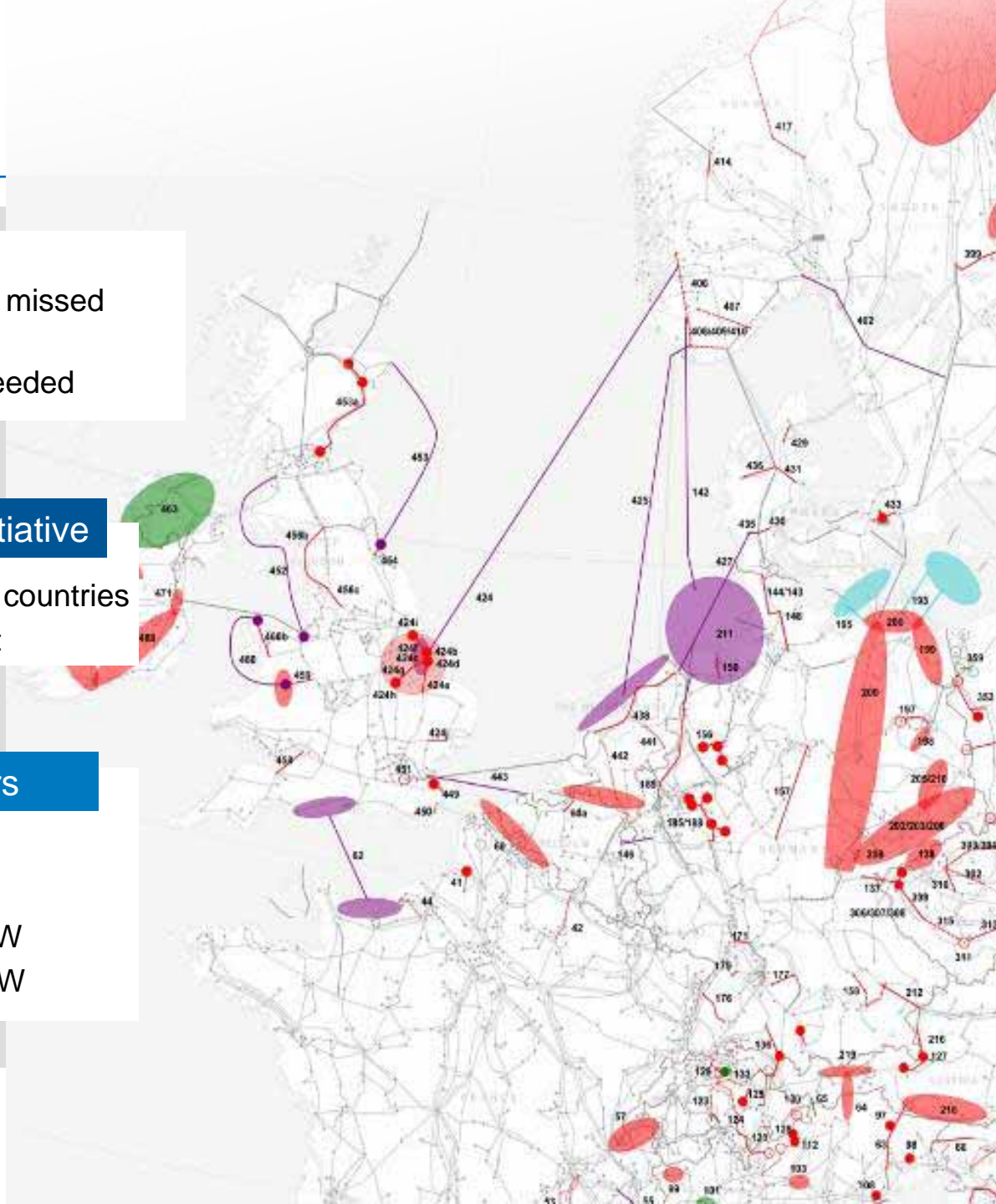
- ◆ Slow progression – 2020 target missed
- ◆ Gone Green – 2020 target hit
- ◆ Accelerated – 2020 target exceeded

North Seas' Countries Grid Initiative

- ◆ Political declaration of 10 N Sea countries
- ◆ Signed up to by UK Government

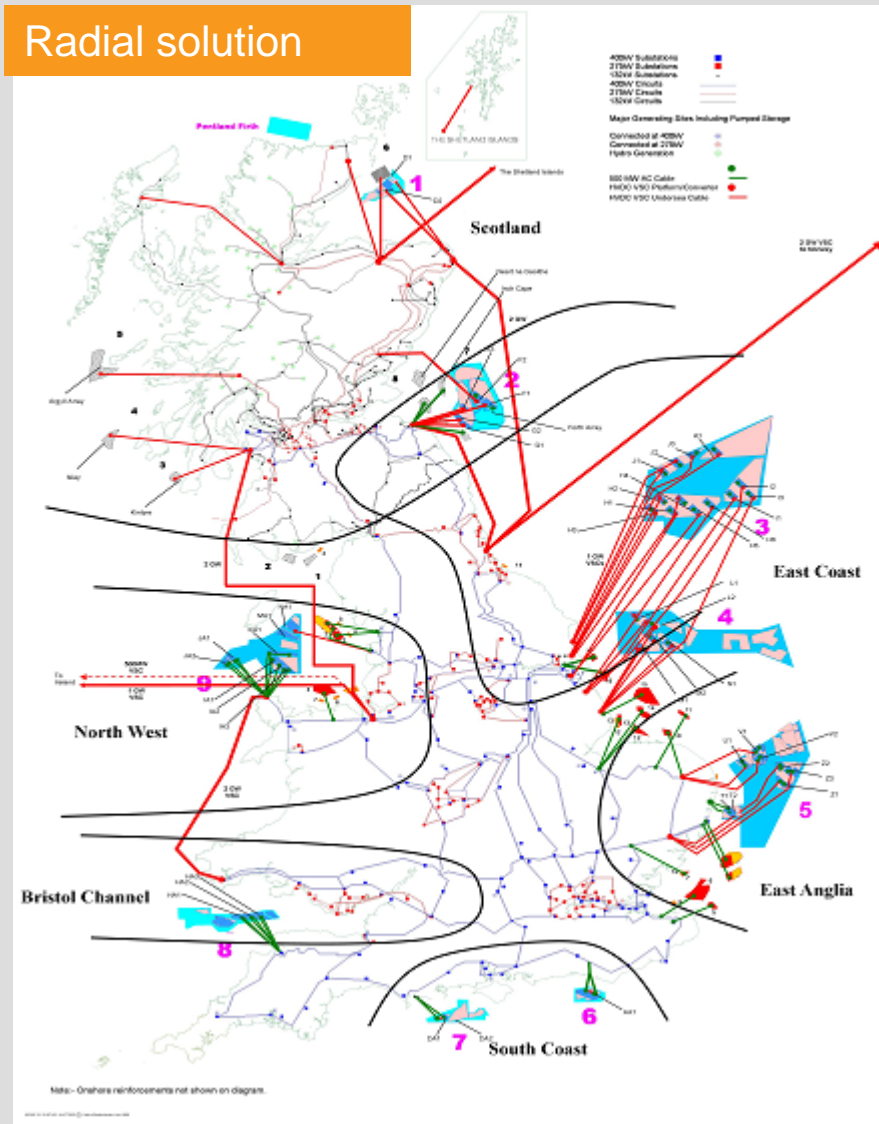
Existing & new interconnectors

- ◆ IFA (GB – France): 2GW
- ◆ Moyle (NI – Scotland): 450MW
- ◆ BritNed (GB – Netherlands): 1GW
- ◆ East-West (GB – Ireland): 500MW

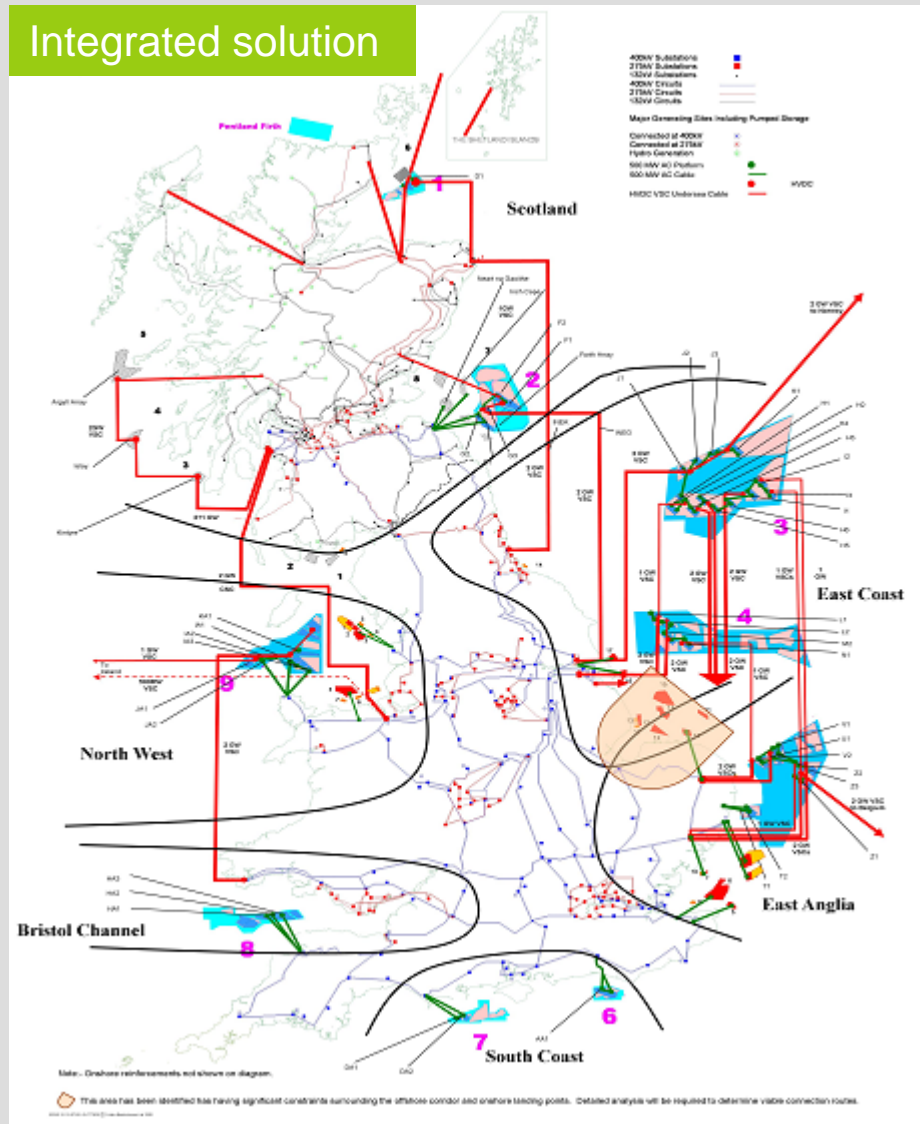


An integrated offshore solution

Radial solution



Integrated solution



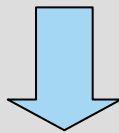
Three broad types of delivery model

Developer / OFTO led options

- ◆ NETSO provides integrated design
- ◆ Delivered by developer / OFTO
- ◆ Voluntarily or obligated ?
- ◆ Practical issues

TO led options

- ◆ TO designs & builds all offshore works
- ◆ Process similar to onshore process
- ◆ Removes any competitive element



Hybrid options

- ◆ TO delivers major / anticipatory works
- ◆ Other works competitively tendered
- ◆ Allocated according to pre agreed criteria
- ◆ Allows for twin track approach

Summary

~25%

potential savings
for UK consumers

- 1) Larger capacity offshore assets
- 2) Onshore / offshore optimisation
- 3) Flexibility to integrate future interconnectors

Reduces planning
consent issues

Better management & utilisation of
valuable resources

“Future proof” for network evolution &
greater European integration

Savings breakdown (Gone Green 2030)

