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Andrew Ebrill - Manager Electricity Transmission

5 November 2006

*Gate 2 report V3.doc*  
*UP00156*

Dear Andrew,

## **Gate 2 – Renewable Generation Connection Applications – Technical Audit**

In accordance with CER's instructions we are pleased to submit this report with respect to the Technical Audit undertaken on the processing of renewable generation applications under Gate 2.

### **Background.**

In line with CER's 16<sup>th</sup> June 2006 Direction with respect to the Gate 2 process, Sinclair Knight Merz (SKM) were appointed to undertake an independent technical audit of the analysis undertaken by the system operators.

### **Technical Audit process.**

**Initial meeting.** The audit process commenced with the identification of the work sequence and documentation of the Gate 2 process that was viewed as necessary to allow the necessary depth of Technical Audit to be undertaken such that CER and the Technical Auditor would be in a position to provide appropriate level of approval and feedback commensurate with their responsibilities. This was based upon the System Optimisation Criteria for Gate 2 as outlined in Section 5 and in Appendices 1 and 2 of CER's 16<sup>th</sup> June 2006 Direction and formed the basis for an initial meeting between CER and the two system operators, notes of which are included as Appendix A of this report.

**Case study meeting.** At an early stage in the process, by which time the DSO had prepared a draft analysis of a number of Gate 2 groups, a full day meeting between the DSO and SKM took place in Cork during which the analysis associated with each of the groups were undertaken. A number of issues were identified during the course of the meeting, some of which were associated with a clarification of the analytical process undertaken and its linkage into the 16<sup>th</sup> June 2006 Direction, and others associated with the need for a degree of



formalisation of the criteria applied with respect to network design. Agreement on all of these issues was reached during the course of the meeting and it was agreed that the formal reporting and record of the process would include the necessary references.

**Process documentation.** As blocks of individual generation groups were processed, completed reports were forwarded to SKM for review. These reports included the following details.

- A list of the groups processed.
- Documentation relating to network design standards, referenced in the individual analysis records.
- Individual group analysis record. This included
  - MEC details for the applicant included within the group
  - Geographic details of the group
  - Identification of existing network infrastructure
  - Details of other wind farms in the area (pre-Gate2 applicants)
  - Details of connection options considered
  - Analysis of each of the connection options, including conformance or otherwise with appropriate planning standard/criteria and also budget cost
  - Comparison of the connection options and identification of the Indicative Optimal/Least Cost Technically Acceptable (LCTA) method of connection<sup>1</sup>.
  - Application of Gate 2 Criteria to each of the applicants, based on the LCTA method of connection, and hence identification of the “Gate 2 result”.

**Technical audit.**

Based upon the above documentation, each of the group analysis records was critically reviewed against the underpinning network design criteria and also the Gate 2 Criteria.

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<sup>1</sup> It should be noted that the LCTA connection methods identified are predominately based on shallow connection methods and assumed 110 kV new substations and connections. These do not take into consideration possible deep reinforcements that may be associated with connecting a Group or Sub-Group. The actual connection works required and the location of such connection works will not be determined until detailed studies associated with the Pricing and Asset Construction stages of the connection application process are completed.



The audit began with a review of the applicants included within each geographic grouping. Such groupings are largely driven by the applicants own location and also the proximity to existing electrical network infrastructure. In all cases the overall groupings were found to be appropriate, as were subsequent sub-grouping which are largely determined by electrical network constraints with respect to voltage drop, the current carrying capability and also the application of rules relating to allowable levels of transmission losses.

In a number of cases, assumptions had to be made by the DSO relating to the appropriate location for new 110 kV substations to accept all or part of a group. The assumed substation location was assessed against the disposition of applicants to ensure that the assumed location was broadly in line with the objective of minimising overall MW.km connection requirements and also that assumptions with respect to those applicants connecting to the new 110 kV substation and those connecting over spurs to existing network infrastructure were appropriate to establishing an overall LCTA method of connection of all applicants.

It should be noted that in a number of cases, the combination of the LCTA method of connection and the Gate 2 Criteria can result in applicants further from an existing 110 kV substation, albeit grouped with a Driver Project, being included in Gate 2, whereas another applicant, closer to the source substation but fed alone over a spur, would be excluded on the grounds that its own connection does not include a driver. Accordingly, the identified groupings and proposed connection arrangements were subject to close scrutiny and analysis and the technical audit process identified only one grouping proposed by the DSO where some rearrangement was considered appropriate. This was confirmed by subsequent work undertaken by the DSO and the revised arrangement has been reflected in the final documentation and in the Gate 2 result. In all other cases, the technical audit concluded that the DSO groupings and LCTA methods of connection were appropriate and correct.

The technical audit continued with an audit of the application of the Gate 2 Criteria to the each of the applicants on the basis of adoption of the LCTA method of connection. The audit concluded that the Gate 2 criteria had been applied correctly in each case.

### **Final reporting.**

Final reporting of the Gate 2 process has been provided in the form of two main documents, namely:

- A summary report, entitled “Report by DSO on eligibility phase of Gate 2 group processing approach for renewable generator connections”. This report documents the key stages in the process and also lists the individual applicants by classification, e.g. first 500 MW, those withdrawn from the 1<sup>st</sup> 500 MW, etc. A schedule summarising the status



and conclusions with respect to each of the total of 197 applicants included in the Gate 2 process is also included in this summary report.

- Supporting “Gate 2 Analysis Documents” essentially a dossier which presents in a consistent manner the detailed analysis undertaken on each of the groups, i.e. as discussed under the heading “process documents” above.

The findings of the Gate 2 eligibility process may be summarised as follows with respect to types of applicants found to be eligible for inclusion in Gate 2 and the associated MEC (MW).

Category	Applicants			MEC (MW)		
	DSO	TSO	Total	DSO	TSO	Total
First 500 MW (Drivers)	32	2	34	375	119	494
Extensions	14	10	24	28	155	183
Groupings	42	5	47	404	212	616
Outliers	15	0	15	49	0	49
Successful	103	17	120	856	485	1342
Unsuccessful	60	17	77	880	793	1674
Totals	163	34	197	1737	1279	3015

### Summary.

In summary, SKM advise that they have undertaken a technical audit of the Gate 2 application process and are pleased to confirm that they consider that the relatively complicated process has been undertaken in a rigorous and well documented manner and that the findings of the process are consistent with the requirements of CER’s 16<sup>th</sup> June 2006 Direction and with the relevant network planning criteria. The summary report has also been audited and found to be an accurate record of the analysis.

We trust that the report presented above fully meets your requirements and we thank you for the opportunity to assist CER in this important area of work.

Yours sincerely

*Technical Auditor*

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## Appendix A - Minutes



<b>Purpose of Meeting</b>	<b>To discuss process and progress re the processing of wind farm connection applications under Gate 2.</b>		
<b>Project</b>	CER - Gate 2 Technical Verification	<b>Project No</b>	UP00156
<b>Prepared By</b>	DI Bailey	<b>Phone No</b>	+44 7793 044 939
<b>Place of Meeting</b>	CER, Plaza Complex, Tallaght, Dublin, Ireland	<b>Date</b>	14 July 2006
<b>Present</b>	Andrew Ebrill - Commission for Energy Regulation (CER) Jill Murray – CER David Bailey – Sinclair Knight Merz (SKM)	Jerry O'Donoghue – ESB Networks (DSO) Siobhan Wynne – DSO Fiona O'Donnell - DSO Shane Maher – EirGrid (TSO) Margaret O'Riordan – EirGrid	
<b>Apologies</b>	None		
<b>Distribution</b>	Those present.		

Item	Action By/Date
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CER (Andrew Ebrill) made the necessary introductions and indicated that the content of his email of 3 July 2006 should be adopted as an agenda for the meeting. This email listed documentation requested by CER's Technical Auditor in connection with fulfilling responsibilities associated with Technical Audit responsibilities. This meeting is seen as the first step in the process of fulfilling a technical audit of the Gate 2 Renewable Generation Connection Offers process, in line with CER's Direction of 16<sup>th</sup> June 2006 (CER/06/112). These were as follows:

- 1) A list of Gate 2 applicants under the system optimisation criteria:
- 2) A list of all deemed completed connection applications (circa 3,000 MW) for consideration under Gate 2, including an identification of the driver projects with which they may be associated
- 3) A list of all deemed completed connection applications which are considered not to fit into any of the above categories and are therefore excluded from any further consideration for Gate 2,
- 4) An indication of the extent to which the "optimal distribution development" group assessments have progressed and documentation of any completed assessments, together with an indicated timetable for progressing the outstanding applications.

Considering each of the above in turn

SINCLAIR KNIGHT MERZ



Item	Action By/Date
<p>1. <b>Item 1. A list of Gate 2 applicants under the system optimization criteria</b></p> <p>DSO submitted a Complete List of Generators for Gate 2 assessment, this listing also included Gate 1, GUDP and Connected Generators. The listing identified;</p> <ul style="list-style-type: none"><li>■ The First 500 MW of applications in completed submission date order, (the Gate 2 Driver projects) noting that due to non-payment of the application fees, these applications total to 483.6 MW.</li><li>■ Other applications completed by the cut-off date of 21<sup>st</sup> April 2006, taking the total to 3071 MW.</li><li>■ Gate 1 applicants (also Gate 2 Driver projects)</li><li>■ GUDP applicants (also Gate 2 driver projects)</li><li>■ Pre Gate Process wind farms, i.e. those with connection offers which preceded the “post wind farm connection moratorium” Gate Processing arrangements (these are not “Drivers”).</li><li>■ Live “Gate 1 Offers” (arguably these projects may become Gate 2 driver projects). <b>CER may need to take a view on inclusion subject to further investigation.</b></li></ul> <p>The listing did not include applications deemed complete after the cut-off date of 21<sup>st</sup> April 2006, nor does it include those application made prior to this date, some considerably earlier, which are considered to be dead due to a failure to provide responses to requests for clarification/data completion to date, or have been excluded for other reasons.</p> <p><b>It was agreed that the DSO (and TSO?) would provide a list of such applications together with detailed reasoning behind their non inclusion.</b></p>	<p><b>SKM/CER</b> <b>21 July 2006.</b></p> <p><b>DSO (TSO?)/</b> <b>21 July 2006</b></p>
<p>2. <b>Item 2. A list of all deemed completed connection applications (circa 3,000 MW) for consideration under Gate 2, including an identification of the driver projects with which they may be associated.</b></p> <p>The DSO presented a listing of 47 “groups” together with the identified Driver Project(s). A geo-schematic network diagram was also tabled which presented the position of each of the applicants and identified individual Driver Projects.</p> <p><b>DSO will provide a soft copy of the network diagram</b> following updating with respect to CER’s recent clarification of the Gate 2 Direction (CER email of 13 July 2006 12:44).</p>	<p><b>DSO/</b> <b>21 July 2006</b></p>



Item	Action By/Date
<p>3. <b>Item 3. A list of all deemed completed connection applications which are considered not to fit into any of the above categories and are therefore excluded from any further consideration for Gate 2.</b></p> <p><b>See action on DSO/TSO identified under Item 1 above.</b></p>	<p><b>DSO/TSO</b></p>
<p>4. <b>Item 4. An indication of the extent to which the “optimal distribution development” group assessments have progressed and documentation of any completed assessments, together with an indicated timetable for progressing the outstanding applications.</b></p> <p>The table referenced in Item 3 above gives an indication of progress to date, outline assessments have been made and in a number of cases only single applicants occupy a group, hence the number of groups requiring detailed process total about 35, some of which are relatively straight forward. Although the timetable is tight, the indications are that it can be met and the necessary supporting documentation produced (and audited).</p> <p>To assist in the process, <b>DSO will forward completed analysis and associated write ups to SKM during w/e 28<sup>th</sup> July</b>, and arrangements put in place to facilitate a meeting between DSO and SKM for late that week. <b>[Post meeting note: Meeting arranged for 28<sup>th</sup> July in Cork]</b></p>	<p><b>DSO/26 July</b></p> <p><b>DSO and SKM/Done</b></p>
<p>5. <b>Other issues.</b></p> <p>The issue of TSO sign onto DSO assumptions re 110 kV substation locations were discussed.</p> <p>TSO indicated that they could not sign-off on 110kV station locations in the short timeframe available to determine those applicants in Gate 2 and that this was one of the first principles set out when designing the rules for Criterion B. The TSO will sign off on the location of the 110kV stations as part of the third phase of Gate 2. TSO’s understanding is that the location of the 110kV station will be carried out by DSO at this point in time to use as a reasonable indicator of where the stations are likely to be located. This however is solely to be used for the purposes of determining the make up of Gate 2 under Criterion B not the actual station locations. While it may not be likely in many cases that the locations of the 110kV stations will change; the actual locations will be only determined after the system operators have carried out the</p>	



Item	Action By/Date
<p>necessary studies and assessments under the third phase, 'Asset Construction', as set out in the Gate 2 Direction.</p> <p>Given the above, and as in most cases the 110 kV location will be largely determined by DSO issues, <b>SKM will review location and agree this with DSO</b> such that this can be judged to have been independently audited and hence minimised as a possible basis for dispute by applicants.</p>	<p><b>DSO/SKM/as appropriate</b></p>