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Subject: Proposed Lake Lothing Third Crossing (TRO10023) - ABP (20013261) - Deadline 7 Submission (EMAIL 1 of 2) [CC-UK1.FID22462820]
Date: 15 March 2019 17:22:43
Attachments: [image001.png](#)
[TRO10023 - ABP \(20013261\) - ABP Document 1 \(Annex 1\).pdf](#)
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Dear Sir,

We write on behalf of our client, Associated British Ports (Objector Reference 20013261), in relation to the above and specifically in the context of **Deadline 7**.

Please see attached the following documents for submission by our client:

1. Summary of oral submissions made by ABP at the examination hearing held on Thursday 7 March 2019 (**ABP: 1 of 3 – DL7**)
 - **Annex 1:** Government Press Release and Policy Paper dated 7 March 2019 relating to the Offshore Wind Sector Deal
 - **Annex 2:** Plan of Lowestoft Inner Harbour Berth Areas
 - **Annex 3:** ABP Lowestoft, Suspended Quay in the Inner Harbour Area
 - **Annex 4:** Supplementary Note on Bridge Transits Inward Bound just before the a.m. Restriction Period
2. Summary of oral submissions made by ABP at the examination hearing held on Friday 8 March 2019 (**ABP: 2 of 3 – DL7**)
 - **Annex 1:** Oral submissions made by ABP in respect of the Western Alternative
 - **Annex 2:** Supplementary Note on CPO and DCO Issues
 - **Annex 3:** Supplementary Note on Serious Detriment
 - **Annex 4:** Supplementary Note on the Port of Newport
 - o Attachment 1 – Plan of the M4 Relief Road
 - o Attachment 2 – Letter to the Secretary of State withdrawing ABP's objections to the M4 Relief Road Scheme
3. ABP Curriculum Vitae (CVs) (**ABP: 3 of 3 – DL7**)

Due to the size of the attachments, we will be submitting these documents in 2 separate emails. **This is EMAIL 1 of 2.**

Kind regards,

Alison

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(ABP: 1 of 3 – DL7)

Proposed Lake Lothing Third Crossing (TRO10023)

Associated British Ports (20013261)

**Summary of oral submissions made by ABP at the examination hearing held
on Thursday 7 March 2019**

Issue Specific Hearing 2 (Environment)

This post examination hearing note summarises the submissions made by Associated British Ports ("ABP") at the LLTC examination hearing held on Thursday 7 March 2019 in relation to the following matters related to the environment:

1. Navigation

- a) Press Release;
- b) Operating regime of existing bridge;
- c) Mooring; and
- d) Draft Scheme of Operation.

2. Environmental Impact Assessment

- a) Environmental Assessment Methodology; and
- b) Overview of ABP's ES methodology points.

As these issues are linked, this post hearing note is split into two parts – Part 1 dealing with issues relating to Navigation and Part 2 dealing with issues relating to Environmental Impact Assessment.

For clarity, this hearing note also incorporates the following Annexures:

- a) **Annex 1** – Government Press Release and Policy Paper dated 7 March 2019, relating to the Offshore Wind Sector Deal;
- b) **Annex 2** – Plan of Lowestoft Inner Harbour, Berth Areas;

- c) **Annex 3** – ABP Lowestoft, Suspended Quay in the Inner Harbour Area; and
- d) **Annex 4** – Supplementary Note on Bridge Transits Inward Bound just before the a.m. Restriction Period.

Where appropriate, these responses are cross-referenced to ABP's Written Representations and other submissions made by ABP for Deadline 3, Deadline 4 and Deadline 5.

1 PART 1 – NAVIGATION

- 1.1 At the hearing on 7 March 2019, ABP raised a number of matters relating to Navigation, which supplemented the detailed submissions made by ABP in its Written Representations for Deadlines 3, 4 and 5.

Press Release

- 1.2 Counsel, on behalf of ABP, began the session by drawing the ExA's attention to the headline components of a Press Release dated 7 March 2019, issued by the Government, reporting the announcement by Energy and Clean Growth Minister Claire Perry of the investment of £250 million to develop the UK's offshore wind energy market – enabling one third of British electricity to be produced by offshore wind power by 2030.
- 1.3 Part of the Government's ambition is to make the UK a global leader in renewables with more investment potential than any other country in the world as part of the modern Industrial Strategy. The investment is intended to spearhead a new £250 million Offshore Wind Growth Partnership so as to ensure UK companies in the North East, East Anglia, Humber and the Solent continue to be competitive and are leaders internationally in the next generation of offshore wind innovations. The investment will also increase the sector target for the amount of UK content in home-grown offshore wind projects to 60% ensuring that the £557 million pledged by the Government in July 2018 for further clean power auctions over the next ten years will directly benefit local communities from Wick to the Isle of Wight.
- 1.4 Relevantly, in recognition of the importance of the East of England as a major offshore wind hub, the Minister officially launched the Government's Offshore Wind Sector Deal in Lowestoft and Great Yarmouth. This highlights the critical nature of the local area to the offshore wind sector, where nearly 4GW of offshore wind power is currently operational, accounting for around 52% of the UK's current installed

capacity. Additionally, the cumulative capacity in operations and development in the East Anglia area could already deliver 50% of the Government's targets for 2030, as set out in the sector deal.

- 1.5 The related policy paper issued by the Government also specifically recognises that places such as Lowestoft and Great Yarmouth in East Anglia are now hubs of activity for the construction and operations and maintenance that support the growing number of offshore windfarms off the coast.
- 1.6 A copy of the Press Release and related Policy Paper relating to the Government's Offshore Wind Sector Deal is at **Annex 1 (ABP: 1 of 3 – DL7, Annex 1)**.

Operating regime of existing A47 Bascule Bridge

- 1.7 ABP's position in respect of the proposed Scheme of Operation remains as stated in ABP's Deadline 5 submission, Sections 4 and 5, Paragraphs 4.1 to 4.13 pages 24 and following (ABP: 1 of 5 - DL5).
- 1.8 Paragraph 4.4 of those submissions (ABP: 1 of 5 - DL5) deals with the response to the Applicant in terms of the operating regime and whether the existing operating procedures are in compliance with the 1969 Order. Attention is drawn in this respect to the fact that the Harbour Master may exercise his discretion as to when to open the bridge. In addition, there is reference to the quotation from Schedule 4 of the 1969 Order requiring the bridge to be closed against vessels except in cases of emergency or with the prior arrangement of the Harbour Master.

Harbour Master's discretion

- 1.9 As explained by Counsel on behalf of ABP, the Applicant appears to be contending that the Harbour Master has exercised his discretion in an incorrect or inappropriate manner, going beyond the terms of the 1969 Order or the 2018 Operating Notice. This contention is firmly rejected by ABP.
- 1.10 ABP pointed out that there has never been any suggestion by the Department of Transport, Highways England or the Highway Authority at any time to date that the Harbour Master has incorrectly or inappropriately exercised his discretion. The procedures have been in place since 1987 and indeed it is believed some time prior to that. Paragraph 4.7 of ABP's Deadline 5 submission (ABP: 1 of 5 – DL5) sets out the process followed by the Harbour Master in terms of bridge operation for

commercial vessels and the use of prior arrangements. In particular, it is made clear that the opening of the bascule bridge is permitted on the basis that:

- a) vessels will sail on next safe tidal period (when not restricted by weather); and
- b) there is a wide discretion as to what constitutes "*on a particular tide*" (wording used in Schedule 4 of the 1969 Order), including consideration of other factors including weather restrictions, and if the weather is likely to be more favourable at different times of day or on a different tide.

- 1.11 The Harbour Master may then, in exercising his discretion, decide to vary the time for vessel entry or exit, having taken into consideration such matters as an approaching weather front, tidal conditions manifesting themselves or best practice.
- 1.12 Captain Gary Horton, Harbour Master and pilot at the Port of Lowestoft ("the Port") commented on the remit of his responsibilities and provided further details relating to the existing operating regime of the bascule bridge. Captain Horton has been a pilot at the Port since 2007, prior to which he was a Master in the Merchant Navy with the last 8 years sent as Master of coastal tankers of a similar tonnage to those at the Port. Captain Horton's CV is provided as part of ABP's Deadline 7 submissions (**ABP: 3 of 3 – DL7**).
- 1.13 Captain Horton confirmed that the operating regime procedures have always been in place (including the operating hours) while he has been working at Port, and that he has been informed by the former Harbour Master for the Port, Captain Richard Musgrove, that the same procedures were in place for his entire career as pilot at the Port, since in 1987.
- 1.14 Captain Horton explained that the tidally constrained element of vessels entering the Port encompasses a number of determining factors, not just the matter of the depth of water but also matters such as published guidelines, to which there is strict adherence, relating to a vessel's size, its manoeuvrability and its draught. All of these impact on a vessel's ability to enter the Port.
- 1.15 By way of example, a vessel which is over 85 metres long is restricted to a half hour tidal window at Pier Head at the entrance to the Port (that can be at low water period or high water period depending on draft). Captain Horton explained that he cannot bring a vessel in outside of prescribed tidal windows, unless he has specific knowledge of that vessel and its handling characteristics. In such circumstances, he

can extend that tidal window thereby enabling safe port entry outside the defined tidal window. There are, therefore, many other factors including the weather and a combination of tidal effect which have to be considered by the pilots. The guidelines are documented and available if required. These guidelines set out which vessels can enter the Port at specific times.

- 1.16 Generally, any vessel below 75 metres in length has a much wider range of tidal window entry ability. That said, Captain Horton did point out that as new vessels enter into service, those new vessels are becoming larger both in terms of length and height for reasons of simple commercial practicality. For example, an operator of what today might be a 75 metre small coaster is now bringing into service vessels which, whilst providing the same service, are being constructed as high platform support vessels, albeit with increased manoeuvrability, thereby compensating for the increased size. At the end of day, it is a judgment call for the pilot to make sure he is satisfied that he can bring the vessel safely into Port.
- 1.17 As far as the operation of the existing bascule bridge is concerned, the 2018 Operating Notice is the means by which Masters of commercial vessels are informed about the restricted periods for entry into the Inner Harbour – when access is discouraged.
- 1.18 Vessels in a range below 75 metres can generally safely enter the Port at most states of the tide, subject to there being available depth of water. Vessels over 60 metres LOA (length overall) will require a pilot so that they can be safely brought into Port. ABP's Port Control will advise any newcomers to the Port of the nature of the access restrictions, so that a given vessel can both make its approach safely but at the same time, during a period when bridge opening restrictions are not in force – thereby avoiding the need to stand out to sea, or hold position in the Port's bridge channel which would delay it. Such delays in themselves can delay the delivery of cargoes, or time critical mobilisation/demobilisation activities – and lead to potential financial cost for the operator.
- 1.19 As a practical example, Captain Horton explained that occasions often arise when he has to accommodate a requests from windfarm vessels operators, whose CTVs all wish to exit or enter at the same time - time being money. That said, the windfarm vessel operators are fully aware of the restricted opening periods for the bridge, and work with the Port to co-ordinate vessel movements so as to minimise delays caused by bridge openings as far as reasonably possible, although delays to the vessels –

often with a full team of turbine maintenance technicians on board – can be costly to the operators. As CTVs are relatively manoeuvrable, they can approach the bridge and hold position until the bridge can be opened, whereupon they all pass through the bridge opening one after the other, thereby reducing the amount of time that the bridge is actually closed to road traffic.

- 1.20 For larger vessels, the pilot will have to time his arrival to board the vessel very carefully, so as to ensure he can board the vessel and safely complete the pilot master exchange, and agree the approach and passage plan for the inwards transit. The vessel to be boarded could be standing off the Port at any distance anywhere between a mile and 3 miles. The pilot has to time the vessel's arrival at the Port so as to meet the correct tidal window (when bridge opening is permitted), whilst also taking into account such factors as tidal currents and prevailing wind strengths.
- 1.21 Subject to the size of the vessel and prevailing conditions, an approach can take between 20 to 40 minutes. Timing will be such that the larger vessels enter the Port at either the beginning of or within the slack water period. In terms of practicality, the entire transit does not have to take place within what is effectively a 30 minute window – but the vessel must be within 500m of the Port entrance within that tidal window if it is to be certain that it will be able to enter the Port safely.
- 1.22 Captain Horton explained that when a vessel enters the Port and is within the Harbour entrance, it is no longer in a tidally critical area in respect of tidal current or flow. Prior to port entry, vessel speed has to be strictly controlled, hence the requirement for no or little effect from tidal current for port entry for larger vessels. In such cases, the principal consideration for the pilot will be the depth of water to ensure sufficient under keel clearance is available. Conversely, in practical operational terms, a vessel leaving the Port will have the ability to apply power as it exits thereby enabling the master to negate the effects of tidal current as it clears the Harbour entrance. Because of this, port exit for most vessels is not so time critical, subject to there being sufficient depth of water available.

Functions of the Harbour Master, Statutory Harbour Authority and ABP

- 1.23 Captain Horton explained the relationship between Harbour Master and ABP as Statutory Harbour Authority. The Harbour Master is a representative of the Statutory Harbour Authority. The Harbour Master's duties extend to ensuring compliance with the Port Marine Safety Code and carrying out marine operations at the Port in a safe

manner without risk.

- 1.24 ABP is the Statutory Harbour Authority for the Port as well as the owner and operator.

Number of bridge lifts during discouraged periods

- 1.25 Captain Horton also addressed the issue of the discrepancy between ABP and the Applicant as to the number of bridge openings having taken place during restricted hours of operation of the existing bascule bridge. ABP is of the view that there were seven instances of bridge openings during the restricted periods within the period specified by the Applicant. All seven could be explained and were justified as being within the proper application of the Harbour Master's powers to open the bridge during the restricted period. Those seven instances of bridge openings during the restricted hours occurred for the following reasons:
- a) Three instances where vessels were tidally constrained; and
 - b) Two emergencies - one to enable a lifeboat to attend a person who had attempted suicide, and the second where a vessel needed to get into the Port quickly as a person on board was ill; and
 - c) One premature lift due to port entry timing misjudgement; and
 - d) A single instance when the bridge operating mechanism had failed. Engineers were called to the site and the fault was rectified. Following the repair, however, the bridge opening mechanism had to be tested whilst the engineers were still on site. That opening fell within the restricted period – and did indeed enable a waiting vessel to pass through.
- 1.26 It should be noted that it is normal practice for ABP to corral vessels which can safely hold position either west or east of the existing bridge, requiring them to wait for the end of the restriction period.
- 1.27 Captain Horton indicated that he was confident that the ABP bridge operators are doing everything they can to avoid disruption or carrying out bridge openings during the restrictions.
- 1.28 Captain Horton suggested that the discrepancy between ABP and the Applicant may be attributable to small time errors and undertook to review the available data with

the Applicant.

Mooring

- 1.29 ABP has provided a position paper regarding the existing mooring arrangements within the Inner Harbour in its Deadline 5 submission at Annex 5, 'Vessel Mooring System in Tidal Ports' (ABP: 1 of 5 - DL5, Annex 5). This report was produced partly in response to the Applicant's assertions in respect of proposed mooring matters.
- 1.30 Captain Horton explained that the mooring arrangements for vessels as proposed by the Applicant in Impact of the Scheme on the Port of Lowestoft Report (Document Reference SCC/LLTC/EX/59) were not in fact practical in terms of the mooring uncertainties present in a tidal Port.
- 1.31 He explained that first a vessel would have to have the necessary mooring arrangements and fittings on deck, to accommodate the somewhat complex spread of lines as identified in the Applicant's Figure 1, but in practical terms far as the Port of Lowestoft is concerned, the mooring process suggested by the Applicant's marine consultant would only work if the elevation of the moored vessel's mooring decks were very closely aligned to the elevation of the quay (the height above the water line) – in that for the moorings to work safely, there could be no disparity in height. Such arrangements would only be possible if no adverse weather conditions, effects of passing vessels, or changes in height disparity between vessel and quay were anticipated during the vessel's stay alongside.
- 1.32 In reality, however, for vessels typically moored in the Port the disparity in height between the vessel and quay would be significant - up to about 5 metres in certain instances. To try to moor a vessel in the manner suggested by the Applicant would be unsafe and impractical. Neither for that matter would it be a particularly efficient way of mooring.
- 1.33 In addition, the mooring methodology proposed by the Applicant would not protect the Port's bollards. The sheer forces acting on the bollard - the forces acting vertically as well as horizontal would be quite significant. Captain Horton pointed out that he had been a Master, Mate and Second Mate of vessels for many years before working at the Port, and he would not consider the arrangements proposed by the Applicant to be either a safe or achievable method of mooring at Lowestoft.

- 1.34 Although the tidal range at the Port is moderately small, a range of approximately 1 metre at Neap Tides and approximately 2 metres at Spring Tides, the rise and fall of a vessel also needs to be considered when it discharges or loads cargo. When discharging cargo the vessel will rise out of the water – ballast may be put into the vessel to compensate for that, but a vessel in a ballasted condition will generally be much higher out of the water than a vessel in a loaded condition. Such a vessel can be as much as up to 5 metres (at springs) above height of the quay on a spring tide.
- 1.35 As far as the bollards are concerned, these are spaced essentially at 12.5 metre intervals. The distance between moored vessels ranges from about 10 – 20 metres. In practical operational terms, it is the vessel’s master in conjunction with the Harbour Master or pilot who will determine which are the safest bollards to moor against. Indeed, it is the vessel master's ultimate responsibility to moor the vessel safely.
- 1.36 Additionally, location and length of berths will vary according to the size of the vessel. Care must be taken, when vessels are moored next to each other, that a given bollard is not overloaded. Ultimately, decisions in relation to mooring are made dynamically, subject to vessel size and space availability.
- 1.37 Safety of mooring is the overriding objective. Although berths at the Port were historically numbered, vessels at that time were historically smaller. Although the Port does accommodate small commercial vessels which can safely moor within a 60 metre berth, if for example a 50 metre long vessel is moored it is very likely that mooring lines will extend beyond the single berth area.

Inner Harbour Berth Plan

- 1.38 At this stage in the examination session, the ExA asked whether ABP could identify the individual berths within the Inner Harbour. ABP has produced a plan which does so and also specifies which berths are allocated to specific users and which are effectively common user berths.
- 1.39 The extent of dedicated and common use berths in the Inner Harbour is shown diagrammatically in **Annex 2 (ABP: 1 of 3 – DL7, Annex 2)**. The term “dedicated berth” covers instances where a berth is committed to a particular user either contractually (for example, the Cefas berth) or where the functional use of the area is such that it is effectively required to be dedicated to a particular use in priority to all other uses (for example, Silo Quay where, because of the specialist nature of the

operation and cargo-handling equipment in use for the handling of dry bulk products such as grain, it is not practicable to direct shipping to use other quays within the Port). Conversely the term “common user berth” refers to quays that are available more generally, and the management and use of which is often dictated by a combination of vessel size, draft and operational requirements. In practice most ports – and Lowestoft is no exception – will have a mix of dedicated and common-user berths, depending on the nature of cargo handled.

Mooring Analysis

- 1.40 The mooring analysis which is shown as part of Annex 5 - 'Vessel Mooring System in Tidal Ports' (ABP: 1 of 5 - DL5, Annex 5) deals with North Quay 1 and 2 and provides at Image 2 a photograph of North Quay 1 and 2.
- 1.41 Captain Horton pointed out that the quay is a suspended, not solid quay. The photograph also shows the constructed vertical timbers and the position of the bollards set back from the quay. It was noted that the bollards are positioned above the supporting members of the suspended deck to give them the required structural resilience.

Suspended Quay

- 1.42 Captain Horton explained that the use of a suspended quay as opposed to a solid quay is quite common. Whilst obviously such a quay can be cheaper to construct than a solid quay, unlike a solid quay, its structure can prove exceptionally beneficial in terms of wave attenuation. As far as the Inner Harbour is concerned, whilst a suspended quay may not be suitable for vessels that require very heavy crane operations, such quays can easily accommodate general cargo vessels, crew change vessels and self-discharging vessels (which are becoming increasingly common).
- 1.43 That said, Captain Horton did point out that the suspended quay design is not well suited for the smaller classes of CTVs, which are too small and too light, and which could in fact, at a low tide, ride under the quay structure and then become caught as the tide rises.
- 1.44 Conversely, vessels of approximately 90 – 100 metres can be berthed at the suspended quay. Indeed many older standby vessels (with conventional rudders and propellers), are able to sit on the bottom during low water – the nature of the bottom being 70% silt. Grain vessels (bulk carriers with a hold and a hatch) also sit on the

bottom when they load.

- 1.45 To assist the ExA, Captain Horton has prepared a short briefing paper on the suspended quay in the Inner Harbour area, at **Annex 3 (ABP: 1 of 3 – DL7, Annex 3)**, which provides guidance on the use of the suspended quay at North Quay in normal practice.

Mooring distances

- 1.46 A distance of 10 - 20 metres is usually allowed for the distance between vessels. Ten metres is the closest that Captain Horton will moor vessels, in light of not just the mooring requirements but also to ensure that there is room to manoeuvre the vessels safely in and out of the berth spaces, even with the ability to almost move some vessels 'sideways'. Captain Horton pointed out that the mooring exercise is not "inch perfect".
- 1.47 A pilot will dynamically risk assess whether there is enough room to moor safely. The pilot will know the space and the size of the vessel that has to be berthed and also the spacing and size of the vessels on adjacent berths. If a pilot does not think that 10 metres provides sufficient mooring space, it may be necessary to adjust the position of those adjacent vessels or look for another alternative berth options. The overall responsibility for mooring a vessel safely rests with the vessel's Master.

CTVs

- 1.48 North Quay Berths 1 to 5 are not generally used for mooring CTVs, bearing in mind that the length of berthing comprises a suspended quay – as discussed in the attached Supplementary Note – **Annex 3 of ABP: 1 of 3 – DL7**. The exception to this is in the vicinity of North Quay 5, just west of proposed scheme, where ABP's customer World Marine is operating. This customer is using large CTV vessels of some 25 metres LOA. The vessels are quite high out of the water, and they are utilising large floating fenders to moor safely with dedicated gangways for crew and passenger embarkation.
- 1.49 Captain Horton confirmed, taking 6 March 2019 as an example, that some 40% of the vessels moored in the Port were above 100 tonnes. The two vessels moored at North Quay 5 were above 100 tonnes - 117 and 95 gross tonnes respectively. The work boats, which operate from Outer Harbour are between 35 - 50 gross tonnes in size (quite small), as were seen on the site visit carried out by the Panel.

Vessels between the bridges

- 1.50 Captain Horton explained that one of ABP's concerns should the LLTC be constructed is that a vessel (non-tidally constrained) may be entering the Port just before the operational restriction comes into effect and may just manage to get past the existing bascule bridge, but could then find itself struck between the two bridges, the LLTC having closed to shipping. In such a scenario, that vessel would have to mill around in the Inner Harbour raising issues relating to safety of navigation – particularly in the absence of an emergency berth. Such delays will also impact operators of these vessels in terms of increased costs and delay to cargo delivery or other vessel operations.
- 1.51 It was pointed out that there is a transit time between the two bridges of approximately 4 minutes, for a distance of some 800 metres.
- 1.52 It was noted in this context that the Applicant has contended that in such a scenario, to avoid being caught, an incoming vessel could simply stand-off at sea and await the next bridge opening period. ABP pointed out, however, that such a contention does rather underline the Applicant's lack of undertaking of the commercial imperatives under which such vessels are operating, where time is of the essence, cargoes have to be loaded or unloaded and delays can be costly. Requesting a vessel to wait 'out at sea' also has potential safety implications, particularly in inclement weather.
- 1.53 The ExA queried whether there have been any occasions when a vessel entering the Port just before the existing bascule bridge is required to be closed could be trapped between that bridge and the closed LLTC, had the LLTC been in existence. To assist the ExA, ABP has prepared a 'Supplementary Note on Bridge Transits Inward Bound just before the a.m. Restriction Period', at **Annex 4 of ABP: 1 of 3 – DL7**, which assesses the impact of the proposed LLTC a.m. restriction period on inward bound vessels required to transit through both bridges.

LLTC Opening Assumption

- 1.54 In this context and in terms of bridge opening times, ABP also drew attention to the representations made by the Applicant as to traffic data and the use of the new bridge. The Applicant noted that it is a modelled suggested opening regime for a bridge which is yet to be the subject of a final design. As a consequence, the Applicant conceded that it does not actually know how its opening regime and cycles will actually work.

- 1.55 There is, therefore, a need to apply a degree of caution regarding the appropriate optimism/pessimism bias as to what is effectively a notional element for the LLTC opening regime, thereby leading to considerable uncertainty as to the opening cycle itself – which could have serious consequences for the passage of port operational traffic.

2 PART 2 - ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Assessment Methodology

- 2.1 During this part of the examination session, ABP drew the ExA's attention to its concerns regarding the Applicant's environmental assessment methodology in the context of the 'Private Assets' assessment contained within Chapter 15 of the Environmental Statement (ES). It was explained that ABP's concerns were set out in:
- a) Section 21 and accompanying Annex 2 of ABP's Written Representations (submitted for Deadline 3 on 8 January 2019) ("ABP WR"), and
 - b) ABP's document titled 'Response to the Applicant's Response on Environmental Statement Matters' (submitted for Deadline 5 on 22 February 2019) ("ABP R").
- 2.2 As the title indicates, document 'ABP R' is ABP's response to the Applicant's response to the ABP EIA adequacy points raised in document 'ABP WR'. For completeness, the Applicant's response being referred to is found at Appendix C of the 'Applicant's Response to Written Representations and Interested Parties Responses to Written Questions (Document SCC/LLTC/EX/51).
- 2.3 ABP's points – which were solely related to matters of assessment methodology, albeit that this is not the limit of ABP's concerns with the ES - were orally raised by Counsel and Mr Philip Rowell (Director of Adams Hendry Consulting Ltd). As indicated to the ExA, a short CV setting out Mr Rowell's qualifications and experience is provided at **ABP: 3 of 3 – DL7**.

Overview of ABP's ES methodology points

- 2.4 Counsel explained that, in general terms, ABP was not undertaking pedantic point scoring as alleged by the Applicant, but demonstrating matters of importance which highlight that the Applicant has not properly scrutinised matters and, as a result, has

ended up with an assessment which suggests that the LLTC scheme only has a 'slight' adverse impact upon the Port.

- 2.5 Mr Rowell explained that, in summary, the methodology used by the Applicant to assess the impact of the LLTC on the Port and other private assets was inappropriate because it failed to consider both the sensitivity or value of the receptor being impacted and the magnitude of the impact on that receptor being generated.
- 2.6 It was also explained that the approach followed by the Applicant was not appropriate for various reasons including:
- a) It does not follow best practice (see ABP WR paragraph 21.8) which was something the Secretary of State emphasised in the Scoping Opinion (APP165, Appendix 1, paragraph A1.5 and ABP WR paragraph 21.5);
 - b) It does not accord with the methodology set out in DMRB, Volume 11, Section 2, Part 5 (see ABP WR paragraph 21.8(a) and ABP WR Annex 2), and the Applicant indicates the DMRB methodology is appropriate for the LLTC scheme (ES paragraph 6.4.9 and ABP R paragraph 2.2); and
 - c) The failure to identify the sensitivity/value of the receptor or the magnitude of the impact was an issue specifically identified by the Secretary of State in the Scoping Opinion (APP165, paragraph 3.14 and ABP WR paragraph 21.8(b)) who also expressed a concern that little information had been provided on how impacts on local businesses would be assessed (APP165, paragraph 3.85).
 - d) In response to these points, the Applicant drew the attention of the Panel to paragraph 15.3.1 of the ES, which states that the assessment "*adopts relevant aspects*" of DMRB Volume 11, Section 3, Parts 6 and 8 as well as IAN 125/15 (Interim Advice Note).
 - e) Furthermore, the Applicant referred to paragraph 2.4 of DMRB, Volume 11, Section 2, Part 5 and noted that the descriptors and criteria for the environmental value of a resource given in Table 2.1 of this aspect of the DMRB were 'typical' and that not all of the value categories will be used by all topics.
- 2.7 The Applicant suggested that the assessment methodology was not inconsistent with the DMRB as a whole and was appropriate for the assessment which needed to be

undertaken.

- 2.8 **[Post Hearing Note:** *It is noted that the Applicant's written rebuttal of ABP's assessment methodology points (provided in Appendix C of SCC/LLTC/EX/51) does not make the point about the assessment adopting "relevant aspects" of the particular aspects of the DMRB referred to. Furthermore, it is noted that the Applicant has not actually provided any detail as to what "relevant aspects" of the DMRB they have "adopted" in its assessment. Both the ES and Appendix C of SCC/LLTC/EX/51 provide no further detail, and no further explanation was provided at the hearing session.*
- 2.9 *In addition, an examination of the elements of the DMRB and the IAN referred to by the Applicant reveals that they do not contain any advice or guidance on how to determine the significance of environmental effects. The DMRB guidance on this particular matter is that which is contained within DMRB, Volume 11, Section 2, Part 5.*
- 2.10 *Finally, the wording of paragraph 2.4 of DMRB, Volume 11, Section 2, Part 5 actually supports the points ABP is making. The paragraph simply indicates that not all categories of receptor value will be used by all of the assessment topic areas set out in Section 3 of the DMRB. This paragraph clearly indicates, therefore, that the approach set out should be used.]*
- 2.11 In addition, the Applicant further suggested that paragraph 3.14 of the Secretary of State's Scoping Opinion allowed for a departure from an overarching assessment methodology and criteria and further indicated that the methodology used was appropriate and had been applied consistently to all private assets considered within the assessment undertaken.
- 2.12 In responding to the Applicant's comments, ABP pointed out that paragraph 3.14 of the Secretary of State's Scoping Opinion made it clear that where a departure from the overarching methodology was made, this needed to be described. Paragraph 3.14 of the Secretary of State's Scoping Opinion, also stated that the ES should clearly identify all potentially significant effects.
- 2.13 Having regard to the conclusions reached on effects in ES Table 15.4 – where the effect on private garages is shown as 'substantial adverse' in comparison to the Scheme's 'slight adverse' effect on the Port – it is clear that the assessment

methodology used had affected the ES in this regard.

- 2.14 Mr Rowell also highlighted that ABP do not consider that the Applicant's own methodology had been correctly applied to all private assets as suggested. Reference was made to paragraphs 3.1 to 3.9 of document ABP R, which detailed why this was the case, and it was pointed out that if the Applicant's methodology had been correctly applied to the Port then the assessment would have had to have concluded a significant effect.
- 2.15 In response, the Applicant indicated that it did not accept that its methodology had been applied inconsistently and that it was comfortable with the assessment approach undertaken and the conclusion reached that the overall effect on the Port is 'slight adverse'.
- 2.16 ***[Post Hearing Note: Nothing said during the hearing session by the Applicant alters the view of ABP that the assessment of the effects of the LLTC scheme on the Port of Lowestoft contained within the ES is inadequate and the conclusions reached by the Applicant in this regard cannot be relied upon.]***



1. Home (<https://www.gov.uk/>)
2. Environment (<https://www.gov.uk/environment>)
3. Climate change and energy (<https://www.gov.uk/environment/climate-change-energy>)
4. Energy infrastructure (<https://www.gov.uk/environment/climate-change-energy-energy-infrastructure>)

Press release

Offshore wind energy revolution to provide a third of all UK electricity by 2030

Energy and Clean Growth Minister Claire Perry announced today the launch of the new joint government-industry Offshore Wind Sector Deal.

Published 7 March 2019

From:

Department for Business, Energy & Industrial Strategy

(<https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy>)

and The Rt Hon Claire Perry MP (<https://www.gov.uk/government/people/claire-perry>)



- Industry to invest £250 million including new Offshore Wind Growth Partnership to develop the UK supply chain as global exports are set to increase fivefold to £2.6 billion by 2030
- a third of British electricity set to be produced by offshore wind power by 2030
- part of the government's ambition to make the UK a global leader in renewables with more investment potential than any other country in the world as part of the modern Industrial Strategy

Clean, green offshore wind is set to power more than 30% of British electricity by 2030, Energy and Clean Growth Minister Claire Perry announced today (7 March 2018) with the launch of the new joint government-industry Offshore Wind Sector Deal

(<https://www.gov.uk/government/publications/offshore-wind-sector-deal>).

This deal will mean for the first time in UK history there will be more electricity from renewables than fossil fuels, with 70% of British electricity predicted to be from low carbon sources by 2030 and over £40 billion of infrastructure investment in the UK.

This is the tenth Sector Deal from the modern Industrial Strategy signed by Business Secretary Greg Clark. It is backed by UK renewables companies and marks a revolution in the offshore wind industry, which 20 years ago was only in its infancy. It could see the number of jobs triple to 27,000 by 2030.

The deal (<https://www.gov.uk/government/publications/offshore-wind-sector-deal>) will also:

- increase the sector target for the amount of UK content in homegrown offshore wind projects to 60%, making sure that the £557 million pledged by the government in July 2018 for further clean power auctions over the next ten years will directly benefit local communities from Wick to the Isle of Wight
- spearhead a new £250 million Offshore Wind Growth Partnership to make sure UK companies in areas like the North East, East Anglia, Humber and the Solent and continue to be competitive and are leaders internationally in the next generation of offshore wind innovations in areas such as robotics, advanced manufacturing, new materials, floating wind and larger turbines
- boost global exports to areas like Europe, Japan, South Korea, Taiwan and the United States fivefold to £2.6 billion per year by 2030 through partnership between the Department of Trade and industry to support smaller supply chain companies to export for the first time
- reduce the cost of projects in the 2020s and overall system costs, so projects commissioning in 2030 will cost consumers less as we move towards a subsidy free world
- see Crown Estate & Crown Estate Scotland release new seabed land from 2019 for new offshore wind developments
- UK government alongside the deal will provide over £4 million pounds for British business to share expertise globally and open new markets for UK industry through a technical assistance programme to help countries like Indonesia, Vietnam, Pakistan and the Philippines skip dirty coal power and develop their own offshore wind projects

Claire Perry, Energy & Clean Growth Minister said:

This new Sector Deal will drive a surge in the clean, green offshore wind revolution that is powering homes and businesses across the UK, bringing investment into coastal communities and ensuring we maintain our position as global leaders in this growing sector.

By 2030 a third of our electricity will come from offshore wind, generating thousands of high-quality jobs across the UK, a strong UK supply chain and a fivefold increase in exports. This is our modern Industrial Strategy in action.

The Co-Chair of the Offshore Wind Industry Council and Ørsted UK Country Manager for Offshore, Benj Sykes, said:

Now that we've sealed this transformative deal with our partners in government, as a key part of the UK's Industrial Strategy, offshore wind is set to take its place at the heart of our low-carbon, affordable and reliable electricity system of the future.

This relentlessly innovative sector is revitalising parts of the country which have never seen opportunities like this for years, especially coastal communities from Wick in the northern Scotland to the Isle of Wight, and from Barrow-in-Furness to the Humber. Companies are burgeoning in clusters, creating new centres of excellence in this clean growth boom. The Sector Deal will ensure that even more of these companies win work not only on here, but around the world in a global offshore wind market set to be worth £30 billion a year by 2030.

Keith Anderson, ScottishPower Chief Executive, said:

ScottishPower is proof that offshore wind works, we've worked tirelessly to bring down costs and, having transitioned to 100% renewable energy, will be building more windfarms to help the UK shift to a clearer electric economy. Two of our offshore windfarms in the East Anglia will replace all of the old thermal generation we've sold and we are ready to invest more by actively pursuing future offshore projects both north and south of the border.

We have a fantastic supply chain already in place in the UK, from businesses in and around East Anglia to across England, across Scotland as well as Northern Ireland. The Sector Deal will attract even more businesses in the UK to join the offshore wind supply chain and we are excited to see the transformative impact this will have on our projects.

In addition, the deal will:

- challenge the sector to more than double the number of women entering the industry to at least 33% by 2030, with the ambition of reaching 40% - up from 16% today
- create an Offshore Energy Passport, recognised outside of the UK, will be developed for offshore wind workers to transfer their skills and expertise to other offshore renewable and oil and gas industries – allowing employees to work seamlessly across different offshore sectors
- see further work with further education institutions to develop a sector-wide curriculum to deliver a skilled and diverse workforce across the country and facilitate skills transfer within the industry
- prompt new targets for increasing the number of apprentices in the sector later this year

The cost of new offshore wind contracts has already outstripped projections and fallen by over 50% over the last two years, and today's further investment will boost this trajectory, with offshore wind projects expected to be cheaper to build than fossil fuel plants by 2020. The Deal will see UK continuing as the largest European market for offshore wind, with 30GW of clean wind power being built by 2030 - the UK making up a fifth of global wind capacity.

The UK is already home to the world's largest offshore wind farm, Walney Extension off the Cumbrian Coast, and construction is well underway on projects nearly double the size. Around 7,200 jobs have been created in this growing industry over the last 20 years, with a welcome surge in opportunities in everything from sea bedrock testing to expert blade production.

The Deal will look to seize on the opportunities presented by the UK's 7,000 miles of coastline, as the industry continues to be a coastal catalyst for many of the UK's former fishing villages and ports. Increased exports and strengthened supply chain networks will secure economic security for towns and cities across the UK.

The government has already invested in growing the offshore wind sector by:

- confirming that clean electricity auctions will be held in 2019 and every two years from then into the 2020s, signalling support worth up to £557 million for industry
- supporting Local Enterprise Partnerships such as the Humber Local Enterprise Partnership to invest in skills and business support to maximise opportunities in the offshore wind sector
- supporting local communities to create new regional clusters and build on their science and innovation strengths with the £115 million Strength in Places Fund to develop stronger local networks

Notes to Editors:

1. The UK's technical assistance programme will allow British business to share expertise globally and open new markets for UK industry. The \$5 million program is being initiated thanks to a £20 million grant to the World Bank's Energy Sector Management and Assistance Program (ESMAP) from the UK, to help low- and middle-income countries implement environmentally sustainable energy solutions and transition away from fossil fuels.
2. Between 2015 and 2017 the price of offshore wind projects securing a contract for difference halved.
3. Today's Deal represents a huge opportunity for the UK industry to benefit from this worldwide shift. The world market for offshore wind is predicted to grow by 17% each year up to 2030, from 22GW in 2018 to 154GW installed by 2030.
4. This Sector Deal is the tenth sector deal established under the modern Industrial Strategy with sector deals already established with the Life Sciences, Automotive, Construction and Nuclear sectors.
5. This Sector Deal follows 9 other partnerships between the government and industry on sector-specific issues can create significant opportunities to boost productivity, employment, innovation and skills.
6. The Industrial Strategy, Clean Growth Grand Challenge maximises the advantages for UK industry from the global shift to clean growth – by supporting UK businesses to lead the world in the development, manufacture and use of low carbon technologies, systems and services that cost less than high carbon alternatives.
7. The Contracts for Difference allocation round for less established technologies such as offshore wind will open by May 2019. The government will hold another allocation round in 2021 and auctions around every 2 years. Depending on the price achieved, these auctions will

deliver between 1 to 2 gigawatts of offshore wind each year in the 2020s. The government will look at ways to manage the auctions to ensure smooth delivery of low carbon generation.

8. Offshore wind projects expected to be cheaper to build than fossil fuel plants by 2020. The International Renewable Energy Association (IRENA) says all renewable energy technologies should be competitive on price with fossil fuels by 2020. (Renewable Power Generation Costs in 2017).
9. The offshore wind industry has predicted 27,000 jobs by 2030.
10. Electricity produced from low carbon sources includes renewable energy such as offshore and onshore wind, solar, biomass and low carbon electricity produced from Nuclear Power.

Key themes of the deal:

This Sector Deal is built on the foundations of the Industrial Strategy (<https://www.gov.uk/government/topical-events/the-uks-industrial-strategy>) – Ideas, People, Infrastructure, Business Environment and Places, and supports the vision to upgrade the UK's infrastructure, creating better, high-paying jobs in communities right across the UK.

Published 7 March 2019

Explore the topic

- Energy infrastructure (<https://www.gov.uk/environment/climate-change-energy-energy-infrastructure>)
- Low carbon technologies (<https://www.gov.uk/environment/low-carbon-technologies>)

Topical events

- The UK's Industrial Strategy (<https://www.gov.uk/government/topical-events/the-uks-industrial-strategy>)



1. Home (<https://www.gov.uk/>)
2. Offshore wind: Sector Deal (<https://www.gov.uk/government/publications/offshore-wind-sector-deal>)
 1. Department for Business, Energy & Industrial Strategy (<https://www.gov.uk/government/organisations/department-for-business-energy-and-industrial-strategy>)

Policy paper

Offshore wind Sector Deal

Published 7 March 2019

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Foreword



Copyright: Gwynt Y Mor wind farm, Rory McKerrrell, RWE Innogy

The offshore wind sector is a UK success story; we have the largest installed capacity of off shore wind in the world and costs have fallen faster than anyone could have envisaged 10 years ago. Off shore wind's share of annual UK generation increased from 0.8% in 2010 to 6.2% in 2017, and is expected to reach around 10% by 2020.

In partnership with government, the offshore wind sector has flourished, demonstrating it can deliver ever larger projects to predictable timescales, at ever lower costs while creating skilled, fulfilling, well-paid jobs in communities around the country. There are more than 430,000 jobs in low carbon businesses and their supply chains, employing people in locations right across the country and 7,200 are directly employed in offshore wind.

This Sector Deal marks a significant deepening of the partnership between the government and the sector, reinforcing the aims of the government's Industrial Strategy to build a Britain fit for the future. To meet these aims, we are ensuring we position the UK at the forefront of emerging opportunities by taking on Grand Challenges - four areas where, building on our existing strengths, we can capitalise on the technological and demographic transformations that will shape the world in the years ahead. Clean Growth is one of these, where we are maximising the advantages for UK industry from the global shift to clean growth. This Deal is a key milestone in furthering these ambitions.

The deal will drive the transformation of offshore wind generation, making it an integral part of a low-cost, low-carbon, flexible grid system and boost the productivity and competitiveness of the UK supply chain. This focus on building the capability of our supply chain will allow companies to play a greater role in the UK's global leadership in offshore wind generation while enhancing their competitiveness internationally. These ambitions will be realised through an industry investment into the Offshore Wind Growth Partnership of up to £250 million, supporting better, high-paying jobs right across the UK.

Taken with the significant commitment from the government in 2018 to run regular Contracts for Difference auctions (our mechanism for supporting low carbon generation), using up to £557 million for future Contracts for Difference, this Deal has the potential to further build on the UK's position as a world leader by providing long-term certainty to business.

Subject to costs coming down, this commitment could see offshore wind contributing up to 30GW of generating capacity by 2030. In return, we expect the sector to continue cutting costs committing to lower their impact on bill payers while investing in and driving growth in the UK's manufacturing base.

Countries around the world have seen what the UK has achieved and are seeking to learn from our example. The technology is now being adopted globally, creating new export market opportunities and accelerating the shift to clean growth.

The government recently set out a renewed approach to the energy sector as we enter a new era for low-carbon power. We are moving towards the end of the energy trilemma, where we can decarbonise and ensure energy security whilst still bearing down on costs to consumers. Just 10 years ago, few people would have imagined that power from offshore wind could be a low-cost form of electricity. That is the reality today. Building on the 30GW of deployment which could be delivered through this Deal by 2030, we are working in partnership towards a future where green power is the cheapest power, with the potential to be delivered without public subsidy. This promises the creation of a low-carbon, secure energy system which is not just affordable but a key driver of our modern Industrial Strategy. In the last 20 years, we have seen offshore wind grow from a nascent sector to the industrial powerhouse we see today. The Sector Deal will take it through to maturity and beyond and will keep the UK at the forefront of this vibrant 21st century industry.

Rt Hon Greg Clark MP (<https://www.gov.uk/government/people/greg-clark>)
Secretary of State for Business, Energy and Industrial Strategy

Benj Sykes Offshore
Wind Industry Council Chair

Baroness Brown of Cambridge
Offshore Wind Sector Champion

Executive summary

The Offshore Wind Sector Deal builds on the United Kingdom's global leadership in offshore wind, maximising the advantages for UK industry from the global shift to clean growth.

This Sector Deal builds on the UK's global leadership position in offshore wind and seeks to maximise the advantages for UK industry from the global shift to clean growth, consistent with the Clean Growth Grand Challenge.

It will do this by:

1. Providing forward visibility of future Contracts for Difference rounds with support of up to £557 million, with the next allocation round planned to open by May 2019, with subsequent auctions around two years thereafter.
2. The sector committing to increase UK content to 60% by 2030, including increases in the capital expenditure phase.
3. Increasing the representation of women in the offshore wind workforce to at least a third by 2030.
4. Setting an ambition of increasing exports fivefold to £2.6 billion by 2030.

5. The sector will invest up to £250 million in building a stronger UK supply chain, establishing the Offshore Wind Growth Partnership (OWGP) to support productivity and increase competitiveness. With the largest installed offshore wind capacity in the world and the prices consumers pay for the energy the sector generates falling significantly (between the 2015 and 2017 Contracts for Difference auctions, support costs fell 50%), a trend that is expected to continue.

Over the next decade, there will be a huge expansion of offshore wind around the world with some estimates envisaging a 17% annual growth from 22GW to 154GW in total installed capacity by 2030¹. In the UK, this could see offshore wind contributing up to 30GW of generating capacity. The domestic opportunities are significant too. Building up to 30GW of offshore wind by 2030 could account for over £40 billion of infrastructure spending in the next decade².

This Deal is built on the foundations of the Industrial Strategy – Ideas, People, Infrastructure, Business Environment and Places.

Ideas

The Industrial Strategy sets out how the UK will become the world's most innovative economy. We are increasing public Research and Development (R&D) spending by £7 billion by 2022, the largest increase on record. Our ambition is to increase total R&D investment to 2.4% of GDP by 2027 and 3% in the long term.

Deployment of innovative technology has been integral to the success of offshore wind in the UK, with notable advances in turbine development leading to significant cost reduction; with turbines now five times larger than when first deployed³. From 2010 to 2016, wind turbine power ratings have grown by 60%, with projects now being deployed over 100km from the shore and in waters over 50 meters deep.

The development of new technologies, and the innovative application of existing ones can all further reduce the costs of offshore wind. For example, the use of autonomous technologies for subsea surveys and the application of data analytics and AI to wind farm operations will help lower the cost of electricity to consumers. The sector and government will work closely to explore opportunities to build on R&D funding.

To support the cost-effective deployment of offshore wind, the sector will establish a System Management and Optimisation Task Group which will explore innovative solutions to support grid integration. This will include managing variability of demand and supply, and the potential for generation and storage of hydrogen for other key applications in a decarbonised energy system.

People

Deploying up to 30GW of installed capacity by 2030 could support 27,000, including in manufacturing, jobs⁴ according to the sector's estimates. This will reinforce the aspiration of the Industrial Strategy to generate good work and greater earning power across the country.

The sector is also taking action to increase the representation of women in the workforce to a third by 2030, (up from 16% in 2018) and with a desire to reach a more stretching ambition of 40%. The sector will also set a baseline and target (by the end of 2019) for increasing BAME representation across the sector.

The sector will work with the government, existing institutions, universities and industry programmes to develop curricula, increase job mobility across and between energy sectors, increase apprenticeship opportunities and coordinate local efforts to prepare for the introduction of T levels (and equivalent higher-level technical levels in the devolved administrations).

Infrastructure

The Industrial Strategy commits to upgrading the UK's infrastructure and we are committed to maintaining and enhancing our position as the anchor market for offshore wind. To achieve this, the government is providing more long-term visibility than any other market in the world through regular Contracts for Difference auctions.

Since 2010, the UK has attracted 48% of new investments, making it the biggest offshore wind market over the last nine years, deploying a turbine a day in 2017. The growth of offshore wind in the UK is underpinned by sophisticated infrastructure capability - from highly capable supply chain companies to design, planning and construction experts.

The government will work collaboratively with the sector and wider stakeholders to ensure that up to 30GW of offshore wind can be delivered by 2030, delivering 1-2GW of new offshore wind per year, in a sustainable and timely way. This will address strategic deployment issues including aviation and radar, onshore and offshore transmission, cumulative environmental impacts (both in the marine and onshore areas) and impacts on other users of the sea space, such as navigation and fishing.

The Crown Estate and Crown Estate Scotland will undertake new seabed leasing in 2019, ensuring a sustainable pipeline of new projects for the late 2020s and early 2030s. This will also provide an opportunity to bring in companies who are new to the UK market, adding to competition, innovation and new sources of investment.

Business environment

We want the UK to be the best place in the world to start and grow a business and attract international investors. The UK's long-term policy framework has driven the growth in offshore wind and encouraged investment.

In response to a commitment of up to 30GW of offshore wind by 2030, the sector has set a target of 60% lifetime UK content in domestic projects, (up from the current 50%) and targeting increasing UK content in the capital expenditure phase. The expertise of UK companies is globally recognised, winning contracts in northern European projects and emerging offshore wind markets such as Taiwan. Deploying up to 30GW offshore wind by 2030 and a growing global market offers unique opportunities for the UK supply chain, with the sector targeting a fivefold increase in exports to £2.6 billion per annum⁵.

As the offshore wind global market expands, the long-term challenge facing the sector and supply chain is to remain competitive. In response to this challenge the sector will invest up to £250 million across the UK, establishing the Offshore Wind Growth Partnership (OWGP), to deliver increased productivity and competitiveness.

The sector commissioned Martin Whitmarsh, former McLaren Group CEO and Formula One Team Principal, to conduct an independent review into the UK supply chain and its conclusions were published in February 2019⁶. Its conclusions served to confirm the direction being taken by the sector and the government in developing the Sector Deal.

Places

The Industrial Strategy set out our goal of helping our communities prosper and thrive across the UK. This is a truly UK-wide sector, with opportunities to create growth and economic benefits, particularly in coastal areas adapting to economic change.

Regional clusters are already emerging, generally located close to windfarms or areas with a strong, pre-existing manufacturing base, oil and gas or R&D presence, such as the Humber and East Anglia.

Linking the clusters with educational institutions, centres for innovation, manufacturing bases, can provide the conditions for local incubation of innovation, drive competitiveness, increase economies of scale and productivity. The deal proposes capitalising on naturally existing clusters and providing sector leadership to create more opportunities for investment and growth in local economies. These will also link with Local Industrial Strategies in England, and City and Growth Deals across the UK.

Key commitments

Ideas

To be the world's most innovative economy.

Sector action to support offshore wind

Industry will establish a System Management and Optimisation Task Group (SMOTG) to deliver innovative solutions to system integration: to support the transformation of the power grid, the SMOTG, led by the Sector Champion, will work with industry stakeholders, National Grid, and the Energy Systems Catapult to identify opportunities to strengthen offshore wind's role in delivering innovative solutions to system integration. A roadmap will be published to identify opportunities to collaborate on pioneering technologies for system integration, such as co-located storage and wind to hydrogen.

The sector will continue to co-fund investment in UK-based Research, Development and Demonstration (RD&D) activities: working collaboratively with UK universities and research institutions to help increase the productivity and competitiveness of the UK supply chain, and support export opportunities. This includes next generation technologies with significant export opportunities. The sector will work in partnership with government to ensure innovation activity also considers how to ensure the UK's radar capabilities and requirements are not impacted adversely.

Drive innovation in the UK supply chain to increase competitiveness and development of UK Intellectual Property (IP): the sector and the government will expand co-operation across the Catapult network and, working closely with UK Research and Innovation, explore opportunities to build on R&D funding within existing schemes in order to help drive increased investment into sectoral R&D and its commercialisation. This will underpin the sector's future innovation and competitiveness and accelerate the commercialisation and development of UK intellectual property.

Government action to support offshore wind

Government will continue to fund collaborative RD&D to increase UK competitiveness and further reduce costs: innovation activity to include a focus on increasing the UK competitiveness of goods and services, including digital and robotic technologies for surveying and operations and maintenance, and next generation technologies contributing to cost reduction.

Government & research institutions will work with the System Management and Optimisation Task Group (SMOTG) on offshore wind system integration: led by the Sector Champion, the SMOTG will identify opportunities to strengthen offshore wind's role in delivering innovative solutions to system integration via existing government programmes.

People

To generate good jobs and greater earning power for all.

Sector action to support offshore wind

Develop a skills training needs analysis and an accreditation framework to broaden the UK offshore wind skills base: the sector will establish an Investment in Talent Group, supported by a skills professional, who will identify skills needs across the sector, and develop curricula and accreditation to deepen the skills base. This includes developing an Offshore Energy Passport (recognised outside the UK) to accredit offshore workers and facilitate job-mobility between offshore renewable and extractive industries. It will also develop a mechanism to more easily facilitate the transfer of former military personnel with appropriate skills into the industry.

Introduce a workforce and skills model to track and report workforce data: the sector has completed a skills gap analysis using a model developed by the National Skills Academy for Rail (NSAR). The sector will continue to track and report on workforce data using the NSAR model, or a similar model to establish measures to encourage diversity, inclusion, and equitable access to opportunity throughout the industry and agree clear targets and metrics.

Increase diversity in the workforce with an ambition of 40% women employed in the sector by 2030. Set new target for BAME representation by end of 2019: the sector is committed to becoming more diverse and inclusive and will take action to raise the number of women in the workforce to a third by 2030 (up from 16% in 2018), but with a desire to reach a more stretching ambition of 40% if feasible (including those undertaking training and university degrees). The sector also commits to calculating a baseline figure for BAME representation and to set an equally stretching target for this by the end of 2019.

The sector will continue to collaborate to ensure the highest health and safety standards during development, construction, operation, and decommissioning.

Build early-stage skills and knowledge accessibility:

- The sector will continue to work with education institutions for post 16 year-olds to support development of Institutes of Technology to develop a sector-wide standardised curriculum. This will facilitate skills transfer within the offshore wind industry and strengthen links between employers and providers of higher-level technical training (particularly at Levels 4 and 5), providing work experience to deliver a skilled and diverse workforce to support Regional Clusters.
- Working with government, the sector will address identified skills gaps by coordinating local efforts to prepare for the introduction of T levels and equivalent higher-level technical levels in the devolved administrations, including informing and signposting opportunities, supporting the work of local communication activity and working with key partners to

encourage high quality work placements. The sector will work with government to increase the provision of work placements, ahead of and during the phased roll out of T levels in specific related routes such as digital, construction, and engineering and manufacturing. Collaborations with universities will be expanded to support research and cultivate a highly skilled Research Development & Demonstration (RD&D) workforce.

Review apprenticeship standards and increase apprenticeships with a target to be set by end of 2019:

- the sector has completed an audit of the current range of over 60 apprenticeship standards and frameworks available and will focus on reviewing the standards periodically. The sector will work with The Institute for Apprenticeships & Technical Education to develop new standards, where necessary.
- the sector will work with the government to set targets to increase the number of apprentices in the sector. Targets will be published by the end of 2019. The sector will work with the devolved administrations, where other apprenticeships approaches exist on targets and standards to ensure that skillsets across the industry are consistent.

Government action to support offshore wind

Government and devolved administrations will participate in a new sector led Investment in Talent Group: the Investment in Talent Group will ensure that sector action is aligned and complements the government's skills agenda. The group will also collaborate with other sectors such as oil and gas, nuclear and automotive.

Infrastructure

A major upgrade to the UK's infrastructure.

Sector action to support offshore wind

The sector will deliver cumulative infrastructure investment of over £40 billion to 2030 (based on the sector's estimates) to deliver a low-cost, clean energy system.

Collaborate to deliver an efficient, secure and integrated energy system. Through the investment certainty provided by the CfD mechanism, the sector will continue to reduce costs to consumers so projects commissioning in 2030 will cost consumers less as we move towards a subsidy free world.

Government action to support offshore wind

Government will provide long term certainty to underpin investment: the government will make up to £557 million available for future Contracts for Difference. The next Contracts for Difference allocation round is planned to open by May 2019. It is intended that subsequent Contracts for Difference auctions will then take place every two years. A pathway to up to 30GW by 2030 provides a level of certainty unmatched by any other European government and means the UK will remain the anchor market for offshore wind.

The government will work collaboratively with the sector and wider stakeholders to address strategic deployment issues including aviation and radar, onshore and offshore transmission, cumulative environmental impacts both in the marine and onshore areas and impacts on other users of sea space such as navigation and fishing.

This is to ensure that up to 30GW of offshore wind can be delivered by 2030 in a sustainable and timely way so that:

- offshore transmission is delivered in a way which is efficient, attractive to investors and provides value for consumers
- impacts on other users of the sea space and impacts of transmission infrastructure (onshore and offshore) are acceptable
- the UK is able to meet its national security obligations, and that its radars can operate effectively as the offshore wind sector expands in the coming years. This will include working in partnership with the sector on innovation activity and development of a technical solution.

In support of this commitment, The Crown Estate will establish a strategic enabling actions programme with the aim of increasing the available knowledge and evidence to support sustainable and coordinated expansion of offshore wind:

- in parallel with new leasing, The Crown Estate will work partnership with government, and in collaboration with the devolved administrations, regulators, developers, operators, Statutory Nature Conservation Bodies (SNCB), and Non-Governmental Organisations to define and deliver the programme. Government, regulators and SNCBs will ensure the lessons from this and previous work are fed back into future decision-making enabling more informed policy making.

The Crown Estate and Crown Estate Scotland will undertake new seabed leasing in 2019, ensuring a sustainable pipeline of new projects to be developed in the 2020s and 2030s.

Business environment

The best place to start and grow a business.

Sector action to support offshore wind

Build more productive, competitive and export-orientated supply chains: a supply chain review led by independent expert Martin Whitmarsh, former McLaren Group CEO and Formula One Team Principal, has examined opportunities and barriers to growth across the supply chain. Clear deliverables developed from the review will be implemented as part of the Sector Deal.

The sector will establish and fund a new Offshore Wind Growth Partnership (OWGP), targeted at raising productivity and increasing competitiveness. Over the next 10 years the sector will be contributing up to £250 million into delivering a stronger, more competitive UK supply chain on the way to delivering 30GW of generating capacity around the UK: learning lessons from the aerospace and automotive sectors, the OWGP will implement structured productivity improvement programmes and work with the developers to increase growth opportunities for the supply chain and provide longer-term visibility of opportunities in UK and global markets.

The sector will have a target of achieving total lifetime UK content of 60% for projects commissioning from 2030 onwards including increasing levels of UK content in the capital expenditure phase. A roadmap of how this could be achieved will be developed.

Measuring and reporting UK content: the sector will update its UK content methodology and commits to a longer-term move towards increased transparency. As part of the update, the sector will develop a more holistic approach by reporting UK content and UK exports.

Increasing UK exports: the sector will have a target of increasing exports fivefold to £2.6 billion per annum by 2030. Project developers will work collaboratively to help facilitate and promote this export drive by encouraging their UK supply chains to bid for contracts in their worldwide project portfolios.

Improving access for SMEs: Martin Whitmarsh has carried out an independent supply chain review on behalf of the industry. The sector will take account of the recommendations specifically in relation to the barriers to entry for SMEs.

Information sharing with supply chain: the sector commits to providing pipeline visibility to supply chain companies at the earliest opportunity and sharing this information as widely as possible. This will help the supply chain to plan and, if necessary, invest in either new capacity or capability.

Offshore wind sector commitment on payment practices: the sector's Industry Council member companies are committed to report on their payment practices and performance. The Industry Council will benchmark the payment performance of the sector to drive cultural change within the industry on this issue to support the financial health of suppliers, including SME's, and encourage good practice at all tiers of the supply chain.

Government action to support offshore wind

Maintain key policies and programmes that support export-led growth: as the global market develops, the government will commit to continuing their export support programme for the offshore wind sector. This will include targeted programmes to help growing firms access international markets, trade and foreign direct investment promotion, supporting supplier competitiveness and productivity, and working with developers and suppliers to access new markets.

Maintain key programmes that support inward investment led growth: continued support from the government to work collaboratively with the sector to encourage inward investment opportunities, based on projected future project pipeline.

Developing frameworks to support future technology: the government will work with the sector and other stakeholders to consider the best way to bring forward new technologies such as floating offshore wind and hybrid projects, consistent with the principles of competition, maximising value for the UK economy and value for consumers.

Places

To have prosperous places throughout the UK.

Sector action to support offshore wind

Coordinate to maximise impact: the sector will bolster Regional: clusters by working with local, regional, and devolved government and economic development agencies to identify areas of comparative advantage and define the specific infrastructure and investments required to support increased earning power in local communities. This will help align cluster support activities across the sector and identify synergies. This approach will help support the clean growth transition by increasing job mobility between offshore renewable and extractive industries.

The sector will continue to invest in projects that will benefit local communities in the regions in which they operate, for example through community benefit funds.

Government action to support offshore wind

Bolster Regional Clusters: established government programmes will deliver significant investments that benefit the industry across the UK. The £115 million Strength in Places Fund will support areas to build on their science and innovation strengths and develop stronger local networks, as a competitive fund for collaborative bids. Local Enterprise Partnerships may also build on the example set by the Humber Local Enterprise Partnership to maximise opportunities in the offshore wind sector by investing in specialist skills and business support, which it has done successfully through its Growth Deal and the Hull and Humber City Deal.

Ideas

The growth of the offshore wind sector in the UK over the past 2 decades—and the cost reductions we have seen—has been driven by constant innovation.

Cost reduction and efficiency has been underpinned by the practical application of Research and Development and learning by doing. This Sector Deal will ensure that ongoing innovation will continue to act as a catalyst to growth of the sector.

Offshore wind is a UK innovation success story

Offshore wind will play a key role in addressing the Grand Challenges set out in our modern Industrial Strategy in delivering the UK's leading role in the global shift to Clean Growth. The increasing deployment of offshore wind over the coming decade will create a range of challenges for the sector. Challenges such as the ability to integrate larger volumes of offshore wind generation into the grid whilst minimising increases in the cost of operating the energy system; generating electricity in a more flexible, responsive manner; and more efficient operations and maintenance.

Rapid advances in manufacturing techniques means that there are opportunities for innovation within the supply chain to continue to drive down costs.

New products and services built on UK expertise in areas such as autonomous vessels, drones, artificial intelligence, data and digitalisation have the potential to transform the sector and strengthen the UK's export proposition.

Investment in research and development to increase productivity and competitiveness

The UK has a longstanding record in supporting collaborative R&D and innovation across the UK economy, capitalising on its strong academic and engineering base. The creation of the UK Offshore Renewable Energy (ORE) Catapult in 2013 brought together leading UK research and testing facilities and expertise in offshore renewable energy to support the development of world leading skills, knowledge and expertise in the offshore sector. In 2018, the government announced a further £73.5 million, five-year funding plan for the ORE Catapult. The sector and the government will expand the co-operation across the Catapult network and, working closely with UK Research and Innovation, explore opportunities to build on R&D funding within existing schemes such as the Industrial Strategy Challenge Fund and learn from other sectors.

This Deal builds on the established 'Offshore Wind Innovation Hub', a collaboration between InnovateUK and the ORE Catapult which has jointly agreed innovation priorities around 4 key areas:

- turbines
- sub-structures (including floating)
- electrical infrastructure;
- operations and maintenance and wind farm lifecycle

As the scale of offshore wind deployment increases, innovative technologies and processes will be able to assist in addressing the cumulative impacts, such as environmental and radar, of more offshore wind deployment.

Delivering an efficient and secure energy system through an integrated approach to decarbonising power

The energy system of the future will need to be clean, smart, reliable and demonstrably fair to consumers and producers. The deal will focus on delivering an effective, low-cost integration of offshore wind into the energy system.

The sector will establish the System Management and Optimisation Task Group, led by the Sector Champion, Baroness Brown of Cambridge, which will work with National Grid, the Energy Systems Catapult and research bodies such as the Faraday Institution to identify opportunities to strengthen offshore wind's role in delivering innovative solutions to system integration, including managing variability.

As a first step, a roadmap will be developed which identifies opportunities to collaborate on pioneering technologies and methods and how it can support energy intensive industrial processes, the role of hydrogen in the energy system and other smart grid solutions, and how they could be enabled through policy and sector action.

Bringing innovation to market and developing new technology

Innovations such as floating foundations could make it feasible to deploy offshore wind in deeper waters around the world which are currently inaccessible to fixed bottom foundations. As the electricity system evolves, hybrid projects linking offshore wind with large scale storage or hydrogen or interconnection may develop into efficient and cost-effective solutions to help the UK decarbonise. The government will work with the sector and interested stakeholders to consider the best way to incentivise new technologies consistent with the principles of competition, maximising economic value for the UK and ensuring value for consumers.

Rovco case study

Subsea survey and inspections are a necessary part of operations and maintenance but current methods of analysing thousands of hours of video are time-consuming and expensive. Bristol-based SME Rovco delivers cutting-edge subsea survey services through a pioneering underwater live 3D vision technology which provides operators with a clearer and immediate picture of their subsea assets. The system creates real-time 3D reconstructions of the seabed and underwater structures. This helps quickly identify issues and facilitates more accurate predictions of asset lifespan and integrity. This could lower the cost of subsea inspections by 80%.

Support from the Offshore Renewable Energy Catapult helped Rovco secure Innovate UK funding and private investment. With an estimated export revenue of £20 million per year, Rovco's subsea robotics expertise has put the firm in line to become the market leader in subsea surveying. The company plans to create around 70 highly-skilled jobs in manufacturing and operations, and its expansion will bring UK supply chain benefit in oil & gas as well as offshore wind.

People

In partnership with the government, offshore wind has grown into a maturing sector, supporting around 7,200⁷ jobs in communities around the country. The challenge the sector now faces is a positive one.

The sector will require a new influx of highly skilled workers by 2030, covering a broad range of disciplines and in communities right across the country.

The sector estimates that offshore wind could support 27,000 jobs across the UK by 2030⁸, covering all aspects of a wind farm; project management, construction and operations and maintenance. With the industry committed to sourcing 60% total lifetime UK content and increasing UK content in the capital expenditure phase, there will also be a need for highly skilled workers in manufacturing areas throughout the supply chain.

To deliver change of this scale will require cooperation and coordination between industry, government and educational institutions, specifically at a regional level as those communities benefitting from this expansion will have the knowledge and resources to deliver the new young, skilled recruits of the future, capable of exporting these skills and experience to global markets.

In this Deal, the sector commits to supporting the development of skills at all levels of the supply chain, from small enterprises to multinationals.

The sector will establish an Offshore Wind Investment In Talent Group, supported by a skills professional, who will identify skills needs across the sector, and develop curricula and accreditation to deepen the skills base. It will work closely with Regional Clusters and with Local Industrial Strategies in England, and where skills policy has been devolved, with the appropriate bodies and the devolved administrations, to ensure that industry action is aligned and complements these skills agendas. This includes developing an Offshore Energy Passport (recognised outside the UK) to facilitate job mobility between different sectors. It will also develop a mechanism to more easily facilitate the transfer of former military personnel with appropriate skills into the sector.

Building early stage skills

The sector understands that it is critical to deliver the highly skilled and diverse workforce into the 2020's and will require work with education institutions for post 16 year-olds. It will support development of Institutes of Technology, and the appropriate institutions in the devolved administrations, to develop a sector-wide standardised curriculum to facilitate skills transfer within the industry and strengthen links between employers and providers of higher-level technical training and providing work experience to deliver a skilled and diverse workforce.

Working with the government, the sector will address identified skills gaps from the work of the Offshore Wind Investment In Talent Group by coordinating local efforts to prepare for the introduction of T levels and equivalent higher-level technical levels in the devolved administrations, including: informing and signposting opportunities, supporting the work of local communication activity and working with key partners to encourage high quality work placements. The sector will work with the government to increase the provision of work placements, ahead of and during the phased roll out of T levels and equivalent higher level technical levels in the devolved administrations in specific related routes such as digital, construction, and engineering and manufacturing.

The sector has completed a review of the current range of over 60 Apprenticeship standards and frameworks currently applicable to the industry and will focus on reviewing the standards periodically to ensure they remain up to date and relevant.

The sector will work with the Institute for Apprenticeships to develop new standards where necessary and will set targets to increase the number of apprentices in the sector and these will be published in November 2019.

Collaborations with universities will be expanded to support research and cultivate a highly skilled Research, Development & Demonstration workforce.

Promoting diversity

The sector recognises that it needs to tap into the largest pool of talent possible and better reflect modern society by having a diverse and inclusive workforce. Currently, only 16% of workers are women, with an average workforce age of 38, meaning the challenge is significant.

The sector has set itself a minimum target of employing 33% women across the sector by 2030 and raising this figure to 40% if feasible—including those undertaking training and university degrees. The sector will also calculate a baseline figure for BAME representation in the industry and look to set an equally stretching target for this by November 2019.

The sector will commit to local initiatives for including people with diverse backgrounds, perspectives and needs, which include age, ethnicity, education and other abilities, including assessing if any systemic issues prevent potential recruits from joining the sector and if so, how these should be tackled.

The government is encouraging more students into STEM education, and training, at all stages from primary school to higher education by funding programmes in schools and colleges to increase the take-up of maths (such as the Advanced Maths Premium), computing and physics; and to support better teaching of maths, science and computing in schools. Supported by a new £84 million programme to improve computing teaching, whilst seeking to address the gender imbalance in STEM subjects, and in particular, improving girls' take-up of maths, computing and physics.

Health and safety initiatives

The marine environment can be a hazardous working environment. The sector is proud of its commitment to the continuous improvement of health, safety, and well-being, setting up the G+ global group to drive good practice. Through industry collaboration there has been a reduction in incident rates, with the G+ group reporting fewer high potential incidents in 2017 even though its members worked 5 million more hours than in 2016.

Over the next decade, the increase in deployment means the sector will expand, bringing in new companies and workers who may have little or no experience of the marine environment and new areas of activity, such as repowering and decommissioning, will also develop. The sector will continue to collaborate to deliver a strong, sustainable and continually improving culture, promoting and maintaining the highest possible standards of health and safety through the life cycle of projects both in the UK and around the world.

Lorna Bennet at ORE Catapult's Levenmouth Demonstration Turbine

Lorna Bennet is a Mechanical Engineer at the Offshore Renewable Energy Catapult, running the STEM engagement and intern programme. She's passionate about encouraging more young women to take up a career in engineering. Lorna was a finalist in the 2018 Institution of Engineering & Technology's Young Woman Engineer of the Year Awards.

Infrastructure

Clean, affordable energy is essential for economic prosperity.

Renewable electricity, is now a significant, core part of the UK's electricity mix providing over a third of annual generation. It's less than 20 years since the UK's first offshore windfarm became operational. By 2020, offshore wind will provide around 10% of the UK's annual electricity generation and by 2023 we expect around 14GW of installed capacity.

Working together, the government and the sector will accelerate investment which could support a credible and achievable pathway to up to 30GW by 2030, generating clean electricity helping to decarbonise the economy and contributing to global efforts to tackle climate change. This will mean the UK remains the core market for offshore wind in the 2020s and this ambition will be the foundation for delivering the other commitments in this Sector Deal.

Offshore windfarms can require billions of pounds in up-front capital investment years before investors realise a financial return. The government will continue to provide a long-term framework to underpin that investment based on the principles of competitive allocation of support, continued cost reductions and value for consumers. The government has committed up to £557 million available future Contracts for Difference. The next Contract for Difference allocation round is planned to open by May 2019.

It is intended that subsequent Contracts for Difference auctions will then take place around every 2 years. Depending upon prices achieved, this offers a credible and achievable pathway to 30GW by 2030. This is a level of certainty and ambition unmatched by any other European country and means the UK will remain the anchor market for offshore wind in the next decade.

Reducing costs to consumers

The costs of offshore wind have fallen faster than anyone could have envisaged, which has brought benefits to consumers. This has been driven by competitive allocation of support and underpinned by long-term policy certainty, which enabled the sector to invest in technological innovation, and benefit from learning by doing and reductions in the cost of capital due to the risk profile of this technology coming down. The sector and finance community expect costs to continue to fall. Over the period to 2030, the sector will continue to focus on reducing both the levelised cost of offshore wind and system costs, as low-carbon technologies move towards a subsidy free world.

Delivering up to 30GW in a sustainable way

The government will work collaboratively with the sector and wider stakeholders to address strategic deployment issues including aviation and radar, onshore and offshore transmission, cumulative environmental impacts both in the marine and onshore areas and impacts on other users of the sea space such as navigation, fishing and dredging.

Our European neighbours will also be deploying more offshore wind in shared sea spaces such as the North Sea. This continued pace of deployment drives the need to better understand the cumulative impacts, both in the ecological and socioeconomic arenas: including birds, marine mammals, navigation and fisheries, and coastal and onshore communities affected by associated infrastructure, such as onshore cabling.

This is to ensure that deployment out to 2030 can be delivered in a sustainable and timely way, that impacts on other users of the sea space are acceptable, that impacts of transmission infrastructure onshore and offshore are acceptable, that future needs of the UK's radar capabilities are taken into account and that offshore transmission is delivered in a way which is efficient, attractive to investors and provides value for consumers.

In support of the government's policy and this Deal, The Crown Estate will establish a strategic enabling actions programme (in parallel with new leasing). In partnership with the government and in collaboration with the devolved administrations, regulators, developers, operators, Statutory Nature Conservation Bodies (SNCBs), and non-governmental organisations, the programme's aim will be to increase the evidence base and understanding of offshore wind deployment, both in the marine area and where there are associated onshore impacts, to support sustainable and co-ordinated expansion of offshore wind. Core funding will be provided by The Crown Estate with additional contributions sought for specific projects and activities from the sector and key stakeholders. Government, regulators and SNCBs will ensure the lessons from this, and previous, work are fed back into future decision-making enabling more informed policy making.

Beyond 2030

Offshore wind projects take a long time to develop—typically 10 years from original concept to generating electricity—so it is imperative to prepare now for the longer term. The Crown Estate and Crown Estate Scotland will undertake new seabed leasing in 2019 ensuring a sustainable pipeline of new projects which can be built in the late 2020s and into the 2030s. This will also provide an opportunity for companies who are new to the UK market, adding to competition, innovation and new sources of investment.

By the late 2020s, the sector will be addressing issues such as life extensions, repowering and decommissioning as the earliest operational projects reach the end of their operating lifetime. The government will work with the sector as this develops, to ensure that the UK maximises the economic value of such work and provides value to consumers.

Beatrice operations base in Lower Pulteneytown, Wick

First developed by renowned Scottish civil engineer Thomas Telford in 1807, these buildings have a long history of supporting marine work. SSE has restored these historic buildings as part of their £20m investment into Wick, to bring them back into use as the operations and maintenance base for the Beatrice project. This base, for Scotland's largest offshore windfarm, will be home to 90 workers through the 25 year lifetime of the project.

Comparison of offshore wind turbine size over time



Business environment

Offshore wind is now growing globally. The UK has built a successful supply chain, with expertise across the entire value chain.

The UK has significant opportunity to increase our competitiveness, and develop the technologies and expertise to increase UK value at home and drive forward an export-led supply chain.

The UK's growing offshore wind supply chain has already delivered a number of notable successes, including blade and cable manufacturing facilities, which have helped deliver British-made components to our most recent UK projects. This has helped us achieve almost 50% UK content in these projects⁹. This Sector Deal provides an opportunity to further build on these successes and supply, at scale, emerging offshore wind markets globally.

Supply chain opportunity

Over the next decade there will be a huge expansion of offshore wind around the world with some estimates envisaging a 17% annual growth from 22GW to 154GW in total installed capacity by 2030¹⁰.

The UK market will be the largest in Europe, and this anchor home market is an opportunity for the sector to build on its competitiveness, increase productivity and by harnessing new technology, develop the new and innovative products and services that will be needed. In doing so, the sector can deliver on its target of achieving 60% UK lifetime content, with increasing levels of value in the capital expenditure phase, and increasing exports fivefold by 2030 to £2.6bn per annum¹¹.

As well as the greater export opportunities, UK companies will be increasingly exposed to competition from the growing global supply chain with customers in all markets putting pressure on costs and requiring continuous improvement in goods and services.

Supply chain competitiveness and productivity improvement

To address these challenges, the sector has developed a new programme—the Offshore Wind Growth Partnership (OWGP), based on successful initiatives in other sectors¹². Through the OWGP, the sector will be contributing up to £250 million to support productivity and increasing competitiveness.

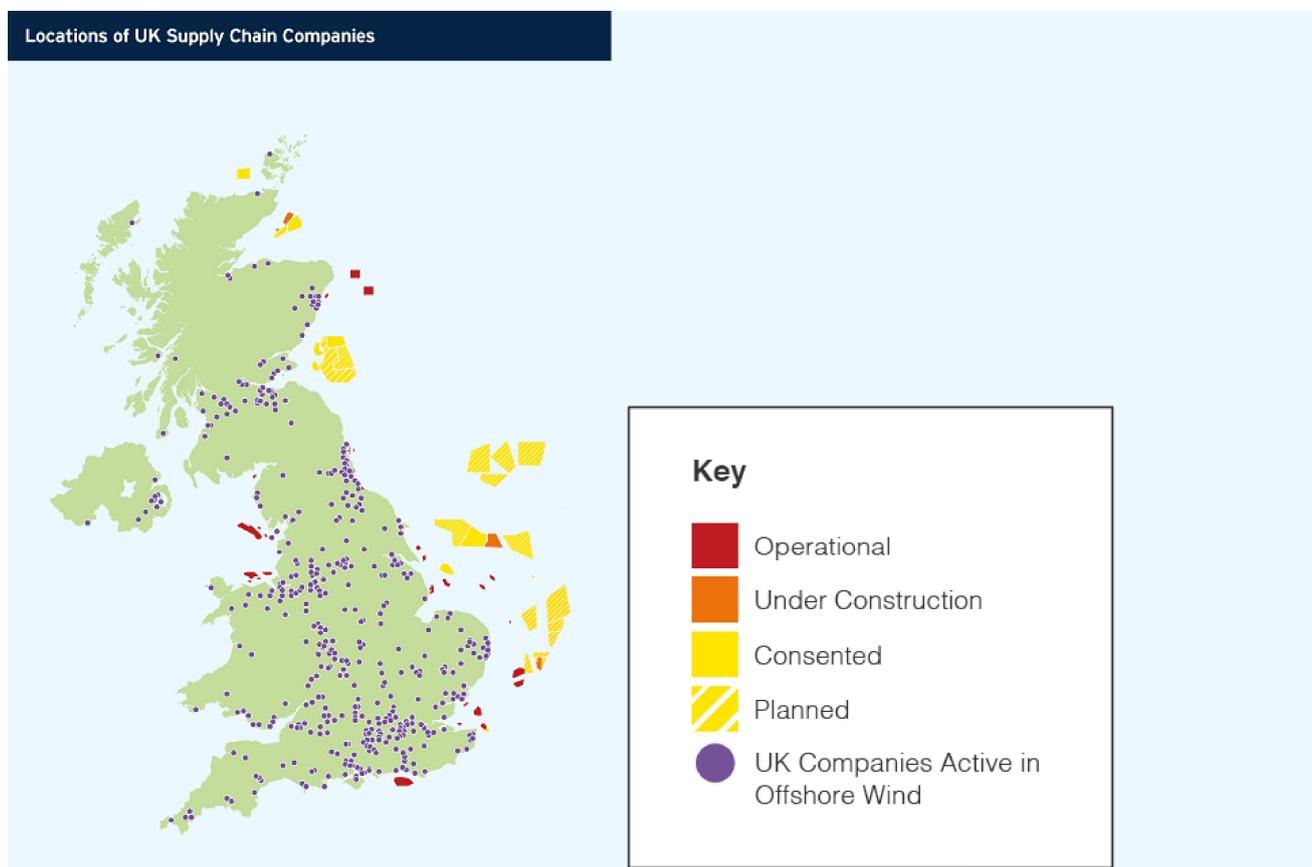
This initiative will work with businesses and SMEs to address the UK productivity gap, increase business competitiveness, promote greater collaboration across and down the supply chain, support greater supply chain innovation, and help increase supply chain capacity through attracting new entrants and growing existing capacity. This initiative will also drive innovation in the supply chain, develop new technology and UK intellectual property. If achieved this would support an increasingly globally competitive supply chain. This programme will coordinate closely with the work the sector is doing through Regional Clusters and on increasing skills provision through the Offshore Wind Investment In Talent Group.

To inform the new programme, an independent expert, Martin Whitmarsh¹³, the former McLaren Group CEO and Formula One Team Principal has examined the opportunities and barriers to business growth, taking advantage of best practice from leading industries across the UK to develop a globally competitive UK-based supply chain.

The report was published on 1 February 2019 and confirmed the direction being taken by the sector and the government in developing the deal. The sector and government will consider the recommendations when developing the programme of work for the OWGP, specifically on removing barriers to SME's entering the market, including examining how to streamline and reduce costs through the procurement process.

The OWGP programme will establish criteria by which companies, can bid for support. It will work with companies and their potential customers, to develop a tailored business improvement plan.

Locations of UK supply chain companies



CS Wind

Campbeltown based CS Wind has invested in a facility to produce large offshore wind towers and recently completed a process improvement project to expand capacity and improve production efficiency. CS Wind supplied the first ever offshore towers manufactured in the UK to Walney Extension, followed by Hornsea One and Beatrice offshore wind farms.

OWGP activities will initially focus on: helping supply chain companies with strategy and leadership, project management, people excellence, process excellence, health and safety culture, and quality management. It will also work with the developers to provide greater long-term visibility of project pipelines which will help supply chain companies to plan and, if necessary, to invest in new capability or capacity.

The government will lead initiatives to target and support inward investment. This work will require greater collaboration with the sector to understand future capacity requirements and technology needs to enable them to develop inward investment strategies and targets.

The OWGP programme has 4 distinct strands:

- project led for growth—enhanced engagement and support between developers to increase competitiveness in the supply chain, build capacity and sharing of information on future opportunities.
- business competitiveness—an intensive structured business improvement programme. Participation in the programme will vary depending on the level of improvements identified for each company.
- building new capacity—considering the recommendations from the supply chain review, and an analysis of achieving 60% lifetime UK content, identify supply chain gaps to grow existing capacity and identify new entrants.
- supply chain innovation—developing new innovations and UK intellectual property in areas such as robotics, advanced manufacturing, new materials and automation, in conjunction with the Catapult Network and innovation programmes.

This Deal will contribute to the sector's ambition of an increased target of 60% lifetime UK content by 2030, while driving up the levels of UK content in the capital expenditure phase.

Seizing export opportunities

The rapidly expanding global offshore wind market presents a huge export opportunity. The deal provides a strong platform to increase the number of globally competitive UK supply chain companies.

The government will continue its export support programmes to help firms access international markets, including:

- working with UK and European developers to access new markets
- supporting supplier competitiveness and productivity
- trade and foreign direct investment promotion

This will complement their existing High Value Campaigns (HVC) programme which targets specific growth markets in offshore wind.

Government will also continue its trade support programme to identify future inward investment opportunities, based on the sectors analysis of the capacity gaps to achieve 60% UK lifetime content.

The OWGP will support this work by collaboratively working with government to identify market opportunities and how to promote export opportunities to the supply chain and by increasing information sharing on future technology trends for instance larger turbines or components to allow government to better inform the supply chain to respond to these changes and identify future investment opportunities.

This supportive business environment aligned with sector collaboration will allow UK businesses to capture not only an even greater proportion of the UK market, but also the global export markets. This will allow the sector to deliver a fivefold increase in exports to around £2.6 billion per annum.

Hutchinson Engineering Ltd

Widnes based SME Hutchinson Engineering Ltd successfully diversified their business into offshore wind. As a market leader in the fabrication and commissioning of mobile telecommunication masts, they pursued a detailed strategy to transfer their capability into the offshore wind secondary steel market. They have delivered secondary steel to Dudgeon, Burbo Bank Extension and Walney Extension offshore wind farms

Places

Offshore wind is a new and growing sector that has already brought a positive transformation to many communities around our coast that are adapting to industrial change.

Due to the investment in the past decade and the number of jobs supported by offshore wind in these areas, we are seeing a renewed confidence and pride that comes from cities and towns realising their potential, shaping their own economic future and benefiting from greater prosperity and life prospects.

With 8 large offshore wind projects currently under construction and many more to follow, many communities are ideally located to take full advantage of the opportunities and investment.

We are already seeing an emergence of regional clusters that are generally located close to the wind farms or with a strong, pre-existing manufacturing or R&D base. Scotland is an example of this where the first three large wind farms (Beatrice, Moray East and Neart Na Gaoithe) will be commissioning in the next few years. This will extend economic activity, wage levels and productivity benefits of offshore wind to Scottish coastal communities such as Wick and Fraserburgh, delivering the Industrial Strategy aim to have prosperous communities throughout the UK.

Places such as Great Yarmouth and Lowestoft in East Anglia, Mostyn in North Wales, Grimsby and Barrow-in-Furness are now hubs of activity for construction and operations and maintenance that support the growing number of offshore windfarms off the coast. Building on the strengths of the oil and gas and fishing industries, companies have seized the opportunities presented by this sector. Manufacturing clusters are also emerging in many places, such as Hull and the Humber, the north east of England and the Solent as companies with specialist capabilities in offshore working expand their work into renewables. In Scotland, regional clusters are developing around Moray Firth, and Forth and Tay.

As the sector grows, so will the demand for the components that are required to build, operate and maintain a windfarm, and for the highly skilled workforce to support it. By linking regional clusters with educational institutions, supply chain companies and centres for innovation we can drive competitiveness, economies of scale and productivity.

The deal proposes capitalising on naturally existing clusters and providing sector leadership to create more opportunities for investment and growth in local economies.

To maximise this impact and bolster regional clusters, the sector will coordinate its approach by working with local and regional agencies, devolved administrations and economic development agencies to identify areas of comparative advantage and define the specific infrastructure and investments required to support increased earning power in local communities. This will help align cluster support activities across the sector and identify synergies to enable individuals and companies to grow and fulfil their potential.

The sector will work with the expertise of Local Enterprise Partnerships and regional Enterprise Agencies (including aligning to any existing or future Local Industrial Strategies) in England, and the corresponding bodies in the devolved administrations to help deliver regional clusters, closely linking with SMEs, larger industry and leading universities and to work closely with UK Research & Innovation. All this will help to drive forward applied research, testing and product development.

Project Aura is a consortium led by the University of Hull which won a £5.5 million funding for the Aura Centre for Doctoral Training (CDT)¹⁴, aimed at boosting offshore wind skills and investment in the Humber. This is an example of how a region can harness the industry, local enterprises, innovation providers and skills agencies, bringing the public and private sector together to promote regeneration and grow capability in the region.



By working through established government programmes, the sector can deliver significant investments that benefit the sector across the UK. The £115 million Strength in Places Fund will support areas to build on their science and innovation strengths and develop stronger local networks, as a competitive fund for collaborative bids.

Local Enterprise Partnerships may also build on the example set by the Humber Local Enterprise Partnership to maximise opportunities in the offshore wind sector by investing in specialist skills and business support, which it has done successfully through its Growth Deal, the Hull and Humber City Deal and the Greater Grimsby Stage 1 Town Deal. Similarly, the Local Enterprise Partnership for Norfolk and Suffolk has outlined its vision to build on an offshore wind cluster.

The sector recognises the importance of support from local communities and will continue to invest in projects that will benefit local communities in the regions in which they operate. Each offshore wind farm operates a community benefit fund that provides grants to support local projects such as community facilities, activities and recreation.

Project Aura

Aura brings together multidisciplinary excellence, knowledge and innovation for the offshore wind industry. Established in 2016 it is a coalition of public and private sector partners, collaborating to sustain the region and the UK as a global leader in offshore wind.

Led by the University of Hull, Aura brings together Humber Local Enterprise Partnership with manufacturers (Siemens Gamesa), developers (Ørsted), the wider supply chain, academia (Universities of Hull, Sheffield and Durham), innovation institutions (ORE Catapult) and training provider CATCH.

Aura focuses on 3 fundamentals to develop the cluster:

- Business support – access to business facilities, advisors and industry, particularly developers and Tier 1 suppliers and links into National business support programmes
- Talent Pipeline – regional skills analysis, local skills development bodies and higher education institutions to identify opportunities and training gaps
- Research & Development – SME’s have access to equipment, expertise and advice and access to funding and support services.

Further information

Implementation plan

Date	Milestone
Mar 2018	'A Sea of Opportunity' – Offshore Wind Industry Council proposal to the government for a Sector Deal
Jul 2018	The government announces regular series of Allocation Rounds
Nov 2018	Whitmarsh Review roadshows across UK
Feb 2019	Publication of the Whitmarsh Review
Mar 2019	Offshore Wind Sector Deal launched
May 2019	Offshore Wind Growth Partnership launched
May 2019	System Management and Optimisation Task Force established
May 2019	Offshore Wind Investment In Talent Group co-opted
Nov 2020	First Annual Review of Sector Deal at Offshore Wind Week

Governance

Oversight of the implementation of the Sector Deal will be led by a Delivery Group, which will review progress against objectives at quarterly meetings.

The governance for the Sector Deal will build on the existing government industry body, the Offshore Wind Industry Council (OWIC), which meets twice a year. It will set the strategic direction for the sector and will also be accountable for the delivery of the deal, including the review and approval of the work programme and budget.

All Council member companies will sign and fulfil the requirements of a new Industry Charter, a summary of which will be published. This will include a commitment to engaging in and providing financial support to the Offshore Wind Growth Partnership programme through the agreed funding mechanism, as well as funding and resourcing of all other commitments of the deal, through an annually agreed Council work programme and budget.

The delivery of the deal outcomes will be overseen by a Delivery Group, led by a representative of OWIC.

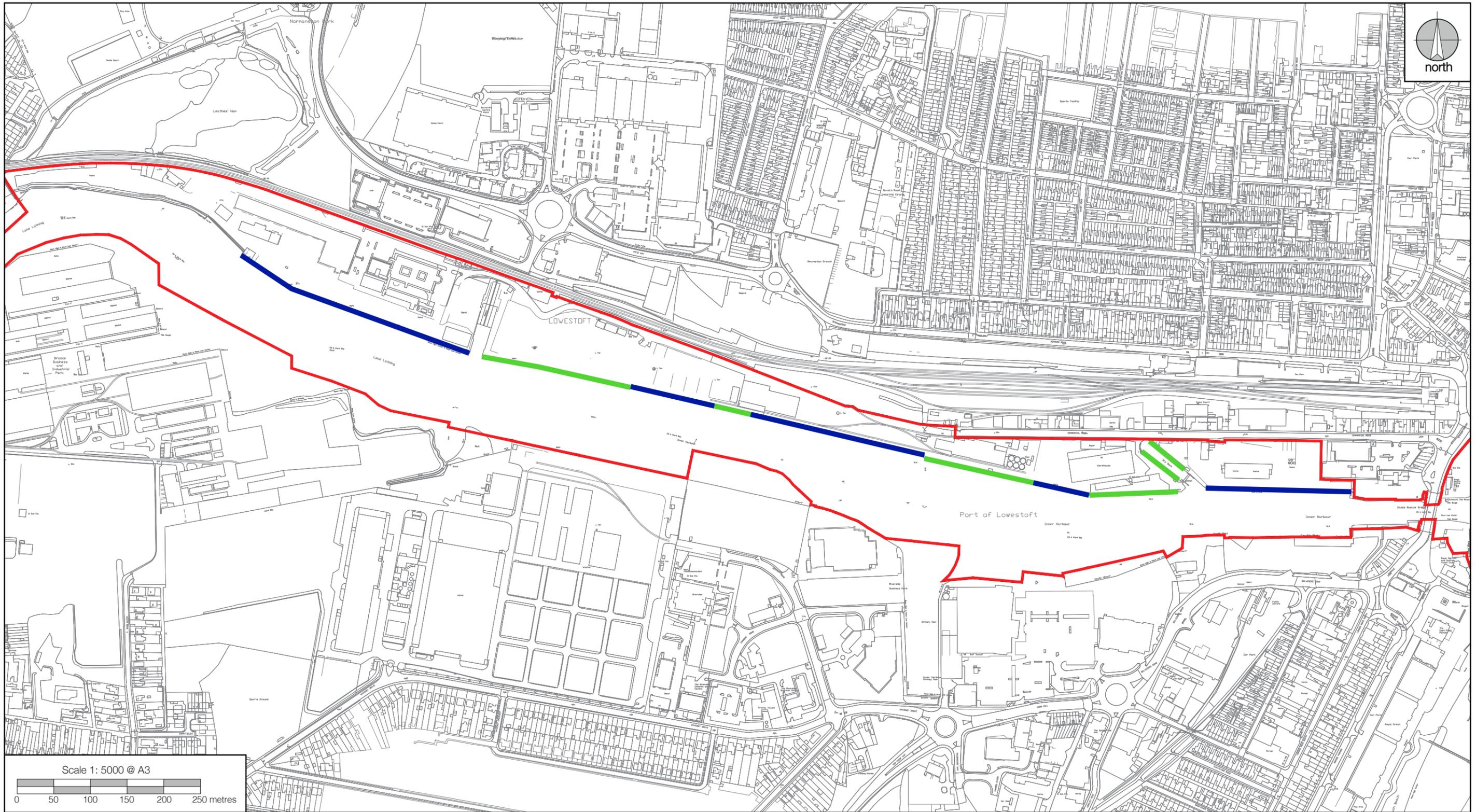
The Delivery Team will be supported by a small Project Management Office funded by the Council and hosted at cost by RenewableUK.

Once the deal enters the implementation phase, representatives of the Council will report on progress annually to BEIS ministers responsible for the deal. The Council is responsible for reporting to the government on delivery at regular intervals.

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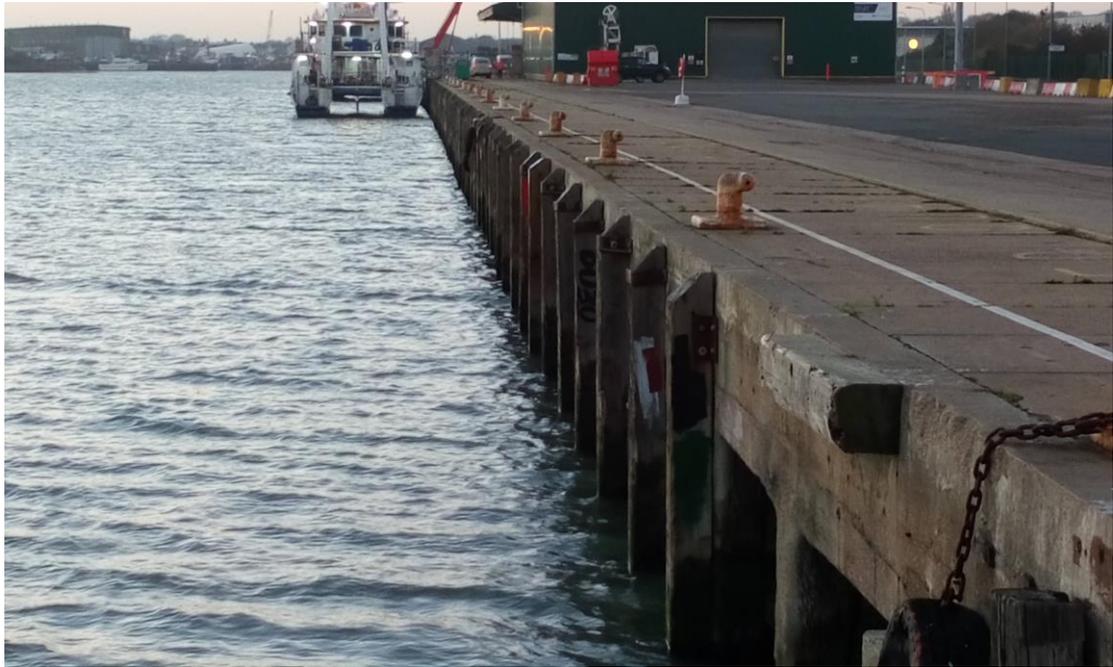
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8. Economic Impacts of the UK Offshore Wind: Scenarios for the Sector Deal – Report prepared for the Offshore Wind Industry Council, Technical Appendix, (March 2018) Vivid Economics ↔
9. New report shows UK Companies benefiting from UK's world leading offshore wind sector (<https://www.renewableuk.com/news/362765/New-report-shows-British-companies-benefitting-from-UKs-world-leading-offshore-wind-sector-.htm>), Renewable UK (September 2017) ↔
10. Offshore Wind Market Outlook, Bloomberg New Energy Finance (December 2018) ↔
11. Economic Impacts of the UK Offshore Wind: Scenarios for the Sector Deal – Report prepared for the Offshore Wind Industry Council, Technical Appendix, (March 2018) Vivid Economics ↔
12. UK Aerospace Sharing in Growth (<https://www.sig-uk.org/>) ↔
13. UK offshore wind industry announces Supply Chain Review (<https://www.renewableuk.com/news/396292/UK-offshorewind-industry-announces-Supply-Chain-Review-led-by-former-McLaren-Group-CEO-.htm>) led by former McLaren Group CEO (April 2018) ↔
14. University of Hull Press Notice (<https://www.hull.ac.uk/work-with-us/more/media-centre/news/2019/bid-win-for-aura.aspx>), "University of Hull leads £5.5 million bid win for Aura doctoral training centre to boost wind energy skills and investment (4 February 2019) ↔



Lowestoft Inner Harbour Area - Berth Areas

- ▭ ABP statutory area
- ▭ Dedicated berth areas (contractual / functional)
- ▭ Common user berth areas





ABP LOWESTOFT

SUSPENDED QUAYS - INNER HARBOUR AREA

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BRITAIN TRADING**

**From Good
to Great**

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1) INTRODUCTION

During the proposed LLTC examination session on Friday March 8th 2019, ABP was questioned by the ExA about the suitability of and utilisation for a suspended quay design in relation to various types of vessel. This briefing note is intended to provide guidance on use in normal practice of such Quay areas such as those at North Quay, Lowestoft Inner Harbour.

This briefing is based on the author's practical experience in accommodating various types and sizes of commercial vessels at Lowestoft.

2) QUAY DESIGNATION AND DESIGN

There are approximately 415 metres of suspended Quays in Lowestoft Inner Harbour Area. This includes ABP North Quay berths 1 to 5 (inclusive), as designated by the yellow line in figure 1.

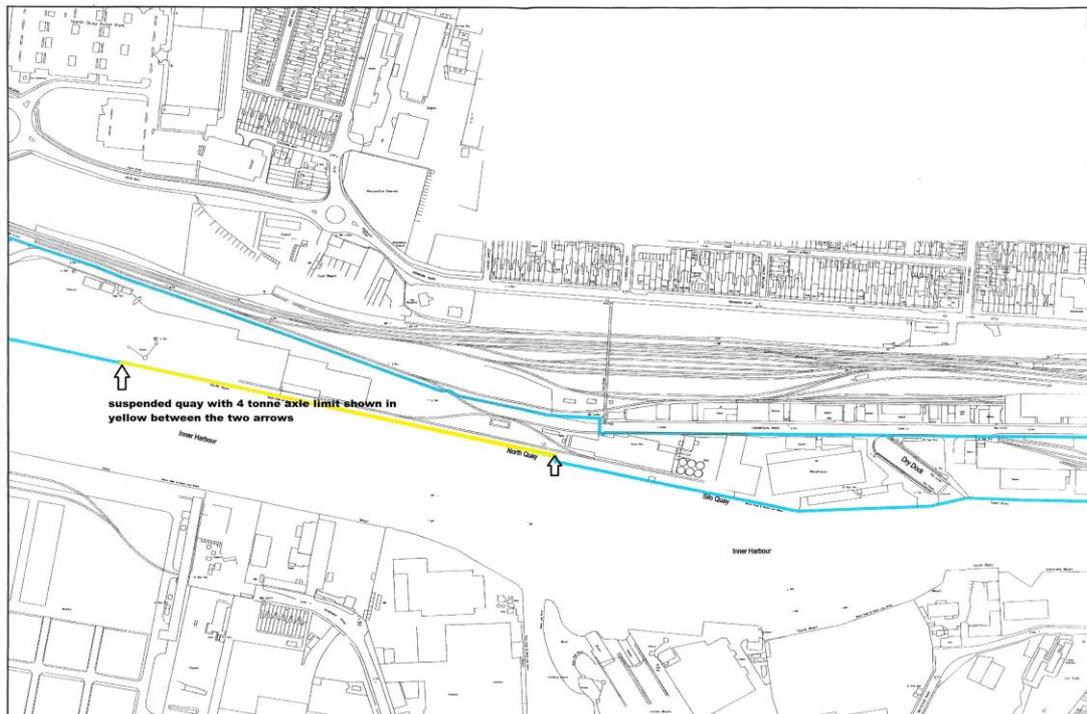


Figure 1

Suspended Quays offer a number of benefits over solid quays. For example, they provide optimum quay area at reduced construction costs. In addition, they can also provide benefits of wave attenuation for quay areas that are exposed to weather and wave action.

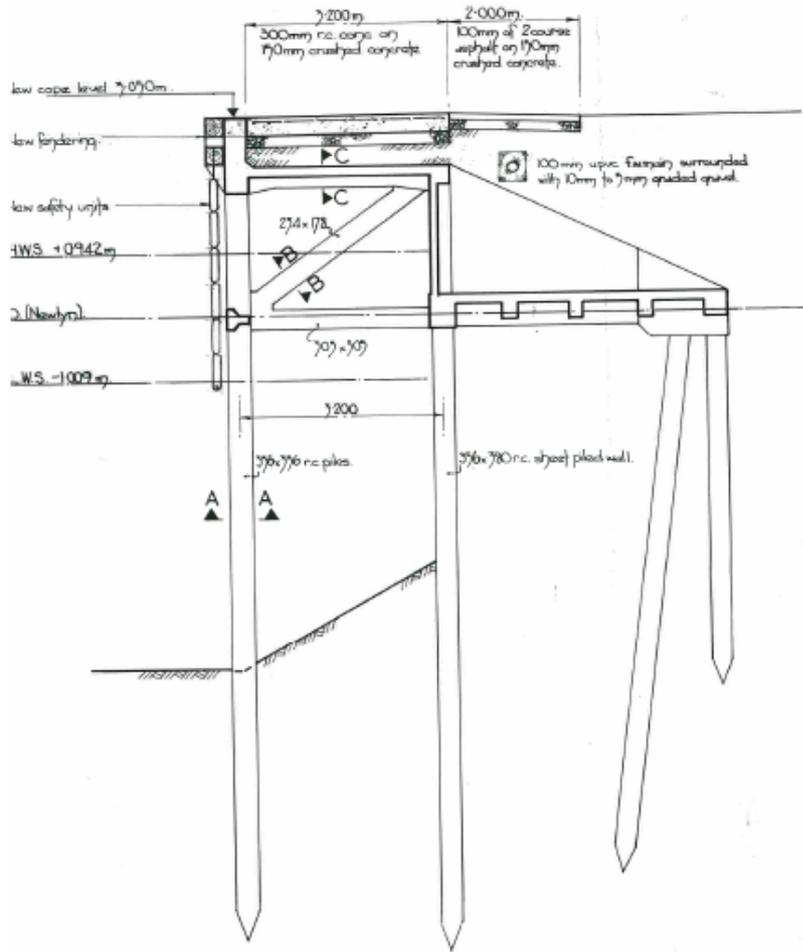
Lowestoft Harbour, (both Outer and Inner Harbour areas), have a mixture of solid piled quays and suspended quays. This provides versatility for accommodating various commercial vessel requirements.

The suspended quays at Lowestoft consist of deck sections approximately 3 metres deep that cantilever out from a solid quay face. At the outboard edge of the suspended quay deck sections there is a continuous horizontal concrete beam. This beam is approximately 1 metre deep. The beam and quay decks are supported by concrete reinforced pillars along the outside edge of the quay deck. The pillars are spaced at approximately every 3 metres. The bases of these pillars are connected back to the solid quay via diagonal reinforced pillars.

At Lowestoft vertical timber fenders are secured to the face of the vertical support columns. These afford protection to the pillars and are, as a consequence, suitable for larger commercial vessels to lie alongside.

The quay deck has a load limit of 4 tonnes per vehicle axle. As a consequence, it is not suitable for the transit of large HGVs. Use of cranes on these suspended quay areas is restricted to a minimum stand off for crane outriggers of 7.5 metres.

A typical suspended quay design drawing for Lowestoft is shown in figure 2 below.



Typical Section Showing New Works
1:70

Figure 2

3) SUITABILITY FOR VESSEL TYPES AND SIZES

The quay height at Lowestoft is approx. 4.5 metres above Admiralty Chart Datum (ACD). The Mean High Water Springs value is 2.5m above ACD. At this state of tide the water level will be approx. 2.0 metres below the top of the quay. Mean Low Water Springs value is 0.5m. At this state of tide the water level will be approx. 4.0 metres below the quay level. The ‘gap’ between the lower side of the quay edge capping beam and the water can, therefore, be between 1.0 metre and 3.0 metres at these extreme tidal levels.

In some instances, smaller commercial vessels with a length overall (LOA) of less than 20 metres - which includes the smaller wind farm CTVs - and which only have between 1.5 metres and 2.0 metres freeboard (height of deck edge above waterline), can, if they do not have sufficient flat sided length, be susceptible to ‘ride’ beneath the horizontal beam as tide falls then rises again. This problem is often exaggerated when strong Southerly winds are experienced as these can push smaller vessels beneath quay edges over LW periods. This can result in damage to the vessel, the quay structure, or both. In extreme cases smaller vessels can become ‘trapped’ beneath suspended deck sections as the tide rises

Generally, commercial vessels over 20 or 25m LOA are considered large enough to moor alongside suspended quay areas. The vessel in figure 3 is 34 metres LOA.



Figure 3

The photo below (Figure 4), shows North Quay berth No's 1 to 5 at full capacity, and demonstrates the various sizes of the larger (small commercial) vessels that can safely moor and utilize suspended quay areas.



Figure 4

4) ALTERNATIVE METHODS OF FENDERING FOR SUSPENDED QUAYS

Efforts have been made at Lowestoft to employ additional fendering for the CTVs so as to enable them to lie safely alongside at suspended quay areas. This type of fendering is shown in figure 5. Although this is effective in preventing smaller craft from riding beneath quay edges, it does result in the vessel being held further away from the quay, which can make safe access difficult. Smaller vessels or CTVs moored at berths with this type of fendering do not, therefore, use such areas for passenger embarkation and disembarkation. Such berths are therefore only used as either a lay by berth or for activities that do not involve passenger transfers.



Figure 5

5) PONTOON BERTHS

Pontoon berths are considered to be the most appropriate and safest means to use for the mooring of CTVs and smaller craft alongside suspended quay structures. This is because the pontoons and vessels rise and fall equally with tides, so the vessels remain tightly moored at all times with no change in height between vessel and quay. This affords safer means of access for crew and passengers. Additionally shorter mooring lines can be utilized, with less spacing between vessels, making more efficient use of available quay space.

Figure 6 shows a typical pontoon berthing arrangement alongside a suspended quay area.

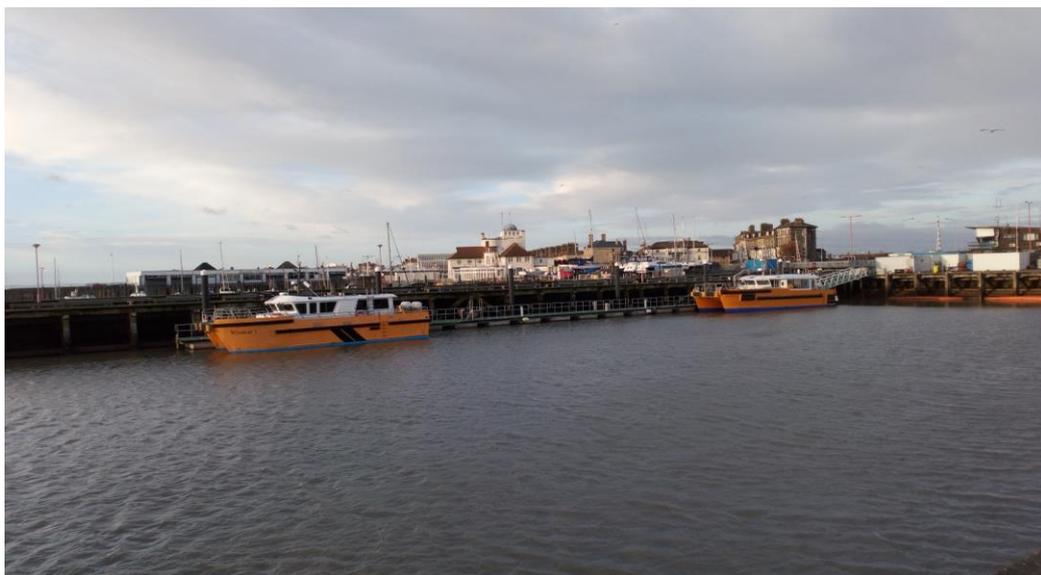


Figure 6

6. CTV STATISTICS

During 2018 a variety of different size and design of windfarm CTVs worked from the Port of Lowestoft. In total 86 different vessels either visited or worked from the port (most, of course, visiting the Port on many occasions over the year). Of these 86 vessels, 48 (approx. 55%) were at or below 20 metres LOA.

64 of the vessel total transited to or from the Inner Harbour at some point during their time at Lowestoft. Of this total 39 (approx. 60%) were at or below 20 metres LOA.

It can therefore be concluded that between 55% and 60% of vessels that used the Port of Lowestoft during 2018 could not safely moor or use a suspended quay area, without either a floating fender arrangement (which would restrict their operational activities), or pontoon berth facilities.

(Annex 4 of ABP: 1 of 3 – DL7)

Proposed Lake Lothing Third Crossing (TRO10023)

Associated British Ports (20013261)

Supplementary Note – Port of Lowestoft: Bridge Transits Inward Bound just before a.m. Restriction Period

This note supplements the submissions made by Associated British Ports ("ABP") at the examination hearing on 7 March 2019 in respect of the restricted periods for the opening of the LLTC as proposed by the Applicant.

At that hearing, ABP's Harbour Master for the Port of Lowestoft explained that there could be occasions, should the LLTC be built across the Inner Harbour, when a vessel entering the Port just before the existing bascule bridge is required to be closed could be trapped between that bridge and the closed LLTC.

The ExA queried whether there have been any occasions when that scenario could have arisen in the Port had the LLTC been in existence and this Supplementary Note is produced in response to that question.

Comparison of restricted periods between the Bascule Bridge and the LLTC

- 1 Comparing the current Bascule Bridge restriction periods with the LLTC proposed restrictions, in the context of anticipated impacts on vessels not tidally constrained, as follows the timing is as follows:

Morning Restrictions

Bascule Bridge	LLTC
08:15hrs to 09:00hrs	08:00hrs to 0900hrs

- 2 Outward bound this could potentially delay a vessel by an additional one hour if the vessel is unable to pass through the LLTC opening before 08:00hrs. If a vessel is aware of this potential delay it will need to adjust departure time from its berth accordingly so as to avoid safety implications that may arise should the vessel be trapped between the two bridges.

- 3 Inward bound (from sea) could cause a vessel to be locked between the two bridges if it is able to pass through the Bascule Bridge before 08:15hrs, but is too late to pass through the LLTC before 08:00hrs. As well as a time delay, this introduces a potential navigational and safety risk to both the vessel and other port users if it is stuck between the two bridges with no alternative berth option or allocated emergency berth.
- 4 If in the alternative, the vessel is forced to delay its arrival at the Port and remain out at sea, particularly if in inclement weather, then further risks arise – to say nothing of the commercial cost of delay.

Midday Restrictions

Bascule Bridge	LLTC
12:30hrs to 13:00hrs	None

- 5 As proposed, this element of the proposed scheme should have no impact on vessel movements.

Evening Restrictions

Bascule Bridge	LLTC
17:00hrs to 17:45hrs	17:00hrs to 18:00hrs

- 6 Outward bound would only delay a vessel transit by approximately 15 minutes. If a vessel is aware of this delay it can adjust its departure time from its berth so as to avoid safety implications.
- 7 Inward bound there is likely to be very little delay once transit time between two bridges is taken into account. The vessel should be able to adjust transit times again to avoid safety implications.

Impact on proposed LLTC restrictions on vessel transits

- 8 Given the above scenarios, ABP is concerned, as noted at the examination hearing, that the proposed LLTC a.m. restriction period has the potential to adversely impact inward bound vessel transits.
- 9 In response to the ExA's request for further information, a vessel study was conducted to assess how such a restriction would have impacted the passage of vessels required to transit through both bridges (i.e. the Bascule Bridge and the proposed LLTC). The criteria used for the study was based on the Bascule Bridge Openings for inward

bound vessels between 07:45hrs and 08:15hrs for vessels intending to transit to the west of the proposed LLTC and which would be impacted by the proposed LLTC am restriction period. The data was collected for 2017, 2018, and 2019 years to date.

- a) Note that these vessels are not considered tidally constrained and would therefore have to wait until 09:00hrs for a LLTC scheme opening.
- b) The data excludes Sat/Sun, which relates to 11 instances over the period of data collection.
- c) Vessels that have air draft known to be less than 11m were not included in the data. There were two instances over the period of data collection.
- d) Vessels that were bound for a dedicated berth east of the LLTC were not included in the data, which relates to three instances over the period of data collection.
- e) Vessels that were bound for any other berth (East or West of the scheme Bridge), were included given that the proposed scheme will include berth take which could potentially cause vessels to be displaced to an alternative berth.

2017 Data

Date	Time	Vessel (CTV Builder if relevant)	Type	Air Draft	Tide Height (if relevant)	Delay allow 7min transit
07.04.17	08:09	EMS Defender	Tug	Not known	2.2m	44min
06.07.17	08:08	Meander	Tug	Not known	2.3m	45min
17.07.17	08:07	Meander	Tug	Not Known	1.2m	46min
25.08.17	08:00	Bibby Tethra	Survey	+12m	2.1m	53min
08.09.17	08:08	MPR1	Multicat	Not known	2.3m	45min
19.09.17	08:11	Seazip 2 (Damen)	CTV	15m (whip aerial)	2.6mm	42min
09.10.17	08:08	Manor Venture	CTV	+15m		45min
27.12.17	08:20	Putford Achates	SBV	+15m		33min

2018 Data

Date	Time	Vessel (CTV Builder if relevant)	Type	Air Draft	Tide Height (if relevant)	Delay allow 7min transit
09.01.18	08:05	Dalby Ouse (South Boats)	CTV	15.2m	0.8m	48min
10.01.18	08:04	Marineco Mariah (Damen)	CTV	15m (whip aerial)	1.25m	49min
24.01.18	08:07	Putford Achates	SBV	+15m		46min
28.03.18	08:12	Seabulk Asia	PSV	+15m		41min
04.04.18	08:05	Susie S (Damen)	CTV	15m (whip aerial)	1.5m	48min
23.05.18	08:05	Goliath	Tug	Not known	1.5m	48min
10.08.18	08:11	Atlantic Explorer	Survey	+15m		42min
04.09.18	08:09	Goliath	Tug	Not known	1.3m	44min
08.10.18	08:04	THV Alert	THLV	+15m		49min

10.10.18	08:06	C Fenna	Multicat	Not known	2.5m	47min
15.10.18	08:03	Goliath	Tug	Not Known	1.1m	50min
06.11.18	08:12	EMS Boxer	Tug	+15m		41min
27.12.18	08:00	BPOS Harvester	SBV	+15m		53min

2019 Data

Date	Time	Vessel (CTV Builder if relevant)	Type	Air Draft	Tide Height (if relevant)	Delay allow 7min transit
03.01.19	08:11	Forties Sentinel	PSV	+15m		42min
10.01.19	08:00	C Fenna	Multicat	Not Known	1.4m	53min
23.01.19	07:58	Biscay Sentinel	PSV	+15m		55min
24.01.19	08:06	Putford Jaguar	PSV	+15m		47min

10 Overall, the above data identifies the following instances when inward bound vessels accessing the Port and transiting through both bridges would have been adversely impacted by the imposition of the proposed LLTC a.m. restriction period:

- a) 8 instances between Jan to Dec 2017;
- b) 13 instances between Jan to Dec 2018; and
- c) 4 instances in Jan 2019.

11 As a general comment, it can be assumed that these impacts are likely to increase as vessel sizes increase and larger vessels visit the Port, as is already being evidence by the figures for the month of January 2019.

Notes:

Vessel Types CTV = Crew Transfer Vessel SBV = Rig Stand-By Vessel

PSV = Platform Supply Vessel

Air Draft +15m stated when confident that air draft easily exceeds 15m. Not known when air draft believed to be +12m but no data available.

Data Data was compiled using written records from Bridge Opening Log Books.