



27TH APRIL 2017

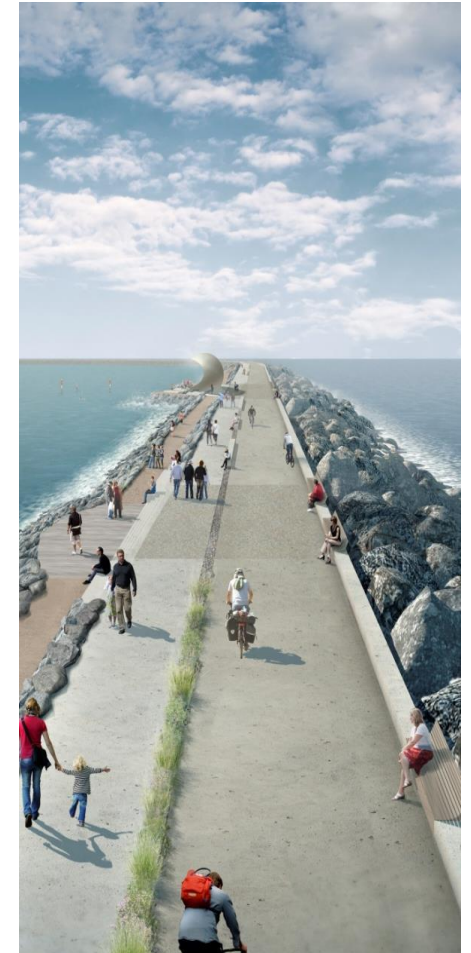
ENERGY OPPORTUNITY TIDAL LAGOON POWER

GRAHAM HILLIER, MANAGING DIRECTOR OF DEVELOPMENT



WHAT ARE WE GOING TO COVER?

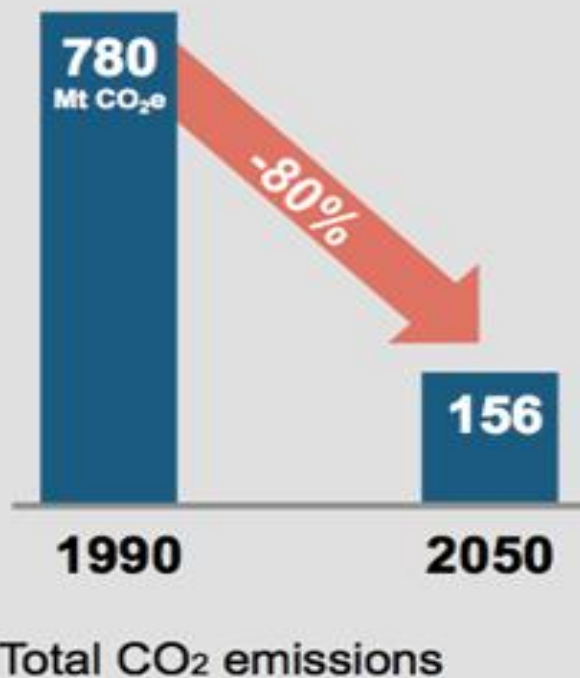
- Why tidal lagoons and why now?
 - Environment (post COP21)
 - Energy
 - Economy (post Brexit)
- Hendry Review update
- Update on TLP's plans
- Why TLP's approach is different



THE CLIMATE CHALLENGE

Ambitious climate targets

80% reduction in CO₂ emissions by 2050



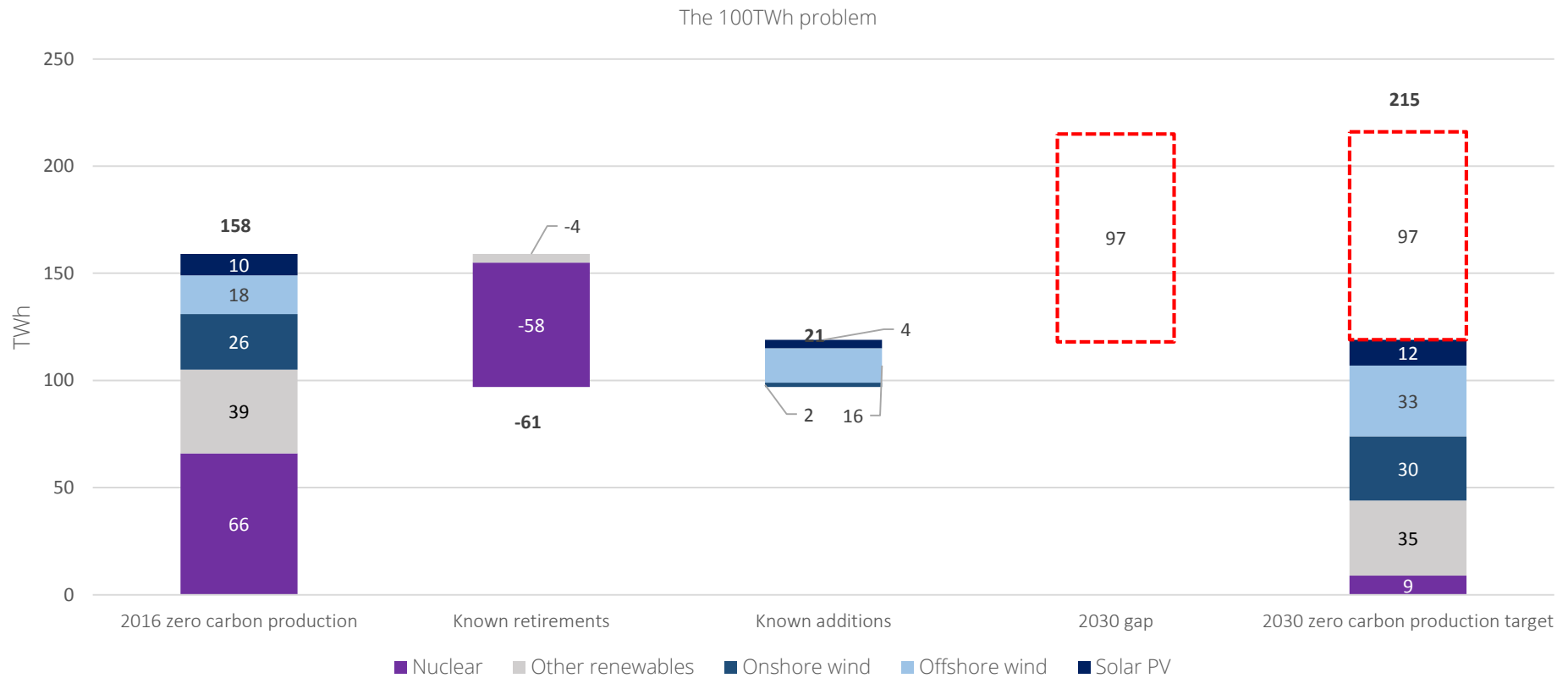
- Paris COP21 – need for greater decarbonisation commitments
- Climate change impacts and the ‘do nothing’ scenario
- *“The greatest threat to our planet is the belief that someone else will save it”*

Robert Swan, polar explorer



ENERGY - DECARBONISATION TARGET

Shortfall of 100TWh to hit decarbonisation targets by 2030



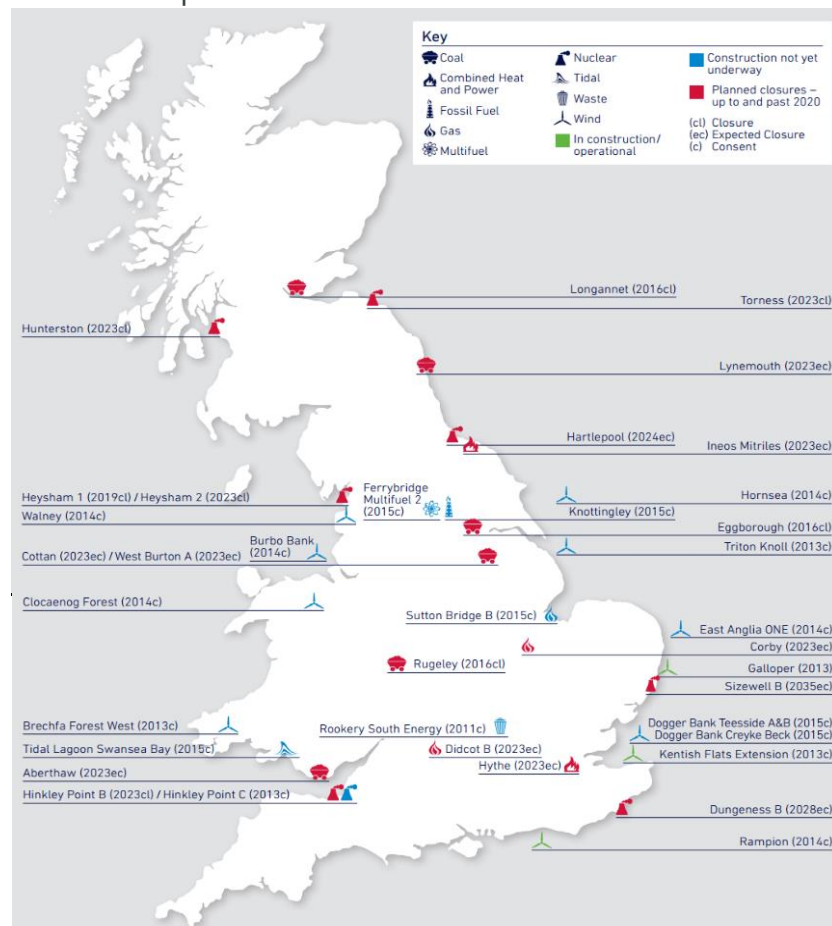
Note: the 97TWh gap includes a potential estimated 25.5TWh from Hinkley Point C



ENERGY – THE SUPPLY GAP

UK power market

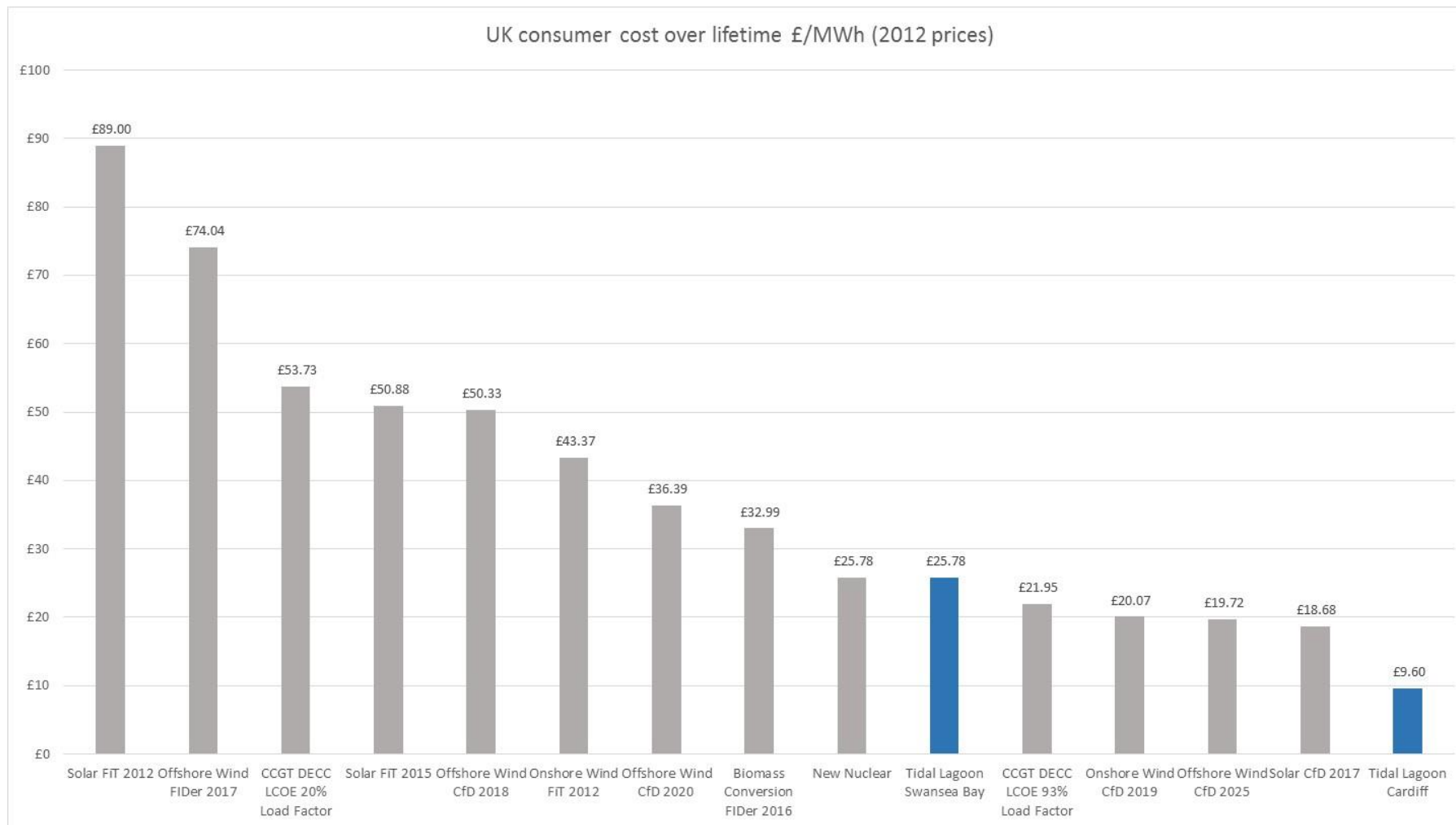
Expected Plant Closures



- 2012 capacity = 100GW
- 18 major closures
- 2017 capacity = 85GW
- Spare capacity = 1.2%
- Further closures by 2030



ENERGY - COST COMPARABILITY



A NEW TIDAL LAGOON INDUSTRY

ECONOMIC GROWTH



Domestic market for turbines and generators

£17bn

UK Construction jobs

71,000

GVA from construction phases

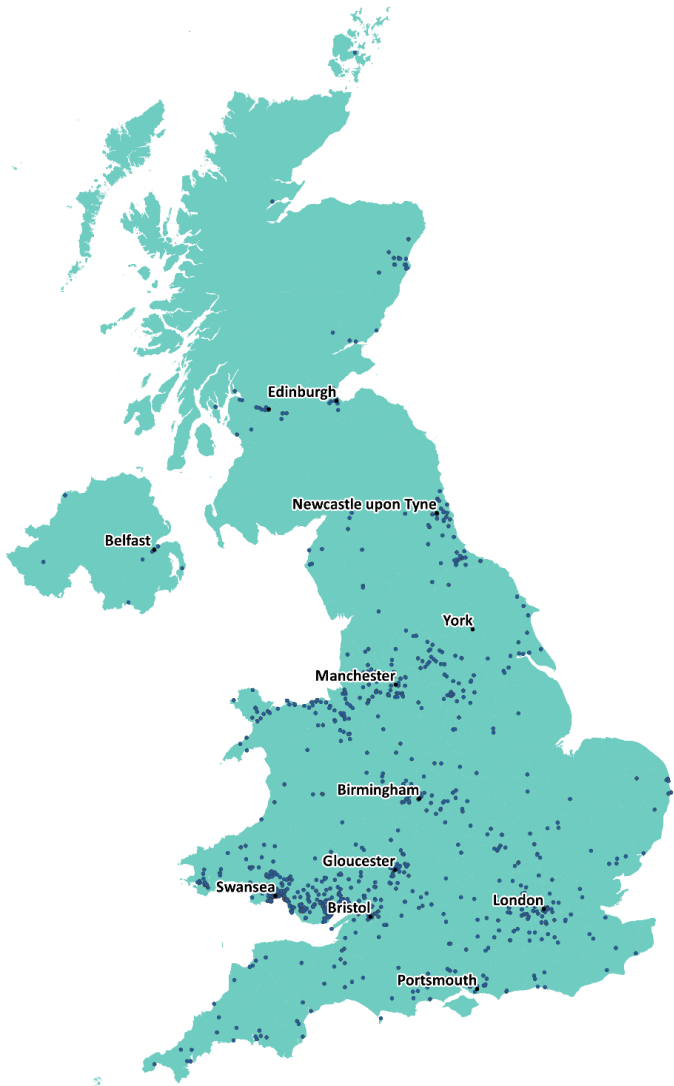
£10bn

The tidal lagoon sector can become a key driver of industrial growth in Wales and across the UK

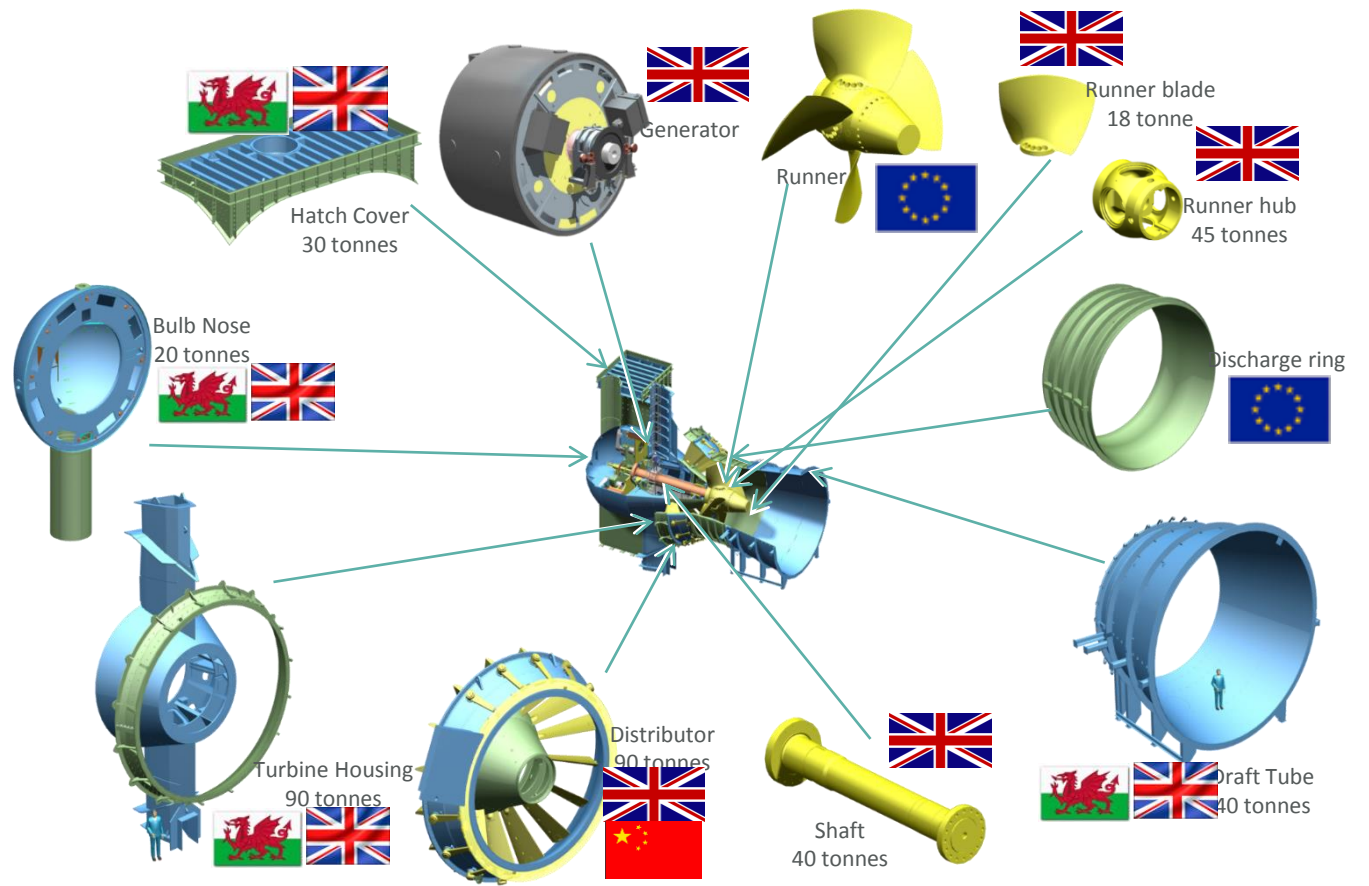


A GLOBAL INDUSTRY LED BY THE UK

A NEW BRITISH INDUSTRY



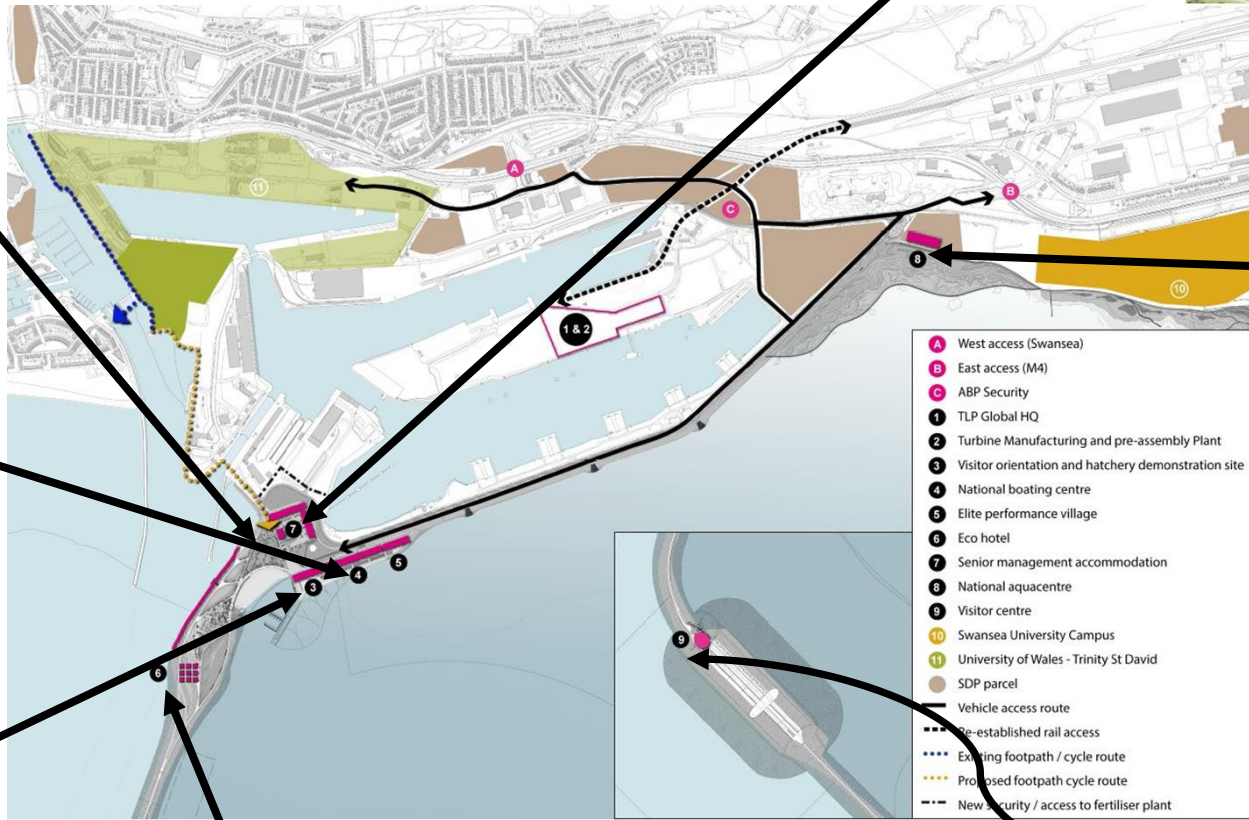
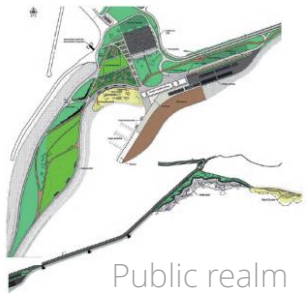
Supply chain



Turbine components



MORE THAN A POWER STATION



Luxury accommodation



National aquaculture



National Boating Centre & sports facilities



The Oyster: offshore visitor centre



Hatchery and visitor orientation



Eco-hotel



HENDRY REVIEW

Key conclusions

○ Deliver low carbon, competitive and secure energy

○ Real and substantial supply chain opportunities

○ Establish a TPA, NPS and competition

○ Learning 'pause' before full-scale fleet

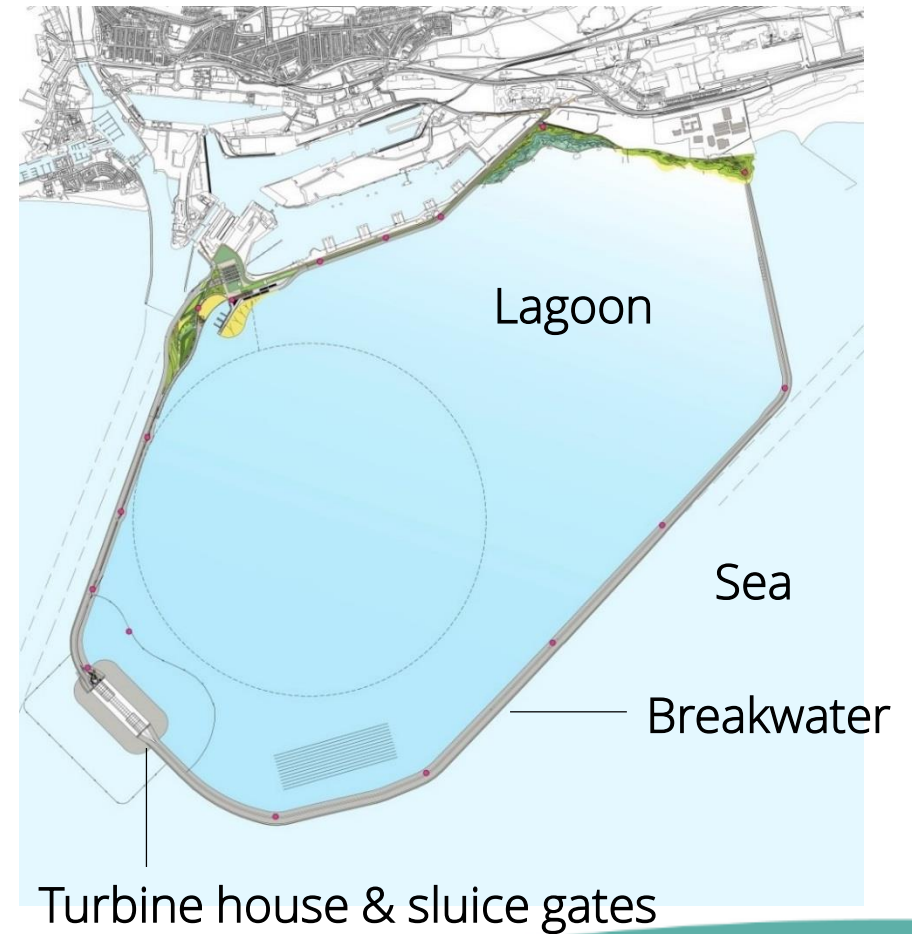
○ Start Swansea now as the 'no regrets' pathfinder



SWANSEA BAY: UPDATE

Key 1st-of-a-kind characteristics:

- The right size
- A template for future lagoons
- The opportunity to learn



SWANSEA BAY – NEXT STEPS

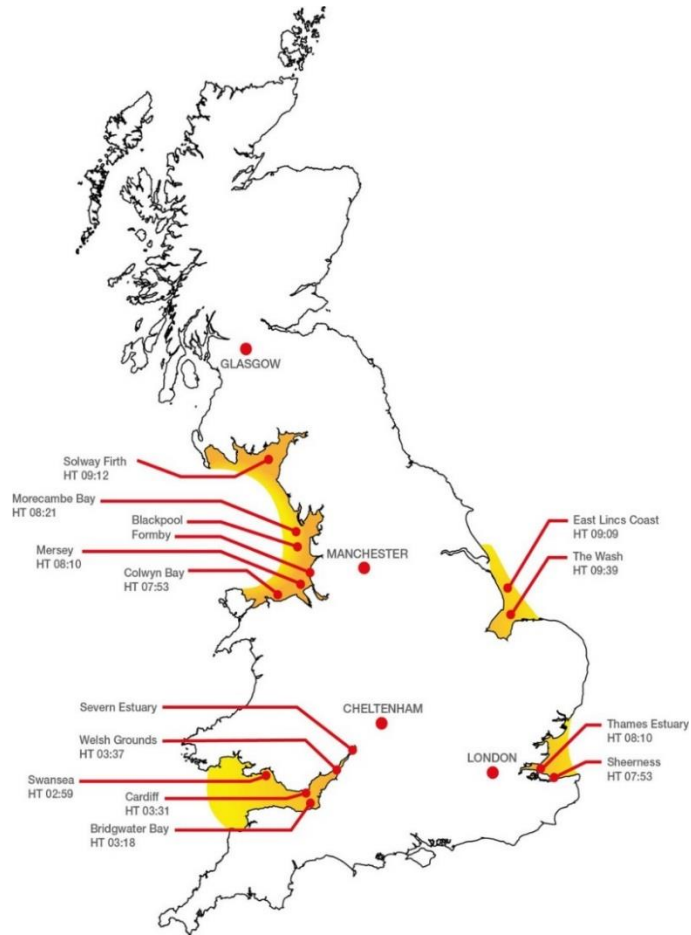
Path to starting construction

- Development Consent Order – granted June 2015
- Hendry Review – published January 2017
- We still need:
 - Marine Licence – NRW
 - Harbour Revision Order / Boundary Review – MMO, WG
 - Lease - Crown Estate
 - Contract for Difference (CfD) – UK Gov
 - Discharge of requirements and conditions
- Start on site – 2018
- First power - 2022



FROM PATHFINDER TO FLEET

A range of potential sites



- Tidal lagoon deployment zones
- Tidal Lagoon Power development work already underway
- Additional viable tidal lagoon sites
- Pathfinder project

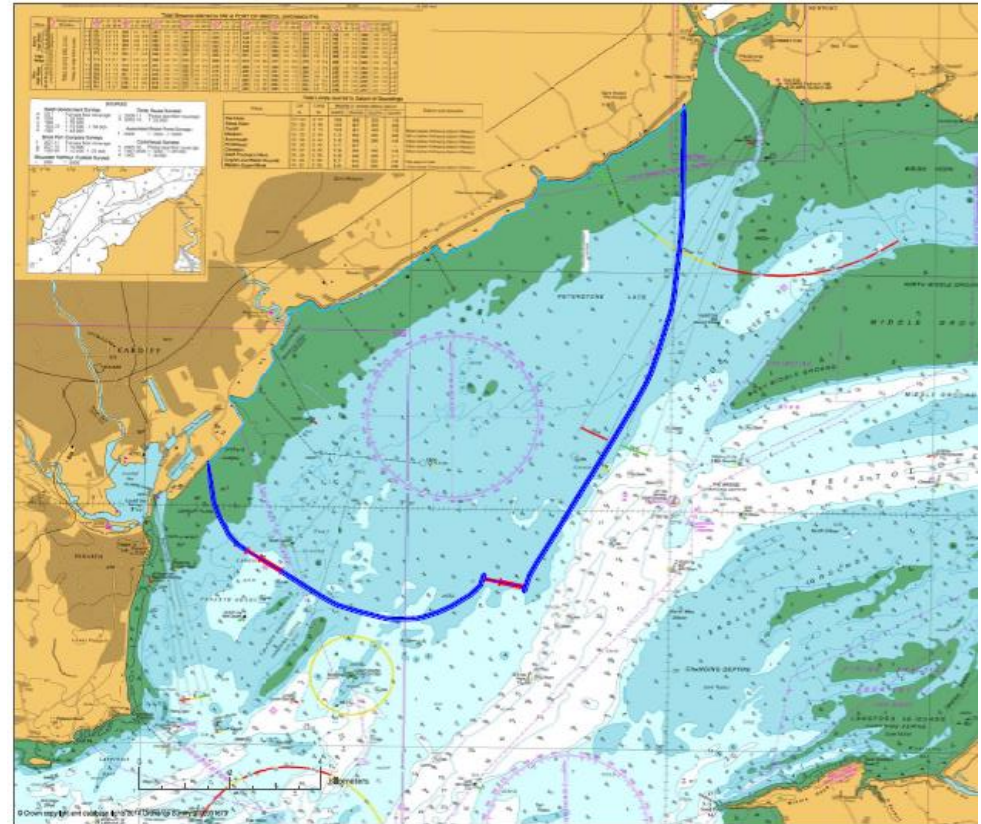


FLEET LAGOONS

Cardiff Tidal Lagoon

Indicative design:

- Breakwater: 22km
- Area: 70km²
- Turbines: 60-90
- Average tidal range: 9.21m
- Installed capacity: 1,800MW-2,800MW
- Annual output: 4TWh-6TWh pa
- Design life: 120 years
- Generating power: 14 hours each day



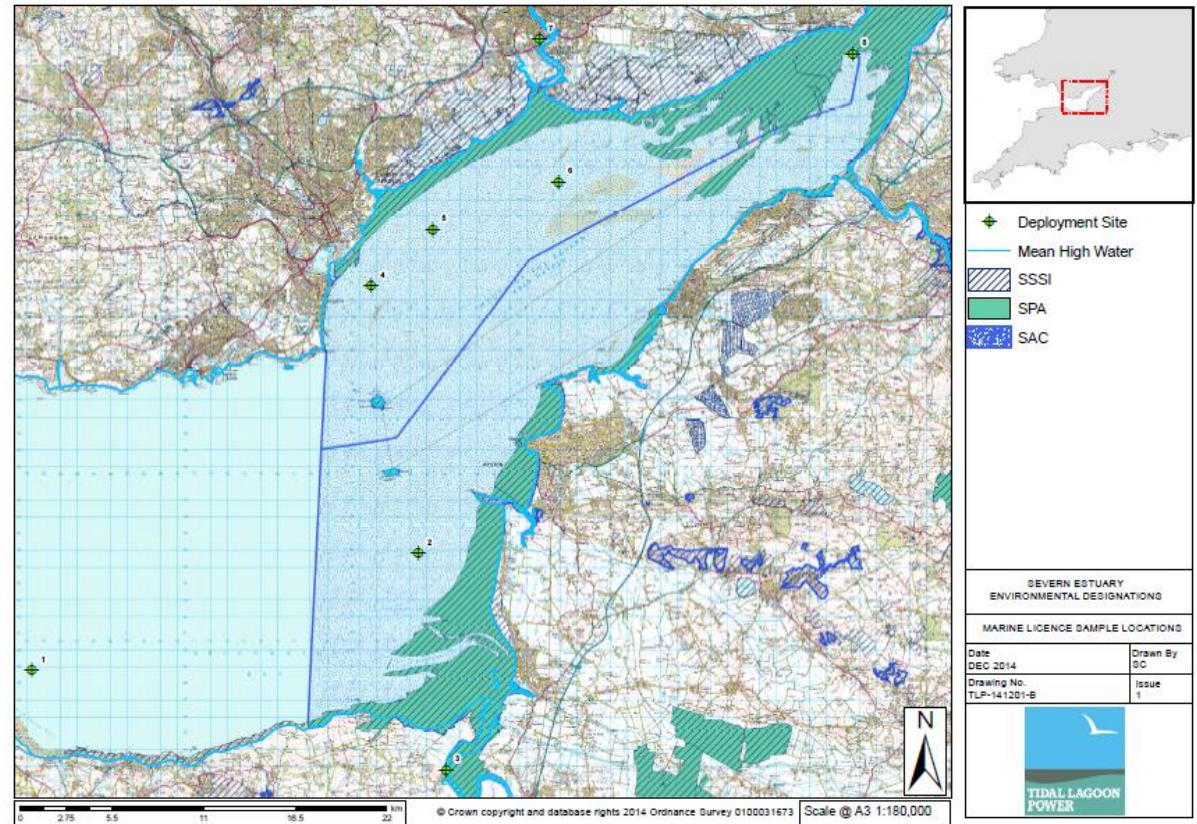
Figures are based on a single indicative design iteration and are not necessarily representative of any scheme that may be developed



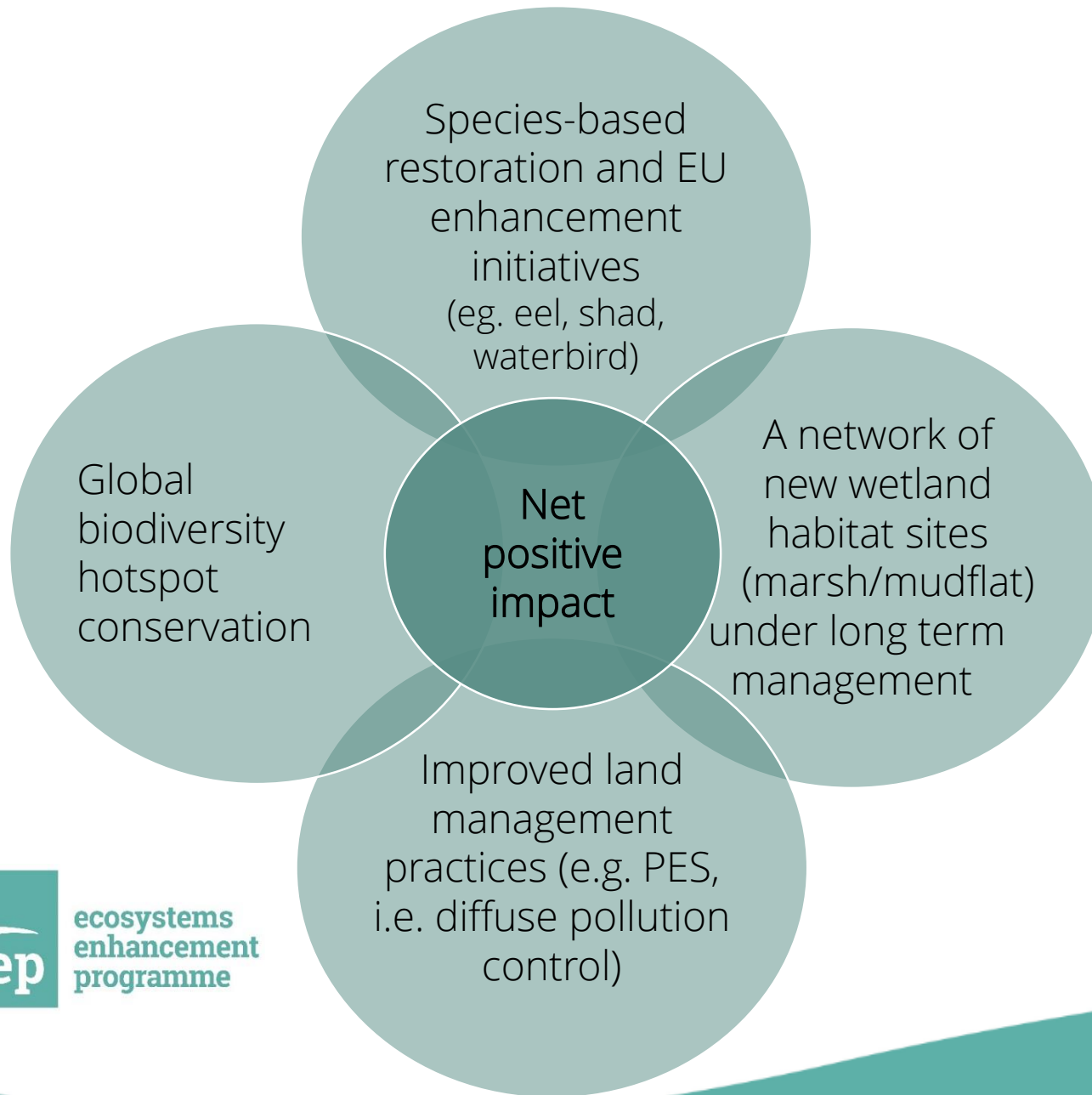
ENVIRONMENT - CHALLENGE & OPPORTUNITY

TLP's approach

- EIA
- AEMP
- Evidence Plan
- Consultants
- Expert Topic Groups
- Peer Review
- EEP



ECOSYSTEMS ENHANCEMENT



European Eel



Redshank



Mudflat Creation





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