

Warwick Energy Limited

Comments on Ofgem/DECC Consultation Document References: 153/08 and URN 08/1185

Scope

This document summarises Warwick Energy Limited's (Warwick's) comments to the Ofgem/ DECC Consultation Document entitled "Offshore Electricity Transmission: A further Joint Ofgem/DECC Regulatory Policy Update" Ref: Ofgem (153/08), DECC (URN 08/1185).

The document deals with some key aspects of the overall proposals. Warwick has reviewed its initial response (Issue 1: 12th December 2008) to the proposals and this is presented with minor changes arising from the subsequent more detailed review. These revised initial comments are included in the section "Initial High Level Comments" below.

The result of the detailed review of the Annexes is given in section entitled "Additional Comments on Draft Codes".

A new section is added to cover high level comments on the Ofgem/DECC Impact Assessment Reference 08/1185.

Initial High Level Comments

Implications of EU Unbundling Requirements

We note the new position that generator affiliates (whether ring fenced or not) are not expected to be permitted to bid for an OFTO Licence. The majority of transitional projects have been developed on the basis that the developer can act as the OFTO of Last Resort. Such arrangements give certainty and control over a vital part of project infrastructure.

The new legislation is only relevant to Offshore networks because of the arbitrary UK Government decision to define all 132kV assets Offshore as a "transmission" system purely on the basis of voltage. This is in direct contrast to Onshore networks where 132kV systems remain (in general) distribution systems and may also form private networks. Onshore generation developers may presumably still choose to own and operate 132kV networks irrespective of EU Unbundling but this will not be possible Offshore. This is a clear case of discrimination against Offshore projects in UK Legislation.

In respect of Round 1 and Round 2 projects, which may qualify as part of the transitional regime, the networks comprise purely radial connections with little or no scope for integration into a wider Offshore grid. As such it is difficult to justify classifying the networks as "transmission" since their function is purely for local connection to the existing Onshore networks.

In view of the above Warwick believes that the decision to classify Offshore networks operating at 132kV and above purely on the basis of voltage as transmission systems should be revised in line with England and Wales Onshore practices; i.e. default voltages of 275 kV and above are defined as transmission.

This approach would also remove the perverse effect on embedded radial projects that an OFTO and a transmission licence is required to operate what is essentially a passive non-switchable network.

OFTO of Last Resort

Warwick notes the Ofgem views expressed in the recent National Grid/ Ofgem workshop on the connection process (1/12/08). In particular the view expressed that existing vertically integrated transmission/generator companies will be allowed to continue without divesting assets appears discriminatory.

Warwick notes that Section 2.8 of the latest consultation indicates that the possibility of obtaining a derogation to allow undertakings to remain vertically integrated exists. In respect of the OFTO of last resort Warwick sees no reason why generators may not qualify on a similar basis to act as OFTO for their own projects.

The above possibility is however excluded from the proposed regime – and no justification for this is given.

Transmission Charges

The issue of charging is not directly addressed by the present consultation. However this is an issue which is clearly of key importance to the success of the whole regime. Warwick has commented extensively on National Grid's latest consultation document under GB ECM08 and does not believe the latest revisions are acceptable.

The original charging proposals allowed socialisation of Offshore Substation costs as part of infrastructure. Indeed socialisation of costs was one of the main justifications used by Government to sell the entire proposed regulatory regime to the wider industry. It is therefore extremely disappointing that Ofgem gave a clear steer to National Grid (open letter of May 2008) to remove the main socialisation benefits from generators. This represents a major change in Regulatory philosophy and Warwick believes this should be subject to revision.

Warwick also notes that the proposed charging rules appear to allow for development of purely radial networks. While this may allow the charging regime to deal with transitional projects, the scope does not appear wide enough to cover future OFTO developments. This is particularly true for possible interconnected networks. Issues to consider include: socialisation of cable costs (as occurs for Onshore networks); treatment and charging for reactive power compensation equipment (simple pro-rate approach is discriminatory); and interconnection of separate OFTOs to form part of the Main Interconnected Transmission System (MITS).

Warwick believes the present charging arrangements as framed in GB ECM08 are unacceptable. Furthermore the proposals represent such a shift away from the original policy position that there is no longer any justification for the entire regulatory regime. As such a fundamental review of the entire License Regime should be carried out.

Overall Connection Process

There is a requirement for the developer to sign an agreement with National Grid committing to any necessary Onshore reinforcement works prior to the tender process commencing. For an Onshore project such a commitment guarantees access to the transmission system. For an Offshore project no such equivalent access rights are offered. This is because there is no guarantee that any OFTOs will bid to provide the connection – let alone satisfy Ofgem's criteria that their proposal is economic and efficient. The lack of access rights for Offshore projects is clearly discriminatory in comparison to Onshore projects and this aspect of the proposal should be revised.

In addition Warwick notes the following points:

- There is no Licence condition on OFTOs to offer connection for additional generation projects – unless the capacity increase is less than the notional 20% figure proposed.

Clearly this means that sharing of networks between developments becomes less likely and the possibility of achieving an integrated and least cost network is minimal;

- There is little prospect of cost or network sharing between projects – i.e. projects will continue to be designed on a radial standalone basis;
- The lack of an overall design stage within the process to ensure that best value network designs are used for OFTO networks;
- Lack of clarity on how technical content of the ITT is to be developed – and what level of detail will be included;
- How bids are to be compared on a levels playing field when the range of technical solutions could be diverse;
- The timescales taken by the process are likely to adversely impact on development of new projects. Even in the transitional regime a minimum of a full year is envisaged between prequalification and issue of an OFTO Licence. Even this assumes that the process goes smoothly – if additional ITTs are required due to lack of bids or lack of an economic proposal this will become longer still;
- The proposed 4 month ITT response in the enduring regime is unlikely to allow bidders sufficient time to provide firm costs.

Reactive Power

Under the proposed regime an Onshore generator is required to provide reactive power at the connection point. In contrast under the proposed Offshore regime the generator is required to fund 100% of the costs of reactive compensation equipment at a remote point on the network; i.e. at the OFTO Onshore TO/ DNO interface point. A difference in reactive costs charged to the generator therefore occurs even if an identical overall generator scheme is located Offshore rather than Onshore. In particular additional equipment will be required in the Offshore situation to compensate for the connecting OFTO cable and transformer network. This is clearly discriminatory.

Warwick has pointed this inequality out on several previous occasions – however there is still nothing included in the latest proposals to address this clear case of discrimination.

The suggestion that reactive power services can be provided to NGET from the compensation equipment is noted. However since the compensation equipment is proposed to be 100% funded by the generator any payments for reactive services should also be passed to the generator. However the equipment concerned is not within the control of the generator and there is therefore a risk that the OFTO will fail to deliver the appropriate services. The area of reactive payments seems unnecessarily complex and should be reviewed.

There is no fair means of allocating reactive power costs between generators connected to a single OFTO, or indeed interconnected OFTO to OFTO network. The simple pro-rate approach proposed by NGET makes no account of possible different generator characteristics or the different lengths and characteristics of the passive network (cables and transformers). Warwick believes that there is in fact no simple or equitable solution to this problem. The fundamental difficulty is that the reactive power equipment and the associated connection conditions are located at a remote point from the connection point.

Warwick believes that one approach that could help would be to adopt a proper planned approach to reactive compensation. A cost contribution could be provided by the generator to account for any deficit in its theoretical contribution at an Onshore (or Offshore) connection point. The monies thus raised could then used to fund reactive compensation equipment placed at the most appropriate point in the network. This equipment could be in the same zone as the generator to provide the optimal value for money. Such an approach would avoid the potentially wasteful requirement under the present regime to place reactive compensation equipment at OFTO/ TO or OFTO/DNO as well as generator/ OFTO

interface points. Clearly further work on such an approach is needed to arrive at a suitable cost reflective proposal which benefits all parties concerned.

Overall Warwick believes a fundamental review of reactive power issues is required.

132kV Connected Licence Exempt Offshore Generators

As noted elsewhere there is no real justification for including these projects as part of the Offshore Transmission regime. The networks concerned are purely radial and if located Onshore would be connected to a DNO network and exempt from TNUoS charges.

Existing projects have been designed, built and financed on the basis of the present charging regime. It seems unfair and unnecessary to go to the expense of artificially splitting successfully working projects into an OFTO and a generator. This will almost certainly increase ongoing O&M costs due to loss of natural synergies as well as increasing complexity of agreements and interfaces. On top of all of this the proposal is to significantly increase the charges by imposing TNUoS charges. The rationale for the entire approach to these projects should be reviewed at a fundamental level.

Warwick believes the pragmatic method of dealing with such projects is to exclude them from the entire OFTO regime.

Consents

Warwick notes that the OFTO will require separate consents from the generator. Existing and transitional projects are typically covered by overall consents for both generator and potential OFTO assets. Warwick understands that it is not possible to split certain types of consents between different (new) owners for the new regime e.g. FEPA and CPA consents. As such the OFTO will need to apply for consents post licence award. This area needs to be addressed in the overall proposals – failure to do so will result in project delays and increased risk that generators will be left stranded while OFTOs apply for new consents.

Initial Comments on Code Drafts

The extent of the consultation is such that considerable work is needed to review the documentation and identify potential problem areas. Warwick details further comments on this area later in this document.

Warwick notes that there are few significant revisions to the requirements of the GBSQSS in comparison to that published in the previous consultation Reference 84/08 (Ofgem) and URN 08/730 (BERR).

Warwick commented in some detail on the proposals in response to the previous consultation. It appears that other respondents to the consultation made similar comments. It is disappointing that little or no account of industry views appears to have been taken in the latest documentation.

Pending full analysis of the documentation Warwick notes the following points:

- The standards appear to apply to all Offshore transmission systems, including interconnected systems. No cost/ benefit analysis has been carried out to provide any criteria to apply Offshore for networks that may be regarded as part of the Main Interconnected Transmission System (MITS);
- The requirement for double busbar switchgear at Onshore and Offshore connection points. Warwick notes that this issue was specifically excluded from the cost justification carried out on behalf of the GBSQSS sub group. (See SEDG Report

Reference URN 08/1144 entitled “Cost Benefit Methodology for Optimal Design of Offshore Transmission Systems”, Predrag Djapic and Goran Strbac, July 2008);

- In view of the above it seems questionable that there was ever any justification for including a requirement for double busbar switchgear (particularly on the Offshore platform) in the draft GBSQSS;
- Warwick notes that Ofgem has now requested NGET to carry out analysis on single versus double busbar arrangements. However there is no reference in the consultation document to this work having been published or being subject to wider industry scrutiny. This therefore does not seem a satisfactory or transparent basis to define a security standard which should be subject to industry review and comment;
- Ofgem requests further information on cost differences between single and double busbar switchgear. However it is worth emphasising there are also significant cost differences due to the increased size and weight of double busbar switchgear on the Offshore platform and foundation costs;
- Warwick notes that during a 20 year Licence period there is likely to be at most one or possibly two occasions when busbar maintenance on modern 33kV switchgear is required. In any case it is expected that co-ordination of busbar, transformer and other switchgear outages (e.g. WTG feeder breakers) will mean there is no additional loss of generation output. i.e. use of double busbar switchgear will not improve network availability or generator output;
- There are likely to be other more pragmatic issues of design that could affect system reliability to a far greater extent – particularly in the event of faults occurring; e.g. segregation of switchgear, treatment of alarms (e.g. is a transformer switched out if a winding temperature alarm occurs or is a constraint applied) etc. Warwick believes that since, quite rightly, there is no requirement to include such issues within the GBSQSS or other codes there should be no requirement for double busbar switchgear;
- Warwick’s position remains that inclusion of a requirement for double busbar switchgear is both over prescriptive and unnecessary and will impact adversely on costs without any real benefit to OFTO or generator;
- The requirement for Offshore generators to provide reactive compensation at a point remote from the connection point is discriminatory in comparison to Onshore systems. Similarly there is no proposal for a cost reflective means of providing reactive compensation if more than one project connects to an OFTO network. Both these issues should be addressed;
- Previous consultations and informal discussions with NGET indicate that up until now the OFTO regime proposed that the interface between the OFTO and generator could be on either the HV (132kV) or MV (33kV) side of the Offshore transformers. The latest drafting of the GBSQSS changes this position so that an MV side connection only is permissible. This represents another late in the day change to the proposed regime which renders the proposals less flexible and efficient than previously expected;
- In relation to the above Warwick notes that this revision may be due to wording of the enabling Act referring to operation of a 132kV transmission system becoming illegal without a Transmission Licence. However the GBSQSS sub-group recommended that flexibility be retained to allow generators to select either an HV or LV connection point. In any case it seems difficult to justify defining a short 132 kV connection as a transmission system – and exclusion of such connections from the OFTO network would improve flexibility in the proposed regime. It therefore seems sensible to revert to the original interpretation where either HV or MV Offshore connection points are permissible.

Derogations

The comments made in Sections 4.86 and 4.87 with respect to possible derogations being considered in advance of the transitional tenders are welcome. However Warwick notes that historically Ofgem’s approach to derogations is that there is a general reluctance to grant derogations. Furthermore derogations are usually either time limited or may be

revoked if the derogation subsequently has an adverse material impact on a third party user. As such the stated “minded to” grant a derogation approach will not eliminate risk to the OFTO that networks will need to be fully code compliant in the future. This will lead to increase costs in OFTO bids to mitigate against such risks.

A further point is that given the number of potential transitional projects designed before publication of even the draft GBSQSS there may be multiple derogations required. Warwick believes that there will be considerable work required from both project owners/developers and Ofgem to identify potential non-compliance issues. A further process of applying for assessing and granting/ rejecting derogations is then necessary. Clearly Ofgem may reject a derogation request and there is no means of dealing with this situation proposed.

It seems far simpler to adopt the more pragmatic solution as suggested previously by Warwick; i.e. there should be some form of “gandfathering” arrangement for transitional projects. This would allow a permanent exemption from Codes to be granted based on the as designed or as built equipment and topology.

Warwick also notes that the requirement to bid a 20 year revenue stream means that the OFTO is exposed to possible future code changes. This will also be built into bids in the form of additional cost premium. This aspect of the regime is discriminatory in comparison to Onshore networks where the 5 year Regulatory Review allows licensees the opportunity to recover costs from Code changes. This issue requires further review.

Additional Comments on Draft Codes

Annexe 6 - Grid Code

As noted elsewhere Warwick is concerned regarding the lack of time given to these consultations. It has not been possible to carry out a proper review of the proposed detailed wording within the time frame allowed.

Aside from points made elsewhere in the response Warwick would raise the following issues.

Glossary and Definitions

The definitions for both Onshore and Offshore Transmission Systems are essentially the same; i.e. both imply that fully interconnected systems are possible. Warwick notes that the main consideration to date in the consultation exercise (and supporting work such as GBSQSS subgroup) has been based on the presumption of radial circuits from a single onshore connection point.

These assumptions limit the validity of the proposals to such radial systems and these limitations are not reflected in the codes. This issue needs to be addressed by:

- Specifically excluding interconnected networks (accepting that Round 2 and Round 3 proposals may lead to interconnected networks being developed and this will therefore trigger further work); or
- Greatly increasing the necessary work; e.g.
 - cost benefit analysis for GBSQSS;
 - charging issues where a single zone per OFTO/ project would potentially no longer be applicable;
 - split of locational/ non location costs;
 - reactive compensation - where the way in which reactive power constraints are met at onshore connection points cannot be disaggregated.

Given the already ambitious timescales the specific exclusion of interconnected networks seems the only pragmatic way forward without incurring significant delays.

Offshore Power Park Module/String – the definition of these items is inconsistent with the proposed GBSQSS. This is because the Power Park Module definition is a grouping of strings connected to a single indivisible busbar. However under the proposed GBSQSS all connections must be via double busbars and therefore by definition a Power Park Module can comprise no more than 1 string.

Planning Code Appendix D

D1.1 – There are no voltage criteria applicable to Power Quality (e.g. flicker, harmonics) defined within the GBSQSS which appears to be the only required design criteria listed. For connection of more than 1 generator (or inclusion of demand customers) on an OFTO network this will lead to potential for adverse effects on other connectees and dispute. This issue has been highlighted previously by Warwick. It is also unclear whether demand connection criteria should include Power Quality standards – particularly for networks where a single generator is connected.

D1.2 – This states that “*all equipment*” in an OFTO network must be fully compliant with IEC Standards. This appears overly restrictive and an invitation for networks to be over-designed. Warwick is not aware of a similar condition on onshore systems. This therefore also appears discriminatory.

Connection Conditions

CC.6.3.2(e)(i) - The requirement to meet zero reactive power transfer at the LV boundary may not be achievable within the specified tolerance at low or zero real MW outputs. This is because the charging current for long cable circuits may be significant, particularly for low rated MW Power Park Modules; and the inherent generator reactive capability at such outputs may be negligible. Use of separate reactive compensation for such scenarios does not appear economically justified and the code should reflect these concerns. The wording as framed appears overly restrictive and will potentially lead to additional costs for the generator for no tangible benefit to the overall system or OFTO network.

CC6.3.8(b) – The requirement to control voltage is incumbent upon the generator but appears to allow some variation in requirements which can be defined in a Bilateral Agreement. Such agreements appear to allow the possibility for overall voltage control taking place at a point remote from the Offshore Connection Point; e.g. at the OFTO/ Onshore TO or DNO network interface. In this case the most efficient overall network design may utilise reactive capability from both the generator and the OFTO network (e.g. Onshore SVC equipment) to achieve an overall voltage control system. Indeed Warwick is aware of transitional project(s) where such a design philosophy has been adopted. There appears to be no means in the code to allow sharing of responsibility for overall voltage control between OFTO and generator. This appears to be a deficiency which could lead to over investment. Warwick believes the code should be modified appropriately to address this issue.

CC6.3.15 Fault Ride Through – Warwick’s initial view is to support the principle that the offshore generator should be able to choose between meeting requirements as for onshore generators or based on generic requirements. However one concern with this approach is how will OFTO networks where there is more than 1 generator connected be treated? In particular will it then be necessary for all generators to comply with either the generic requirement or a requirement to ride through a fault on the Onshore network? A further issue to consider is how OFTO networks which form part of the MITS will be treated. It is

not obvious to Warwick how these cases are to be treated and further explanation and review of the codes in these areas is requested.

The Grid Code onshore requirements for asynchronous plant were subject to extensive and time consuming scrutiny by consultation with wider industry. Warwick believes that this should also apply to any generic offshore requirements and is concerned that the manner of introduction of the present proposals means the proposals are not subject to this same level of scrutiny.

Warwick therefore believes that wider and separate consultation on generic fault ride through (and connection conditions offshore) is required. Warwick therefore opposes the drafting of the code in these areas on a matter of principle at this stage.

Warwick notes that the offshore generators would need to choose between an offshore or onshore fault ride through option within 28 days of signing the offer unless a different timescale can be agreed with NGET. Since the turbine type and characteristics are unlikely to be known at this stage the 28 day timescale of this decision is unrealistic and arguably unnecessary at this early stage anyway. Warwick believes that the period of 28 days is wholly unrealistic. It seems preferable to redraft the wording either to extend this period considerably or more simply to rely on a Bilateral Agreement for the timescale of this decision in all cases.

Figure CC.A.7.2.2b – This diagram implies that sites are required to provide reactive capability when the network is operated both above and below statutory limits. This is unnecessary and will lead to additional costs. Warwick has commented on this on numerous previous occasions including in the original Consultation in which this diagram was introduced into the Grid Code. It is unclear why these concerns have been ignored both by NGET and Ofgem. It is clear that providing reactive capability for voltages above statutory limits would lead to increased costs for no benefit since the system cannot be run in this way.

Annexe 7 – STC

Section D

Item 2.1.1.2 – Each OFTO network will necessarily be a standalone License due to the proposed structure of the overall Regulatory Regime. Further there is a cap of 20% increase in capacity without a new OFTO License being required. In this context the usefulness of development plans prepared by individual OFTO Licensees must be questionable.

Warwick believes the basic Regulatory Regime by its very nature will hinder overall network development and prevent a co-ordinated approach to planning being used. Ultimately this lack of planning will significantly increase costs for no benefit to generators, OFTOs or wider demand customers. While a requirement to produce development plans is desirable in the overall context of the OFTO regime and lack of an overall planning process its usefulness is likely to be extremely limited.

Item 2.2.6 – This indicates conditions on plant and equipment for onshore and offshore systems. Warwick notes that all equipment for OFTOs must be to IEC Standards. This condition is not applicable to onshore systems. This requirement is overly prescriptive. It is accepted that OFTO networks must be built to acceptable standards and with suitable design criteria. However Item 2.2.6.4 oversteps this requirement, is an invitation to over-design, and should be removed

Item 2.2.6.5 – This states “any Transmission Apparatus located Offshore is suitable for operation in a marine environment”. This appears overly prescriptive – for instance there seems to be no requirement for 132kV Offshore switchgear to be suitable for use in a marine environment if it is located in an indoor room within a suitably controlled substation environment. Warwick is not aware of similar restrictions on equipment for Onshore equipment located for instance in polluted areas or those prone to salt fog. Such cases are dealt with on their own merits rather than by conditions in the STC. There therefore appears no justification for adopting such a specific approach for Offshore networks.

Items 2.3.3 and 2.3.4 – Warwick is unsure why both of these clauses are included. Is Item 2.3.3 alone sufficient?

Item 3 - The wording contains no modifications to cater for the planning boundaries for OFTO networks. This should be checked.

Item 8 – The amount and purpose of the Construction Securities referred to in this section is unclear to Warwick. If the OFTO fails then it will be the entire revenue stream and future access of the generator that is lost – not merely a construction cost. This issue and the purpose and amount of the securities require further work and explanation.

Section J

Interface Point Capacity – This is defined as “The maximum amount of Active Power transferable at the Interface Point as declared by an Offshore Transmission Owner, expressed in whole MW. Being not less than the sum of the declared Transmission Entry Capacities of each Power Station connected to that Offshore Transmission Owner’s Offshore Transmission System when all such Offshore Transmission Plant and Apparatus is in service.”

This requires the capacity to be equal (or greater) than the generator stations connected to the OFTO network. The definition does not appear to cater for the case where a single OFTO network has more than 1 interface point with the Onshore network. The condition expressed in the sentence starting “Being not less than...” should be removed.

Section K

Item 2.1 – The proposed pro-rate reduction in reactive capability for an OFTO network where there are multiple generators connected is not necessarily equitable. This is because the effect of the passive network would normally be supported by all the generators, however if 1 generator is out of service the (fixed) element to compensate for the passive network would fall entirely on the other generators. Warwick believes this problem is inherent in the regime due to the requirement to provide reactive support at a point remote from the connection point. This issue needs to be addressed by a fundamental review of the entire approach to reactive compensation as highlighted elsewhere in this response.

Appendix KB

The responsibility for meeting reactive power at the Onshore boundary rests with the OFTO. For an efficiently designed network it may be that the overall requirement is partly provided by the OFTO and partly by the generator. It is not clear to Warwick how such efficient designs are to be treated given that the stated requirements (and hence risks of non-compliance) fall entirely on the OFTO.

As explained under comments above under CC6.3.8 this creates a responsibility problem for cases where reactive requirement and voltage control is met by a combination of generator and OFTO equipment. Warwick believes that revision to the codes is needed to address this issue – total reliance on Bilateral Agreement in this area does not seem

workable particularly for an OFTO network connecting more than 1 generator or with more than 1 Onshore connection point.

Warwick notes the diagram Figure KB.3b is analogous to that provided in the Grid Code discussed above. It implies a requirement for OFTOs to provide reactive capability outside the statutory voltage limits of $\pm 10\%$. This should be corrected to limit the operating capability requirement to statutory voltage limits for the reasons given elsewhere.

Annexe 8 – GBSQSS

Section 1 Introduction

Items 1.10-1.12 – Section number cross references are omitted.

Item 1.15 – It is not clear why ownership of the Onshore substation affects the security criteria applied. It seems more logical that the functional purpose of each part of the system should determine the applicable security standard. This wording should be reconsidered/revised accordingly.

Item 1.17 – The wording represents a fundamental change in the interpretation of the location of the Offshore interface point. The original work of the GBSQSS sub-group indicated that it is preferable to allow both HV and LV connections to be chosen. Later consultations have tended to favour the LV boundary while allowing flexibility to retain a HV connection point. It is not clear why this interpretation has been changed so late in the day. Warwick believes the wording should be amended to allow a choice of HV or LV connection points. See also comments elsewhere.

Item 1.18 – The choice of connection point between either HV or LV side of the Onshore substation should be an OFTO choice and not dictated by the GBSQSS. Selection of the connection point allows greater design/ procurement flexibility with potential consequential cost benefits.

Item 1.25 – For the example given the application of MITS criteria to the OFTO network would only be applicable if the network were designed to parallel the separate busbars. Warwick is aware of designs where paralleling of circuits between different GSPs in a single Offshore network is explicitly prevented by suitable interlocking measures on the Offshore network. In such cases MITS criteria are clearly irrelevant. The wording should be amended to reflect this situation.

Section 7 Generation Connection Criteria Applicable to an Offshore Transmission System

General Comment – The font size and formatting needs to be reviewed.

Section 7.2 – As noted in previous consultation responses the limitations of the analysis work and scope of the Ofgem consultations are not adequately reflected. The limits of applicability of the offshore parts of the GBSQSS should be extended accordingly to reflect this. In particular an explicit statement indicating that interconnected networks have not been considered should be included.

Section 7.4 – interconnected offshore systems are to be subject to the same criteria as onshore systems. However the cost/ benefit analysis justifying this has not been carried out.

Section 7.6 – the Section references in Appendix E (E2.2 and E2.3) are not properly defined.

Section 7.8.1 – the case of multiple connections using different technologies at a single offshore substation is omitted and should be included.

Section 7.8.3 – Warwick has previously commented that this requirement for double busbar switchgear (particularly on the LV side of the platform) is over prescriptive, unnecessary and not cost effective. Designs using single busbar equipment can be developed with the appropriate degree of redundancy at lower cost. This has for example been done for the Thanet project. Indeed in the case of the HV side of the platform use of transformer feeders (i.e. no busbar) may be justified on economic grounds. Please also refer elsewhere within this response and to earlier consultation responses (both from Warwick and other industry participants) on this issue.

The stated requirement for double busbar switchgear is a clear case of “gold plating” and should be removed. Similar comments apply to the relevant paragraphs of Section 8 and Appendix A.

Section 7.8.3 – The deterministic criteria applied appears overly prescriptive - and is presumably based on current market prices and a cost /benefit analysis. Warwick believes that such issues would better be dealt with on a project specific basis with the analysis being carried out by the OFTO according to principles set out in Appendix E.

Section 7.13.1 – The wording appears to imply that all offshore connections of 120MW or more must be connected by at least 2 circuits rated each at 50% of the connected capacity. This is a major change from the original GBSQSS Sub Group proposals which allowed up to 1500MW of capacity on a single circuit. This section needs to be revisited and revised accordingly.

Section 7.13.3 – Similar comments to 7.8.3 apply – for example there are network 132kV topologies possible where there will be no justification for a double busbar arrangement; e.g. extension of existing DNO 132kV transformer feeders from onshore substation to an offshore network.

Section 7.14.2 – The means by which reactive power limits can be selected as anything other than zero is not clear. The presumption that the transfer will be zero may lead to under use of generator reactive capabilities and over design of the OFTO network. This issue needs further consideration. Comments on Section K of the STC are also relevant to this paragraph.

Section 7.16.8 – The loss of overall export capacity following a single outage is accepted. Warwick assumes that the unacceptable overloading condition referred would only apply post fault after any generator constraints necessary have been applied; i.e. there may be a short time period when overloading is possible and suitable protective measures must be in place to prevent damage to equipment.

Section 7.20 – Appendix A includes double busbar requirements. Similar comments apply to those detailed elsewhere; i.e. the requirement is overly prescriptive and unnecessary.

Section 7.21-7.24 – the applicability of Design Variations to transitional projects is not clear. Since transitional projects may pre-date the proposed GBSQSS their designs should be treated as a Legacy rather than a Design Variation (since no variation request can by definition have been made in such cases). If treated as a Design Variation then OFTOs would be exposed to the risk situation in Section 7.23 that a new customer could trigger the need to significantly modify the network. It is unfair to penalise or add risk for a generator or an OFTO as a result of a standard being introduced post event.

Warwick notes also in this respect a general reluctance on the part of Ofgem to grant derogations – which is another potential way around the problem. In any case Ofgem would doubtless wish to impose some restriction on any derogation issued rendering it of little real comfort to the OFTO or generator.

While Ofgem has made some move to address these concerns (see comments elsewhere) the proposals fall short of the necessary assurance to allow legacy designs enduring exemption from requirements.

As the proposals now currently stand different transitional projects will each need to apply for a number of derogations. This is because the designed networks do not completely match the technical proposals now in circulation.

Warwick believes that the above issues are probably outside the remit of National Grid in drafting the GBSQSS and should be addressed by Ofgem.

Section 8 – Demand Connection Criteria Applicable to an Offshore Transmission System

Warwick supports the principle that there should be demand connection criteria offshore. These should in the short term cover demand of the OFTO network itself (offshore substation auxiliaries) and any demand required by the generator. Warwick notes that the deterministic criteria applied to demands in excess of 1MW may drive design of the entire OFTO network. This seems perverse given that there may be more innovative alternative means of meeting generator requirements without the need for additional transmission circuits.

Section 8.7 – The requirement to consider busbar outages for demand connections is excessive for the type of networks being considered. As detailed elsewhere Warwick believes this requirement is unnecessary and should be removed.

Section 8.10 – The wording is not clear. Warwick assumes the intention is that for a radial network both power station demand groups will be summated for certain outages before applying the demand criteria. This would be the usual practice for similar networks onshore.

Section 8.11 – Similar comments apply to the double busbar requirement as noted elsewhere.

Section 8.12-8.15 – Similar comments to those listed under Design Variations under Section 7 above are applicable

Section 10 – Voltage Limits in Planning and Operating an Offshore Transmission System

The inclusion of steady state voltage criteria is a welcome addition to previous consultation exercises.

Warwick notes that there are no voltage step limits analogous to those applicable to onshore system defined in the GBSQSS. It is not immediately obvious whether such conditions are applied elsewhere by other codes e.g. Grid Code (CC6.1.7). Ofgem's and National Grid's confirmation of the position on this matter is required to assess the impact of this aspect of the proposals. Warwick notes that this issue was raised in response to the June consultation on this issue. It is disappointing that the latest consultation document does nothing to either respond to or address these concerns.

In any case issues such as voltage step change are an area for potential conflict. The following illustrate some key issues:

- For typical offshore networks it is unlikely that the networks will comply with normal onshore standards for public networks (i.e. P28);
- This in itself is not necessarily a problem for the generator – so long as the initial design allows for this and there are no significant adverse effects on site operation;
- The above situation is analogous to the approach adopted on many private and industrial systems (which may themselves have both generation and demand connected);
- In the event that a second User (generation and/or demand) connects at the offshore substation then there is obvious potential for conflict;
- As there are no offshore voltage step change limits then the second-comer will presumably have to design its system to cope with any pre-existing step change conditions on the network (irrespective of whether these lie within onshore limits).

Warwick believes that clarification of these issues is required as the consultation moves forward.

Impact Assessment

The Impact Assessment published under Reference 08/1185 contains a number of items which merit some comment.

Summary

Why is Government Intervention Necessary? – Contrary to the stated position the proposed OFTO regime has introduced greater uncertainty into a developing industry. There is no means of providing a co-ordinated or integrated approach to overall network development. This will add cost, complexity and risk to the development of the entire industry. In Warwick's view the industry would be better served either by a continuation of the existing merchant approach or by extension of the existing Onshore Transmission Licensees remit to cover offshore networks. No comparable analysis of such options is presented to justify the overall approach adopted.

What are the policy objectives and the intended effects? – It is difficult to see how the regime can meet the stated objectives or intended effects.

The potential connection of up to 33GW of offshore wind projects to UK Electricity Networks represents a massive change in terms of both location and technical characteristics of power sources. The proposed Regulatory Regime has no real mechanism to provide overall co-ordination of offshore networks. The use of tender windows is the only possible means by which co-ordination can be provided – and then it is wholly reliant upon generation projects reaching viability and applying for connections in similar areas within a short space of time of each other. Such a reliance on blind chance to develop a co-ordinated approach, with consequential cost savings by sharing of assets, is not credible. Warwick believes that this aspect of the proposed regime is fundamentally flawed and requires major re-examination and restructuring.

In relation to the onshore grid there are obvious concerns. The level of investment and timescales for the necessary reinforcement of the transmission system are significant. Given that Crown Estate lease areas will soon be confirmed there is a strong case for reinforcement of the existing transmission system on a strategic basis (as is already being considered in Scotland). Such reinforcement could be undertaken as part of the Regulated Capital Programmes of the various transmission companies. A further benefit of this approach is that it would potentially help spread the asset replacement and upgrading of the main 400kV and 275kV systems over a longer time period – thereby alleviating the issue of currently being faced that large parts of the network will reach replacement age within a relatively concentrated time frame.

Warwick believes that a strategic approach to development of onshore network capacity is essential to success in meeting Government targets for renewables. There is no means in the proposals of addressing such issues – and this appears to be another fundamental flaw.

Policy work stream 1

The estimated one off cost for each transitional project to enter the regime is stated as between £10-15million. Under Section 5.188 the capital cost for the 24 projects under consideration for this part of the regime is stated as £2.5-3billion; i.e. average cost of each OFTO network of £104-125million. It is difficult to see how an effective increase in capital cost of up to nearly 15% will ever be recovered by savings from on-going operations and maintenance activities. This is particularly true given the potential loss of synergy between generator and OFTO in terms of access issues. There is also potential increased cost due to the additional complexity of operating split responsibility sites (e.g. Offshore substations).

For existing license exempt projects capital values of the OFTO network are likely to be significantly below the above average costs. The £10-15million one off expenditure is especially difficult to justify in this context given the loss of the existing exemption from TNUoS charges will add further to the financial burden on such projects.

Policy work stream 2

There is an estimated saving from use of an OFTO of last resort mechanism in the transitional regime of £12-33million. If this benefit is real why is the OFTO of last resort not available in the enduring regime?

Policy work stream 4

The key benefit of £3,314million relates to savings associated with reactive power and frequency services. It is worth noting that under the existing merchant led regime similar benefits already accrue. A further point is that the cost savings relate mainly to the wider economy and therefore do not act as a driver to encourage offshore investment.

Policy work stream 6

The key benefit of £158-395million is associated with supposed benefits in terms of increased speed of connection and consequent utilisation of the transmission system. A brief review of previous consultation responses from across the industry indicates a general concern that connections will in fact be delayed. There is further comment that actual capital costs will rise due to increased risk faced by OFTOs and generators alike due to the Regulatory Regime. In this context it is difficult to see how the alleged benefits can be justified – indeed the reality is that delays to connections will lead this to become a net cost rather than a benefit.

Summary

Despite progress in a number of areas there remains much to be done if these proposals are to be made into a positive addition to the UK regulatory framework. Due to the number and complexity of the unresolved issues we requested an extension to the deadline for full responses to this consultation. While recognising Ofgem has offered some flexibility to Warwick in responding, we believe that extra time would have led to more extensive and better feedback from the wider industry.

Much has changed in the offshore wind sector in the last 4 years during which the time proposals have been debated. The increasing targets set for the industry, the greater need for early delivery of new capacity, the size of the Round 3 campaign, the challenges facing capacity reinforcement onshore and now the latest EU directives all suggest that a rethink

is needed. Implementing a flawed regime that doesn't address the major challenges that face us will be a major 'shot in the foot' for the UK.

In relation to the Impact Assessment Warwick is concerned that the entire document appears to have been constructed around a predetermined agenda to put a positive spin on the proposals. Responses to previous consultations from across the industry indicate a general concern that in fact the OFTO regime will increase risks and costs as well as delaying project development. In this context Warwick is sceptical that the alleged benefits will accrue – and in practice the regime will have a detrimental effect in terms of both delays to projects and additional costs of connections.

Overall therefore Warwick believes there remain major difficulties with the entire OFTO proposals. Indeed we currently believes that extending the existing onshore transmission franchises under the 'connect and manage' ethos would best match the stated aims of connecting major increases in offshore wind capacity in a timely and efficient manner and would be consistent with the new approach onshore. This would allow a more strategic and holistic approach to be developed for both onshore and offshore grid networks to the benefit of all UK consumers. A major HVDC offshore grid, owned and operated by National Grid, will provide the industry with the best opportunity to meet its targets and to allow interconnection with continental networks.

Whether the above structure is the considered the best outcome or not Warwick strongly recommends that the 'Go Active/Go Live' timetable is delayed whilst a full review is undertaken to ensure that any new regime best meets the future needs of the industry and UK consumers.