Warwick Energy Limited

Comments on Ofgem Consultation Document 84/08 Offshore Electricity Transmission – Regulatory Policy Update 13th June 2008

Scope

This document summarises Warwick Energy Limited's (Warwick's) comments in response to the Ofgem Consultation Document 84/08 (BERR URN 08/730) and associated Appendices and Annexes.

The present response should be considered along with the associated covering letter and comments already submitted by Warwick in response to earlier Ofgem consultations on Offshore Transmission.

Detailed Comments

Comments are detailed below against the following sections as per the structure of the consultation document.

As many of the details in the proposals are incompatible with each other and/or the overall objectives not all of our comments are necessarily compatible with each other and must be read in the context of the section of the proposals that they are referring to.

Section 1 Introduction

Items 1.3-1.7

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 large parts of the network reaching 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.

Item 1.13 (Policy Context)

Warwick recognises that considerable work has been carried out by Ofgem/ BERR and the wider power industry in developing the proposals to date. However as detail of the proposed regime has emerged it has become increasingly obvious that the stated aims are unlikely to be achieved. In relation to the high level objectives listed in Item 1.13 the following should be emphasised:

- *Consistency* - the proposals are inconsistent with onshore arrangements in a number of key areas including Connection Conditions, Security Standards, Charging Arrangements and Access and Compensation rights. The proposals can also be regarded as discriminatory between onshore and offshore generators in many areas. It is difficult to see how the stated objective of consistency with onshore arrangements is met;

- *Assistance to offshore developers* – the costs of building and maintaining the network will indeed be recovered by the charging methodology. However the proposed 20 year regime in which prices are fixed from day one, in a new industry is a recipe for inflated bids from all participants in the tender process.

  In this regard Warwick notes a response from a relatively experienced offshore wind farm connections provider (Siemens), made in reply to the earlier Ofgem Consultation 04/08 to support this view, *"We are frankly stunned by the cost benefits claimed for the chosen non exclusive regime over the exclusive alternative."*

  The presumption that transferring costs to an OFTO and spreading the capital costs over time is of benefit to a project is wholly reliant on the assumption that financing costs for an OFTO will be lower than those for a developer. A further presumption is that any resulting cost benefits will be passed on by the OFTO via the tender process. Warwick does not believe these presumptions to be credible – as such there is unlikely to be any realisable cost benefit of the proposals;

- *Shared Risk* – the structure of the proposed connection application and tender process means that the main project development risks will continue to be borne by developers. Indeed in order to reach a "firm" tender price the developer will have needed to have obtained: all Consents; carried out key seabed surveys; and where necessary any onshore route surveys. All this will realistically need to be done prior to formal application for a connection to achieve sensible timescales and "firm" bids. The proposed tender process itself adds to project risk since there is no guarantee that an economically viable OFTO bid will be received - or indeed that an OFTO License will be granted.

  Warwick also notes that to achieve Consents a detailed view of the connection assets (connection point, cable numbers, cable route, substation design etc), timescales and risks is required. The only practical means of achieving this is outside the proposed Regulatory Framework - by commissioning feasibility studies from Onshore TNOs/ DNOs. Warwick notes that there is no License Obligation on TNOs/DNOs in this respect - and therefore TNOs/DNOs are likely to seek to satisfy License condition requirements (such as formal Connections Applications) in preference. Hence feasibility studies critical to the successful selection of offshore cable routes and landing points will at best be low priority and thus subject to delay. This issue will be increasingly important as volumes of TNO/DNO work increase due to aging of transmission and distribution assets. The UK skills shortage in power engineering will tend to further worsen this situation.

  These issues all appear to be fundamental flaws in the proposed arrangements and

should be addressed;

- *Coordinated Approach* – as indicated above there is no realistic or realisable means of connections being coordinated within the proposed framework. The likely reality is that projects will continue to compete for onshore capacity; and that connections will be designed as radial networks for individual projects with little or no shared infrastructure. Again this is a major flaw in the proposals.

Item 1.25

Warwick believes that realistic alternatives to the licensed approach have not been adequately considered. It is notable that as detail of the proposed licensed approach emerges it appears to make the supposed benefits of the Licensed approach unrealisable.

Given the numerous problems now uncovered by the detailed work it is not clear why the existing Merchant approach – which has already and continues to deliver offshore connections – or an extension of the onshore licensed transmission franchises are not given further consideration.

Item 1.27

For onshore systems the Regulatory Framework in a relatively mature industry involves periodic reviews at least every 5 years (with on more than one occasion an interim review/ revised Price Control being used between regular 5 year reviews). In the case of Offshore Transmission the consultation document states that *"a lighter regulatory regime than onshore … will help reduce costs for developers and consumers"*.

Taking this stated position at face value there are two possible logical conclusions:

- The onshore regulation is not as efficient or effective as it should be in delivering value for money solutions. The onshore regulation should therefore be revised to a light touch approach;
- The degree of regulation proposed for offshore projects should be reduced further – resulting in the Merchant approach being adopted as already is successfully in use for existing projects.

Warwick believes that since the Consultation neglects both of these issues it is fundamentally flawed and should be subject to wider review.

Section 2 Design of the Regulatory Framework

Key Proposals for the Regulatory Regime

Warwick notes that the key proposals for 20 year licenses/ revenue streams are unchanged. This is despite extensive comments by industry participants expressing views to the contrary.

Warwick maintains its earlier comments that in a new industry it will be difficult for any OFTO to make a realistic estimate of design, construction, 20 year O&M and decommissioning costs at the tender stage. As such it is likely that tender prices will be inflated to account for the relatively high risk and uncertainty in the tender. It is difficult to believe the Ofgem assertion that lower costs will result from the proposed tender process.

The view that the proposed tender process will inevitably result in OFTOs applying a risk premium to bids – thereby inflating costs and elongating timetables to generators and consumers alike - appears to be shared by other industry participants. Warwick therefore believes there is an urgent need to review the entire proposals to avoid unnecessary risk premiums being built into OFTO bids.

The proposed write down of capital costs over the 20 year period is discriminatory in comparison to onshore regimes where 40 years is the normal period considered.

In any case the notion that the license will be set for not less than 20 years (with revocation at 18.5 years possible) and that Ofgem can choose to set the revenue stream to a shorter period appears bizarre.

- The tender will presumably be based on a 20 year period. Any significant change to this will render the entire commercial proposal invalid;
- If a revenue stream of say 10 years is agreed, then at the end of this period a new tender will be required. In this case only the incumbent OFTO will be eligible to bid since it will not be possible to revoke its existing license.

Warwick continues to believe that the proposed Regulatory Process forming the basis of the OFTO charges is unsuitable for the above reasons. Further Warwick believes that the latest consultation document does not adequately address concerns raised by both Warwick and other industry participants in this respect – and these key issues must be re-examined.

Items 2.8 and 2.9 (End of regulated revenue stream)

The proposal for the Authority to decide whether extension or re-tender of the license is appropriate on a case by case basis adds to uncertainty for the OFTO and the generator. This will tend to lead to inflated prices and potentially OFTO assets being inadequately maintained towards the end of the License period. The proposal appears to be fudged and unsatisfactory in this area. In Warwick's view this is mainly as a result of the proposed approach of 20 year licensing approach without Regulatory Review being unsuitable in the first place.

Item 2.10 to 2.13 (Adjustments to the revenue stream)

The issue of unpredictable and uncertain costs and savings emerging over the period of the license is inevitable with the proposed Regulatory approach. Ofgem's solution (Item 2.13) appears to be to leave this issue in the hands of the OFTO. In the first instance this is likely to add costs to projects since insurances/ other mitigation measures will all come at a price. A further consequence is that unexpected savings will not be factored into prices at all – again adding to the costs chargeable to generators and consumers alike.

The consultation document itself states that *"respondents have continued to express support for the inclusion of pre-defined mechanisms for unforeseen exceptional events".* Given this, and the likely increased costs arising, Ofgem's proposal to exclude such mechanisms appears perverse; as well as being contrary to the stated policy aims in this area. Warwick believes that this issue should be further examined and the proposals revised accordingly.

Item 2.16-2.17 (Indexation)

Warwick supports the notion that indexation could be applied to certain OFTO costs. This may help cap prices and reduce OFTO risk, thereby allowing potential for cost savings.

In relation to capital costs Warwick agrees that much of these costs will be one off upfront design, procurement and installation costs. However how these are treated regarding indexation may depend in part on the type of network concerned.

For example most OFTO networks will be largely dedicated to a single project under these proposals – and when the generation license expires the network will potentially become redundant. Other OFTOs may serve a larger number of projects within a strategic

development zone or indeed become interconnected with other OFTO networks as well as the main onshore transmission system. In such cases the issue of how strategically important networks are funded and licensed on a longer term basis is critical. The 20 year licensing regime does not appear to adequately cover such issues.

For strategically important networks Ofgem should also consider the pricing model to be adopted for asset replacement – since the networks will likely be required for periods in excess of 40 years (as per onshore networks). It is not clear whether a TNO model (initial capital related and time varying with depreciation) or DNO (capital value based on current replacement cost) model should be adopted. This issue does not appear to have been covered by any of the consultation documents on offshore transmission.

Items 2.20-2.25 (Incremental Capacity Increases)

The previous consultation recognised 2 distinct scenarios - pre and post construction. The latest consultation adds a 3rd which is defined as during construction. Warwick believes that the 20% figure is arbitrary and will potentially hinder network expansion and coordination between projects.

As in previous replies the following scenarios, which might lead to increased capacity requirements and costs, do not appear to have been adequately considered:

- Pre-construction/ construction changes – the possibility that capacity changes might be required pre-award of the license does not appear to be considered. However Warwick notes that given the length of the proposed application and tender process (at least 18 months) plus the construction time (driven by plant availability but unlikely to be less than 2 years from financial close) there is a real possibility that additional generation projects may come forward in this period. The proposals do not appear to consider this issue adequately – and there appears no means of co-ordinating the later projects with earlier ones given the 20% cap. This issue should be further examined;
- Post-construction changes – in the event that a 20% cap is adopted then any adjacent projects will require a new tender process and OFTO licence. Due to the different licenses and their differing expiry dates this will tend to encourage “stand alone” bids for connections to different generation projects in similar geographic areas. This in turn will discourage co-ordinated approaches to network extension – leading to increased costs.

As such Warwick believes that an option for an existing OFTO to extend its network should be permissible with no cap on capacity increase. In order to allow proper competition the OFTO should be allowed to bid for any new capacity by extending its license rather than by award of a new license. This process could run in parallel with a separate tender exercise for an independent OFTO license thereby encouraging competitive bids.

Item 2.29 (Energy loss incentive)

Warwick agrees with the stated position that losses should be accounted for in the tender/ design phase. This will help ensure correct economic efficiency signals are given to potential OFTOs.

Items 2.30-2.32 (Capacity delivery incentives)

Warwick notes that the proposals are little different from onshore arrangements where Liquidated Damages are included in Connection Offers. However levels of penalties onshore do not equate with loss of revenue to generators and are therefore of limited value.

The proposed level of penalty for late delivery of capacity is up to 10% of annual revenue. Clearly since the asset is not complete the OFTO will incur minimal operating and maintenance costs during the project construction over-run. The capital cost will be written down over the 20 year license period, and therefore the maximum proposed penalty

equates to around 0.5% of the capital cost. Warwick believes that this level of penalty could easily be included by OFTOs in their bids without loss of overall competitiveness. As such this level of incentive is likely to encourage OFTOs to inflate their bids to cover potential delays, and therefore the proposed penalty is in fact perverse.

A further consideration is that the treatment of weather risk. The OFTO construction program may be affected by weather and no mention of this important program risk is made in the proposals.

Items 2.33-2.42 (Operational incentives))

As noted in previous responses the level of availability (97%) and exposure of revenue (2% maximum) appear arbitrary. Furthermore the setting of realistic performance targets in a new industry appears almost impossible. The fact that Ofgem expects input from the generator to set these levels and proposes that OFTOs may be allowed some form of *"permit mechanism"* against major outages does not address this fundamental difficulty.

Ofgem's statement regarding possible revocation of license (Item 2.37) does not appear helpful – unless the OFTO is blatantly and deliberately negligent. This is because if the network is prone to major failures which preclude meeting performance targets – due for instance to inherent bad design/ installation, poor equipment quality or manufacture or simply through 3rd party damage – there is unlikely to be much that a different OFTO could do to remedy such a problem.

License revocation would potentially leave a generator without an OFTO – and thence unable to generate through no fault of its own. Other OFTOs would be unlikely to wish to assume responsibility for an inherently poor network so this situation could become permanent. Ofgem's proposals regarding License revocation should set out a policy in relation to this.

Item 2.52 (Allocation of risk)

Warwick reiterates the view that the main project risks lie with the developer right through until License award. This does little to help bring new projects forward to meet Government targets for renewables.

Section 3 Tender Process (including Transitional Arrangements)

Key Proposals

Warwick maintains the view that the tender and connection application processes are poorly conceived, overly complex and will act as a barrier to the development of successful offshore generation process.

Warwick remains opposed to the concept of annual tender windows – and this view appears to be supported by the majority commenting on this issue in the previous consultation. It is not clear why these views have been ignored and remain unanswered in the latest consultation.

The majority view of consultees appears to oppose Ofgem's proposals on RAV valuations for transitional projects. Warwick also remains opposed to the Ofgem proposals. It is worth reiterating the fact that the connection design/ construction must be economically efficient to pass criteria for financing within the existing Merchant regime. Ofgem provides no justification for ignoring these facts and the proposals add to project/ developer risk and costs for transitional projects. This will tend to prevent projects coming forward in this uncertain period – which is contrary to the stated Government aims.

The interaction with consents and leases remains unclear. The only practical way through the process appears to be for the developer to undertake all of this work up front. The connection application and tender process then merely serve to add risk and delay to projects. The fact that Ofgem refuses to include an OFTO of last resort further compounds risk; and renders projects less attractive to developers and OFTOs alike.

Item 3.30-3.31 (OFTO of last resort)

Warwick notes the proposal regarding the OFTO of last resort for the transitional regime.

The proposals are not clear as to whether the developer will be required to bid as part of the tender process for the OFTO network. This issue should be clarified as a matter of urgency given the proposed timing of the first tender window.

Furthermore if the developer is required to bid it is clear that by virtue of knowledge gained in developing the project that other bidders may perceive this as an unfair advantage and decline to bid. This concern applies irrespective of any commitments made (and honoured) in respect of data rooms and transparency. Ofgem should clarify whether the developer will be required to bid as OFTO of last resort and if so how these stated concerns will be addressed.

Item 3.32 (OFTO of last resort)

For transitional projects Warwick notes the conditional phrase *"decisions on awarding an OFTO license without a successful tender will be considered on a case by case basis"*.

One possible interpretation of this statement is that Ofgem may not award an OFTO license for a transitional project. Ofgem should clarify either:

- That the nature of the license may be qualified in some way (e.g. duration), but be guaranteed; (i.e. availability of licence is a certainty); or
- That there is in fact no guarantee of an OFTO of last resort – as is implied by the above statement - albeit this contradicts the headline statements made elsewhere.

Item 3.37 (Pre-conditions)

Warwick would question the pre-conditions for the tender process that a developer has received consent, entered into a Connection and Use of System Code (CUSC) bilateral connection agreement with NGET and signed the Lease with the Crown Estate. Warwick believes that only the first of these should be a pre-condition to the tender process.

NGET will require the developer to underwrite any relevant Final Sums Liabilities (FSL) in respect of the onshore connection offer. This is not withstanding the fact that there will be no certainty that an OFTO network that meets the connection requirement can be provided at an economic and financially viable cost – or indeed that Ofgem will award the necessary transmission license.

The onshore connection may require significant network reinforcement over long timescales and hence FSL will accrue against the developer. National Grid has indicated in a workshop (19/6/08) that it will not ordinarily commence any onshore connection works. Warwick assumes this statement was made with reference to a single scheme triggering onshore reinforcement - unless the developer underwrites the initial costs. However in the case of multiple schemes (particularly combinations of onshore and offshore schemes) this position appears unworkable – due to National Grid's clustering methodology. For example any offshore project which is included within a cluster will necessarily be liable for FSL for the ongoing transmission reinforcement within that cluster. This means that developers will need to underwrite FSL for major transmission works with no guarantee that a connection will be provided under the OFTO regime. This is clearly not acceptable.

The additional delays introduced by the OFTO tender process are also likely to delay offshore projects. This will increase the chance of clashes and clustering with other projects – particularly onshore ones where the usual 3 month timescale for a binding connection offer will still apply. This increases project risks and costs and the likelihood of complex interactions with other independent projects.

In respect of FSL Warwick believes that the Interim Generic User Commitment Methodology (IGUCM) currently being offered as an option by National Grid is helpful to project development – particularly for smaller and independent developers. This is because it limits the financial exposure of projects to actions of 3rd parties in a cluster. Such parties may otherwise trigger transmission reinforcement (and thence FSL on other independent 3rd party schemes) in a designated cluster. Having said that the latest Ofgem consultation on this very issue CAP131 (Ref 81/08 dated 6th June 2008) indicates that Ofgem is *"minded to reject all of the proposals"* while recognising that *"all of the proposals would lower the barriers that new generators seeking to connect face"*. Clearly such a position is unsatisfactory since it will prevent new schemes coming forward in direct contrast to stated Government policy for renewables. Warwick would urge Ofgem to view consultation proposals and subsequent responses positively in this light – rather than its *"minded to reject"* statement. In the event that CAP131 proposals are rejected then Warwick believes that some form of modified IGUCM should still be pursued for the reasons outlined above.

Warwick believes that the above issues will have a potentially adverse impact on offshore projects. A further problem not considered by the present consultation is that with the IGUCM the developer is effectively paying a non-refundable sum as security that the connection will go ahead. Clearly appointment of an OFTO is not guaranteed by the tender process – and this issue will act as a further barrier to projects from both a cost and risk point of view.

The signing of the Lease with the Crown Estate commits each development to pay ground rent for the site for at least a 20 year period. Committing to this before all the construction contracts are finalised (which cannot be done until the outcome of the OFTO tender is clear) significantly increases the risk profile for the developer. This is an unnecessary burden and should be removed as a pre-condition.

Overall Warwick believes that the proposed pre-conditions will act as a significant barrier to new projects. This area therefore appears to be in need of major review and revision.

Item 3.44 (Stages in the tender process)

Warwick notes the reference to bid consortia in the proposals. Based on Warwick's experience of project development consortia are likely to be important players in the market – and thence the OFTO tender process. In a previous response a concern was raised by another consultee regarding possible impact of EU Procurement Rules and how these might apply to OFTO bids. The latest consultation document omits any response to this concern – and this significant omission should be addressed.

Item 3.47-3.49 (Tender windows)

Warwick remains opposed to these as stated elsewhere. The approach is discriminatory against offshore projects in comparison to onshore applications where no such requirement is necessary. The windows will also serve to delay projects.

Items 3.50-3.53 (Consents and leases; seabed surveys)

As noted elsewhere it is likely that the developer will be required to fund all of this work in advance of a connection application. The recovery of *"efficient"* costs for consents, leases

and surveys which will be transferred or relied upon by OFTOs does not seem an appropriate level of return for this high risk undertaking.

OFTOs will make an uncapped and effectively unregulated level of profit (accepting that the tender will need to be in some form competitive with other bids). A rate of return of *"efficient"* costs to a developer for what is arguably the highest risk part of the project seems inequitable in comparison.

The whole issue of consents and associated risks will deter players from entering the market which is contrary to the stated Government aims and objectives.

Section 6 Technical Rules and Industry Codes

Chapter Summary

Warwick notes that major contributions have been made by NGET, industry working groups and respective owners of codes. There is undoubted value in much of the work done to date and considerable time and effort has clearly gone into the drafting. The volume and scope of the documentation alone gives an indication of the complexity of the proposals and their far reaching consequences. There are a number of fundamental concerns regarding the proposals:

- The various participants have drawn up code revisions intended to implement policy - presumably to a very specific brief from Ofgem/ BERR. The fundamental structure of the proposals has however not been open to scrutiny to anything like this level of detail. This appears a perverse use of resource since if the basic structure is incorrect the codes can do nothing to correct this; i.e. the code drafting's basic requirement is to paper over the cracks and flaws in the fundamental Regulatory Proposals;
- The scope of the proposed changes and timescale for their introduction does not appear to allow the process to be subject to considered scrutiny. One example of this is the proposed changes to OC8 on Safety Coordination (Appendix 5 Items 1.30 and 1.31). Warwick's understanding of the present position is that NGET has experienced difficulty in modifying the code within their terms of reference without adding two new sections to the document. Neither Ofgem, nor more critically the HSE appear happy with this result. Without taking sides this surely infers a basic problem with the timescale and structure of the entire process?
- There are areas where there is clear discrimination between onshore and offshore connections. One example raised by Warwick in response to previous consultations relates to conditions on reactive power and voltage control. It is clearly discriminatory that an offshore connection is required to meet reactive power requirements at a remote point in the network (the OFTO onshore connection point) whereas there is no such requirement even for an electrically identical network if it is located onshore.

A number of readily identifiable detailed issues are detailed in subsequent sections of this response.

At this stage Warwick believes that there are a number of places where the policy positions are not reflected in the codes. There are other places where it is difficult for the codes to reflect the policy since the policy is unclear, contradictory or unworkable (as appears the case from Ofgem's comments in relation to NGET's charging proposals). Furthermore given the extent of the changes and the timescales it is not possible to consider the implications of all the changes to the codes. In support of this assertion Warwick notes the consultation document was published on 13th June with *"material"* comments requested by 4th July.

Overall Warwick does not believe it tenable to introduce the scale of change required in a considered and responsible manner consistent with normal Governance of the codes. This appears a fundamental flaw in the proposals.

Section 7 Transmission charging, access and compensation

Items 7.10-7.11 (Respondents' view)

Warwick agrees with the view expressed in Item 7.10 that *"if offshore charging arrangements intend to reflect 100 per cent of the OFTO's revenue stream straight back to the offshore generator concerned, then it is likely that offshore generators may conclude that they are better off retaining ownership of the cables to shore as extensions of their power station and seek connection from the GBSO at an onshore connection point of their specification."*

Item 7.11 indicates that NGET is already consulting on a similar approach for onshore connections. Such an approach favours vertically integrated companies over smaller developers and is therefore perverse.

This issue presents a number of fundamental problems with the proposed Regulatory Framework:

- The decision to artificially define a transmission asset offshore by voltage prevents the above common sense approach being adopted – at least as far as offshore networks are concerned. This is due to transmission unbundling rules;
- The idea that the generator can own the connection assets cuts across the original concept of a shared network which could be accessed by all – albeit the current Regulatory Proposals make such a goal difficult, if not impossible, to realise; and
- One of the perceived benefits, which sold the idea of a licensed regime to the industry in the first place, was the concept of socialisation of costs between generation and demand customers. Taking away cost sharing (as appears now to be on Ofgem's agenda as indicated below) then there really is no justification for the entire Regulatory Proposals.

Item 7.14 (Updated position – Charging)

In response to GB ECM-08, Warwick noted that it is discriminatory for all onshore reactive compensation equipment to be charged to locational assets and thence directly back to the generator. This is because the reactive compensation equipment will in part compensate for OFTO cable and transformer reactive requirements. Since no equivalent condition exists on shore this is discriminatory against offshore projects.

Apart from reactive compensation Warwick otherwise supports the NGET position, however would add a qualification - that for radial networks alone the offshore cables should be classed as locational assets and the offshore substation itself a non-locational asset. Clearly for non-radial systems the cables become part of the interconnected transmission system(s) and therefore costs should be socialised as per existing onshore practice.

Items 7.15-7.17 (Updated position – Charging)

NGET has raised legitimate and practical issues relating to the proposed tender process. In particular the issue of how the cost split between locational and non-locational costs could be correctly derived. In Warwick's view this difficulty a fundamental flaw in the Regulatory Proposals. Indeed it is a direct result of the tender process itself - and is unlikely to be resolved in a transparent manner, since the breakdown of OFTO prices will not be open book.

Item 7.19-7.20; 7.21-7.24 (Issues to be addressed; Way forward)

The contents of the letter from Ofgem to NGET regarding the proposed TNUoS charging methodology, together with the Ofgem's stated reservations in Item 7.20, are a considerable cause for concern.

The contents of the letter appear to imply:

- Ofgem recognises obvious difficulties with the tender process and gathering of required RAV data which are essential to the proposed charging methodology;
- Ofgem wishes to investigate alternative (simpler) methods of cost allocation. These could if implemented:
  - Differ from onshore arrangements and thus be discriminatory;
  - Make 100% of the entire OFTO network chargeable to the generator (to avoid the difficulty of the cost splitting issue detailed above).

The key selling points to the industry of the proposed Regulatory Regime were originally:

- Socialisation of the connection assets between demand and generation customers. This assumption now appears under threat based on the above comments;
- Perceived benefits that Licensed OFTOs would be lower risk than developers and therefore able to raise finance on more advantageous terms. Further it was assumed that such benefits would be passed on via the Regulatory Regime to the generator and wider demand customers;
- As detail of the OFTO regime and tender process have emerged it now appears that the OFTO activity will be relatively high risk – and thereby the possibility of lower cost financing is less realistic. Furthermore even if the OFTO is able to obtain better finance terms than a developer it is questionable that all, or indeed any, of these benefits will be passed on through to generators and demand customers through the tender process.

The above points support a view that there is unlikely to be any benefit to development of the industry of the proposed Licensed approach to offshore transmission. Given the arrangements are also complex, time consuming and add risk it is becoming increasingly difficult to find any justification for the Regulatory Proposals to be introduced.

Appendix 1 – Detailed analysis of responses to Ofgem January 2008 Regulatory Policy Update

Appendix Summary

Warwick notes that a number of responses are included in the analysis from key industry players. The complexity of the Ofgem/ BERR consultation by its very nature means that consultees will not address all the important issues if confined to the specific questions asked. It is understandable that questions are included in the consultation documents – and that the analysis picks up any direct comments. It is however far from straightforward for Ofgem to account for comments which are not directly related to specific questions. Many of the questions are currently too restrictive and leading, to allow for fair and reasoned comment to be made in an easily digestible form.

Warwick believes that more thought needs to be given to the structure and scope of the consultation.

It is also noted that in several key areas the position of Ofgem has not moved despite nearly unanimous opposition to specific parts of the proposals. This aspect of the consultation is particularly disappointing.

Technical Rules

In relation to GBSQSS it would appear that no account of Warwick's previously stated concerns has been taken in drafting the detailed text of the revised document. Warwick is therefore concerned that the remit of NGET in drafting the codes has been overly restricted by Ofgem and limited largely to the original GBSQSS sub group's original proposals.

Appendix 5 – Detail of Technical Rules and Industry Codes

Item 1.12 (Power Park module)

The definition of a Power Park Module will necessarily mean every individual turbine string (i.e. outgoing LV circuit) becoming a Power Park Module. This is because of the stated requirement for double busbar switchgear – which necessarily comprises 2 sections. The definition of a Power Park String therefore appears redundant as currently framed.

Warwick does not believe the definition of a Power Park Module to be appropriate – it is also contradictory to treatment of onshore sites.

Item 1.15-1.7 (Fault ride through)

Warwick supports the principle that the offshore generator should be able to choose between meeting requirements as for onshore generators or based on generic requirements.

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.

In any case Warwick notes that the offshore generators would need to choose whether offshore or onshore fault ride through option within 28 days of signing the offer (as indicated by National Grid in the Workshop of 19th July). Since the turbine type or characteristics may not be known at this stage the timescale of this decision is unrealistic and arguably unnecessary at this early stage anyway.

Item 1.20 (Definition of power station)

The defined limit of 10MW appears at odds with the onshore definition for embedded generators. While recognising concerns about system stability, Warwick believes the limits at which Grid Code requirements should be the same onshore and offshore – anything else is clearly discriminatory.

Item 1.22-1.24 (Reactive Power)

An efficiently designed OFTO network will make use of any available reactive capability of the generator. Where necessary this will be supplemented by additional reactive plant which is likely to be more cost effective onshore than similar plant offshore (but more costly than generator capability itself).

The proposed connection application and tender processes do not encourage effective design. In many cases the OFTO network may necessarily be designed – and the License awarded - prior to final turbine selection. Hence the possibility of achieving the most efficient overall design and realising the cost benefits of this will be lost. This part of the proposals appears fundamentally flawed and should be re-examined. A pragmatic solution

might allow re-openers on the revenue stream based on capital cost once final design is complete.

As detailed elsewhere the Ofgem proposal for generators to pay 100% for compensating for reactive power taken by transmission system cables and transformers is discriminatory. There is no requirement for an onshore generator to compensate to a remote point for a radial connection and this principle should hold true offshore.

A further difficulty is that for OFTO networks connecting more than one project an equitable means of allocating charges for remote reactive capability is not possible. This is because the reactive performance will be dependent on the differing lengths/ type of connections between power stations within the same OFTO. A further consideration is the possible differing reactive capabilities of connected generators; i.e. different wind turbine capabilities as well as possible differences between wind turbines, marine current turbines and gas turbines on the same network. Interconnected OFTO networks represent a further level of complexity. These issues have been completely omitted from the proposals and this is a significant defect particularly if any form of asset sharing is to be realised in the future.

In relation to the Grid Code itself Warwick notes that Figures CC.A.7.2.2a and CC.A.7.2.2b both require a reactive capability outside the statutory voltage limits of ±10% (132kV and above). Warwick has previously raised this issue with National Grid and believes that these diagrams should be revised. It is plainly unsatisfactory and unnecessary to require connectees to provide reactive capability outside statutory voltage limits.

Item 1.31 (Implementation Proposals)

As noted elsewhere Warwick is concerned that Ofgem's timescale requirements are driving major changes which may, when examined thoroughly, be unsatisfactory. The example relating to OC8 is concerning in this respect.

Item 1.42-1.43 (Updated Policy Position)

Warwick notes Ofgem's suggestion that a standby diesel generator on the offshore platform might supply the local offshore substation. There is no reason why an offshore generator should provide this equipment when the offshore substation will be owned and operated by the OFTO. There are also obvious logistical difficulties of ownership, responsibility and liability with this proposal.

Regarding offshore wind turbines the issue of inoperability for extended power outages is real. Warwick is however unconvinced that, from a technical perspective, supply of the turbines from a single diesel generator on the offshore substation is practical. Important technical consideration include whether a realistically rated generator could supply:

- The necessary charging current to energise the interarray cable network and turbine transformers (>60km of 33kV cable and 100 turbine transformers for existing sites); and
- The necessary fault level to allow remote protection systems to clear network faults in accordance with Electricity Supply Regulations.

Warwick believes that further work is needed in these areas to justify Ofgem's position.

Warwick is strongly opposed to Ofgem's *"minded to"* position that the generator should provide a back up diesel supply for the OFTO's substation.

Appendix 6 – The Connection Application Process

As noted elsewhere this process is likely to add time delay and risk to projects. Warwick does not agree with the principle that a developer will be required to sign on to NGET's FSL or the Crown Estate lease without any clear definition of costs of the OFTO network. In any

case the proposals provide no guarantee that an OFTO License will be bid for, let alone a Licensee appointed. The presumption that market forces will provide OFTOs appears naive – as evidenced by similar reliance in places such as California where power cuts have resulted from similar assumptions.

The most efficient means of connecting further generation may be by extension to existing OFTO networks, or by interconnection of separate and previously radial OFTO networks. There is no co-ordinated means of achieving this. The present proposals rely purely on the tender process to provide connection – and necessarily this will require a pre-defined onshore connection point. The proposed process will encourage a series of purely radial and independent networks with little chance of the benefits of shared infrastructure occurring.

It is also not clear in the proposals whether NGET would be required as a license condition to consider combined connections between onshore and existing OFTO networks in preparing its (minimum scheme) connection offer. The connection point is an essential input to the tender process – hence unless NGET identifies such opportunities for minimum overall connection schemes at this early stage it is unlikely that they will be captured in the tender process. Warwick would welcome Ofgem's view on how this issue is addressed in the proposals.

Warwick is also unclear whether there are any statutory license duties on OFTOs to offer network extension/ interconnection to provide additional capacity to a new OFTO licensee. Such statutory conditions apply onshore and therefore allow design of minimum engineering schemes. Warwick is presently not aware of any conditions which might compel existing OFTO's to take part in the tender process (entry to a tender process is normally on the basis of a purely voluntary and commercial decision). This implies that connection to an existing OFTO network by extension or interconnection would only be possible at the discretion of the OFTO. It follows that even if the overall minimum cost scheme involves a new OFTO licensee connected offshore to an existing OFTO network (whether exclusively or by interconnecting to an onshore connection point) there is no means of guaranteeing co-operation of the OFTO. Clarification of this issue would be helpful.

A further problem is the lack of a systematic approach to connections to DNO networks. There is no License obligation on either TNOs or DNOs to develop the overall most efficient and economic network (i.e. combined TNO plus DNO network). Connections to DNO networks may be more cost effective – and the connection application process does not appear to properly recognise this. At very least there should be a requirement for NGET to investigate connections in collaboration with named DNOs at the request of generators. This should be undertaken in parallel with the application to NGET. The suggestion that DNO connections might be triggered at the request of a potential OFTO during the tender process itself appears completely unrealistic as consents will have been received for a particular cable route, substation design and connection point.

Warwick believes that the tender process should be able to be triggered once consents have been obtained by the developer. Most of the system will be designed by this point but any delay in tendering for the OFTO beyond this point will lead to an unnecessary delay to a project.

Warwick believes the connection application process and its treatment of possible DNO connections requires review and revision.

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.

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 Connection Conditions

CC.6.3.2(e)(i): while agreeing in principle with zero reactive power transfer at the LV boundary this 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. Use of reactive compensation for such scenarios does not appear economically justified and the code should reflect these concerns.

Planning Code Appendix D

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.

Annexe 7 – STC

Section D

Item 2.2.6 – this indicates conditions on plant and equipment for onshore and offshore systems. Warwick again notes that all equipment for OFTO's 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 and is an invitation to over-design.

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 K

Similar comments apply to those detailed elsewhere with regard to timescales.

Warwick also notes the diagram Figure B.7.2.2b is analogous to that provided in the Grid Code. It implies a requirement for OFTOs to provide reactive capability outside the statutory voltage limits of ±10%. This should be corrected for the reasons given elsewhere.

Appendix B – The code places responsibility for meeting the various conditions on the OFTO. For an efficiently designed network it may be that the overall requirement is partly provided by the OFTO and partly be 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. This area needs further explanation and potentially review/ revision accordingly.

Annexe 8 – GBSQSS

Section 7 Generation Connection Criteria Applicable to an Offshore Transmission System

Section 7.2 – as noted elsewhere 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.

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 power 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 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 to earlier consultation responses 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 7.13.1 – 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 7.21-7.24 – 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 mad 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.

A further point of note is that any required derogations can only be applied for by the relevant Licensee. Since the Licensee will not be appointed until after the tender process additional risks will apply to the OFTO in the absence of a derogation. This may deter any bidders coming forward, which is counter to the stated aims.

As the proposals now currently stand the Thanet project will have to apply for a number of derogations as the commitments already made by this project 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.

<u>Section 8 – Demand Connection Criteria Applicable to an Offshore Transmission System</u>

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.

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 8.12-8.15 – 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.

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.

Summary

Overall Warwick believes that the current Regulatory Proposals are overly complex, will significantly delay projects and will increase project risks and costs. There is little or no provision for extended or interconnected networks offshore – nor any realistic means of co-ordinating network developments.

The proposals make no allowance for the extent of offshore networks, or the associated onshore reinforcement, needed to connect the headline 33GW of offshore generation. The work on network security and charging for instance has been limited in scope to relatively simple radial systems – and a completely different approach may be necessary for genuine offshore transmission networks.

The lack of co-ordinated design strategy, or any means of providing this is a major omission in the current Regulatory Proposals. The proposals rely on piecemeal and totally market lead solutions.

It now appears that main benefits of a Regulated Licensed approach as originally perceived by the industry – namely lower financing and cost sharing between demand and generation customers – will not materialise. Given this and the complexity and obvious difficulties which become increasingly apparent as detail emerges, there is no real justification for proceeding along the present lines. Warwick would therefore call for a fundamental review

of the way offshore transmission - and its integration with the onshore network - is to be regulated, structured and managed.

Warwick currently believes that extending the existing onshore transmission franchises under the ‘connect and manage’ ethos will best match the stated aims of connecting major increases in offshore wind capacity in a timely and efficient manner.

Despite the numerous fatal flaws in these proposals Warwick has made a number of constructive suggestions in this paper which could to some degree limit the damage if these proposals are imposed on a reluctant industry.