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Dear Jon,

26 April 2012

## **RE: Consultation on offshore network coordination**

Your ref. 26/12  
Our ref. 120426\_OffshoreCoordination

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DONG Energy is a leading energy company operating in Northern Europe and headquartered in Denmark. It is one of the most active offshore wind operators and investors in the United Kingdom with a total pipeline capacity of approximately 5 GW, including four offshore wind farms in operation, a stake in a further four sites currently under construction and a strong pipeline of potential future projects. We also have an interest in the first 1GW from the Hornsea Round Three zone, and recently acquired a 50% interest of the Irish Sea Zone, both of which may require anticipatory investments or could benefit from coordination of offshore transmission assets.

DONG Energy welcomed the DECC/Ofgem Offshore Transmission Coordination Group, and participated in the process through supporting workshops organised by Renewable UK. We welcome the publication of the OTCG report and this consultation. Offshore coordination has the potential to reduce the costs of an important component of the wind farm, and can contribute to cost reduction and the Government's ambition for levelised costs to reach £100/MWh for projects making an investment decision in 2020.

However, the implementation of this policy will be crucial. Coordination may introduce new barriers for generators' ability to take investment decisions and thereby create additional uncertainty in the supply chain. Such effects risk jeopardise the initiative to reduce costs in the sector.

As described in the consultation, coordination can take different forms. For 'simple coordination' projects where anticipatory investment (AI) is required to connect later phases more cost effectively two barriers remain: ensuring Ofgem's approval of the anticipatory investment, and clarification around the charging arrangements for the assets. While more details are required regarding the assessment criteria for AI, this consultation is a step in the right direction and the proposal should provide more certainty for generators.

We agree that 'simple' coordination as described above can be managed through the connection process. Coordination for wider benefits is likely to require a more strategic approach. This could result in increased risk for generators who may see changes to their current connection agreements in order to accommodate further coordination. Ofgem should provide guidance on the extent to which connection agreements can be unilaterally altered by NETSO in order to accommodate coordination when this has little direct benefit to the generator. Also, proposals to give NETSO a significant role in

determining the design strategy for the offshore network needs to be considered alongside the additional roles given to NETSO through the Government's work on Electricity Market Reform.

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Coordination may require generators to make earlier commitments to invest which increases the need for a rapid consents process and stable and transparent regulatory regime. A timely consents process is necessary for generators to be able to reach FID on projects that include coordinated assets and/or anticipatory investment.

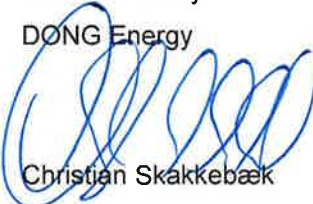
We also note that a remaining barrier for generators accepting offers incorporating AI includes uncertainties around the transmission network charging regime, and welcome National Grid's initial note on charging. As Project TransmiT did not consider offshore charging for coordinated solutions, another code modification will be required.

Where the generator is not willing or able to carry out the pre-construction work for 'wider assets' Ofgem proposes an early OFTO build solution. Where this is the case generators will require reassurances that any interfaces with the wind farm are appropriately considered by the OFTO, and that any programme risks are effectively managed, for example there are appropriate compensation arrangements if the OFTO is delayed in delivering the connection.

One risk not covered in the consultation is the potential for OFTO licence periods to be mismatched or not meet generators' needs. For example, if transmission assets are oversized to allow for the connection of two wind farms, and the second wind farm connects five years after the OFTO was appointed, there will have to be a retendering exercise 2/3 way through the life of the second generator to ensure that it can export power for the full 20-25 year lifetime of the wind farm. This could result in increased uncertainty and risk for generators, and needs addressing by Ofgem.

Yours sincerely

DONG Energy



Christian Skakkebæk

**Q 1: What are your views on whether:**

**a) the connection process (including the relevant industry framework) supports the design of an efficient and coordinated network?**

**b) the NETSO needs further powers to develop an efficient network?**

**c) there are any barriers to the NETSO taking on an enhanced role in network development?**

The existing connection process and industry framework can support the design of an efficient and coordinated network to a certain extent. Where coordination takes place within one wind farm zone (a phased project), or between two zones that are planned within similar time scales, we are confident that the NETSO will be able to identify and propose coordinated solutions. This has been seen in recent connection offers that include some aspects of coordination or anticipatory works.

For coordination where the benefits are for the wider network, or coordination between zones, the current connection process may not be sufficient and a wider, more strategic investment plan may be required. However, Ofgem needs to be mindful of the uncertainty and risk imposed on connection agreements by coordination identified outside of the connection process.

We also note that whilst the NETSO's competence in developing coordinated onshore networks is clear, much of the delivery experience for offshore transmission sits with the developer and supply chain community. As such we would welcome recognition of the value offshore developers could add to enhanced offshore network coordination and planning.

Further, Ofgem needs to consider the implications of giving the NETSO an enhanced role in network development alongside the additional responsibilities it is acquiring through the Government's Electricity Market Reform work. While it may be appropriate, any additional responsibility given to NETSO needs to be assessed in the light of their increasingly important role in the market.

**Q 2: Do you agree with the proposed objectives for a reformed network planning document? Would other changes be useful?**

Combining the Seven Year Statement and the ODIS is likely to be an improvement. We believe the planning document could benefit from a strategic approach, setting out a high-level conceptual design which can then be amended as appropriate as generators' plans for their transmission assets take form. A simple amalgamation of the two documents is unlikely to achieve the stated aims and provide the necessary certainty to the investment community.

**Q 3: Do you agree with our initial proposal for a definition of AI and that the types of AI set out are those that need to be captured in an approach to AI?**

Ofgem's proposal is appropriate and covers the right aspects of anticipatory investment. However, the list should be non-limiting, in case additional elements are required in the future.

Ofgem should note that that pre-construction and construction activities are likely to be carried out concurrently. For example, for projects requiring HVDC technology or other long lead items the developer may be undertaking procurement of a transmission system (a construction activity) whilst still undertaking consenting activities (pre-construction).

**Q 4: Do you agree with our initial proposed objectives and regulatory design principles for an approach to AI? Are there some which you see as more important than others?**

We agree with the proposed principles set out in the consultation document. Of particular importance are:

- Ensuring appropriate incentives are in place to make sure the work is undertaken in a timely manner. There are currently no incentives on a generator to undertake AI unless it is of direct benefit in the very near future to its own project.
- Developing a framework that is flexible enough to allow project-specific issues to inform the process.
- Ensuring that the regime provides certainty to parties undertaking AI that efficiently incurred costs will be recovered and that this occurs sufficiently early in the investment cycle.

In addition Ofgem should note the importance to the generator of ensuring appropriate treatment of the interface between the transmission assets and the wind farm, in particular when an OFTO build option is not chosen. The value of the wind farm significantly exceeds the value of the transmission assets, and the timely connection and successful operation of the wind farm should always be considered first given the scale of consequential loss an offshore generator is exposed to.

**Q 5: What are your views on use of the connection application process as the platform for identifying AI opportunities? Could there be a need for AI to be identified outside of the formal connection offer process?**

The connection process is adequate for identifying AI opportunities associated with specific generation groups in relatively near term time horizons. However, solely relying on the existing connections applications process is likely to result in an inflexible, piecemeal approach to coordination and a failure to realise the maximum value for system users.

For AI with wider system benefits, where value may be realised over longer periods or across multiple generation groups we believe the NETSO and the industry need to take a more holistic, strategic approach to identification. This could be done for example through a reformed planning statement and/or steering group equivalent to the ENSG. However, a steering group will require industry funding and the scope and benefits of such a group need to be clearly established in order to not unnecessarily increase costs on system users.

The OTCG report and associated consultancy reports consider how coordination can apply for some Round Three offshore wind development projects. As many of these have already received connection offers (some of which include elements of coordination), the first opportunity for identifying coordination has passed. Ofgem must provide guidance on whether National Grid can fundamentally change a connection agreement if further opportunities were to be identified than are included in current agreements.

**Q 6: Do you envisage that changes to industry codes and licences are necessary to enable the connection offer process to identify AI?**

The current connection process allows for a three month negotiation period before NETSO's offer has to be accepted. We expect any connection offer that incorporates AI to be more complex to assess, and more difficult for the

generator to evaluate, in particular for AI designed to provide a wider system benefit rather than a direct benefit to the generator.

Thus, a three month period is unlikely to be sufficient unless the generator has greater certainty as to the long term strategic development of the transmission system. In the case of AI for wider benefits, the generator may feel required to accept an offer that has not been assessed sufficiently in order to not risk delays to its wind farm project, and for all projects insufficient time to assess and negotiate offers would increase the likelihood of subsequent modification applications as well as increasing development risks for the wind farm project as a whole. That said, we would ask Ofgem to remain cognisant of the fact that any extension to the 3 months has the potential to add delays to project development and therefore keeping to the existing timescales is preferable; provided the connections offer process is rigorously administered and Ofgem recognise that there may be the need for greater regulatory involvement in dealing with referrals and extensions for particularly complex offers.

**Q 7: Are there barriers to cooperation in connection offers being agreed where a development involves more than one generator? What actions do you consider are warranted to address these?**

Under the current framework the interdependency between two generators where one is reliant on the other for its own connection would be regarded as highly undesirable, and as a major risk to the dependent generator.

One possible solution is to place the relevant transmission assets and development works into a Special Purpose Vehicle that is jointly owned by the two generators, allowing the dependent generator influence over the design and construction programme of assets crucial to the timely completion of its wind farm. However, if such arrangements were only voluntary there would be no guarantee that the first generator would be willing to accept the SPV solution.

Another possibility is for NETSO or the relevant Scottish onshore TO to be fully responsible for developing shared assets, with a competitive OFTO process at the end. This would be preferable to an early OFTO build option as NETSO has significant experience in pre-construction work which no OFTOs currently have.

**Q 8: Are there other parties that should be able to identify opportunities for AI?**

The parties proposed in the consultation document (TOs, OFTOs, NETSO, and generators) are appropriate. Ofgem should consider in particular the role the NETSO has in identifying coordination for wider benefits, as it has a unique overview of the GB transmission system.

One barrier to coordination between zones is the fact that the connection offer process is bilateral and confidential, with generators not party to details of other connection agreements. Generators would want to avoid a situation where they are dependent on the contents of another generator's confidential connection offer and vice versa.

In the longer term, in order to achieve international coordination, other countries' TOs will also have to be allowed to identify opportunities for AI.

**Q 9: What changes may be needed to ensure that assets that provide wider network benefits are designed, constructed and operated to provide a longer asset lifetime?**

Changes are likely to be needed in the design and tender specifications for offshore assets to ensure that they can have a longer lifetime, such as

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- Specifications for electronic protection & control equipment, which typically have shorter asset lives
- Maintenance and refurbishment strategy (greater focus on preventative maintenance)
- Changes to the post-delivery support agreements with suppliers
- 'Future Proofing' with respect to system expansion or wind farm repowering, for example.

This may increase the costs of transmission assets. Provisions for longer lifetime of assets can be seen to constitute AI but in terms of time, rather than volume. Ofgem approval of any additional expenditure as efficiently incurred is important to enable assets to be designed for a longer lifetime.

Under a generator build model we expect generators to design transmission assets strategically to enable refurbishment and extended lifetimes in case of wind farm repowering. Under an OFTO build (particularly early OFTO build) the OFTO's tender criteria need to reflect the longer asset lifetime. The OFTO's O&M requirements will also need to change to ensure that the assets remain operational for their intended lifetime. We believe the OFTO's revenue stream needs to match the longer asset lifetime to ensure that the OFTO has an incentive to keep the assets operational beyond the current 20 year licence and revenue period.

**Q 10: What are your views on whether a longer revenue stream for assets that have wider network benefits could create better value for consumers?**

A longer revenue stream would reduce the cost to consumers, as the NPV of the transmission assets will fall as the recovery period is prolonged. It will be necessary for the revenue stream and licence period for OFTOs in charge of wider network assets to match the intended lifetime of those assets. The tendered revenue stream will need to include e.g. significant future refurbishment costs, and must incentivise appropriate maintenance regimes.

**Q 11: What are your views on the best way to deal with possible interaction between assets with differing lengths of tender revenue streams?**

It is not clear from the consultation document how Ofgem are intending to treat the ownership of assets with wider network benefits. If an OFTO tender process and ownership is envisaged there may be merit in aligning the revenue stream periods of OFTO assets and wider benefit assets.

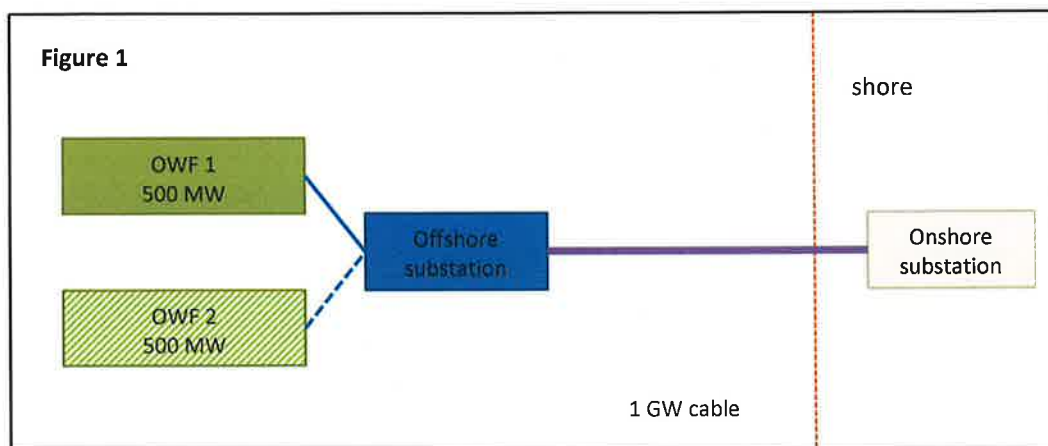
The main issue concerning interaction between assets we can foresee is the lack of clarity on how the system will work with several interconnected OFTOs with 20- (or 40-year) periods that commence at different times. In addition to its current work on coordination Ofgem needs to provide clarity on the treatment of OFTOs at the end of the 20-year licence period. This is of particular concern for a generator that connects to an offshore platform a few years after the OFTO has been appointed but expects its wind farm to have an operational lifetime of at least 25 years. In such a scenario the OFTO would need to see its transmission licence extended to cover the full lifetime of all connected wind farms. If the initial TRS only provides funds for 20 years' O&M expenditure, an

additional revenue period covering only O&M costs will need to be negotiated. This should include suitable incentives for the OFTO to provide the highest possible availability.

**Q 12: Do you agree with these high-level user commitment and charging principles for AI?**

We believe Ofgem has overestimated the benefit to generators in scenarios where anticipatory investment takes place to facilitate a less costly connection of future phases of a large wind farm. Just because a connection is oversized does not mean it is more resilient.

In Figure 1 below, the offshore wind farm (OWF) will be built in two phases, and anticipatory investment is required to initially oversize the assets to enable a single connection to shore rather than two radial connections.



While OWF 1 will have an oversized connection (1 GW compared to the 500 MW size of the wind farm) before OWF 2 is completed, it will still have a single point of failure and no benefit in terms of increased redundancy. The benefit of the anticipatory investment is mainly in terms of reducing the total CAPEX of the transmission assets, rather than increased redundancy for the generator.

Indeed, system redundancy is reduced compared to a scenario with two radial connections whereby only 50% of export capacity is lost in the event of a single transmission failure. Only in later development phases with interconnection between or within zones does a generator stand to benefit from a more resilient connection.

Interconnection between wind farms would be expected to occur at a later stage. Interconnections should become either an enabling work for connection of generators according to system security standards (which under current rules the generator secures), or should take place for wider system benefits. If interconnection is neither essential for connection of the generator nor for wider system purposes, then the generator should be able to choose whether to be provided with a more secure connection (as for onshore connections) and only in such cases it is appropriate for the generator to bear the extra costs.

Otherwise we believe the first generator(s) should share the cost of the AI with consumers at the early stage. Consumers benefit from less onshore reinforcement, reduced overall transmission costs (which are ultimately passed

through to consumers via energy prices), and reduced constraint costs assuming that AI results in more options or power flow offshore.

**Q 13: What areas of the transmission charging regime may need to change to facilitate AI in the offshore transmission network?**

Ofgem should consider the following areas:

*User commitment*

- Applicability of the strategic investment factor under the enduring user commitment methodology. We understand this will provide some reduction in the level of security required for AI, but do not believe there is enough guidance on when and how it will be applied under the OFTO build option.
- User commitment for phased projects: under the CMP192 rules local assets are considered to be efficiently incurred once completed and generation has connected, so no user commitment is required post completion of the assets. We understand that arrangements may need to be different for coordinated assets, in particular where the initial connection is oversized in anticipation of connection of later wind farm phases, and the size of the user commitment needs to be carefully considered. If the later phase is required to post security equivalent to the proportional value of the transmission assets (e.g. 50% of a £1bn link) before FID, the generator is unlikely to favour the ultimately cheaper coordinated solution as the risk to the second phase is too large.

*TNUoS charges*

- Treatment of security factors for offshore assets that become part of the MITS. Currently a security factor of 1 is applied to offshore transmission assets, while a factor of 1.8 is used for the MITS. If through coordination any part of the generator's connection sees an increase in the security factor, its TNUoS charge for that portion nearly doubles.
- Treatment of DC technology in National Grid's load flow model: while a solution to the HVDC bootstraps has been considered as part of Project TransmiT, we believe there is more work needed to ensure that DC links used for offshore wind farms are treated appropriately.

**Q 14: Is there a need for greater, earlier clarity on how including AI within the scope of works might be treated under our assessment of costs?**

Signing up to a connection agreement that includes anticipatory investment increases the cost and risks for generators if Ofgem were to deem the investment inefficient during its cost assessment for the OFTO tender process. At present the ex-post assessment of costs is already a significant risk to developers conducting generator build of offshore transmission assets. This risk would increase exponentially when some of the investment is anticipatory, particularly when it may be for wider system benefit, or dependent upon other generator's zonal developments. Furthermore, AI could lead to greater levels of financial commitment for a generator prior to achieving consent or financial close. Early guidance on the treatment of AI will provide reassurance to



generators that its development expenditure (DEVEX) and CAPEX spend will not be disallowed in the cost recovery process.

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We would also welcome similar treatment for investments that may not be classed as AI which are also at risk of disallowed costs.

**Q 15: What are your views on the potential form of these Ofgem assessment stages? Should it be optional for generators to go through the gateways where they would be undertaking the subsequent works?**

We welcome Ofgem's proposals for a two-stage approach, and emphasise the need for generators to receive early comfort that expenditure will not be disallowed. This is key to unlocking AI: without certainty on cost recovery, generators will face a significant risk from undertaking AI, and will be less likely to do so.

A strict two-stage approach will be less appropriate for projects requiring long lead time items where there will be less of a distinction between pre-construction and construction phases. For items such as HVDC it may be necessary to commence procurement spend in advance of project consent, whilst pre-construction is still being undertaken.

The assessment stages could be triggered by the generator in a similar manner to the OFTO tender process. Ofgem should also consider a more continuous dialogue with generators rather than two discrete assessment points. A running process would allow Ofgem to better understand the generator's project and cost considerations, and should assist in the final cost effectiveness assessment.

If the AI is driven by requirements in connection offers for wider system purposes then assessments should be multi-party including National Grid and other affected TOs and generators.

We would hope that any assessment process does not cause delays to the project in critical stages (e.g. moving into procurement of high capital long-lead items) and therefore that the anticipatory investment process as a whole doesn't put timely connections for the first phases at risk.

**Q 16: Do you agree with the proposed high-level criteria for use by Ofgem if considering whether AI would be economic and efficient?**

We seek clarity on the requirements to demonstrate technical readiness and hope that Ofgem's assessment will provide suitable certainty to enable investment decisions to be made and project finance obtained. We would also welcome assurances that DEVEX for an option that may not ultimately progress through later gates to construction can be recovered, provided it has been efficiently incurred. For onshore developments Ofgem approves a sum of money that can be used for pre-construction activities so that the onshore TOs can conduct these with confidence that they can be recouped. A similar approach should be applied offshore.

**Q 17: What are your views on the appropriate timing of the possible Ofgem assessment stages?**

Ofgem's proposal to perform the assessments before the start of preconstruction and construction work is appropriate. This allows generators to move onto the next phase (and increase DEVEX and CAPEX spending) with more confidence that it will be considered economic and efficient by Ofgem.

However, given the unprecedented long lead times for e.g. HVDC technology and possibly HVAC cables, generators may need to issue tenders and place orders ahead of project consent and so will need Ofgem to engage at a very early stage in the development process. The exact timing of assessments may have to be project specific depending upon the nature of the connection; it is unlikely a 'one size fits all' approach will work for all projects. It may be appropriate to allow generators to trigger the start of the first phase in a similar manner to the triggering of OFTO tender rounds.

The key stage for Ofgem's assessment should be shortly before the generator is about to sign large contracts with suppliers, but earlier assessment phases could include an early stage design assessment.

The best solution would be for the assessment process to include intermediate updates between the two assessment stages, in order for the generator to share information on consents, tenders and so on that will make the final assessment phase easier for Ofgem to conduct.

**Q 18: What information should in your view be provided as part of any published guidance that supports AI approval?**

Published guidance should include:

- Conditions for entry into the assessment process (such as the grid connection application),
- Information milestones (surveys, tenders, land agreements etc) and guidance on the necessary level of detail for cost/benefit assessments (for instance, will an assessment of constraint costs avoided onshore be necessary and if so NETSO must provide data).
- Final criteria for approval, clarity on the approval/cost recovery process for pre-construction spend and a clear link to the final cost assessment as part of the OFTO process.

**Q 19: Should there be additional requirements to share information with Ofgem to help streamline Ofgem's assessment of AI for project? What information should be included?**

The information required will depend on the specific project. For example, for coordination that involves two generators, information may be required from both (although this depends on the exact design of the connection and who performs the AI). However care must be taken considering that some of the required data may be of a commercially sensitive nature. Ofgem may need to be able to require information on clusters of wind farms and associated OFTOs and Ofgem will likely require information from NETSO where the investment is of a wider system benefit or features in the connection agreements of multiple generators.

There could be an issue if confidential data regarding generator assets is required as part of the assessment process, which would risk providing another generator party to the process with a commercial advantage. This could become an issue for coordination between separate generators. For example, bilateral connection agreements are confidential, but the information provided there will be important for the coordination.

**Q 20: What are your views of the different options for who should undertake pre-construction works for assets that are driven by wider network benefits?**

We do not have a strong preference for who is to carry out the preconstruction work for assets with wider network benefits, as long as generators can be reassured that there will be no delays or cost increases for any wind farms as a result. In general, the responsibility and risk for preconstruction activities should sit with the party set to benefit from the subsequent revenue stream.

As is set out in the consultation document, assets with wider benefits can take many different forms and have many different impacts on generators. A generator affected by wider assets should be given the option to undertake preconstruction work, including design work to ensure that the interface between the wind farm and the transmission assets is considered appropriately. Depending on the timing of the development of the wider assets it may also be most efficient to include in the generator's pre-construction programme for the wind farm and any other associated transmission assets.

**Q 21: Could OFTOs potentially have a role in undertaking pre-construction works for assets significantly driven by wider network benefits? How might this work?**

We believe it is appropriate for an early OFTO build option for assets providing wider system benefits, assuming that an OFTO will be the ultimate owner of such assets (and not National Grid or another onshore TO). As mentioned above, the responsibility and risk for pre-construction activities should sit with the party set to benefit from the subsequent revenue stream. Generators and onshore TOs are likely to be reluctant to engage in significant pre-construction spend on wider system assets unless there is a clear advantage for them to do so – without a revenue stream or associated IRR for the spend there seems to be no discernible benefit, but significant risk.

However, as outlined in the consultation it is not always straightforward to determine whether transmission assets will be solely for wider network benefits, or if they will benefit (or be instrumental in connecting) individual generators. Where this is the case, an early OFTO build solution may be less attractive to wind farm developers, and if such an option was chosen generators would require comfort that risks in terms of delays and increased costs would be compensated for. Also, there are currently no OFTOs with the required experience in pre-construction or construction works, which would make this option a risky choice.

Another possible solution is for National Grid (or one of the Scottish onshore TOs) to undertake the preconstruction works for assets with wider benefits, at least until more experienced OFTOs enter the market. We note that existing OFTOs have previously indicated an unwillingness to carry out such work under the enduring OFTO regime: this was the reason for Ofgem's decision to only develop the late OFTO build model for the enduring regime. However, if the appropriate framework for an early OFTO build is developed, and generators can be reassured that this option would not result in delays or increased costs for the wind farm project, an early OFTO build model may be appropriate.

**Q 22: Do your views of the attractiveness and feasibility of an early OFTO build option differ for assets that are driven by wider network benefits?**

Theoretically, the early OFTO build option is more attractive for assets with wider network benefits, in particular if the scale of the CAPEX investment is large enough to deter a generator build option.

However, where wider assets affect a generator's wind farm, it is likely that this generator would wish to have some control over the design and interface issues between the network assets and the wind farm.

There needs to be a strong incentive on the OFTO to deliver the network assets on time and to the appropriate specifications, as delays can have large impacts on wind farms dependent on the assets, where the value of the wind farm will always exceed the value of the transmission assets.

**Q 23: Are there changes that can be made to enhance the incentives on offshore generators in undertaking pre-construction and construction works for assets that are driven by wider network benefits?**

The greatest incentive to an offshore generator conducting pre-construction and construction works for transmission assets is the timely connection of their generation project. If a coordinated network solution facilitates timely connection then it is in a generator's interest to support this. However, given the cost of developing an offshore wind farm and associated transmission assets there is no incentive to do anything outside of what is necessary to deliver the wind farm. In fact, there is a disincentive due to the OFTO tender process and Ofgem's ability to disallow expenditure and this disincentive should be addressed, potentially through the sanction of development spend at an early assessment gate. Under current arrangements generators are sometimes not willing to adopt a coordinated solution where they are the only beneficiaries due to the level of risk and costs associated with anticipatory investment. The incentive on such projects should be the simplest to implement, however.

**Q 24: What would be the impact on the attractiveness of the Generator build option for assets that have wider network benefits if additional delivery incentives are incorporated? Should the OFTO build option be the main focus for this type of asset?**

See question 23. This will to a large extent depend on the interaction between the wider assets and the wind farm and associated radial transmission assets. It will also be dependent upon the nature and size of the transmission investment. If the investment for wider benefit is very significant in terms of value and complexity then it is unlikely a generator would wish to bear the construction and financing risk and carry the investment on their balance sheet. If however the investment is of relatively small value and facilitates the connection of the offshore generation project(s) *as well as* providing wider network benefits it may be attractive to pursue a generator build option. We would prefer to retain the option of generator build for wider assets and determine the appropriate delivery method on a case by case basis.

**Q 25: What are your views on how any distinction between "offshore generator focused" and "wider network benefit" assets should be made?**

The consultation mentions the existing distinction in connection offers (under the 'connect and manage' regime) between local or enabling and wider works. These definitions are drawn from the SQSS classification of system reinforcements. We believe it would be appropriate to review the SQSS in light of the coordination of offshore transmission and introduce criteria to determine appropriate security standards for offshore coordinated networks. This would assist in determining whether works could be classed as offshore enabling works (i.e. essential to permit export of power from the generation site to a minimum security standard) and which are of wider benefit (provide additional security, or are above and beyond the minimal security standard for a given

generator). This may require the definition of an offshore MITS substation, different to that of an onshore MITS substation.

**Q 26: What role could commercial contractual arrangements have in ensuring that pre-construction assets are passed to the relevant party and the first developer can recover their costs?**

The recovery of preconstruction costs should be straightforward under an OFTO build scenario: any costs incurred by the generator are recovered from the OFTO at the time of appointment. Any additional costs incurred by the OFTO are included in the Tendered Revenue Stream and are recovered through TNUoS charges once the assets are operational.

Under a generator build scenario the recovery is likely to be more complicated, and our preference is for the recovery of costs to be regulated and not subject to commercial arrangements.

**Q 27: What changes may be needed to support the process? What would be the impact of requiring an OFTO to hold assets for future generators?**

The OFTO will not 'hold' assets as it should recover its tendered revenue stream from National Grid through TNUoS charges. Clarification is required on the treatment in the charging methodology of the assets that are not immediately used (i.e. the extent and duration of socialisation of anticipatory investment).

The main issue of requiring an OFTO to allow connection of future generators will be the duration of its transmission licence. There is already a mismatch between the OFTO's 20-year licence and revenue period and the expected lifetime of 25 years for most offshore wind farms today. If a second generator is to connect to the existing OFTO's assets the mismatch between the duration of the transmission licence and the expected lifetime of the wind farm will be even greater. Ofgem needs to clarify how the OFTO's licence period is expected to be extended to avoid this situation and reduce the risk to generators.

**Q 28: Will commercial arrangements and industry codes and licences provide sufficient access rights for shared assets? If not what changes may be needed to support the process?**

As generators are not allowed to hold transmission licences, we do not believe current arrangements are sufficient to guarantee appropriate access rights for shared assets, and such arrangements need to be provided through code changes rather than through commercial arrangements.

Assuming generator build, commercial agreement, in the interest of first generator to provide access rights.

**Q 29: Are there any other issues with shared assets that need to be considered?**

Ofgem should consider the following issues:

- Technical compatibility of offshore generation and transmission assets, and the present lack of a comprehensive set of offshore Grid Code requirements.

- Construction outages may be needed to connect additional generation to existing operational assets. Will the existing generator be compensated for lost production if they cannot export power during construction of the second's connection?
- Could works being undertaken by another generator under generator build arrangements, which were sole use assets at the time of construction commencing, become enabling works for the connection of a subsequent generator? One generator's construction program could become dependent upon a competitor's construction program, which would introduce exposure to construction risks that one of the generators cannot manage. What are the incentives/penalties on the first generator to keep to its construction programme and not cause delays for the second wind farm? Would the construction have to transfer to an OFTO?
- On a broader level to the point above, will it be possible for generators to conduct wider system reinforcements under generator build arrangements (if the assets serve a dual purpose as well as connecting the generator), and what are the incentives/penalties to ensure that these reinforcements are delivered on time and are fit for their wider purpose given that generators do not have a transmission license?
- Generators' access to National Grid's full GB model for studying harmonic / SSR issues.