

# **Norfolk Vanguard and Norfolk Boreas Offshore Wind Supply Chain: Opportunities and Expectations Workshop Report**

20th November 2019  
Energy Skills Centre, East Coast College,  
Lowestoft Campus, Rotterdam Road,  
Lowestoft, NR32 2PJ



**VATTENFALL**





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# Meeting Summary

## Enhanced collaboration and proactive stakeholder engagement can enable enhanced local content in the new generation of offshore wind farms

Vattenfall has conducted a number of supply chain meetings with UK companies since 2018 in relation to Norfolk Vanguard, Norfolk Boreas and Thanet Extension, our UK pipeline of projects. One-to-one meetings, “meet-the-buyer” sessions, and workshops bringing hundreds of stakeholders together enable a broad and deep exploration of opportunities and challenges currently faced by the offshore wind sector.

The emerging understanding is:

- There is a collective desire to deliver innovative, efficient, sustainable advances in technology for the next generation of renewable energy generating projects, while also contributing to the goals of the Offshore Wind Sector Deal, UK industrial strategy and clean growth challenge.
- Both established and potential entrants to the supply chain would benefit from longer term planning and a better understanding of how the sector works as a whole, to boost preparations for winning, deliverable tenders.
- The Offshore Wind Sector Deal target of 60% UK content can be achieved by 2030 providing there is top-down and bottom-up commitment and action across the sector. For example, Government can stimulate a business environment conducive to long-term investment, developers can work together better and engage earlier, with a collaborative and more joined-up supply chain.

Vattenfall, acting as a facilitator, is attempting to address this feedback as far as possible, for example by initiating information-giving on potential opportunities very early, sharing our contract strategy, providing clarity on terms and conditions, and committing to open book procurement and facilitating sector wide collaboration.

The event described in this supply chain report sought to focus on specific programme limited opportunities – a function of procurement and

construction being done project by project, rather than utilising a portfolio or bundling approaches to procurement. Globally-active Tier 1 companies are currently better able to manage the peaks and troughs of this system than more locally based SMEs.

For smaller manufacturers or those with ambitions to enter the sector to deliver what the Tier 1 companies (T1) require, engagement with T1 tends to be after developers are awarded Contracts for Difference (CfD) for their projects, and final investment decisions are taken. This can result in insufficient time for SMEs to meet T1 expectations.

Our purpose in convening this meeting was to introduce T1 companies to local (East Anglia and UK) SMEs with the potential and capacity to deliver some of their needs, and to hear directly about their capabilities. Similarly, in order to build effective collaboration, T2 and SMEs need to understand how T1s operate, their interests, needs and engagement timeline. Finally, all participants considered how it might be feasible to reach the target of 60% UK Content by 2030, as set by the Offshore Wind Sector Deal for 2030. A clear understanding emerged that developers cannot achieve that target singlehandedly. Rather, a more collaborative approach, which moves away from the recurrent cycle of ‘bid, award and construct’ is needed.

The meeting successfully achieved its purpose, and we are grateful to participants for their contributions and involvement. Below we summarise messages / calls-to-action which emerged from the meeting, and which are aimed at key offshore wind stakeholder groups. The full meeting presentations and dialogue session outputs are in the appendices at the end of the report.

Vattenfall encourages stakeholders to reflect on the messages delivered by meeting participants, and will facilitate ongoing dialogue, including via our LinkedIn supply chain group<sup>1</sup>.

<sup>1</sup> Vattenfall's LinkedIn supply chain group: <https://www.linkedin.com/groups/8790643/>



## Key messages / asks to Government

### Provide a better business environment for investment

Provide a clear framework and plan for the energy transition including:

- Encouraging collaboration / support to address / mitigate current and potential / future consenting barriers (e.g. radar, marine spatial planning, local onshore infrastructure, rural transport [road] network)
- Better clarity on pipeline of interconnectors, grid reinforcements / sector coupling
- Support development (and the Supply Chain) with annual CfD rounds
- Smooth the boom & bust cyclical nature of the sector to encourage sustainable long-term investment in the UK – encourage manufacturing companies to the UK
- Do not create / implement policies that counter delivery of binding C-reduction targets – encourage green growth & the supply chain
- Don't scrap CfD's – unless there is another means of encouraging / requiring local content

### Encourage and monitor (and “police”) local content

- Accept higher cost for more local content - cost pressure pushes manufacturing industry out of the UK/EU
- Consider ways to prove and measure UK content? Long term plan, supported by policing

### More support for UK companies when working/selling overseas.

### Support for and clarity on rules for microbusinesses and SMEs

e.g. IR35 and flexibility for project based employees/consultants

### Invest in skills – there are global shortages of suitably skilled workers looming

- More design and tech courses
- Encourage more women into engineering
- Make climate change a core element of the curriculum. Not just to be green but to promote future career paths. Follow the science. Lead don't follow

## Reflection from Vattenfall

Many of the points and asks here align with the aims of the Offshore Wind Sector Deal, showing real commitment and motivation on the part of all sector stakeholders to engage with the Offshore Wind Sector Deal, and Clean Growth challenge in the UK, and play their role in driving actions forward, implementing UK Government

Policy. In turn, the sector calls for assistance to establish favourable conditions for investment. There is also a suggestion that more should be done to support local companies (i.e. in counties, and regions closest to / hosting offshore wind farm developments, rather than UK companies). Targeted, cluster development might help create complementary local hubs of expertise and manufacturing / supply.



## Meet Joanna

We know that the climate smarter solutions of tomorrow will be shaped by the bright minds of today. Our journey to engage with Norfolk's future workforce is actively underway. This is University Technical College Norfolk (UTCN) student Joanna's story.

<https://www.youtube.com/watch?v=aMsBh4Q4hKU&feature=youtu.be>

## Key messages / asks to Developers

### Support / award framework agreements

We need to project approximately 1,000 foundations in order to build a UK facility

### Take procurement decisions early & engage early

- Engage/commit early/ASAP, this will encourage investment, planning and innovation
- Gather preferred suppliers together to develop solutions collaboratively (HKZ approach)
- Clarify work packages and potential T1 suppliers
- Early engagement with local supply chain – local knowledge/logistics for delivering package of works
- Early engagement in design – bringing best practice/lessons learnt from previous HVDC projects
- Be more consultative and open to all stakeholders. Support onshore enterprise as well as offshore – for example around onshore project substation (furthest from coast, as well as at coast)

### Standardise Codes of Practise, Skills & HSE requirements across markets

**The supply chain would like more collaboration among developers e.g. one procurement portal for all developers**

**Why depend so much on T1's?** They are not too big to fail. Expensive and bureaucratic

## Reflection from Vattenfall

A wide range of views reflect the diverse characteristics of participants. For example the call for framework agreements, from a T1 supplier suggests there is aspiration to invest in significant manufacturing capacity in the UK.

Other suggestions go further, all developers should streamline procurement and work together to facilitate local investment. Others challenge developers to encourage greater collaboration among SMEs and to moderate the role of T1 companies.





## Key asks to T1

### We want to understand you better

- More transparency, and information-giving to enable SMEs to understand the interests, needs, motivations of T1 companies
- Greater engagement in a collaborative environment
- Share your T&Cs
- Hold similar events like this where T2 and SMEs etc. are invited

### Help SMEs to work with you

- Contractual obligation for T1's to use local content but local content needs to be defined (East Anglia or UK)?
- Personnel breakdown in relation to local content will help to document and support a bid
- Share your skills plans for local labour with councils and training providers as well as local companies
- Be more flexible with suppliers. Contractual terms to be fair and reasonable. Aim for win/win claim free
- Develop an understanding of the 'hidden cost' of tendering. Frequently this risk is pushed to the party least able to bear it

There are currently no fabrication facilities in the region on a scale to be able to compete.

Will future developments actually require a CfD and if not will that mean that UK content targets disappear?

## Reflection from Vattenfall

On the whole the comments here reflect a desire to engage more constructively and profitably with T1 companies, however, there is also some

scepticism about the motivation of T1s to work with SMEs. Potentially, more dialogue can move parties towards win : win outcomes.



## Our key ask of Local Suppliers

Is there a desire for suppliers to collaborate?

Do not tick all boxes in tenders - must be able to provide proof!

What is the trigger point at which you will feel confident to invest? E.g. in skills and training/new workforce.

How will you engage with education/are you partnering with local companies, providing mentors, work experience, graduate schemes etc.

How will you develop a training package to transfer oil and gas personnel to wind industry? Much of the supply chain not yet done this - there are opportunities here, probably more in O&M than construction.

Buy survey vessels/autonomous vessels/recruit and train staff.

Train grads to work offshore.

## Reflection from Vattenfall

Across the industry we need to improve communication from the top down. There are many initiatives around partnering and skills but these are often confusing and lead by different Groups (OWIC/OWGP/ClustersOREC) etc.

Vattenfall will pass this message back at the highest level that we need clear routes into wind, and will continue to work with others collaboratively to develop pathways into the sector that enable entry at different points in individuals' careers.





## Introduction

On 20th November 2019, participants from local agencies, Tier 1 companies and local SMEs joined Vattenfall at its supply chain workshop, held in conjunction with the East of England Energy Group's Offshore Wind Week East Anglia. The workshop was held at the Energy Skills Centre at East Coast College, and we'd like to thank all the staff involved in organising our hospitality for the day.

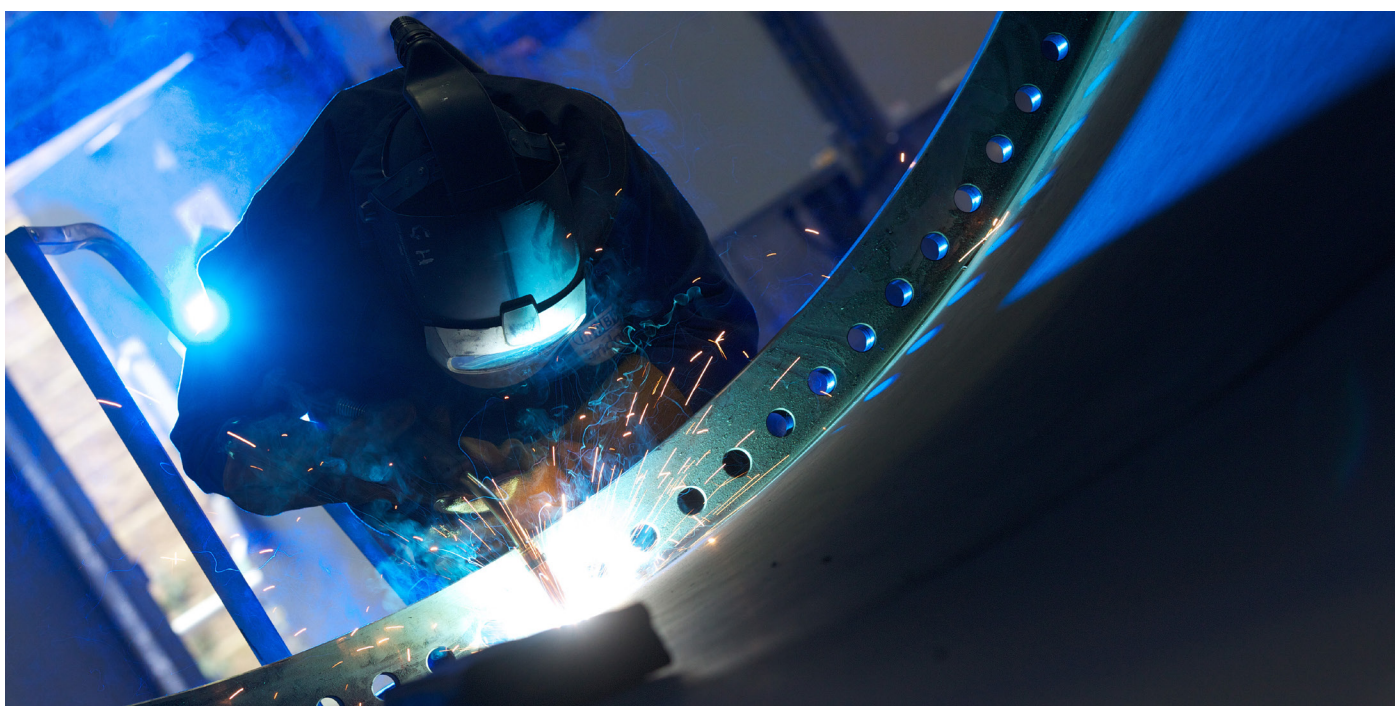
This report provides an overview of the workshop and captures the key discussion points raised by all parties. This event builds on ongoing discussions with stakeholders in the supply chain, including events facilitated by Vattenfall in September 2018, December 2018 and May 2019.



## Purpose of the meeting

The purpose of the workshop was to bring together East of England Small and Medium Enterprises with an interest in the offshore wind supply chain, T1 companies and larger, established offshore wind farm supply chain companies, representatives of National and Local Government, and organisations supporting local growth, productivity and employability initiatives, and developers, to:

- Consider opportunities to increase participation in the Norfolk Vanguard and Norfolk Boreas projects, particularly from SME's in the East of England and the UK, in line with the Offshore Wind Sector Deal aspirations and Vattenfall's sustainable procurement requirements.
- Listen to a range of companies, across all categories & sizes about how we can collaborate better to achieve this
- Explore the challenges of 60% UK Content, 40 GW or 52GW by 2030 along with a globally constrained market
- Identify needs and gaps in terms of skills, staffing levels, scopes & knowledge so that:
  - Vattenfall are informed,
  - the supply chain, with support from local Econ Dev Stakeholders are encouraged to grow, and are equipped to realise opportunities from offshore wind.
  - Local suppliers are equipped and ready for the first scopes to be released after consent.



## Participants & Contributors

The event was attended by companies that have expressed an interest in providing services to the Norfolk Vanguard and Norfolk Boreas projects and/or that represent service areas that could be delivered by local companies. As with Vattenfall's other supply chain workshops, this was not a "pre-selection" process and did not prejudice the Vattenfall procurement process in any way. The style of the workshop was informal with a focus on enabling productive conversations. The aim was for collaborative exploration involving all participants into opportunities and barriers which can facilitate / hinder an enhanced, sustainable UK offshore wind supply chain. Participants were asked for their feedback and key messages to key Sector Stakeholders. In this way, all participants became contributors to the event, and to this report, and we'd like to express our thanks to participants for their candid and open views. To facilitate discussions, participants were grouped on tables of 8-10 people, all sharing interests in the same package of works. At each table there was one or possibly two T1 or T2 companies. Also, at each table, to provide relevant detail and context

to the dialogue, there was the relevant category manager or engineer from Vattenfall. Table group discussions accordingly were focussed on the following overarching work packages: Wind turbine Generators (WTG), Foundations (FOU), Transmission / Grid (Grid) and including cables, Installation & Logistics (I&L - relating to foundations and inter array cables), Operations and Maintenance (O&M).

A list of participants and table groups can be found in Appendix A.

## Sharing this meeting Report

Please share this report. It is intended to be a resource for companies interested in supply chain opportunities, as well as individuals and organisations working towards supporting the growth of the sector, and an enhanced, sustainable, skilled workforce. This report is available as a download on the Norfolk Vanguard and Norfolk Boreas web pages, along with other resources and information on the project.





# Agenda

Time	Session	Notes
2.30	<b>Arrivals &amp; coffee</b>	Meet & greet, informal networking Take seats by 3.00pm
3.00	<b>Welcome &amp; Introduction to each other and to Vattenfall</b>	Kathy Wood, Vattenfall Head of Offshore Wind Consenting Catrin Ellis Jones Vattenfall's Norfolk Vanguard and Norfolk Boreas Stakeholder Engagement Manager
<b>Offshore Wind Supply Chain: Opportunities and Expectations</b>		
3.10	<b>UK Government perspective on Supply Chain Opportunities and Expectations:</b> the Offshore Wind Sector Deal, Contracts for Difference and Supply Chain Plans	Rob Lilly Vattenfall – UK Procurement Manager
3.25	<b>Vattenfall Wind Farm Design – what is our strategic focus?</b>	Wouter van Helden Offshore Wind Park Roadmaps & Design Engineer
3.35	<b>O&amp;M – innovation for optimised operations</b>	Hernan Vargas Offshore Wind Operations and Systems & Design Engineer
3.45	<b>Project and cluster expectations – cooperation in practise</b>	Rob Lilly
4.05	<b>Reflection &amp; plenary feedback</b>	Reflection at tables and plenary Q&A session
<b>Planning our collaboration – programme mapping, information needs, next steps</b>		
4.20	<b>Workshop session – working to Vattenfall's Norfolk projects' programme:</b> <ul style="list-style-type: none"> <li>Identifying supply chain interests &amp; needs, potential barriers, challenges &amp; solutions</li> <li>Action planning</li> </ul>	Facilitated / structured working session.  Small groups arranged according to main packages. Each group will be joined by a Vattenfall category manager to ensure appropriate information is provided to enable discussions and decision-making. The worksheets provided will facilitate productive working session, which will identify clear, scheduled inputs from Vattenfall and Supply Chain Partners.  The output will be to agree the next steps, including the next meaningful liaison with Vattenfall.
5.00	<b>Feedback from groups – reflections relevant to interfaces, key requirements, innovative solutions</b>	2-3 key points shared by each group – to get a flavour of package discussions (including interface challenges & solutions)
5.20	<b>Summing up, thanks and close</b>	Rob Lilly

## Post-workshop agenda

5.20	<b>VF Manager &amp; T1 mini-surgeries</b>	<p>Vattenfall &amp; T1 company representatives are available for 3 x 10 minute 1-2-1 discussion sessions.</p> <p>Participant interested in taking advantage of these sessions to enable specific follow-up discussions and decision-making.</p>
6.00	<b>Energy Skills Centre Launch &amp; Reception</b>	<p>Participants are cordially invited to hear a short welcome to the brand new Energy Skills Centre from the Principle, and to join a short tour of the facilities (optional).</p>
6.30	<b>Skills and Apprenticeships Information Point</b>	<p>Vattenfall to host a display and information exchange on skills and apprenticeships opportunities and developments to enable our Net Zero workforce of the future.</p>



# Offshore Wind Supply Chain: Opportunities and Expectations

## An overview of presentations and key point

The presentations were intended to provide context for and to stimulate discussions of subsequent workshop sessions. The following paragraphs will be most useful if read in conjunction with the PowerPoint presentation slides provided in full in Appendix B.

### Opening remarks

*Kathy Wood – Head of Offshore Wind Consenting, Vattenfall*

*Catrin Ellis Jones – Stakeholder Engagement Manager, Norfolk Vanguard and Norfolk Boreas, Vattenfall*

The opening remarks from Kathy Wood described Vattenfall's aim of being fossil free within one generation. She talked about Vattenfall as one of Europe's largest producers of electricity and heat, and specifically its investment in offshore wind in the UK. She noted the great leaps made over recent years in innovation, enabling the deployment of larger turbines, larger wind parks in further-offshore locations, capturing stronger and more constant wind resources, as well as associated advances in transmission technology.

All of this innovation heralds a new generation of offshore wind farms which are able to generate, effectively base-load power, at scale, and at ever more competitive cost to the UK consumer. Vattenfall anticipate the Norfolk Vanguard and Norfolk Boreas Offshore Wind Farms will deliver technological advances which contribute to the dynamic pace of innovation in the sector, helping to maintain the UK's global leadership in offshore wind farm deployment and intellectual capital.

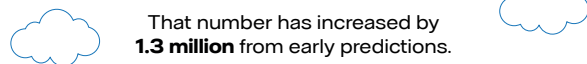
Catrin then described the Offshore Wind Sector Deal. This is a partnership between the government and the offshore wind sector, which will help deliver on key pillars of the UK Government's Industrial Strategy to build a Britain fit for the future, and to support our transition towards Net Zero emissions by 2050.

The five foundations of the Industrial Strategy – an innovative economy; a business environment for enhanced productivity and competitive export capacity, upgraded energy infrastructure, opportunities for local growth, including in coastal counties and investing in the workforce to encourage inclusivity, diversity, up-skilling and progression – were each described in turn in relation to how even during their development phases, of the Norfolk Vanguard and Norfolk Boreas projects are paving the way to collaboration that can help enhance the opportunities for the locality, the region and the UK that can follow from these projects and the multi-billion pound investments required to deliver them.

## 3.9 million

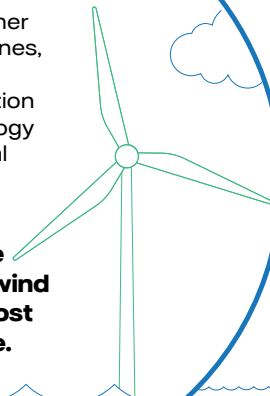
That's how many homes we expect Norfolk Vanguard and Norfolk Boreas to power.

That number has increased by **1.3 million** from early predictions.



Stronger winds further out to sea, taller turbines, longer blades, cutting edge innovation – advancing technology and environmental understanding all play their part.

**We can capture and convert more wind energy at lower cost than ever before.**



**Leading the way to a fossil free future**



This meeting was convened as a direct result of requests from participants at previous Vattenfall local supply chain events, aimed at companies wanting to learn more about supply chain opportunities in the offshore wind sector. Vattenfall, and other developers tend not to introduce SME's and T1 / T2 companies to each other until much later in the development process, with consent and CfD in the bag, and some T1 companies already signed-up. However, it is noted that smaller companies, or those new to the sector need more time to prepare, to gear up for the opportunities that are coming. Furthermore, there is a greater pressure on all in the sector / wishing to enter the sector to go beyond current 50% UK content targets, and move towards the 60% by 2030 aspiration of the Offshore Wind Sector Deal. That means developers and T1s alike are going to have to look harder for collaborations with UK and local companies to reach those goals.

Other asks made by the (potential) supply chain to date include:

- more knowledge about Vattenfall's pipeline,
- Vattenfall's contracting strategy,
- information about how to register for the tendering process,
- information about Terms and Conditions,
- transparency about the scoring process during the selection of successful tenders

As a result of these types of requests, Vattenfall intend to be open in our interactions with the supply chain. Due to the wide range of opportunities, scopes and suppliers Vattenfall wants to avoid being too prescriptive in our approach but will send guidelines around HSE, legal and payment. The best approach for both parties around contractual risk and interfaces should ensure the appropriate level for all involved. This could be open book, so costs are jointly managed and agreed with a fixed margin, lump sum or reimbursable. Through the provision of information early and by encouraging collaboration Vattenfall aim to achieve more sustainable procurement and operations.



May 2nd, 2019 Supply chain meeting in Norwich, attended by representatives from around 200 UK companies to discuss opportunities associated with Vattenfall's UK pipeline, O&M opportunities on our existing projects and export opportunities. At this event, presentations were also given by organisations supporting the Sector and its supply chain, nationally and locally, including OWIC, NALEP, Norfolk County Council.

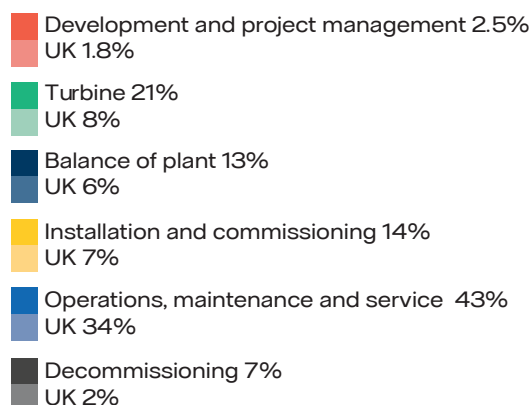
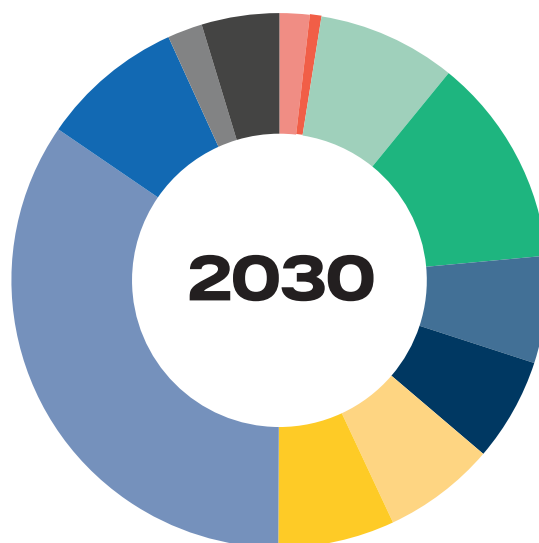
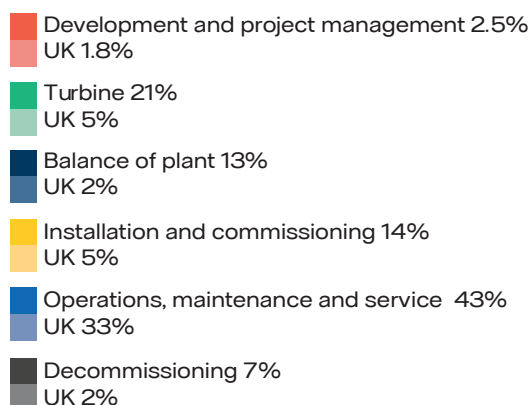
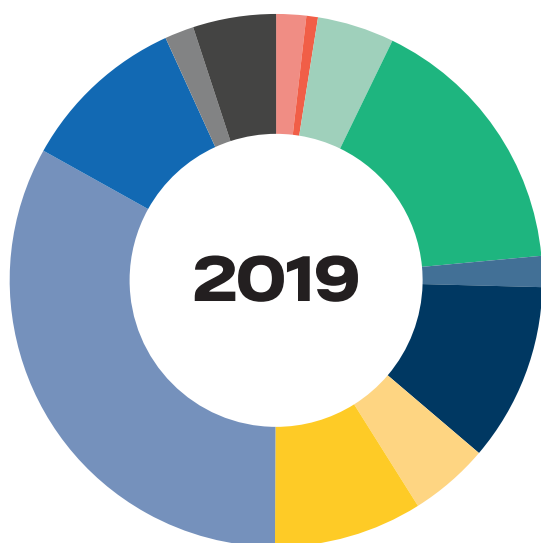
## UK Government perspective on Supply Chain Opportunities and Expectations

*Rob Lilly – UK Procurement Manager, Vattenfall*

Rob Lilly provided an update on the UK offshore wind supply chain. According to 'Expert Nation', in the last year UK firms have won multi-million

pound contracts supplying various components for offshore wind farm development. Some of the opportunities for suppliers on Vattenfall's Norfolk Vanguard and Norfolk Boreas projects were highlighted, and in particular work-packages that offer the most immediate potential for increasing UK-content.

Source: BVG Associates



In order to achieve 60% UK content, each category of works needs to have enhanced UK content. This is not just blades and turbines, we also need a significant proportion of the foundations to be fabricated in the UK. We need an HV cable factory, and we need a greater UK footprint for marine contractors.

**300**  
Nacelles

 **2**  
factories

 **600**  
employees

**900**  
Blades

 **4**  
factories

 **4000**  
employees

**300**  
Towers

 **6**  
factories

 **1800**  
employees

**200**  
Monopiles

 **4**  
factories

 **1200**  
employees

**200**  
Transition Pieces

 **4**  
factories

 **800**  
employees

Jackets

 **4**  
factories

 **2000**  
employees

Array Cables

 **3**  
factories

 **900**  
employees

Export Cables

 **2**  
factories

 **600**  
employees

Operations &  
Maintenance

 **10**  
factories

 **1800**  
employees

 **180**  
jobs/GW for each  
additional project

Reaching the Government's target of 40GW of installed offshore wind capacity, and attaining 60% by 2030, presents real socio-economic opportunities, as shown here. A number of new factories and fabrication plants would need to be established, creating many hundreds of jobs. To attract this investment, a more consistent supply chain workflow is required.





## Vattenfall Wind Farm Roadmaps Strategy

Wouter van Helden – Offshore Wind Park Roadmaps & Design Engineer, Vattenfall

Wouter van Helden from Vattenfall's international wind park design team explained a new streamlined approach to design: creating a unified approach to developing all of Vattenfall's offshore wind farms will help create world class products across the whole portfolio. This shows a longer-term perspective on development, working closely with suppliers, and prevents reinvention between projects. The learnings, improvement ideas and technologies are therefore shared across all projects between Vattenfall and the supply chain.

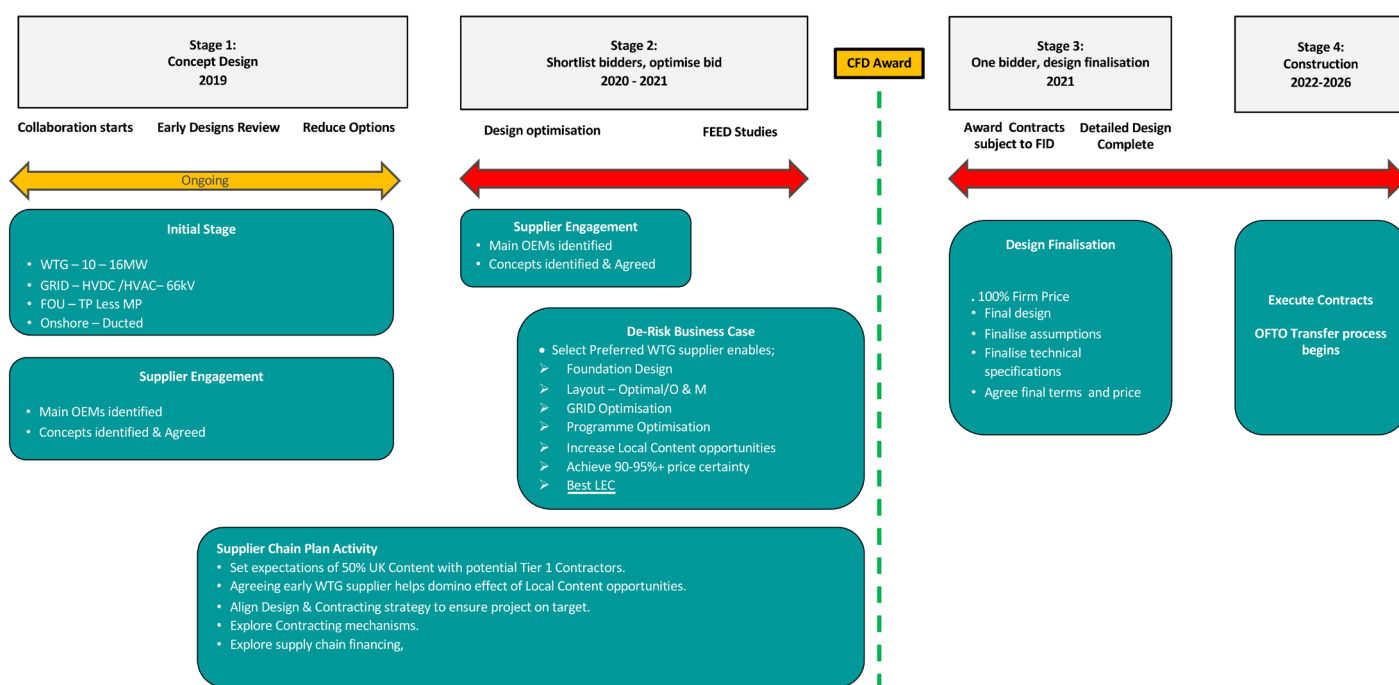
## Project and cluster expectations - cooperation in practise

Rob Lilly – UK Procurement Manager, Vattenfall

This session focussed on Supply Chain Plans, and how the requirements of the CfD process are adapting to reflect better the country's interest and needs, as defined by the Industrial Strategy and echoed in the Offshore Wind Sector Deal. An overview of Vattenfall's pipeline was considered, to show where current and future potential opportunities across Vattenfall's markets follow one another. It was pointed out that for the supply chain, the opportunities are not only with Vattenfall, but also with the sector as a whole, which ultimately will be stepping up efforts to reach the Sector Deal targets of 30GW by 2030, or the UK Governments targets (as of December 12th 2019) of 40GW by 2030, and beyond that to achieve Net Zero by 2050.

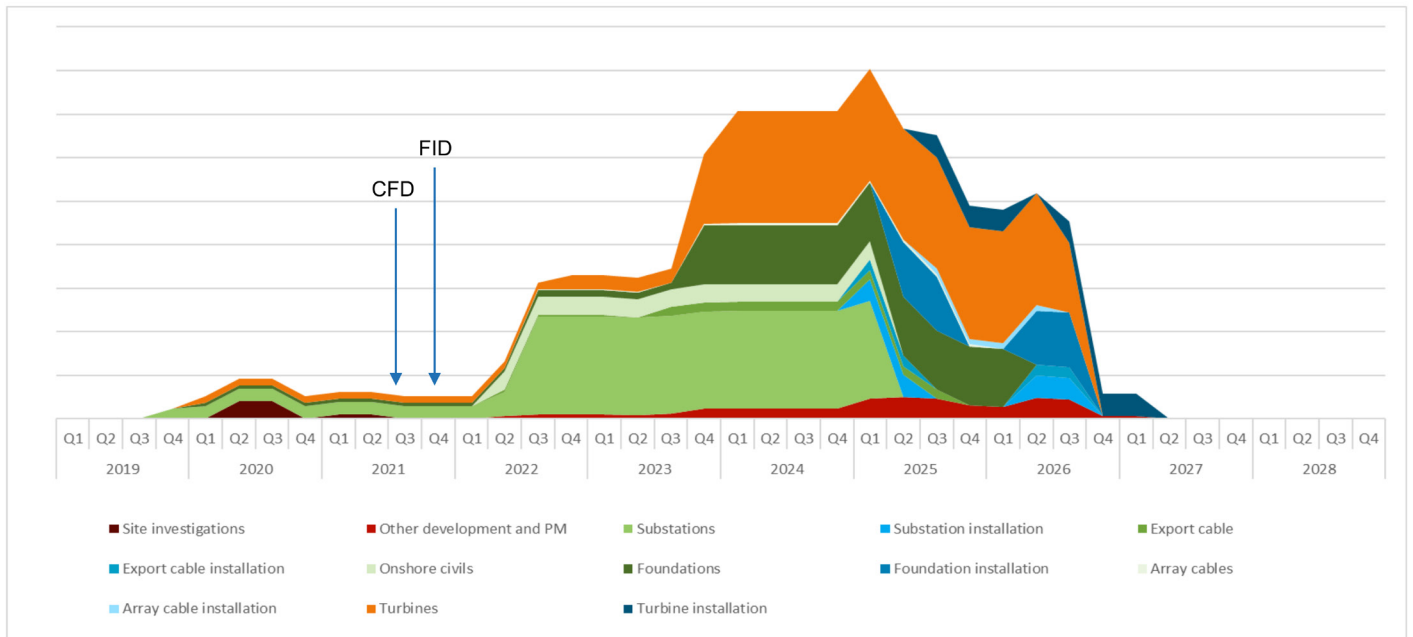
Vattenfall's procurement approach was mapped out – again providing visibility in advance for new entries and existing elements of the supply chain.

## Overall Procurement Approach



A high level view of the Vattenfall approach to Project procurement.

The schematic is from an internal management document. It is shared here in the interests of transparency on how we engage, and on our strategic procurement objectives.



This schematic shows the current spend profile of projects and the supply chain. This could be smoothed with a more *Collaborative portfolio approach*, rather than the “feast or famine” that ensues from *project by project* investment. The current CfD regime does not help horizon more than 2 years in term of investment.

## O&M - innovation for optimised operations

*Hernan Vargas – Offshore Wind Operations and Systems & Design Engineer, Vattenfall*

Focussing on new opportunities to optimise and streamline operations and maintenance of a new generation of offshore wind farms allows greater flexibility for the operator and for their supplier, but the ultimate goal is to ensure optimised operations and electricity generation and transmission. Currently projects are developing a cluster approach – large coordinated projects. In the future, and already the case in markets like Denmark, a hub approach is possible. Beyond that, possibly we are looking at sector coupling. Logistics and O&M are potentially work packages that must adapt to future demands, faster than any other. By implication port facilities too must adapt and evolve to accommodate this dynamic reality.



Horns Rev 3 offshore wind farm – turbine construction in the North Sea



## Workshop session:

### Planning our collaboration - programme mapping, information needs, next steps and messages to key stakeholders & each other

The questions we felt would best stimulate productive discussions, and help identify potential opportunities and barriers to a better adapted, productive and sustainable UK offshore wind supply chain were described and posed in plenary.

Recognising that at each table, participants with a wide variety of interests, needs and perspectives – depending on whether they were representing a local SME or a multinational T1 company, or a developer, or a Local Authority or the New Anglia Local Enterprise Partnership for example – would generate different and varied priorities and views on next steps, we gave several sets of worksheets to each table. In some instances, the table found sufficient commonality and worked as a single group, while on other tables, several sets of worksheets were completed.

The package of worksheets included:

1. **Timeline, for participants to draw on / annotate to illustrate key milestones pertinent to their supply chain process and delivery programme.**

Prompts / questions intended to help mutual understanding of different stakeholders' key milestones, inter-relationships / interfaces between packages and assumptions made:

- i. When you think it is optimum for us to engage with you to ensure we hit our key milestones?

- ii. Based on (i), when will you engage with your supply chain?
- iii. Note any dependency on information from another package, [or draw a connector on the planner worksheet].
- iv. What assumptions are you making / what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme

2. **Worksheet: If you could ask for one thing from Government / suppliers / T1 / developers, what would it be?**
3. **Worksheet: Imagine a new scenario where we have certainty on our 4GW\* of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**




\*Vattenfall currently have approximately 4GW in the planning system – Norfolk Vanguard, Norfolk Boreas and Thanet Extension (part of Vattenfall's Kent cluster of projects)

Copies of the worksheets can be found in Appendix C.

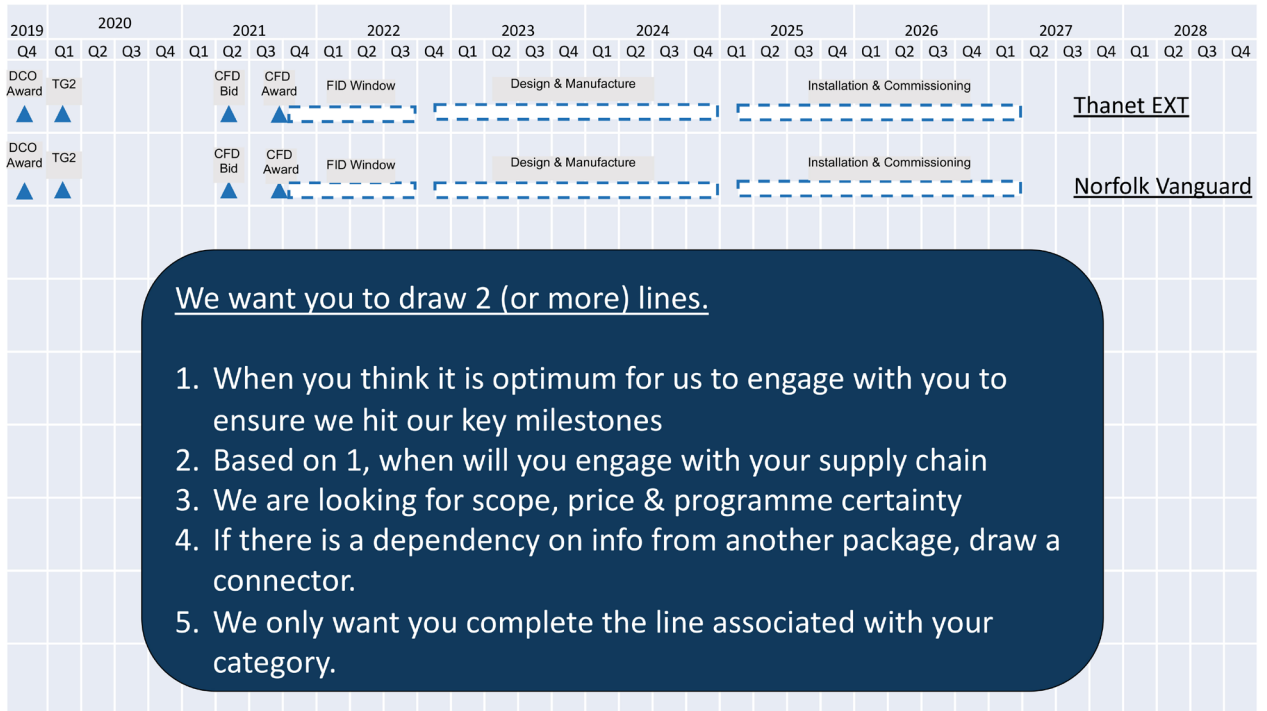
All responses have been typed up, verbatim, and are reproduced in full in Appendix D.

**KEY**

- ITT Start
- T2 ITT Start
- T2 ITT Finish
- ITT Finish
- ◆ Preferred Bidder
- 😊 Contract Award

- WTG 
- FOU 
- TRANS 
- LOG-WTG 
- LOG-FOU 
- LOG-IAC 
- O&M

## Engagement Timeline (Pragmatic approach required!)



28/02/2020  
Confidentiality – High (C3)



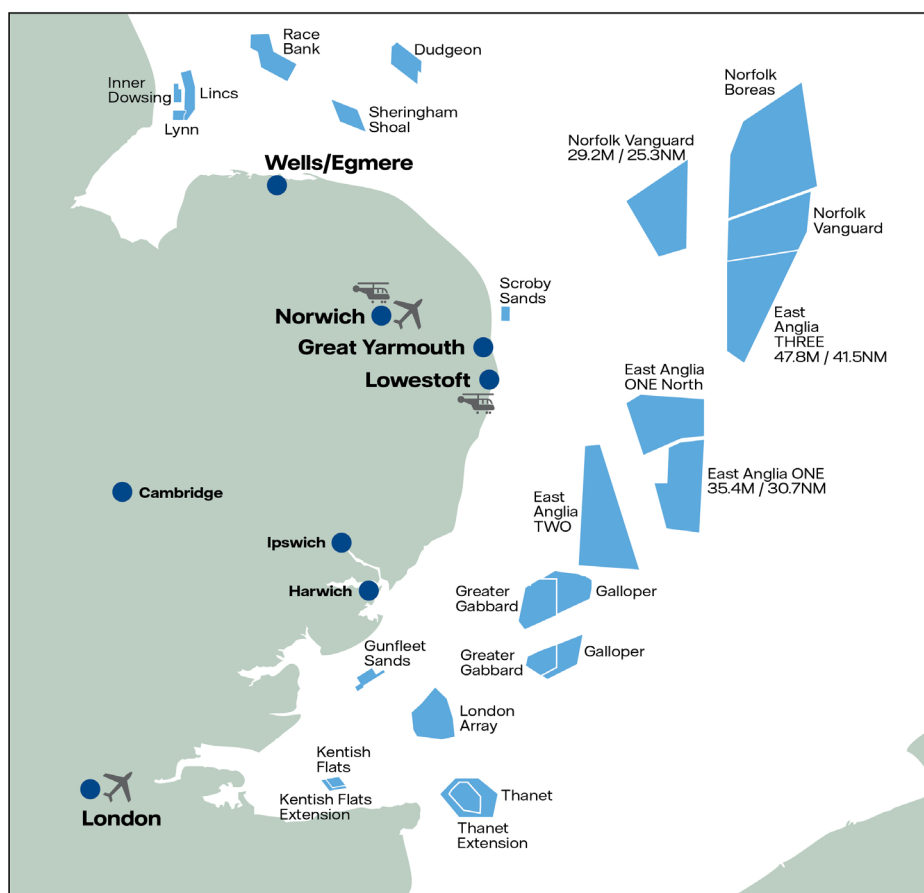
## Summing up, next steps and close

*Rob Lilly – UK Procurement Manager, Vattenfall*  
*Catrin Jones – Norfolk Vanguard and Norfolk Boreas Stakeholder Engagement Manager, Vattenfall*

The final talk from Rob and Catrin encouraged attendees to register their supplier interest on the

Vattenfall website if they hadn't done so already, to ensure they are kept up to date on procurement as the Norfolk Boreas and Norfolk Vanguard projects progress. Workshop attendees were informed that feedback from the group activities would be collated and summarised in a report, and later circulated for consumption. The report would also be published on Vattenfall's website so a wider audience are made aware of the discussions and next steps.

## East Anglia offshore wind cluster



### Key specialisms.



Fabrication



Innovation and Business Incubation



Subsea Innovation



Decommissioning



Specialist Engineering



Operations and Maintenance

**The East Anglia cluster aims to produce 8.4 GW by 2032.**

It offers:

- World-class physical infrastructure
- Suitable ports
- Established offshore supply chain
- Skilled workforce
- An All-Energy Industry Council to oversee the regional cluster development.



The Offshore Wind Industry Council (OWIC) identify the strengths of a burgeoning East Anglia cluster. More coordinated and collaborative action across the sector may encourage greater investment and a new world of offshore opportunities.





# Appendices

# Appendix A

## List of participants

### Name & organisation / company

#### Table 1 (WTG)

Ray Thompson – Siemens  
 Anne Gourlay – Bilfinger Salamis UK Ltd  
 Wayne Thorp – Padgate Services Ltd  
 Glynn White – Sitek Engineering  
 Ben Hooker – JFMS  
 Lexi Brackpool – Furthermore

#### Table 2 (WTG)

Iain Entwistle – NKT  
 Paul Kelly – Volker Trenchless Solutions  
 Tina Nenadovic – Seiche Environmental Ltd  
 John Price – EDS HV  
 Martin Roberts – Global Wind Service  
 Alex Loudon – OREC  
 Venkata Chalapathi – Vattenfall

#### Table 3 (FOU)

Eric Fine – Smulders  
 Ben Marshall – Worley  
 Emma Harrick – A & P  
 Alison Lucas Collier – Next Geosolutions UKCS Ltd  
 Elliot Shilling – N-sea Offshore Limited  
 Stuart Thornton – OHT  
 Stuart Newby – Vattenfall

#### Table 4 (I&L)

Gordon Nicoll – Global Marine (UK based IAC-I)  
 David Blake – Pipeshield  
 Katie Cross – MarineSpace  
 Stuart Smith – PWE Recruitment Group Ltd  
 Ian Clarkson – ABB  
 Helen Slade – Orange Heating Supplies  
 David Fleet – Vattenfall

#### Table 5 (I&L)

Ali Lawson – Global Marine (UK based IAC-I)  
 Keith Pomfret – Global Marine (UK based IAC-I)  
 Ranjit Singh Nagra – Peel Ports  
 John Cooper – BAR Technologies  
 Steven McCall – ABB  
 Kieron Ford – Stowen LTD  
 Darryl Hall – Vattenfall

#### Table 6 (Grid)

Colin McCaffery – ABB  
 Sam Parament – Roadbridge  
 Mike McCloy – Instalcom  
 Scott Stone – Volker Trenchless Solutions  
 Garron Lees – ODE  
 Steve Cox – Blaze  
 Rajat Aggarwal – Vattenfall

#### Table 7 (O&M)

Paul Deaton – GE  
 Mandy Masters – Rix Renewables Ltd  
 Graham Hacon – 3sun Group  
 Gary Horner – Global Wind Service  
 Andrew Stenson – Petrofac Offshore Projects & Operations  
 Adam Cross – Spectrum Offshore Limited  
 Hernan Vargas – Vattenfall

#### Table 8 (Grid)

Jeba Gladstone – Siemens  
 Glyn Vickers – Schneider  
 Paul Thomson – Sembmarine SLP Ltd  
 Andy Aston – Turner & Townsend  
 Vince Bowler – Instalcom  
 Gilmar de Souza – Prisma  
 Wouter van Helden – Vattenfall

#### Table 9 (Cables/Grid)

Dean Sanders – TFK Cable  
 Corrine Barry – EDS HV  
 Denise Hone – Stowen LTD  
 John Best – Petans  
 William Traynor – Roadbridge  
 Nigel Hargreaves – Synoflo  
 David Reid – Vattenfall

#### Table 10 (O&M)

Michael Martins – Bibby Marine Services  
 Warren Boore – Optima Metal Services  
 Joy Dean – Cpower Energy Ltd  
 Jess Hanham – Sepctrum Offshore Limited  
 Simon Grey – EEEGR  
 Mark Challinor – MHI Vestas  
 Patrick Rickerby – Terra Drone  
 Martyn Norton – N-ERGISE  
 Richard Brown – Orange Heating Supplies

#### Several participants moved from table to table, so not all names are included on table group lists. Other participants were:

David Macintosh – DIT head of Renewable  
 Allan Taylor – Dept. of Trade & Industry  
 Jenna Perry – GEV Offshore  
 David Dukes – GYBC  
 David Glason – GYBC  
 Sophie Wilson – Rhenus Offshore  
 Jeremy Holt – Rix Renewables  
 Abdul Samad – Siemens  
 Tom Pedersen – Siemens  
 Mark Easter – Welton

#### Others supporting discussions were:

Catrin Ellis Jones  
 Katherine Wood  
 Rob Lilly  
 Susan Falch-Lovesey  
 Richard Packham  
 Celia Anderson – Skills Hub



As we were determining table groups, we were aware that several SME could contribute to more than one work package, and for different work packages the optimal timing for their input would be different – we were interested in exploring these inputs in terms of how they fit into an overarching programme of works. The workshop session would enable an understanding of programme based decision making and requirements from top to bottom.

An alternative way of managing work packages is WTG, WTG Install, Foundation Fabrication, Foundation Install, Export Cable Manufacture, Export Cable Install, Array Cable Manufacture, Array Cable Install, GRID (Substation, electrical equipment onshore & offshore) Site Enabling & Ducting, Installation & Logistic, O & M.

For example, a T1 or T2 fabricator could supply direct or indirect. They could supply into WTG, WTG install (grillages) Foundations & foundation install (grillages), GRID (substation) Civils (multiple metal fabs for civils, metal roof structures etc) they could supply into I & L with vessel mods, repairs, spud can plates, lifting cradles etc etc. They could also be involved in O & M in dozens of ways.

Some participants, also participated in discussions on other tables during the session, or after the main workshop had concluded.



## **Appendix B**

### **PowerPoint presentation slides**

# Supply chain film

Click here to view our short film about supply chain opportunities in the UK: [https://www.youtube.com/watch?v=zVEcOpdV\\_xs&t=28s](https://www.youtube.com/watch?v=zVEcOpdV_xs&t=28s)

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## The offshore wind sector

– working together to secure supply chain opportunities

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# Introductions

Catrin Ellis Jones

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## Purpose of meeting today

To gather together potential delivery partners & stakeholders our UK pipeline projects, to explore:

- Increased participation in the projects by local (East of England and UK) SME's, in line with Offshore Wind Sector Deal aspirations and Vattenfall's sustainable procurement requirements
- Achieving enhanced collaboration for optimised construction and operations and LEC- lowering innovation



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## Programme

3.00	<b>Welcome &amp; introduction to Vattenfall</b> – Kathy Wood, Head of Offshore Wind Consenting
3.15	<b>UK Government perspective on Supply Chain Opportunities and Expectations</b> – the Offshore Wind Sector Deal, Contracts for Difference and Supply Chain Plans – Rob Lilly
3.30	<b>Vattenfall Wind Farm Design – what is our focus?</b> - Wouter van Helden <b>O&amp;M – innovation for optimised operations</b> – Rob Lilly & Hernan Vargas <b>Project and cluster expectations – cooperation in practise</b>
3.50	<b>Your reflections</b>
4.10	<b>Planning our collaboration – workshop session</b> <b>Working to Vattenfall's pipeline projects' programme:</b> <ul style="list-style-type: none"> <li>Identifying supply chain interests &amp; needs, potential barriers, challenges &amp; solutions</li> <li>Action planning</li> </ul>
5.00	<b>Plenary Feedback</b> – interfaces, key requirements, innovative solutions
5.20	<b>Summing-up, Thanks &amp; Close</b>



\*Numbers include both onshore and offshore investment.  
\*\*Person years

## Post-workshop Programme

5.30 – 6.00	<b>VF Manager &amp; T1 mini-surgeries</b> 3 x 10 min one : one discussion sessions – participants interested in taking advantage of these sessions to enable specific follow-up discussions and decision-making.
6.00 – 8.00	<b>Energy Skills Centre Launch &amp; Reception</b> Participants are cordially invited to hear a short welcome to the brand new Energy Skills Centre from <b>Ray Shilling, East Coast College Commercial Manager</b> and to join a short tour of the facilities (optional)
6.30 – 7.30	<b>Skills and Apprenticeships Information Point</b> – <b>Celia Anderson Skills Hub &amp; Sue Falch-Lovesey Vattenfall Skills Champion</b> Information exchange on skills and apprenticeships opportunities, and other developments to enable our Net Zero workforce of the future.



\*Numbers include both onshore and offshore investment.  
\*\*Person years



# Vattenfall in the UK

Katherine Wood

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## Fossil free living in one generation

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# This is Vattenfall

## Basic Facts

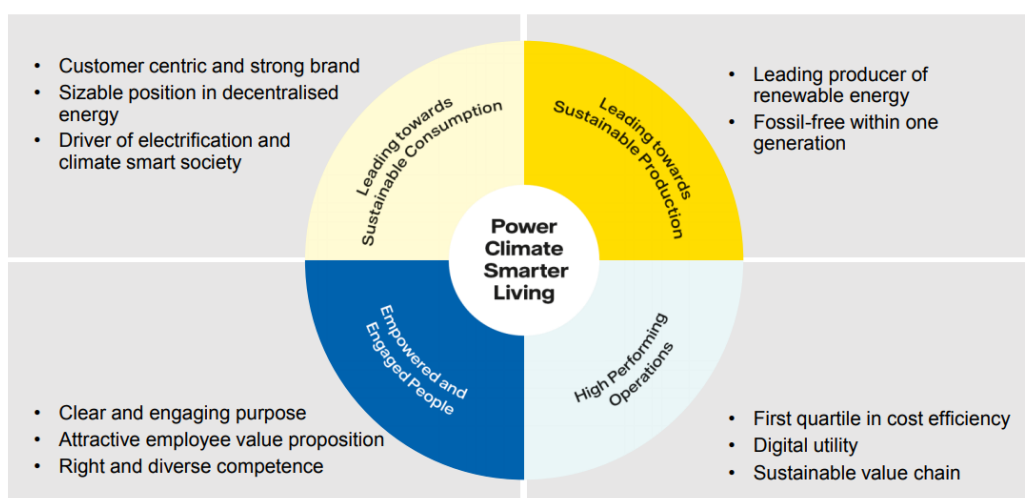
- One of Europe's largest producers of electricity and heat
  - Supply over 130TWh of electricity, 7.8TWh from Wind
- Main markets: Sweden, Germany, Netherlands, UK and Denmark
- Employs approx. 20 000 people
  - Over 500 in UK across all areas
- 32bn SEK growth in 2019/20 investment plan
  - 75% to wind investment



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# Vattenfall's strategy



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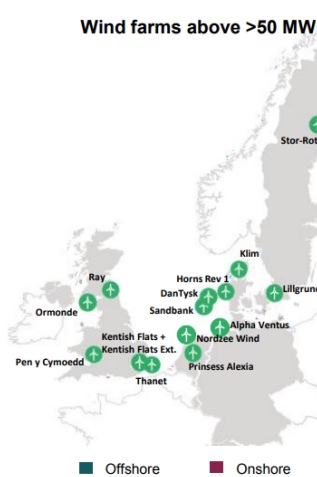
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## Operating wind farms, construction and pipeline

### In operation

Name	Capacity (MW)	Country
Thanet	300	UK
Ormonde (51%)	150	UK
Kentish Flats	90	UK
Kentish Flats extension	50	UK
Pen y Cymoedd	228	UK
Ray	54	UK
Lillgrund	111	SE
Stor-Rotliden	78	SE
Horns Rev 1 (60%)	158	DK
Klim (98%)	67	DK
DanTysk (51%)	288	DE
Sandbank (51%)	288	DE
Alpha ventus (26%)	60	DE
Nordzee Wind (50%)	108	NL
Princess Alexia	122	NL
Other offshore	10	
Other onshore	669	
<b>Total 2,764 MW</b>		

### Wind farms above >50 MW



### In construction

Name	Capacity (MW)	Commissioning	Country
Aberdeen	92	2018	UK
Horns Rev 3	406	2019	DK
Slufterdam	29	2019	NL
Wieringermeer	180	2020	NL
<b>Total 707 MW</b>			

### Pipeline

Name	Capacity (MW)	Commissioning	Country
Wieringermeer ext.	~118	2019	NL
Blakliden + Fäbodberget	~354	2022	SE
South Kyle	~200	2021	UK
NK II	~120	2021	DK
Danish Near Shore	344	2021	DK
Danish Kriegers Flak	602	2021	DK
Hollandse Kust	700-750	2023	NL
Sandbank Plus	<250	2024	DE
Thanet Extension	272	2024	UK
Norfolk Vanguard	1,800	2027	UK
Norfolk Boreas	1,800	2028	UK
<b>Total ~6.5 GW</b>			

UK = ~63% of wind pipeline

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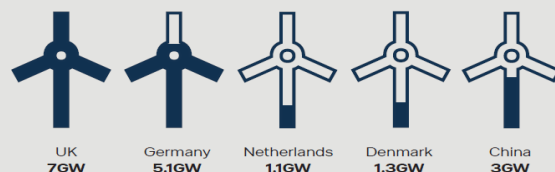
11

## Why the Offshore Wind Sector Deal?

Offshore wind, as a source of renewable energy, offers the UK a wide range of benefits including:

- ✓ energy security
- ✓ decarbonisation of our energy supply
- ✓ economic growth

**The UK is NO.1 in the world for installed offshore wind generation capacity (2018)<sup>2</sup>**



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# The Offshore Wind Sector Deal

Built on the five foundations of Industrial Strategy



**Ideas** – growing an innovative economy – increasing UK competitiveness, reducing costs, and greater UK intellectual property.



**People** – to generate good jobs and greater earning power. Deploying 30GW could support 27,000 jobs in the UK, including manufacturing. To Achieve this we need more young people to enter the sector and a more diverse workforce. Building skills is key.



**Places** – more opportunities for investment and growth, including in coastal communities.



**Business environment** – the Sector Deal encourages growing a more productive, competitive, export-orientated UK supply chain.

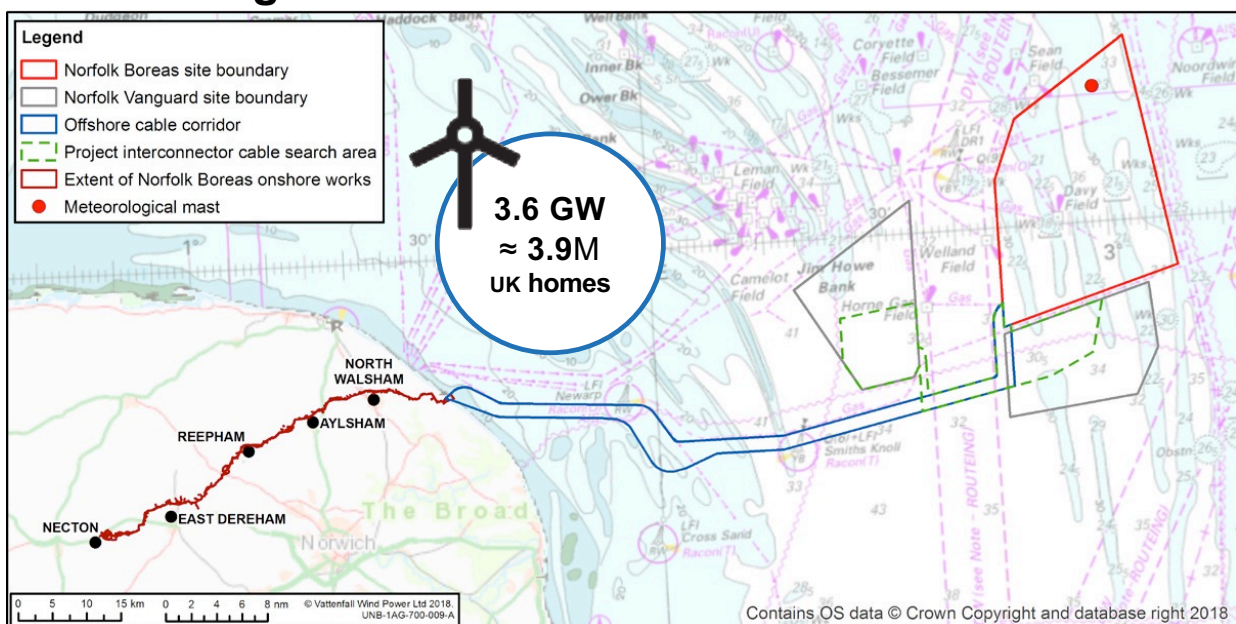


**Infrastructure** – the Sector Deal represents a commitment to upgrade the UK's energy infrastructure. Investments to 2030 of £40bn plus

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## Norfolk Vanguard & Norfolk Boreas



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# Supply chain engagement

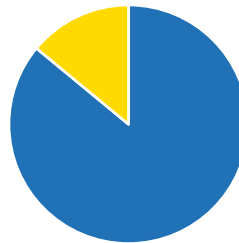
Early engagement & strategic collaboration is the key to gearing up for the opportunities ahead



60+ presentations, workshops and 1:1 meetings involving more than 600 local supply chain companies

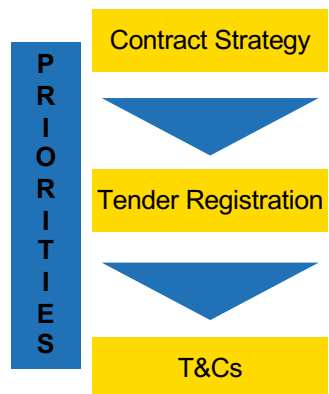
"Gearing up to Grow" – a collaboration with Norfolk Chamber of Commerce and Norfolk County Council, supported by NALEP – 216 SME's engaged with / received advice since Spring 2019

Having learned more about Vattenfall's pipeline I can see why long-term planning is important to ensure we are prepared to win offshore wind contracts



■ Yes ■ No

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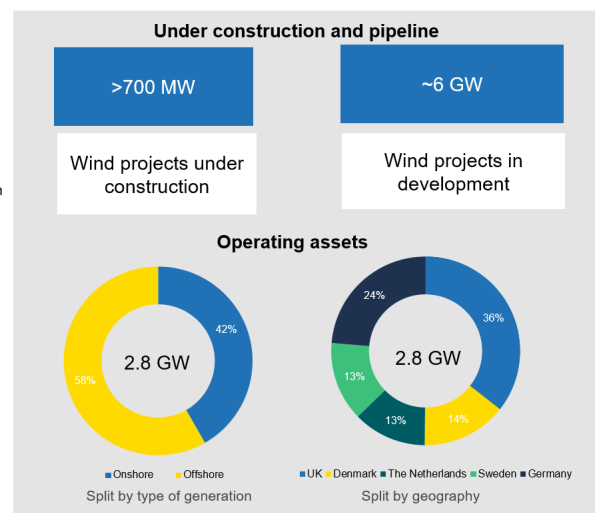
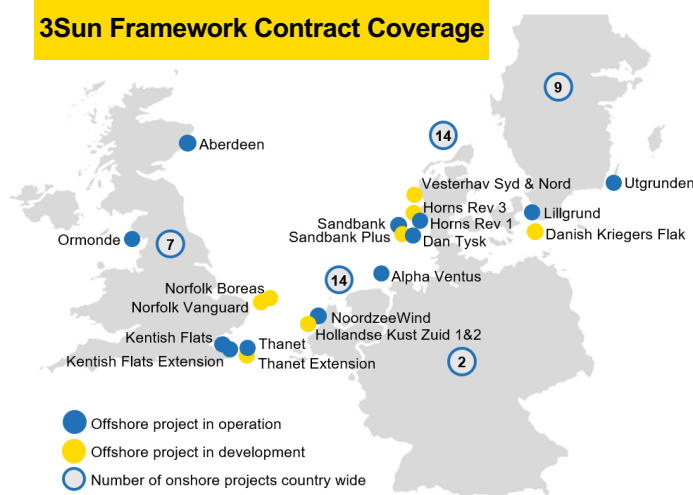


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# Developing opportunities with local companies

Companies with the appropriate offering, HSE standards & ethos can work with us in all our markets

## 3Sun Framework Contract Coverage



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# UK Government perspective on Supply Chain Opportunities and Expectations

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## Business environment - Exports

### Some good news!"

"Export Nation" reveals that **47 UK firms signed 465 contracts worth up to GBP 53 million per company in the past year**, working on hundreds of projects in Europe, Asia, North and South America, Africa, and Australia.

Overall, UK exports of wind energy products and services are worth **GBP 525 million a year**, according to the Office for National Statistics. The new report reveals that current top ten export destinations for UK wind and marine energy companies are, in order of importance, Germany, Taiwan, Denmark, the USA, the Netherlands, France, Belgium, China, Ireland, and South Korea.

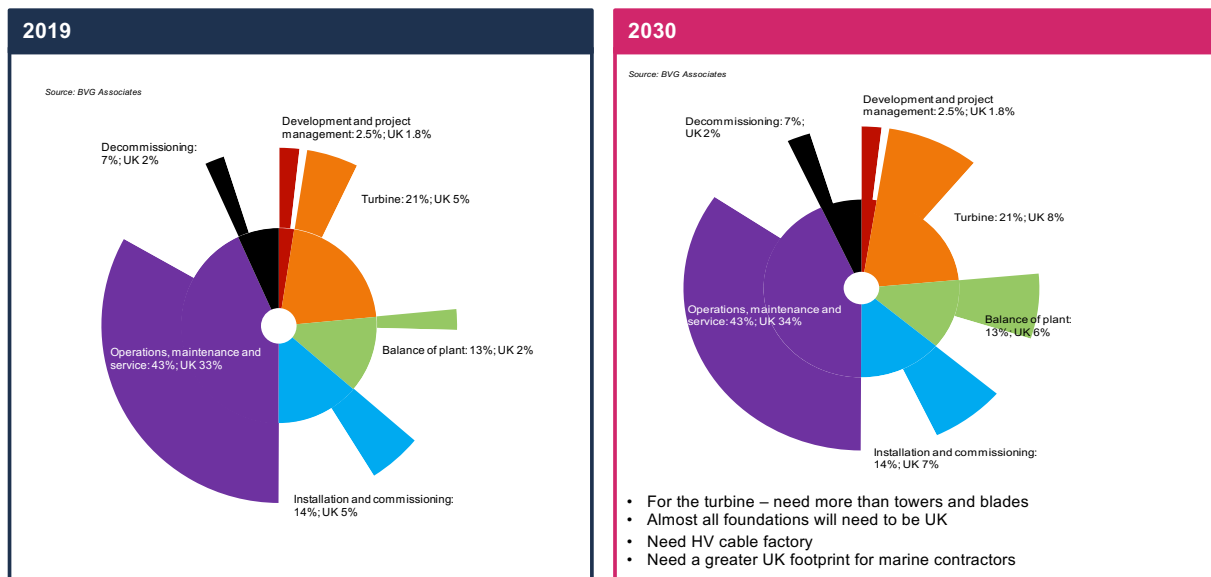
**Nearly 70% of the contracts were in the offshore wind sector.** The companies featured in the report won offshore wind contracts in 15 countries across four continents. Germany is the most popular destination, followed in order by Taiwan, Denmark, the Netherlands, and the USA.

**UK firms are designing, building and maintaining wind farms onshore and offshore, as well as wave and tidal projects**, the report said. Exports from the UK supply chain include manufacturing blades, supplying and installing UK-made power cables on land and underwater, fabricating specialist steelwork, providing helicopters and crew transfer vessels, producing software to maximise power generation, conducting geological surveys, monitoring wildlife, and providing legal and financial services.

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## UK content – the route to 60%

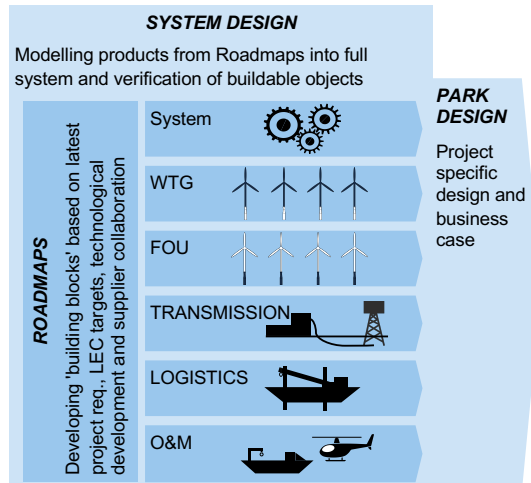


## Wind Fam Design



## Roadmap organization and cooperation

### WIND FARM DESIGN WILL DELIVERING PRODUCTS...



### ... TO OUR PORTFOLIO OF PROJECTS

- **MARKET DEVELOPMENT**
- Scenario assessments
- Concept designs and product dev. program / schedule
- Roadmap strategy incl. procurement / supplier strategy
- CAPEX and OPEX input for BCs and FBD
- Layouting and production estimates

#### PROJECT DELIVERY

- FEED and detailed design
- Supplier and contract strategy incl. manufacturing readiness
- CAPEX and OPEX input for BCs and FID
- Layouting and production estimates

#### ASSET MANAGEMENT / O&M DELIVERY

- O&M setup and strategy (joint development)
- Exchange of improvement levers from future to spinning assets and vice versa

06/03/2020

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## A NEW WAY OF WORKING

... to provide a more efficient and focused organization – enabling focus and excellence within each area ...

### Enabling us to do what we do best and love ...



#### Project:

- Clear focus on winning and building projects with enhanced product development from Roadmaps

#### Product (Roadmaps):

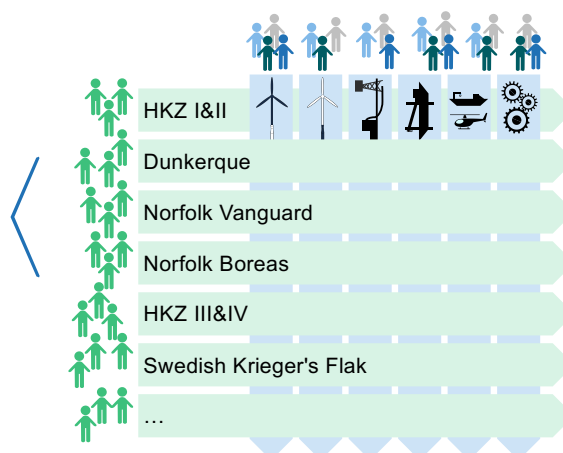
- Long term perspective and focus on developing / innovating world class products to the entire Project portfolio



#### Line and support:

- Clear focus on developing our specialist competences, quality assurance processes excellence and a strong infrastructure

### PORTFOLIO APPROACH



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## WIND FARM DESIGN IS THE PROVIDER OF WIND FARMS TO THE PROJECT....

### Interface between Project and Wind Farm Design



### BENEFITS

- No reinvention across projects
  - Fewer people for same output
- Longer term perspective
  - Invest in strategic ideas & technologies
  - Closer supplier relations
- 360 degree view on improvement ideas and technologies through cross-functional expert teams (e.g. Engineering & Procurement)
- Automated system optimisation tool
  - All system options tested
  - Zero time from request to result

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## Project and cluster expectations – cooperation in practise

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# TARGETS FOR TODAY

1. To share Vattenfalls programme & expectations so we have absolute clarity of how we want to **deliver against UK Sector Deal targets.**
2. Listen to a range of companies, across **all categories & sizes** about how we can collaborate better to achieve this.
3. To discuss the **challenges of 60% UK Content**, 40 GW or 52GW by 2030 along with a globally constrained market. **Consent & CfD limitations.**
4. To jointly identify **gaps in terms of skills, staffing levels, scopes & knowledge** so that:
  - ✓ Vattenfall are informed,
  - ✓ the supply chain, with support from local Econ Dev Stakeholders are encouraged to grow, and are equipped to realise opportunities from offshore wind.
  - ✓ **Local suppliers are equipped and ready** for the first scopes to be released after consent.



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# Sector Deal Update

## Supply Chain

From discussions, it looks like the supply chain plan structure is going to change slightly.

In the future, instead of

- Competition
- innovation
- Skills

**We will focus on the 5 strands of sector deal (which are broadly similar) and a large emphasis on how that relates to the Vattenfall UK strategy between now and 2030.**

- **Ideas** – Innovation
- **People** – jobs & diverse workforce
- **Infrastructure** – Inward investment in UK companies to meet demand.
- **Business environment** – The UK as a technology hub, exporting knowledge, skills and manufacturing.
- **Places** – Local content and “clusters” working together around ports and wind farm O & M areas



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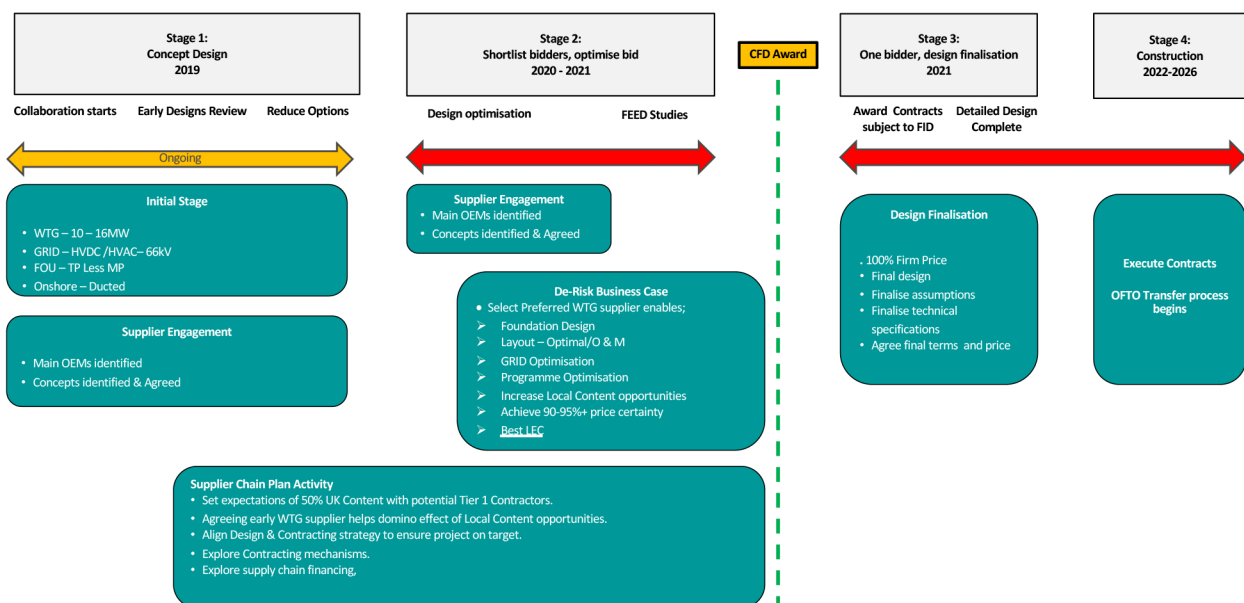
## Supply Chain Plans 2.0 - Expectations

- Structures the SCP around the 'foundations' of the Sector Deal, namely Ideas, People, Infrastructure, Business Environment and Places.
  - Places a strong emphasis on **measurable outcomes**, and
  - Has a **transparent and objective** scoring system.
- 
- Commitments from Vattenfall**
  - Commitments made by the project**
  - Commitments made by our suppliers**
- 
- Commitments are likely to become more important to reflect the **longer term (2030) targets** contained in the Sector Deal.
  - Vattenfall is developing an **overarching supply chain strategy** to which the project SCP refers.
  - By recognising targets beyond the timeframe of the specific project in question, Vattenfall **can show benefits with a pipeline of projects and can therefore give greater support to the supply chain.**
- 
- Achieve 60% UK content**
  - Achieve 30% women representation, and**
  - Achieve and undefined BAME representation.**
- 
- There is no well-defined target in **Ideas**.
  - We expect that UK **RD&D expenditure** is used as a proxy for UK IP creation.

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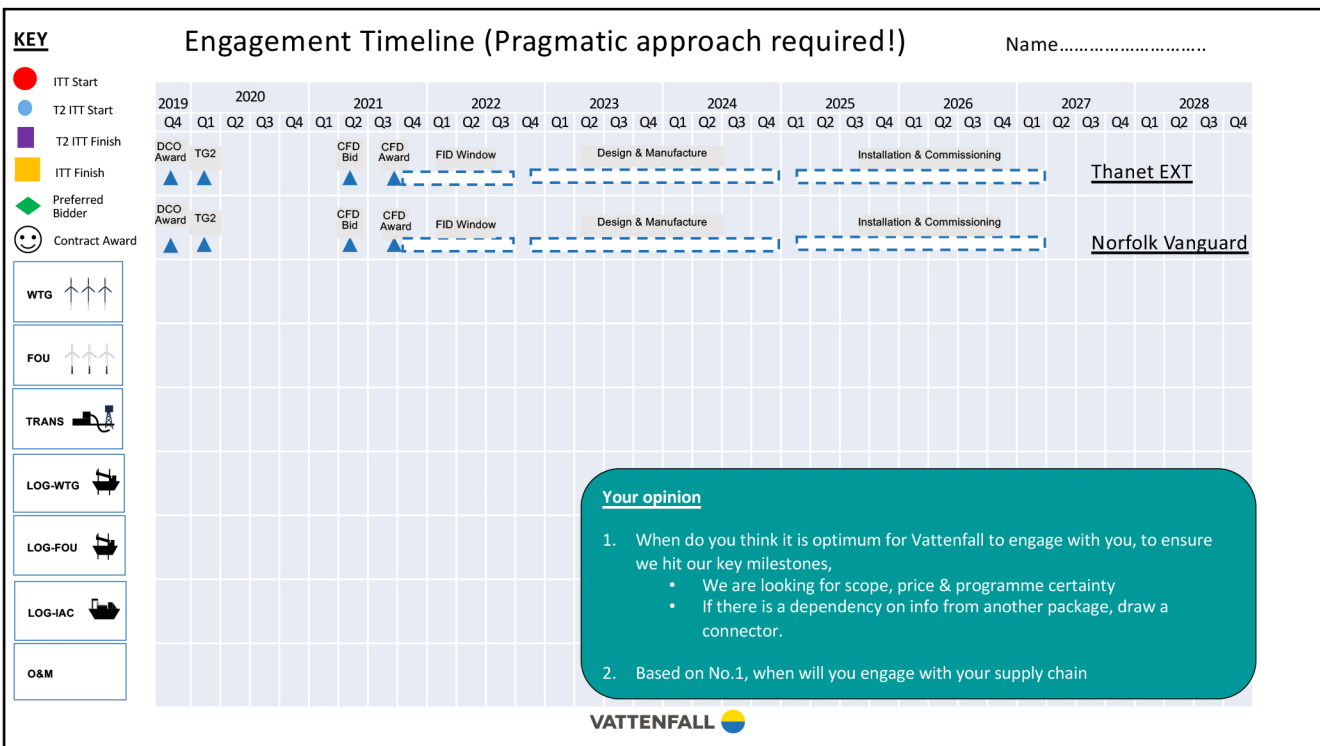
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## Overall Procurement Approach



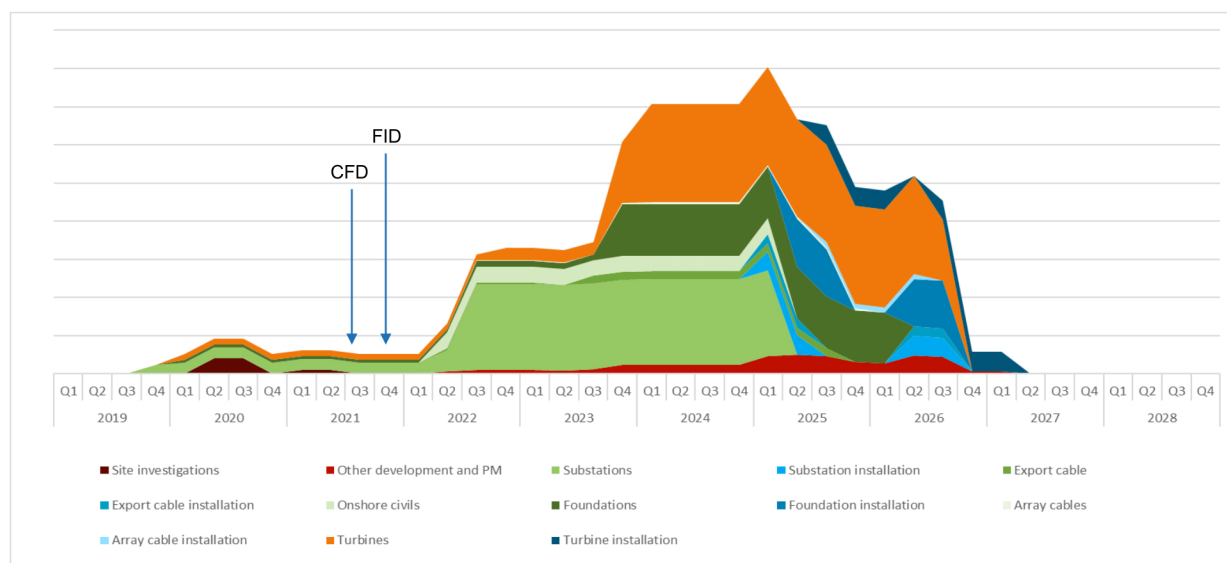
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## Spend Profile AR4



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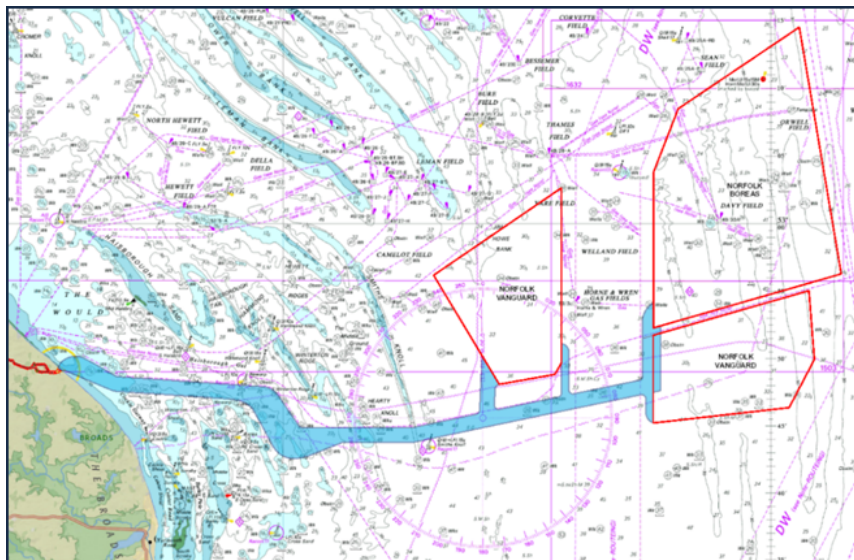
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# Vattenfall O&M – innovation for optimised operations

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## Norfolk Vanguard and Boreas



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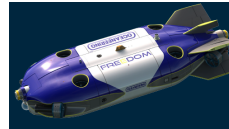
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### Current O&M Logistic set-up:

- **Logistic concept:** integration of SOV + large CTVs + helicopter hours into over-all site set up. Also, we are discussing the possibility to offer a logistic solution to the eventual OFTO. The preliminary per site set up includes (subject to modeling and further feedback from WTG OEMs and suppliers) :
  - **Large CTVs:** crew transfer vessels 12-24 PAX 24h/7 charter. Main activities cover WTG trouble shooting and BoP. The utilization is also subject to developments for daughter crafts that can maintain station at boatlanding or improved fall arrest system (UK HSE regulatory regime).
  - **1 SOV:** Accommodation 60 cabins (typical). Onboard storage and warehouse. Current accessibility (motion compensated gangway).
  - **Helicopter:** fast transfers at around 250 km/h, used for urgent maintenance/troubleshooting, special crew transfers to OSS or SOV.

In addition to this, we are also developing ER for SOVs for the whole of Vattenfall integrating BoP activities into its scope. New technologies such as drones for inspections and surveys (aerial, underwater and sea-surface) are also being investigated in order to include them into the SOV scope.



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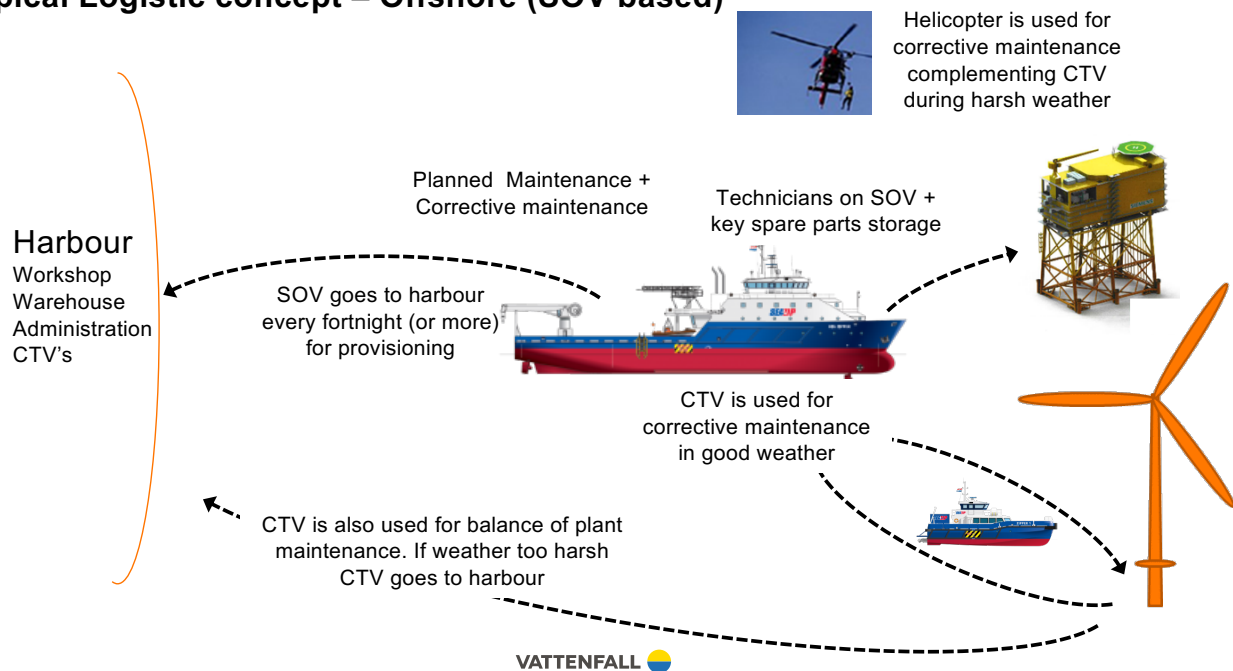
## General Logistics and Personnel

- Crew Transfer Vessels: Troubleshooting events, Service, Crew Change
- Service Operation Vessel(s): Offshore accommodation + Service
- Helicopter: Troubleshooting
- Troubleshooting personnel based primarily offshore on the SOV (transferred via sub-station or directly from vessel) but a fraction possible also onshore.

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## Typical Logistic concept – Offshore (SOV based)



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## Plenary reflections



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## **Workshop – Planning our collaboration:**

- **Identifying supply chain interests & needs, potential barriers, challenges & solutions**
- **Action planning**

## **Project and cluster expectations – cooperation in practise**










# Introduction to tasks

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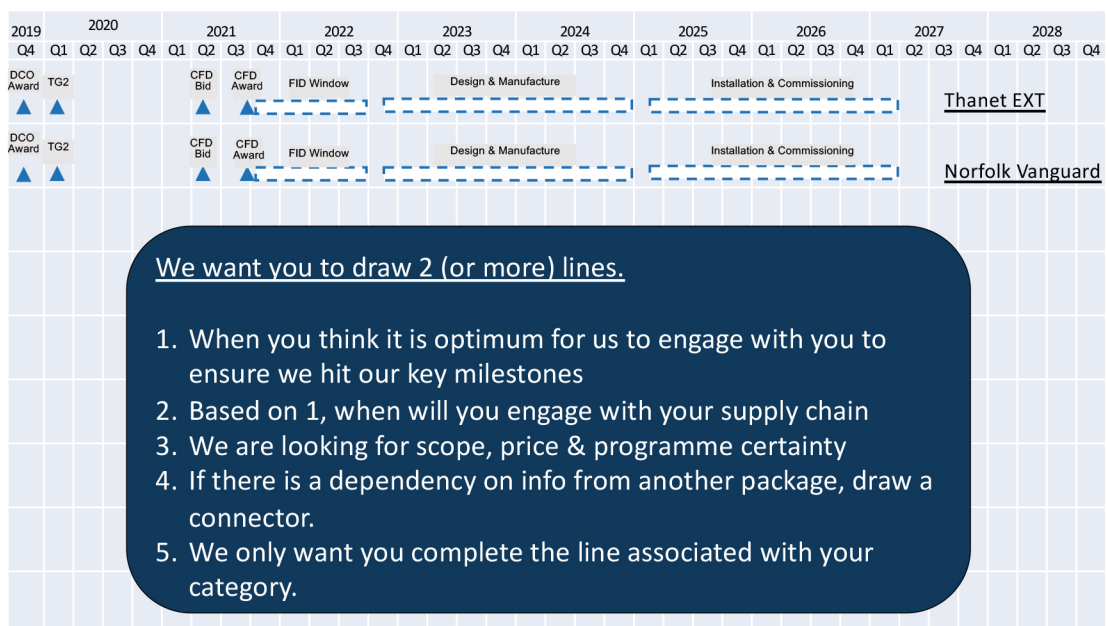
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## KEY

- ITT Start
- T2 ITT Start
- T2 ITT Finish
- ITT Finish
- ◆ Preferred Bidder
- 😊 Contract Award

- WTG 
- FOU 
- TRANS 
- LOG-WTG 
- LOG-FOU 
- LOG-IAC 
- O&M 

## Engagement Timeline (Pragmatic approach required!)



We want you to draw 2 (or more) lines.

1. When you think it is optimum for us to engage with you to ensure we hit our key milestones
2. Based on 1, when will you engage with your supply chain
3. We are looking for scope, price & programme certainty
4. If there is a dependency on info from another package, draw a connector.
5. We only want you complete the line associated with your category.

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# Plenary feedback

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# Thanks & Close

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## **Appendix C**

### **Copy of the worksheets**

Name & Company:

In relation to the timeline, please indicate:

- i. When you think it is optimum for us to engage with you to ensure we hit our key milestones?
- ii. Based on 1, when will you engage with your supply chain?
- iii. If there is a dependency on info from another package, draw a connector.

- iv. What assumptions are you making / what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme

**Notes:**







We are looking for scope, price & programme certainty

We only want you complete the line associated with your category.

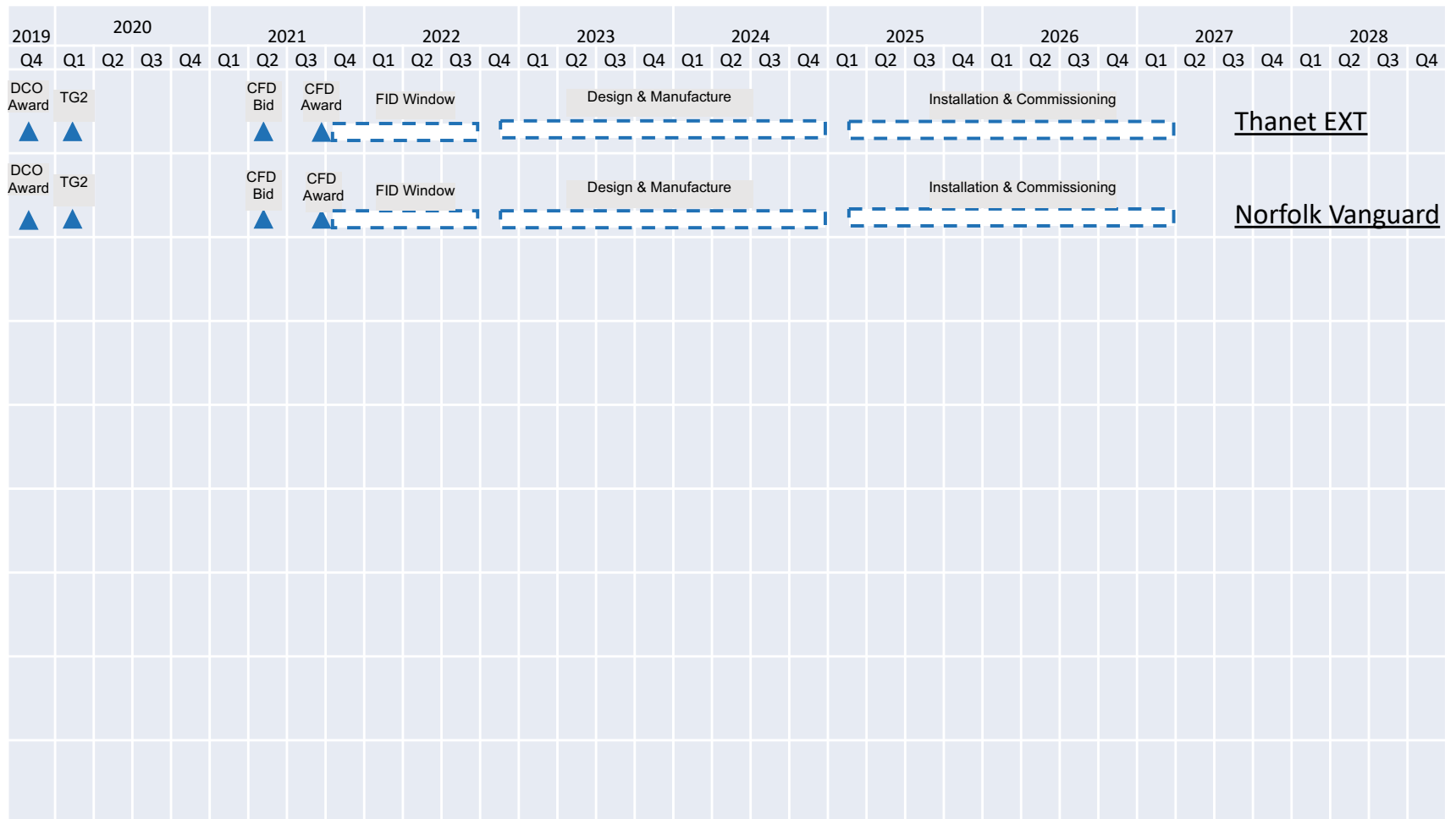
Name & Company:

## KEY

- ITT Start
- T2 ITT Start
- T2 ITT Finish
- ITT Finish
- ◆ Preferred Bidder
- 😊 Contract Award

WTG	
FOU	
TRANS	
LOG-WTG	
LOG-FOU	
LOG-IAC	
O&M	

18/11/2019  
Confidentiality – High (C3)



Thanet EXT

Norfolk Vanguard

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Name & Company:

2. If you could ask for 1 thing from Gov/Suppliers/T1/Developers (delete as required) what would it be. What 1 thing do you (your company) commit to doing to drive change forward after this meeting.

Our key ask of :  (and why / what difference would it make?)	Government	
	Developers	
	T1	
	Suppliers	

Name & Company:

3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?

# Appendix D

## Verbatim type up of the feedback

**Table 1 (WTG)**

### 1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?

Timeline: The earlier the better, (SGRE) with low Contract for Difference (CfD) results the traditional linear development path is broken (e.g. developers could be without CfD).

### 1 ii. Based on i, when will you engage with your supply chain?

The threshold for SMEs to enter business is colossally high as the timeline doesn't leave enough time to invest, set up production footprint and produce in time.

James Fisher suggests the investment decision for installation vessels might be the earliest milestone to enable offshore growth.

SGRE: We don't worry about installation vessel that much. We see planning consenting a main bottleneck. CfD becoming less important could make a difference.

Padgate (small engineering business): We need six to twelve months from first discussions to delivery of small steel construction contracts. Staff resourcing is a big issue.

James Fisher: Vattenfall is penalising SMEs in tenders if they are questioning the risk profile in the tender and want to reduce risk for themselves, as otherwise work might not be feasible.

DIT: We need to avoid EPCs to take a contract and then go back to 'Dutch mates'.

### 1 iii. If there is a dependency on info from another package, draw a connector

Foundations are procured last but installed first, which is a big problem for tower supplier.

The shortage in availability of ports and installation vessels is driving prices.

Foundation size, requirements for installation vessel and requirements for base ports.

Supply chain collaboration

Local content

Optimise - [18000] ton Singapore

60% UK content

O&M

Siemens as lead

STEM Ambassador

### 1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.

**Table 1 (WTG) cont...**

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**

**Our key ask of Government:**

Clear framework

Collaborate on consenting barriers (radar)

Accept higher cost for more local content

**Our key ask of Developers:**

Early procurement decision

Get preferred suppliers together to develop solution (HKZ approach).

**Our key ask of T1:**

**Our key ask of Suppliers:**

**3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

Training up people for jobs takes time and early notification is therefore important.



**Table 2 (WTG)**

**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

**1 ii. Based on i, when will you engage with your supply chain?**

**1 iii. If there is a dependency on info from another package, draw a connector**

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

To spend less time tendering, there is currently almost 'too much commitment'.

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**

**Our key ask of Government:**

Better clarity on pipeline of interconnectors.

For developers – more regular CfDs.

Better clarity on pipeline of interconnectors.

**Our key ask of Developers:**

Who holds relevant contracts? I.e. environmental services, would it be Vattenfall or T1/2 or similar?

**Our key ask of T1:**

Understanding of freedom of T1 to engage with suppliers and T&Cs they are able to give out.

**Our key ask of Suppliers:**

Understanding of 'limiting resources' for cable availability.

**3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

**Table 3 (FOU)**

<b>1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?</b>
<b>1 ii. Based on i, when will you engage with your supply chain?</b>
<b>1 iii. If there is a dependency on info from another package, draw a connector</b>
<b>1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.</b>
<b>2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?</b>
<b>Our key ask of Government:</b>
For developers – more regular CfDs.
<b>Our key ask of Developers:</b>
Framework agreements so we can project approximately 1,000 foundations and build a UK facility.
<b>Our key ask of T1:</b>
<b>Our key ask of Suppliers:</b>
Engage with basis 1,000 foundations pipeline; invest, learn, improve and existing continental supplying chain.
<b>3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent &amp; CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?</b>
4GW means approximately 350 to 400 foundations (assuming 12-10 MW WTG's).
350-400 foundations is 2 year' work (180-200 foundations per annum) but require an investment of £100 - £160m in the UK. Two years' work is not enough to justify such an investment. Minimum five year work is necessary (approximately 100 foundations).

**Table 4 (I&L)**

**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

December 2019, after the DCO Award.

Subject to scope Q2/Q3 2023 (assuming schedule is as slide).

You need to engage with everyone now, with more detail of the work packages. This will allow the main contract holders of the packages to assess where they need more support. Signpost who we need to talk to. Attendee list of today, to help with networking. Definition of local content – UK or East Anglia?

**1 ii. Based on i, when will you engage with your supply chain?**

January 2020.

Fast turnaround.

**1 iii. If there is a dependency on info from another package, draw a connector**

We hope to engage with each package and each tier.

Ventilation contractor – cable, crossings, foundations (scour protection, cable and foundation stabilisation).  
Lifting and installation aids – vessel optimisation.

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

Investment in technology, personnel and supply chain engagement as well as investment in infrastructure (officer). Scope in supply of personnel (staff) to Vattenfall and each project, prices have been submitted and we are committed to programme certainty.

Port of mobilisation and road infrastructure (including bridges).

**Table 4 (I&L) cont...**

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**

**Our key ask of Government:**

Clearer guide to IR35 and flexibility for project based employees/consultants.

How are the government going to resolve the road network issues in Norfolk? Are they going to improve it? How are they going to manage these projects and the impact on project delivery?

**Our key ask of Developers:**

Engage/commit early/ASAP, this will encourage investment, planning and innovation.

**Our key ask of T1:**

Successful T1 companies need to hold similar events like this where T2 and SMEs etc. are invited and there has to be a contractual obligation for T1's to use local content but local content needs to be defined (East Anglia or UK)?

**Our key ask of Suppliers:**

Is there a desire for suppliers to collaborate?

**3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

Invest in new staff, new technology and training.



**Table 5 (I&L)**

**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

**1 ii. Based on i, when will you engage with your supply chain?**

**1 iii. If there is a dependency on info from another package, draw a connector**

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**

**Our key ask of Government:**

How do you prove and measure UK content? Long term plan – encourage manufacturing companies to UK.

**Our key ask of Developers:**

Filtration of engagement through supply chain.  
Continuous improvement – where have you had issues/weak points on certain projects.

**Our key ask of T1:**

Indication of potential T1 suppliers.

**Our key ask of Suppliers:**

Do not tick all boxes in tenders - must be able to provide/prove!

**3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

The commitment on policing UK content.

**Table 6 (Grid)**

<b>1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?</b>
ABB already engaged with Vattenfall – prior to the DCO Award.
<b>1 ii. Based on i, when will you engage with your supply chain?</b>
During tender phase – TG2.
<b>1 iii. If there is a dependency on info from another package, draw a connector</b>
Local resource requirements, to assist with 60% UK content project requirements
<b>1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.</b>
The interface between depths of installation and cable spec is very important. An incorrect cable results equals reduced depth and trenchless installation equals more depth.
Float in programme, pre survey, archaeology window – execute at early stage to prevent programme slippage. Nearshore survey for deeper drilling depth (should be a consideration).
<b>2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?</b>
<b>Our key ask of Government:</b>
Co-ordination cluster project in UK/specialisms required in delivering the projects.
More support for UK companies when working/selling overseas.
<b>Our key ask of Developers:</b>
Clarify work packages and potential T1 suppliers.
Early engagement with local supply chain – local knowledge/logistics for delivering package of works.
Early engagement in design – bringing best practice/lessons learnt from previous HVDC projects.
More early info on who will get the (being considered for) large packages (i.e. offshore platforms) so we can approach them/work with them prior to enquiries being issued.
<b>Our key ask of T1:</b>
How are they going to structure the enquiry package? (I.e. design/supply etc.)
<b>Our key ask of Suppliers:</b>
<b>3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent &amp; CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?</b>
1. Corridor – environmental, ecological, contracts/site surveys.
2. Principal contractor role (multiple interfaces)
3. Grid connection approvals in place
4. HDD – trenches installation design complete, i.e.: cable ratings/spec (including input from cable supplier).
5. Availability of resources (global)

**Table 7 (O&M)**
**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

2022 – End of Q2.

**1 ii. Based on i, when will you engage with your supply chain?**

2022 – End of Q4. To place contracts with our supply chain, we would require around three – six months to do the following:

- Develop a strategy
- Develop the ITT with a project specific scope
- Develop the terms and conditions to align with the specific contract/deliverables

Obtain all relevant approvals pertaining to the above:

- Build tender scoring criteria by which we'll measure suitability to the project.

Skills – two years for installation and O&M plan. Turbine topsides.

Vessels – two years train and build/survey platforms potentially longer for multi-use vessel platform.

**1 iii. If there is a dependency on info from another package, draw a connector**

Prior to engagement of new vendors/sub-contractors we would:

- Review existing suite or supply chain support with reference to T1 scope to see if support is already in place with an existing subcontract.

It would be key to ensure that the existing subcontract scope content is sufficient to enable/facilitate deliverables under T1 scope.

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

Skills, as loss of personnel numbers keep people quiet.

Vessels – loss overseas.

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**
**Our key ask of Government:**

How will you measure UK content?

Why do you no longer support design and tech courses?

How are you getting more women into engineering?

As projects are cyclical, people or persons about speculative investment – what can you do to help with this?

Local Authorities – how do you achieve transparency on criteria?

Skill investment – capitalisation investment (tax relief)

UK content

**Table 7 (O&M) cont...**

#### **Our key ask of Developers:**

How will you secure and demonstrate UK content?

Keep up the level of collaboration positive in relation to skills.

Keep skill and retain seasonable work for companies/individuals. To recognise local content/supply not price driven. Length of contract to allow investment pot 4-5 years.

Standard codes of practice O&M and GWO etc. as well as explanation – within wind as well. Across all.

#### **Our key ask of T1:**

Within the contract you share your skills plans for local labour with councils and training providers as well as local companies.

Training up people for jobs take time, early notification is important.

Skills – loss of personnel numbers keep people quiet season

Vessels – loss overseas.

#### **Our key ask of Suppliers:**

What is the trigger point at which you will feel confident to invest? E.g. in skills and training/new workforce. How will you engage with education/are you partnering with local companies, providing mentors, work experience, graduate schemes etc.

How will you develop a training package to transfer oil and gas personnel to wind industry? Much of the supply chain not yet done this.

Invest innovation and skill need the above and commitment.

Can you combine works e.g. CTV and Survey and launch from drones, ROV. Build Plan 2 into vessel.

Involvement in design stage.

1. Look for security of award.
2. Engagement with client/suppliers to build consensus.
3. Client committee to build training/asset supply.

#### **3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

Government to support teacher training to encourage people from the industry to retrain as further education teachers.

To also encourage more teachers for STEM.

Higher or increased funding for colleges to develop new and innovative courses related to offshore wind careers.

Local security teams using ex-armed forces personnel need to be involved early in the planning phase, but can gear up fast.

1. Look for security award.
2. Engagement with client/suppliers to build consensus.
3. Client committed to build training/asset supply.



**Table 8 (Grid)**

<b>1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?</b>
<b>1 ii. Based on i, when will you engage with your supply chain?</b>
AC platform – contract three year before load-out. Schneider – during design. Bop – during manufacturing.
<b>1 iii. If there is a dependency on info from another package, draw a connector</b>
Tier 1 is organising local events after CfD/FID/contract award. The earlier we can announce Tier 1 the earlier they can engage.
<b>1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.</b>
<b>2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?</b>
<b>Our key ask of Government:</b>
Cost pressure, pushes manufacturing industry out of UK/EU. CfD – if a company misses a CfD window/annual CfD round, then 2 years out of work. Support to build a factory.
<b>Our key ask of Developers:</b>
Put more to CAPEX – decreased OPEX/losses. Share scope of supply, announce the preferred suppliers early – like Doggerbank, inform which development partners we have.
<b>Our key ask of T1:</b>
Indication of suppliers
<b>Our key ask of Suppliers:</b>
If employer prescribes nominated suppliers/products (O&M/reasons) then local content. A2
<b>3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent &amp; CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?</b>
European engineers need to be clear and know the UK-safety rules as the UK-Safety rule may increase the price. Consenting makes it possible to invest in people and factory/assembly in the UK.

**Table 9 (Cables/Grid)**
**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

To be able to plan any CAPEX investment we need high level specs and design by end of Q2/2020. We can then programme and cost any CAPEX.

Provide CfD prices at budgetary level.

**1 ii. Based on i, when will you engage with your supply chain?**

Q2/2020, throughout the design and development phases.

2021 – Q1 to be engaged at CfD stage

2024 – Q3 ??? For hook up (commissioning)

**1 iii. If there is a dependency on info from another package, draw a connector**

Civil contractors. What are their capabilities? If we innovate, will the benefit be realised or lost down the supply chain?

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

Assumptions:

- Cable design freeze
- Route
- Technology being used

Risks:

- Developer reverting to old methods – not providing the time to engage and develop

Perspective:

Installation and commissioning

Termination and testing sits on the critical path

Should it be considered in isolation?

Presently it sits in either the WTG package or the cable installation.

Should it be:

WTG new termination testing and cables clean interface

To gain an aggregated overview of the project requirement and timeline, keep it local. To help ensure that sufficient trained people are available. Supply and demand.

Consider and promote the carbon footprint benefit.

All unique design of vendor's procurement decision and made in FEED/early EPC – detail engineering phase. Supplier needs to be visible with regard to functionality – companies' w/standards – quality and commercially competition.

We always do what we have always done. Why build roads when we could strategically place equipment and materials by air. This is cheaper, quicker and has less social and environmental impact. Also saving time. Greater flexibility in the road map. Innovative, different, inspirational (less aggregates). Clean sheet approach.

## Table 9 (Cables/Grid) cont...

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be?  
What one thing do you (your company) commit to doing to drive change forward after this meeting?**

### Our key ask of Government:

More fluid financial commitment process – set parameters and commit.

Climate change a core element of the curriculum. Not just to be green but to promote future career paths. Follow the science. Lead don't follow.

Do what you say you are going to do. Paris Accord. Net zero by 2050

Be accountable to all those who don't want to become extinct!

Do not implement incoherent policies that counter the set decarbonisation target. Be resolute in achieving targets. Everyone will benefit, including the supply chain.

### Our key ask of Developers:

Consistent approach to design and supply chain interaction.

Early supply chain engagement with a commitment to recover cost. This will open up the supply chain sharing rather than hiding innovation but with security of award.

A consistent long term approach. \*code of practice\*. An industry approach;

Be competitive on a collaborative framework;

Value and support cluster organisations e.g. EEEGR;

Direct OWGP to recognise 'soft values' as well as product improvement.

Demonstrate long term value vs lower cost (they should equate!).

Be more consultative and open to all stakeholders. Be different support onshore enterprise as well as offshore – for example around Necton.

### Our key ask of T1:

Partner' approach not a desire to drive down price by margin degradation.

Cost out not margin removal of supply chain.

Becomes unsustainable.

More flexible with suppliers. Contractual terms to be fair and reasonable. Aim for win/win, not win/lose.

An understanding of the 'hidden cost' of tendering. Frequently risk pushed to the party least able to bear it. Too aggressive.

Why depend so much on T1's. They are not too big to fail. Expensive and beaurocratic.

### Our key ask of Suppliers:

Sell what you can do, not what you would like to do (but don't stop learning and innovating). Collaborate with others.

For the want of a nail a battle was lost.

## Table 9 (Cables/Grid) cont...

### 3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?

Create a list of 'jobs', then simply list the typical training requirements for the role. This could help us, but also colleges and other training suppliers.

Stand back and use a fresh 'pair of eyes' to look at the project design and roadmaps to see if there are any assumptions and recycling of previous practice 'habits' that could be identified and possibly improved upon. This all includes invention, innovation and doing things differently (invent-design-roadmap-build).

Apply systems thinking and design.

Identify synergies between and within packages.

Think outside the box and be ambitious in terms of social/environmental footprint – to set our standards.

Leverage headroom in terms of lead time in some workstrands within packages, into other stands that have 'pinched' lead time.

Nail down the project management.



**Table 10 (O&M)**
**1 i. When do you think it is optimum for us to engage with you to ensure we hit our key milestones?**

Depends on required pre-qualifications. For an SME we need six months as a sub-contractor to T2 contractor.

**1 ii. Based on i, when will you engage with your supply chain?**

SME – two months prior to contract start.

**1 iii. If there is a dependency on info from another package, draw a connector**

One procurement portal for all developers. Best case would be one procurement portal per developer.

**1 iv. What assumptions are you making/what risks do you perceive when determining these milestones? Please note here any other important information in relation to programme.**

No fabrication facilities in the region on a scale to be able to compete. Steel prices are rapidly increasing and fluctuating with massively varying quality.

Could offshore wind benefit from the volumes of steel in the UKCS that needs decommissioning?

Will future developments actually require a CfD and if not will that mean that UK content targets disappear?

**2. If you could ask for one thing from Government / suppliers / T1 / developers, what would it be? What one thing do you (your company) commit to doing to drive change forward after this meeting?**
**Our key ask of Government:**
**Our key ask of Developers:**

One procurement portal for all developers – best case – one procurement portal per developer.

**Our key ask of T1:**
**Our key ask of Suppliers:**
**3. Imagine a new scenario where we have certainty on our 4GW of projects, that consent & CFD is secured today (2 years earlier), what opportunities do you see to invest in the UK? What would you do now?**

Probably more in O&M than in construction.

Buy survey vessels/autonomous vessels and recruit and train staff.

Train graduates to work offshore.