Work Package 4 Report Technical Rules Review - REGWG Comments	
Issue	**Comments**
System Management	
4.8 Communication	System Management currently has communication and SCADA visibility of all 3 major windfarms in the SWIS and is attempting to secure wind speed, wind direction, air pressure and air temperature a hub height. System Management also has the ability to curtail each of these windfarms. The outcome for this issue is unclear. It appears that there are 2 recommendations arising from this 1. the WEM rules should be changed to include an obligation to provide real time data requirements (System Management agrees it has to be placed somewhere and it must be enforceable) 2. *"Changes to the operation of the market will be required to more effectively determine the extent to which intermittent generation should be curtailed. The specification of dispatch communication requirements is highly dependent on the manner in which the market evolves to meet this challenge. In determining these market changes, SKM recommend that consideration be given to the communication requirements of the recommended market solution. "* (this is unclear) System Management must be able to issue dispatch instructions for each facility irrespective of the market rules. This can be done by phone or SCADA. Currently each windfarm is unmanned for operational purposes so SCADA control has been provided. This appears to be working correctly.
4.5 Ramping Rate	An observation should be made in regard to the ramping rate requirement explored in section 4.5. A maximum rate of 15%/minute is imposed on intermittent generator. I believe that limiting the load following requirement is necessary the issue as described as it is looking at continuous control rather than control during contingencies. Similarity to Ireland is key. System Management faces frequency control issues when an intermittent generator ramps rapidly up on its own accord. This generally happens when a wind front passes through. The front raises the wind speed and causes a rapid shut down of the farm pushing all scheduled generators up. When the front has passed the wind speed lowers to a level that allows the full output of the windfarm to be restored almost immediately, requiring all scheduled generator to be reversed. This proves to be difficult to control.

Work Package 4 Report Technical Rules Review - REGWG Comments	
Issue	**Comments**
Western Power	
4.1 Voltage Ride Through	p. 9, section 4.1.1, last paragraph Misunderstanding. The SWIS requirement (the 'default' voltage fault ride through curve) is the maximum requirement (based on the CB fail protection clearance time in the 330kV and 220kV networks in the SWIS, first time presented on 27 August 2003). The site specific voltage envelope, based on the actual fault clearance times, is determined by simulations, and that curve used instead of the 'default' voltage fault ride through curve. The latest revision of the Technical Rules (yet to be released) has clarified that apparent ambiguity and deficiency. p.10, section 4.1.2, second dot point. Having high levels of motor load can be significantly worse that constant PQ load model. This is a significant issue in weaker parts of the network when considering short term voltage stability. p.10, section 4.1.2, fifth dot point. Circuit breaker fail protection will only operate if the primary protection also operates successfully. p.10, section 4.1.2, the last bullet point acknowledges the page 9 comment p.12, section 4.1.4 The recommendation of the conclusion has already been implemented in the new revision (to be released shortly) of the Technical Rules.
4.2 Frequency Excursion	page 14, section 4.2.2 The statement in bullet points 2 is not correct. The topic has been covered comprehensively in the Draft Report. p.19 section 4.3.4 last sentence. the rate of change of frequency is effectively time bounded by the frequency limits. Operation at 4 Hz/s is required for less than 1 second. If it continued for longer that 1 second the frequency would be outside limits.
4.6 Voltage Excursion – Overvoltage Curve	The requirement has been revised and new curve produced in the (yet to be released) new revision of the Technical Rules, based on the actual protection clearing times.

Work Package 4 Report Technical Rules Review - REGWG Comments	
Issue	**Comments**
	The latest major wind-farm project had no difficulties complying with the new curve (the actual plant overvoltage withstand capability is higher than that required by the new curve). Similarly, as mentioned for the voltage fault ride through, the site specific voltage envelope, based on the actual fault clearance times, is determined by simulations, and that curve used instead of the 'default' voltage fault ride through curve. The latest revision of the Technical Rules (yet to be released) has clarified that apparent ambiguity and deficiency. Comprehensive coverage of the topic. p23. Fault application.It should be noted that the overvoltage limit curve only applies to phase to phase voltage. This is not impacted by the X0/X1 ratio. p24 section 4.6.4. The curve is based on a typical surge diverter protection voltage.
4.7 Post Fault Voltage Control	p.28, section 4.7.2, 1st bullet point Misunderstanding. The design should facilitate the plant performance characteristic. The driving factor is the system issue is that major renewable energy generation is typically located in remote parts of the system where they largely dominate transients in the local network and could bring it down if the response is sluggish or if the network support (through MW and Mvar injection) disappears. Being 'self-sufficient', without relying on the network help to remain connected and supply loads (otherwise supplied by that generator), facilitates mass proliferation of renewable energy generation, equity among generators and, effectively, eliminates the need for, otherwise, cross subsidy. p.28, 2nd bullet point Misunderstanding. The apparent confusion has been clarified in the new (yet to be released) Technical Rules, through, to the effect of, subject to the availability of the primary energy source. p.28, 3rd bullet point Misunderstanding. The requirement is for the generator to generate enough MW & Mvar necessary to remain connected to the grid (ie not to rely on the grid support to remain connected). Note, no injection of MW or Mvar into the SWIS is required by this particular clause (which should be read in conjunction with clause 3.3.3.3(h), as a prerequisite). p.28 section 4.7.3. first paragraph. This is not strictly true. If it is a new generator causing the issue then the performance of the generator will have to be change so that it does not cause the issue.

Work Package 4 Report Technical Rules Review - REGWG Comments	
Issue	**Comments**
4.8 Communication	p29, Denmark - It is noted that one part of Denmark normally operates in the UCTE interconnection, another (north-eastern, it appears) in the NORDEL interconnection and that the two interconnections may have different connection and plant performance requirements. p.30, section 4.8.2, 1st bullet point - After nearly six months of operation, the new Telstra's system (IP cloud) does not seem to have shown inferior performance to the old system. Western Power has been monitoring and testing the performance of the new Telstra's system for own reasons. The results, so far, have been satisfactory. p.30, section 4.8.2, 2nd bullet point - Disagree with the statement. Operational planning and operation of the distribution network require visibility and knowledge of the MW output of the generator, in order to maintain the reserve capacity in case the generator trips. This does not apply to loads, whose sudden trip cannot overload the distribution network. Hence comparison of generator and loads is not justifiable in this case.
General	7, section 3.3.1, last sentence "load ride through" to be "fault ride through" p.9, section 4.1.1, bullet point "WEM" to be "NEM" page, 31, section 4.8.3, 3rd bullet point Check the phrase "2 shifted" page, 32, section 4.8.3, last sentence Check the phrase "2 shift" p 2 section B.1 third paragraph should be IEC 60255. p8 appendix C Governor droop should be 4%