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Dear Sam, Paul

Offshore Electricity Transmission: Further consultation on the Enduring Regulatory Regime

National Grid owns and operates the high voltage electricity transmission system in England and Wales and, as National Electricity Transmission System Operator (NETSO), we operate the Scottish high voltage transmission system. Following Go Active on 24 June 2009, the scope of our system operator role was extended to offshore waters. National Grid also owns and operates the gas transmission system in Great Britain and the distribution system in the heart of England serving approximately eleven million offices, schools and homes. In addition, National Grid owns and operates significant electricity and gas assets in the US.

We welcome the opportunity to respond more fully to the Offshore Electricity Transmission: Further Consultation on the Enduring Regulatory Regime. We provided an initial response in request for material submissions on September 9th, focusing on the benefits of network integration and reasons as to why the current regime will not deliver the totality of benefits.

From our work to date, as TO, NETSO and prospective OFTO, we have established three key findings:

- Integrated networks are the best solution for UK plc (in terms of both cost savings and deliverability);
- The existing enduring offshore regime proposals will not deliver integrated networks; and
- Enabling the onshore TOs to build offshore in addition to specific generator-developer/OFTO build is pragmatic and maximises probability of delivery.

We therefore believe that a hybrid approach, combining TO and generator-developer/OFTO arrangements - which we set out in more detail below - offers a pragmatic, affordable approach to delivering the enduring regime.

Maintaining the current momentum

Since our submission on the 9th of September, we have continued to engage with a wide range of stakeholders on an integrated onshore-offshore network solution. The feedback has been very encouraging, with stakeholders acknowledging the potential benefits of an integrated solution and expressing concerns with the existing regime model. Stakeholders are now keen to see progress in the analysis and to discuss the specifics of how an integrated network might be delivered. As you might expect, concerns over timing and the interaction with the current process have also been raised.

We recognise that introducing a developer-generator led option for offshore transmission build offers a pragmatic step to avoid delays in offshore renewable generation deployment.

We do not advocate the application of an integrated network design to rounds one and two of the transitional tender process. Instead, changes should be applied only to the enduring regime – the scale and volume of which make adoption of an integrated approach essential. Any changes necessary to enable an integrated network solution must be undertaken in a timely manner and in such a way as to provide continued certainty of delivery for market participants. We therefore advocate a twin-track approach whereby the integrated network delivery model is worked up in parallel to ongoing implementation of the existing arrangements and that this implementation should, where practical, incorporate changes to enable and ease future transition to an integrated delivery model.

How best to deliver an integrated network

Our analysis has demonstrated that the introduction of a coordinated and integrated onshore-offshore network design solution is key to the delivery of offshore wind and hence UK targets, with significant opportunities arising there from:

- delivering ~£4bn-8bn of savings for UK consumers (approximately 25% of capital costs), as well as significant whole life cost and reliability benefits year on year;
- significantly reducing onshore planning consent requirements;
- allowing evolution against an uncertain and changing onshore and offshore generation backdrop – flexing to meet the needs of developers, challenges of system operation and facilitating greater European integration;
- allowing better management and utilisation of valuable resources, including the easy adoption of new technologies.

We have been exploring conceptual designs for an onshore-offshore network that ensures deliverability and maximises network resilience at the least cost to the end consumer. With a design philosophy that has sought to develop an economic and efficient solution for consumers, allowing developers to get their power to market in a timely manner, the resulting solution seeks to ensure that multi-user transmission infrastructure is optimised, secure and future-proof. We have also given thought to the regulatory models through which an integrated network could be delivered.

Our work suggests that three broad types of delivery model exist, with varying degrees of success and consumer benefit. At the one end of the spectrum, the model mimics the current generator-developer/OFTO build arrangements, whilst the other delivers offshore transmission through the onshore TOs. In reality, the optimum solution (from where we are today) probably sits somewhere in the middle and it is the hybrid model that we believe will deliver an efficient transmission network in the interests of UK plc. We discuss the models in more detail below.

Generator-developer/OFTO led models

The generator-developer/OFTO delivery models effectively enhance the current regime, i.e. the generator-developer or OFTO retains responsibility for designing, financing and delivering the offshore transmission assets but is somehow encouraged to deliver to an integrated design. The delivery of an integrated approach could be through a voluntary process with

NETSO offering design solutions through an enhanced or expanded ODIS process. Alternatively, a stronger approach could be taken whereby generator-developers/OFTOs are obligated to deliver the detailed functional designs provided by NETSO.

These models will not deliver an integrated network without substantial intervention and additional interfaces, which will introduce inefficiencies to an already complicated process.

Considering first the generator-developer model:

1. An integrated design requires the construction of high voltage, multi-user assets. These assets are likely to be sized in excess of that required for particular individual projects. For individual developers, this will raise issues of financing, risk and competitive advantage.

In addition to the issue shown above, both this model and the OFTO model raise the following concerns:

2. As projects progress, the detailed understanding of the delivery issues surrounding the designs within ODIS will change, necessitating frequent reviews and updates to proposed designs. For multi-user assets, the position is constantly evolving as different customers' needs change, hence requiring constant re-optimisation to ensure the right design is delivered. A model whereby the design is provided upfront at an early stage will not allow for evolution and will lead to a sub-optimal solution;
3. Building according to a 3rd party design (voluntarily or not), for example from the NETSO through an extended ODIS, raises significant questions regarding project risk that will put upward pressure on the overall cost of projects. Under this model, generator-developers/OFTOs could be required to build based on design, survey, environmental impact and pre-engineering undertaken by the NETSO. This could introduce an unacceptable level of risk through the inability to influence and understand such pre-construction activities, and is likely to bring additional delays when pre-construction work requires re-visiting to bring the project to fruition. The issue of policing designs and the types of sanction in place for deviation also becomes important since a single deviation from design could result in the inability to operate the system as a single network;
4. Onshore and offshore planning will be very difficult to coordinate as it is a multi-year process involving many different public stakeholders. It will result in each individual project lodging their consent applications separately, with multiple generator-developers/OFTOs revisiting communities on multiple occasions. NGET will continue to pursue onshore consents as part of a separate process responding to individual applications.

From our discussions with generator-developers, it is apparent that this model is very unlikely to be successful due to the unacceptable levels of risk to which the developers would be exposed. Ultimately this means that either project costs will be unnecessarily high from a consumer perspective, or, more probably, the projects simply will not happen.

A TO approach

At the other end of the delivery model spectrum is one that sees all offshore investment delivered by either the incumbent TO by geographic region or a single TO. This effectively extends the onshore arrangements – delivering through an established process, allowing for coordinated consenting as well as onshore-offshore optimisation.

The adoption of such a delivery model has many benefits. The provision of infrastructure both onshore and offshore by the same party will allow for effective coordination of all works, thus facilitating an optimal trade off between onshore constraints and offshore infrastructure costs. The holistic approach will allow full consideration of future developments, with resulting assets sized so that they are fit for purpose into the future. Alignment of the consents process means that one approach is made to affected communities.

However, the adoption of such a model does not deliver against the objectives that Ofgem has stated as important in this process, i.e. the benefits associated with the introduction of further competition in asset construction and finance. Furthermore, it represents a significant shift away from the current regime.

A hybrid approach

The most pragmatic approach introduces hybrid TO and generator-developer/OFTO arrangements to deliver effective coordination. This would see the TOs responsible for delivering major/anticipatory works to optimise onshore/offshore investment, whilst additional offshore, local links to wind farms would be delivered either by the generator-developer or by project-by-project OFTO appointment. The NETSO would have an enhanced role to oversee the strategic and coordinated development of the integrated network. Where an investment is required, the NETSO would assess against a set of pre-agreed criteria to determine if the investment is to be taken forward on a coordinated or local basis. For instance, we would envisage that multi-user, coordinated investment would take place in instances where:

1. Transmission assets are required to accommodate two or more major offshore developers, where due to confidentiality or project timescales, generator-developers/OFTOs are not in a position to deliver reinforcements in a timely manner;
2. There is significant interaction with onshore reinforcements which could interact with the requirement of other users; or
3. The offshore network needs developing in such a way as to accommodate reasonably foreseeable future offshore user requirements.

In contrast, local/point-to-point investment would take place where:

1. The reinforcement is primarily for the benefit of a single user and can be connected directly to either the onshore or offshore network in way in which it will not materially impact on any other user;
2. One or more developers have either the ability or are prepared to coordinate, provided it does not conflict with the multi-user requirements identified above.

This model has the potential to accommodate the evolution of generation developments and interconnection requirements as they occur, whilst maximising efficiencies in the planning process. The approach would also have the significant benefit of fully facilitating onshore and offshore optimisation and greater European integration, whilst retaining the competitive benefits of introducing new entrants into the transmission market. We believe this model could be implemented initially through relatively modest amendments to NGET's and the Scottish TO's licences.

To conclude, there are different models that could be considered but only some of these will enable full delivery of the significant benefits of an integrated network. We have provided more detail on the requirement to deliver a coordinated model in our response to chapter 6 of the consultation. We also detail further our concerns with the lack of coordination delivered through the existing proposals, interoperability and integration with other regimes.

The EU third energy package requirements

We would like to reiterate the query raised in our earlier submission regarding the risks associated with the EU 3rd package of energy legislation. The degree to which compliance with the unbundling requirements is achieved is fundamental in determining whether the offshore proposals are workable. The consultation document suggests that Ofgem is comfortable that the proposals align with the requirements. We are not yet convinced that compliance, in particular with Articles 9 and 12, is clear-cut. We have concerns that any model in which generators have a role in developing transmission infrastructure may not comply with the objectives of the package – in that there may be scope for generator-developers to seek to develop infrastructure to their advantage.

Twin Track - the need to start now

In order to maximise the benefits of an integrated approach it is essential that early progress is made on the analysis to support its detailed development. To achieve this, it is imperative that a clear policy direction on further development is made immediately.

We, as NETSO, are now finding ourselves in an interesting position. The requirement under our licence to develop an economic, efficient and coordinated system lends itself to NETSO making offers based on an integrated design today – clearly the most economic approach. However, the industry framework does not currently support delivery of such a connection offer and we consider it unlikely that connectees would be able to accept offers on this basis.

We have already suggested that a twin-track approach to delivery would best ensure the delivery of an integrated onshore-offshore solution, allowing further development to continue in parallel to the enduring regime.

In particular, we believe the following elements to be time critical, and work must start on these immediately if 2020 targets are to be met and the early benefits of an integrated design are not to be lost:

- Leadership of industry common technical and functional specifications for offshore network infrastructure through collaboration with suppliers to inform the likely detailed design solution;
- Consideration of the ongoing North Sea design study which seeks to ascertain benefits from greater European integration;
- The derivation of detailed functional design for the Irish Sea, the east coast, the Wash and the Firth of Forth, including offshore consent restrictions, given the magnitude and immediacy of the investment required;
- Further analysis to ascertain which routes to shore are likely to become sterilised in the near term. Discussions with developers suggest that a limited window of opportunity exists to avoid further route sterilisation in areas such as the Wash where environmental and engineering constraints mean that any remaining routes to shore are at a premium. Where such constraints exist, cables sized such that multiple projects are able to access the remaining landing points must be installed rather than create a barrier to market entry for future developers.

As with other large scale investments of this type, we would propose that this work be taken forward on an industry-wide basis, similar to the development of onshore anticipatory investments. This would allow technical challenges to be fully understood by all and solved accordingly, thus ensuring smooth implementation.

The attached appendix 1 provides our response to the specific questions asked within the consultation.

Yours sincerely

[By E-mail]

Paul Whittaker
UK Director of Regulation

Appendix 1 – Responses to consultation questions

Chapter 3: OFTO Build Options

Q3.1. Do you agree with the proposed scope of activities defined as pre-construction works?

We support the view expressed in the consultation that the approach to dealing with pre-construction works should be flexible. Classification of pre-construction works can vary from project to project and as such should be considered on a case-by-case basis in an open and transparent manner.

The scope of activities identified within the consultation seems reasonable. However this should not be seen as exhaustive. For example, in some instances it might be necessary to start development of the Invitation to Tender (ITT) as part of the pre-construction works.

It should also be noted that under the late OFTO appointment, completed pre-construction works prior to transfer may need to be supplemented (or even repeated) by an OFTO depending on their criticality to the integrity and cost of the OFTO system.

Q3.2. What are the appropriate mechanisms for ensuring that contingencies are managed efficiently?

Contingencies are an important mechanism to ensure the efficient management of project risk and maximise value to consumers from the tender process. OFTOs should be encouraged to put forward their best bids with and without contingencies to allow Ofgem to determine best value. Onshore investment is reviewed through the 5 year price controls to assess whether investment has been economically and efficiently incurred. A similar rigorous and transparent process is required offshore to avoid price distortion through the inclusion of contingencies, whilst ensuring appropriate incentives are in place to deliver economic and efficient investment.

Q3.3. What are your views on allowing generators a role in informing the evaluation criteria for technical issues or enabling generators to comment on the technical sections of the bid submissions?

The assessment of best value bids should be made in accordance with very clear and robust criteria, supported by the expertise necessary to make an objective and informed assessment. In principle, we have no objection to generators having a role in informing the tender evaluation process – although specifics of such a role would need to be clearly defined by Ofgem. Indeed, we would suggest that this should be extended wider, i.e. other parties which may be impacted by the tender, should also have the opportunity to lodge their views on issues such as routing; flexibility; the ability to accommodate future generation; and impact on other designs.

Q3.4. What should be Ofgem's role in the transfer of property rights and consents to the OFTO?

We agree that a role exists for Ofgem in assessing whether costs have been incurred in an economic, efficient and transparent manner, whilst continually seeking to minimise the uncertainty, risk and cost of the transfer. A standard framework to facilitate the project transfer is likely to be useful.

Q3.5. Should we extend OFTO of last resort arrangements to include failed OFTO build tenders (noting a generator could construct their own assets should the tender process fail to identify an OFTO under those appointment options), and if so should the obligations be extended to all transmission licensees?

There are two distinct elements for consideration with regards to OFTO of last resort:

- failure to appoint an OFTO during the tender process;
- failure of an OFTO once appointed.

With regards to failing to appoint an OFTO during the tender process, we agree with the view expressed in the consultation that in this instance it would seem logical that the generator-

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developer build option be taken forward. When market participants are unwilling to submit tenders for a new offshore network there are likely to be good reasons to support this (including the project's risk profile, complexity, timescales, supply chain limitations etc).

In relation to finding an OFTO of last resort for the failure of an established OFTO, our view is that once again this does not seem necessary. Transmission licensees are subject to a regime of special administration and, in the event of a financial failure, the network would continue to operate while an alternative network owner was found to take on the assets of the failed OFTO.

If OFTO of last resort provisions are implemented, they should apply only to newly granted offshore licensees, as such parties are specifically licensed to operate offshore (unlike onshore transmission licensees).

Q3.6. What are the appropriate mechanisms for ensuring that there is effective competition across the supply chain under OFTO build options?

The scale of investment required in UK offshore transmission, against a backdrop of European competition for capacity is such that, under the current framework, an exclusive agreement may indeed be in the best interest of consumers in order to drive innovation and reduce cost. However, it is not clear that the supply market could currently support this on a piecemeal project by project basis. At present, the market has a limited number of suppliers able to deliver against the extensive offshore projects being proposed. Only under an integrated network solution can longer term contracts be tendered, bringing both competition and certainty to the supplier market as it gears up for delivering the challenge ahead.

Q3.7. How feasible are fixed price bids under an early OFTO appointment tender process? Is a bid based on approaches to procurement and financing possible?

The very nature of offshore build, particularly for more complex projects, means that costs are uncertain. A fixed bid solution would need to include careful management of contingencies to ensure that all risk is not simply transferred to consumers and that the level of contingencies is reasonable. The industry is familiar with the drivers of cost certainty and capable of identifying risks and contingency costs accordingly.

With regards to the procurement or financing approaches, we would suggest that a bid based on an estimate of the cost of equipment and financing would be unlikely to provide incentive to innovate or drive down future costs.

Q3.8. To what extent can design innovation be realised under an early OFTO appointment approach, given the restraints imposed by the connection offer and technical codes and standards?

The earlier the appointment of an OFTO, the more scope they will have for innovation in design of the network, allowing for the forming of ongoing relationships with suppliers and other partners such as universities. The specialised transmission system knowledge that would be introduced through the early appointment of an OFTO should bring with it an ability to innovate and explore solutions that challenge existing technical specifications and standards. As developments progress, such standards could be updated to incorporate further innovation.

Q3.9. What are your views on the proposal to align stages of the tender process to milestones within the planning process?

It would seem sensible to align the stages of the tender process to milestones within the planning process.

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Q3.10. Are changes to the standard framework required to deliver an effective late OFTO appointment approach?

Notwithstanding our concerns with regards to compatibility of the late appointment/developer build models and the unbundling requirements of the EU 3rd package of energy legislation, the implementation of a late OFTO appointment as proposed in the consultation would require similar changes to the framework as the generator-developer build option.

We are working with Ofgem to develop a more robust view of the changes required to the industry codes to facilitate the proposals within the consultation, recognising that the timescales outlined in the consultation make delivery of this extremely challenging.

Q3.11. Which approach to engaging with the supply chain of the three suggested under a late OFTO appointment enables the greatest level of competition?

As stated in response to 3.6, at present the market has a limited number of suppliers able to deliver against the extensive offshore projects being proposed. It would appear in the best interest of consumers for OFTOs to have firm relationships with suppliers in order to guarantee ability to deliver within required timescales. This would, therefore, lend itself to the most suitable approach for a late appointment bid to be based on a firm price at the ITT based on negotiated equipment prices.

Q3.12. Do the form and nature of arrangements for asset transfer under a late OFTO appointment need to differ substantively from an early OFTO appointment?

We would imagine that the form and nature of the specific transfer arrangements would need to be broadly similar for both late and early appointment, in that costs are assessed in an economic and efficient manner whilst seeking to minimise uncertainty.

CHAPTER 4: Generator Build Option

Q4.1. Should a generator build approach be included in the enduring regime?

We believe that it is important that a fully integrated regime be implemented, allowing onshore and offshore optimisation. The generator-developer build option, in addition to OFTO build, is a necessary pragmatic step, allowing for further consideration of the integrated requirement.

Q4.2. Are changes needed to the connection application process to reflect the different scope of information available at each stage for NETSO offers under a generator build option?

Any changes to the application process should reflect the proposed range of options available to a generator i.e. early or late OFTO appointment and generator-developer build. These would need to ensure that the relevant obligations/standards are applicable.

We are working with Ofgem to develop a more robust view of the changes required to the industry codes to facilitate the proposals within the consultation, recognising that the timescales outlined in the consultation make delivery of this extremely challenging.

We would note that neither the generator-developer build model nor OFTO build model provides the conditions and drivers for coordinated and integrated transmission development. Please see our response to chapter 6 for further detail.

Q4.3. Do you agree with our initial assessment of required amendments to the standard industry framework? Have you identified further areas that may require amendments?

Our initial view is that the areas detailed in the consultation that need modification for each of the codes are correct. We are working with Ofgem to develop a more robust view of the changes required to the industry codes to facilitate the proposals within the consultation, recognising that the timescales outlined in the consultation make delivery of this extremely challenging.

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In relation to transmission charging arrangements for the generator-developer build and late OFTO appointment options, we have some concerns about the impact of the additional uncertainty introduced into the transmission network use of system (TNUoS) tariffs. This uncertainty, already experienced as projects transitioned onto the new regime throughout 2010, arises as a result of the relative timing of the asset transfer to an OFTO; any subsequent ex-post valuation; and whether the OFTO revenue requirements are known at the time of setting tariffs in December/January. Further consideration must be given to ensuring that firm information is available from the tender process to enable NGET to set TNUoS tariffs in December/January that recover the allowed costs of OFTOs. This will increase stability of TNUoS for all those using the transmission network on an enduring basis.

Q4.4. Do you agree that there is now sufficient understanding of the offshore transmission market and arrangements for cost assessments to remove the need for an ex-ante cost guarantee?

The offshore transmission market remains at an early stage of development, and therefore, in principle, there remains a requirement for a degree of comfort. Removal of some form of cost recovery guarantee at this stage is likely to increase financing costs through the introduction of additional risk. This applies equally to the generator-developer build and OFTO build models.

Q4.5. Do you think that action is required to ensure fair and timely asset transfer from the generator to the OFTO, given that the property transfer scheme only applies to transitional projects?

The process of transferring assets from generator to OFTO brings with it uncertainty, risk and cost. A standard framework to facilitate this process is likely to be useful.

Q4.6. Are OFTO of last resort arrangements required under the generator build approach and if so, should the obligations be extended to all transmission licensees?

Please see response to question 3.5.

Q4.7. What are the appropriate mechanisms for ensuring that generators ringfence transmission costs from generation costs when competitively procuring under a generator build approach?

If a generator-developer model is permitted (notwithstanding our concerns regarding the compatibility with the EU 3rd package of energy legislation requirements) then clear provisions must exist to ensure that generator costs are not loaded onto the transmission element of the project.

Our view is that appropriate licence conditions should be placed on the generator and the OFTO regarding ring-fencing. An ex-post assessment should be undertaken by Ofgem regarding the cost allocations. Ofgem should have the power to disallow costs, adjust OFTO revenue streams and fine generators where deliberate misallocation has taken place.

CHAPTER 5: Implementing the Generator Build Option

Q5.1. What is the most appropriate route to implement the required amendments to the standard industry framework to deliver the generator build option?

We are working with Ofgem to develop a more robust view of the changes required to the industry codes to facilitate the proposals within this consultation. We would, however, note that the timescales outlined in the consultation make delivery of a comprehensive solution very challenging and it may be worthwhile exploring alternative means of delivery.

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Q5.2. the feasibility of the timetable to deliver an enduring regime by 19 December 2010 (when the Secretary of State's powers expire)

The timetable set out in the consultation document is extremely challenging. Whilst in principle the concept of introducing the generator-developer/late OFTO appointment options is straightforward, the code implications are extensive. Being able to fully evaluate, work up and consult on the practical implementation of these in the timescales proposed represents a significant challenge. We are working with Ofgem to identify the potential changes required and try to facilitate this process, but would stress that the timetable in place does give us concerns regarding delivery of a comprehensive solution.

Q5.3. what are the minimum necessary changes to implement a generator build approach. Do respondents consider that it is possible to develop and deliver these changes by 19 December 2010?

We are working with Ofgem to develop a more robust view of the changes required to the industry codes to facilitate the proposals within the consultation, noting that the timescales outlined in the consultation make delivery of this extremely challenging.

Q5.4. the best approach to ensuring timely, effective and fair transfer of assets to the OFTO.

Please see response to question 4.5

Q5.5. What is the best approach to implementing OFTO of last resort arrangements under a generator build model?

We offer no comment on this question.

CHAPTER 6: Facilitating Co-ordinated Offshore Development

Q6.1. Do our proposals create sufficient opportunities for co-ordinated development of offshore transmission infrastructure?

No - the current regime proposals offer a piecemeal solution that will not facilitate operation or development of the National Electricity Transmission System (NETS) in a coordinated manner.

The introduction of a coordinated and integrated network design solution is key to delivery of offshore wind and hence to meeting UK climate change and renewable energy targets. We do not believe that the regime as proposed encourages or facilitates multi-party cooperation or facilitates the necessary coordinated development. Issues of financing, risk and competitive advantage are likely to act as significant barriers to coordinating and building such a design on a voluntary basis.

Specifically, the following elements of the existing proposals will inhibit coordinated development of the transmission system:

- Onshore and offshore planning would be very difficult to coordinate as it is a multi-year process involving many different public stakeholders. As time progresses, subsequent projects are likely to experience increasing difficulties in securing landing points with route sterilisation emerging. Increasingly planning decision-makers are looking for optimised designs that minimise environmental and community impact -, the lack of onshore-offshore coordination will add significant delay to the delivery of offshore generation.
- An integrated design requires the construction of high voltage, multi-user assets. These assets are likely to be sized in excess of that required for particular projects, with no single party having the obligation to build the most economic and efficient solution overall. For individual developers, this will raise issues of financing, risk and competitive advantage. Without the introduction of targeted obligations onto market

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participants, it is highly unlikely that generator-developers/OFTOs will build additional capacity into their design.

- While design concepts are set out in the ODIS, developers/OFTOs are not obliged to follow these designs. The ODIS is produced without the benefit of pre-construction engineering works, preventing fully optimised designs from being developed. Furthermore, as projects progress, the detailed understanding of the delivery issues surrounding designs will change – onshore investment is continually refined as generation requirements develop. A model whereby the design is provided upfront at an early stage will not allow for evolution and will lead to a sub-optimal solution.
- Building according to a 3rd party design (voluntarily or not), for example from the NETSO through ODIS, raises significant questions regarding project risk that will put upward pressure on the overall project cost. The issue of policing designs and the types of sanction in place for deviation becomes important since a single deviation from design could result in the inability to operate the system as a single network.

Recent engagement with developers has led us to firmly believe that developers are working on a project specific basis. Continued development with such discrete project works will not allow an integrated network to be delivered.

Q6.2. Are there circumstances where additional offshore infrastructure development would be in the wider interest of the NETS?

The sheer magnitude of investment needed to connect the potential volume of offshore wind increases the importance of establishing a model that delivers economic and coordinated infrastructure at the lowest cost to the consumer, whilst ensuring adaptability. To deliver this we do not necessarily need additional infrastructure development, but rather development that is smarter and different. The development of an integrated design would deliver a reduced requirement for both onshore and offshore assets and ensure that any decision is optimised. Such deployment would not only be in the wider interests of the NETS, but of UK plc.

We have been exploring conceptual designs for an integrated onshore-offshore network that ensures deliverability, maximises network resilience at the least cost to the end consumer, whilst delivering a fully optimised onshore-offshore network. With a design philosophy that has sought to develop an economic and efficient solution, allowing developers to get their power to the market in a timely manner, the resulting multi-user transmission infrastructure would be flexible and future-proof. We believe that the resulting benefits for the wider NETS and UK plc would include:

- Capital cost savings in the region of £4-8bn (depending on the wind deployment scenario) compared to an equivalent uncoordinated radial solution:
 - Delivered through the deployment of large, multi-user transmission assets and optimisation of onshore and offshore reinforcement;
 - Under the Gone Green scenario, equating to 25% cost saving to consumers, 20% less offshore assets and 75% less new onshore lines.
- Facilitation of the planning process:
 - Halving the number of landing sites required; reducing the risk of site sterilisation; avoiding significant onshore reinforcement (including creating the opportunity to develop assets offshore to relieve system constraints onshore); and enabling planning process coordination.
- Future-proofing the network
 - Allowing the design and deployment of offshore transmission assets to evolve as changes emerge in the onshore and offshore generation backdrop; flexing to meet the needs of developers, the challenges of system operation and greater European integration.

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There are areas where access is limited (i.e. the Wash), with few routes available and some taken up by existing developers. If an integrated model were already in place, we believe that an increased volume of offshore generation could have been accommodated. Where constraints exist on the number of available sub sea cable routes, the equitable solution would be to adopt a multi-user coordinated asset approach to maximise capacity for all customers through the available sub sea routes, rather than allowing early developers to create a barrier to future market entry.

Q6.3. Do you consider there to be any issues in respect of interoperability and standardisation?

We agree that the development of offshore networks will be more effective if compatible technologies are installed. As NETSO, this is a key requirement in order to operate across the NETS in its entirety. The introduction of an integrated model would assist in ensuring compatibility, through the standardisation of assets and control system protocols. To attain the full benefits of an integrated network, the control system of the individual elements must be developed to be fully compatible with other elements of the offshore network. This would ultimately lead to a model whereby assets are interchangeable to optimise fully the operation of the NETS.

Moreover through such standardisation, the number of suppliers who can compete in the market will increase, thereby increasing confidence that the volumes required to deliver the offshore network will be available and increasing competition on unit price.

Q6.4. We would welcome views on the materiality of issues surrounding interfacing with other regimes.

An offshore regime which easily interfaces with other regimes would enhance security of supply, facilitate the transition to a low carbon energy sector and allow the efficient integration of variable renewables from across Europe. Differences in regulatory approach by European regulators can represent a barrier to development and to realising the benefits of European integration.

A radial offshore network solution would present little or no opportunities for the UK offshore network to integrate with the wider European grid, through the deployment of single point to point connections without the capacity to facilitate further integration and connection as it develops.

An integrated network solution would serve to strengthen the UK role in the European energy market:

- acting as an enabler of the North Seas' Countries offshore grid; increasing the potential for the UK to export excess wind power and future-proofing offshore development in line with wider system and security of supply requirements.

In order to enable this to be delivered, it is important that the UK continues to influence and engage at a European level to ensure compatibility of development of the regimes.