Leveraging Oil and Gas Subsea Expertise into Offshore Renewables

Our Experience
Serving our clients since 2010

Our Techniques
State of the art analysis and engineering

Our Organisation
Experts in the field of Subsea Engineering
AGENDA

• ABOUT PERITUS
• WHY RENEWABLES?
• FIXED WIND
• FLOATING WIND
• MARINE ENERGY
• GENERAL MARKET DIFFERENCES
• BARRIERS TO ENTRY
Why Peritus?

- Highly experienced people – recognised and respected in the industry
- Innovative technology
- Global knowledge networks
- Nimble flexible approach

• Formed in 2010
• Global Company
• 100% owned by Sapura Energy
• Full SURF design capability
• Extensive experience in:
  - advanced analysis
  - design for geohazards
  - challenging environments
GLOBAL SPREAD OF PROJECTS
WHAT ARE WE TALKING ABOUT?

• Fixed Bottom Wind
• Floating Offshore Wind
• Wave and Tidal Energy

Not

• Solar
• Nuclear
• Hydrogen
• CCS
WHAT MIGHT IT LOOK LIKE?

- Technology and data creating huge additional value, unlocking opportunities
- Supply chain is key to MER UK. Diversification and export opportunity
- Blue hydrogen: Natural gas converted to H2
- Green hydrogen: Generated offshore from renewable power
- H2 transported to shore using redundant oil/gas infrastructure
- Platform electrification from nearby windfarms
- H2 storage in reservoirs
- CO2 from industrial activity transported
- CO2 used for enhanced oil recovery to extend field life and maximise recovery
- Sequestering and storing the CO2
- Stand-Alone Fixed bottom Windfarms
- Floating Windfarms
- CO2 storage in reservoirs
- Clean Vessels
WHY ARE WE TALKING ABOUT IT?

**Long-term oil demand forecasts**

- **IEA Sustainable Development scenario**
- **Shell’s Sky scenario**
- **IEA Stated Policies scenario**

*SOURCE: International Energy Agency and Shell*

**FIGURE 6**

*Global average annual energy investment by type and scenario*

- **Fossil fuels without CCUS**
- **Renewables**
- **Electricity networks**
- **Nuclear and other**

*SOURCE: International Energy Agency*
WHY ARE WE TALKING ABOUT IT?

O&G Majors currently investing ~3% CAPEX into renewables

FIXED WIND MARKET

Investment in wind power generation
£2.5 Trillion between 2017 and 2040
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<th>Oil and gas track record in offshore wind</th>
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HIGH POTENTIAL AREAS FOR SUBSEA COMPANIES

- Project management
- Array cables
- Substation structures
- Turbine foundations
- Secondary steelwork
- Cable installation
- Installation equipment
- Installation support services, and
- Maintenance and inspection services.
FLOATING MARKET

Source: Carbon Trust and ORE Catapult, 2018
EMERGING MARKET – DIFFERING FORECASTS

Source: BVG Associates

- Monopile
- Non-monopile steel
- Concrete
- Floating
HIGH POTENTIAL AREAS

- Mooring Design
- Dynamic Cable Design
- Policy and Consenting
- Supply Chain Capability / Capacity
- Port Capability
- Offshore Grid Connection – Concepts
- O&M Strategy
- Cost Modelling / Market Analysis / Commercial
MARINE ENERGY – A different scale

**TIDAL**

**WAVE**

Global Tidal/Wave Energy – Source ocean energy Europe – March 2020
MARINE AUSTRALIA

VERY HIGH WAVE POWER – Enough for ~11% of Aus Electrical Demand

GOOD TIDAL POTENTIAL
HIGH POTENTIAL AREAS

- Policy and Consenting
- Supply Chain Capability / Capacity
- Port Capability
- Foundation Design
- Cable Protection
- Landfall Design
- O&M Strategy
- Cost Modelling / Market Analysis / Commercial
## MARKET DIFFERENCES

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<th>AREA</th>
<th>O&amp;G</th>
<th>RENEWABLES</th>
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<tr>
<td>VOLUME</td>
<td>One off/Bespoke</td>
<td>High Numbers – repeatable. Serial production Small savings add up</td>
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<td>SPEND</td>
<td>Front weighted</td>
<td>Back weighted – Small until FID</td>
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<tr>
<td>CULTURE</td>
<td>Incremental innovation</td>
<td>High level - to drive down cost</td>
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<td>RISK</td>
<td>Tends to rest with developer</td>
<td>Pushed down onto supply chain as much as possible</td>
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<td>Off Balance Sheet</td>
<td>3rd Party Finance</td>
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BARRIERS TO ENTRY

- TRACK RECORD
- COST
- RISK-averse INVESTORS
- CONTRACT STRUCTURE
- SUSPICION
CONCLUSIONS

O&G isn’t going away anytime soon

Majors are increasing investment and diversification into renewables

Subsea engineering companies have the skills to add value to renewables projects

But… the markets are different

Dedicated renewables offering is required