Grid Code Review Panel

Review of Regional Differences

1. The GB Grid Code includes within it a number of regional differences where technical or critical procedural variations meant that some differentiation became necessary between rights or obligations in Scotland and the equivalent rights or obligations in England and Wales. The recognition of 132kV as a transmission voltage in Scotland has also resulted in other regional differences.

2. In developing the GB Grid Code it was acknowledged that given the timescales it would not be possible to harmonise all arrangements, and in certain circumstances there may be justifiable reasons for treating plant in Scotland differently. To ensure that work continued after Go-live the duties of the Grid Code Review Panel as defined in the Grid Code General Conditions were amended to include:

   'Consider and identify changes to the Grid Code to remove any unnecessary differences in the treatment of issues in Scotland from their treatment in England and Wales'

3. In developing the GB Grid Code regional differences were allowed to occur if:

   - it was likely that changing the technical requirements would have a significant material impact on Users or RTLs, then the existing technical requirements would be adopted;
   - Safety related, then the existing RTL procedures would be incorporated;
   - the Grid Code needed to recognise that 132kV was a transmission voltage in Scotland;
   - where the RTL interfaces directly with the User and this arrangement needs to be recognised directly in the Grid Code for clarity and safety.

4. The main area where the review of Regional Differences might be expected to bring about changes relates to the first area identified above. These differences generally occur in the Connections Conditions and/or are as a result of the applicability of the Code through differences in definitions (e.g. Small, Medium and Large Power Station definition).

5. Within this first area, a review of definitions of Small, Medium and Large Power Station definitions was also requested by Ofgem in the final conclusion on Embedded Exemptable Large Power Stations under BETTA.

6. We recognise that there may also be benefits in reviewing certain aspects of the remaining three areas, although many of these are fundamental to the design of BETTA and are clearly justifiable. NGC believes however it would be beneficial to review the requirement for and the manner in which each is expressed.

7. NGC has identified within the Grid Code those areas where it believes Regional Differences exist. This list is attached to this paper at Appendix 1. The list also includes NGC's initial views on the priorities associated with taking forward each of the issues together with a summary of the background to each issue. After consideration of this list NGC's initial view is that the following areas require review:

a) Definition of Small, Medium and Large Power Station (incl. BC1.4.2 (a)).
b) Technical requirements, covering CC6, CC.A.3, Planning Code requirements, OC5, BC2.A.2.6 and including relevant definitions.
c) Site Safety, CC5, CC7 and CC.A.1 / OC8, including relevant definitions.
d) Operational processes and interfaces, mainly the Operating Codes, including relevant definitions.

8. Any review will need to be mindful of and identify consequential changes to other codes and documents, principally the CUSC, STC (including STCPs) and the BSC although any consequential amendments would of course have to be referred to and taken forward through the appropriate change governance processes of those codes. The information received through the Planning Code and the assumption made based on the application of Connection Conditions are fundamental in the design of the System and connections. There may also be changes to information that the market would see e.g. arising from a change in definition of Large Power Station

9. NGC proposes that a GCRP working group is formed to review the existing regional differences triggered by the existing definition of Small, Medium and Large Power Stations within the Grid Code commencing in September 2005, probably for a period of 6 months. This Working Group would also be charged with seeking appropriate way forward in those areas where the working group believes that the regional difference can be reduced or eliminated. Either the same or separate working group would be charged with reviewing the other areas of work. Draft Terms of Reference for such a Working Group is attached at Appendix 2 to this paper.

Regional Differences (priority U -urgent, H /M/L, C, consequential, N no action ; Number denotes sub priority)

Code	Section	Priority	Context	Notes
G&D	Control Point	C	Applies to >50MW E&W, >5MW Scotland	Linked to the demand capacity under BC1.4.2 (a). Recommend that BC1.4.2 (a) be reviewed as a Urgent priority and this is changed as a consequence.
	Customer Demand Management Notification Level	C	12MW E&W, 5MW Scotland	OC1/2 review is proposing to remove CDM.
	Demand Control Notification Level	M	12MW E&W, 5MW Scotland	Used in OC6. Linked to the fact that GSP are generally 132/33 kV in Scotland and network is 132kV. NGC believe that it is justifiable that the limit should be different.
	High Voltage	M	>650 volts E&W, >1000 volts Scotland	The Grid Code definition for England and Wales does not appear to be consistent with rest of Industry. Review H&S issues, wider GC issues impact on other documents and bring forward changes as soon as practicable.
	Large Power Station	U 1	>=100MW E&W, >=30MW SP, >=5MW SHETL	Significant impact on all parties. This interacts with GC15 and the need for derogations. NGC to carry out an initial assessment and information gathering exercise and bring forward recommendations to progress a review. Initial plan has two threads: 1) Seek a 12 month extension to GC 15, 2) Present ToRs for a WG to July Panel, to report back to February GCRP. This affects nearly every area of the Code and the applicability of the wider framework. Note impact on requirement for EELPS to accede to CUSC is driven by the Grid Code definition of Large.

Code	Section	Priority	Context	Notes
	Local Joint Restoration Plan	L	In Scotland a LJRP may cover more than one BS Station and includes Gensets other than those at a BS Station and the creation of one or more Power Island.	The pre BETTA BS plans were adopted for BETTA go-live. In Scotland the existing procedures involved plant that was not Black Start. The framework also provides for the RTL carrying out specified control activities under a procedure. Would suggest this be reviewed when the existing Black Start plans are reviewed. NGC's initial view is that this reflects the arrangements in the STC and the role of the RTLs. This needs to be maintained if the RTL is to continue to carry out Black Start locally.
	Low Voltage	C	<=250 volts E&W, >50<=1000 volts Scotland	Links to 'High Voltage' and therefore take same approach.
	Operational Switching	N	To the instruction of NGC in E&W, to the instruction of Relevant Transmission Licensee in Scotland.	Required due to the switching model implemented under BETTA, RTLs issue operational instructions for switching at sites they own.
	Permit for work for Proximity Work	N	Issued by NGC in E&W, issued by RTL in Scotland	RTLs are responsible for safety at sites they own.
	Power Island	L	May include more than one Power Station in Scotland	Reflects the pre BETTA Black Start arrangements that were adopted. To be reviewed when the Black Start plans are reviewed.
	Responsible Manager	N	Authorised by the RTL in Scotland	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	Safety Coordinator	N	Nominated by the RTL in Scotland	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	Safety Rules	N	Rules of the RTL in Scotland	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	Small Power Station	C	<50MW E&W, <5MW Scotland	Linked to review of Large Power Station.

Code	Section	Priority	Context	Notes
	Transmission Site	N	Site owned by RTL in Scotland	Required to differentiate ownership. Different arrangements are required due to the role of the RTL and to allow the RTLs to carry out their obligations under the STC and other statutory documents / Licence.
	User Site	N	Site owned by RTL in Scotland (rather than NGC in E&W) and occupied by a User.	Required to differentiate ownership.
PC	PC.1.1	N	NGC obligation under STC to inform RTL in Scotland of data required	Required under STC obligations.
	PC.6.2	L	Appendix C lists technical criteria applying to RTL in Scotland	The RTL is responsible for planning in its area. Potential benefits from convergence of criteria is regulatory and /or STC issue not for Grid Code to dictate these. Possible benefit of listing additional standards e.g. G74.
	PC.A.2.2.2	N	Single Line Diagram, Voltage differences for sub-transmission systems.	Nature of Transmission.
	PC.A.2.2.3	N	Single Line Diagram, Voltage differences.	Nature of Transmission.
	PC.A.2.2.5.1	N	Single Line Diagram, Voltage differences.	Nature of Transmission.
	PC.A.2.4.1	N	Single Line Diagram, Voltage differences.	Nature of Transmission.
	PC.A.6.2.1(f)	N	Transient Overvoltage Assessment Data, Voltage differences	Nature of Transmission.
	PC.A.8.1	N	Single Point of Connection, Voltage differences	Nature of Transmission.
	PC.A.8.3(d)	N	Voltage differences	Nature of Transmission.

Code	Section	Priority	Context	Notes
CCs	CC.5.2 (c)	N	For User sites in Scotland NGC consults with RTL on safety procedures	RTL is responsible for safety on its sites and NGC needs to consult with RTL.
	CC.5.2 (m)	N	For sites in Scotland lists of responsible persons for various duties provided.	Reflects RTL safety rules / practice. Changes initiated by Users / RTLs not NGC.
	CC.6.1.5(b)	M	Phase Unbalance, below 1% E&W, below 2% Scotland	Requires a technical review of impact, possible impact on wider design standards. Option to relax England and Wales or to tighten up for Scotland. As with most design issues retrospective application could a have serious implications.
	CC.6.1.7 (a)	M	Voltage Fluctuation, defined in Grid Code for E&W, in Scotland ER P28 applies.	Requires technical review. Assess if P28 can be applied in England and Wales without additional Grid Code obligations to supplement. Figure 4 in ER P28 (p. 10) gives limits for step-size as a function of time between steps (larger steps require a longer interval between steps), this limits Pst to 0.5, assuming no other sources of flicker. CC.6.1.7 allows 1% repetitive steps, but does not limit their frequency. P28 (figure 4) allows 1% steps, provided they are at least 20 s apart. P28 introduces the time dimension. On the other hand, it would allow larger steps at longer intervals. Note that P28 limits steps to 3% for repetition times above 600 s.
	CC.6.2.1.1(b)	M	Earth Fault Factor below 1.4 E&W, below 1.5 Scotland. Phase to earth voltage differences under fault conditions.	Requires technical review. Going from 140% to 150% for maximum voltage (under fault conditions) may have implications in terms of equipment rating for NGC / England and Wales Users. Going from 150% to 140 % may mean some existing Users in Scotland cannot comply.

Code	Section	Priority	Context	Notes
	CC.6.2.1.2(a)(ii), (a)(iii), (a)(iv)	N	References to RTL in Scotland.	Reflects role of RTL under BETTA arrangement.
	CC.6.2.2.2.2 (b), (c)	H	Fault clearance time differences and voltage level differences.	Requires technical review. May be associated with the different licensees internal protection policies and assumptions about the number of protections / terminology.
	CC.6.2.2.4	M	Work on Protection Equipment, In E&W NGC representative to be present but in Scotland written authority from NGC suffices	As drafted this paragraph can be misinterpreted as 'written authority' sufficing in E&W as well as in Scotland. Need to review clarity of paragraph, possibly overly complex. Review whether NGC can relax, Scotland to tighten up or the difference is justifiable. Need data on how often it actually happens in Scotland / E&W. We are not aware of it causing any problems in E&W.
	CC.6.2.3.1.1 (c)(i)	M	Circuit breaker fail protection provision, voltage differences.	Need to understand why it isn't, or if it actually is in practice, applied to at 132kV in E&W. Review the technical requirement with RTLs to have it connected at 132kV. The requirement may be more about the nature of the system (i.e. active and inter connected) rather than the voltage level.
	CC.6.2.3.5	M	Work on protection equipment. Similar to CC.6.2.2.4	Similar to CC.6.2.2.4, review with CC.6.2.2.4.

Code	Section	Priority	Context	Notes
	CC.6.3.7(e)(f)	M	Frequency response requirement profile, generating unit/CCGT Module completion date differences.	Review if date can be harmonised, impact on both systems. If Scottish limit moved back it implies it would be retrospective application, and the date is in the E&W because it was not seen to be viable to implement it retrospectively in E&W. Could lead to increased cost on Generators and / or increase the number of derogations required. In E+W the main impact would be that for completion dates between that current in E&W and a later date. This is unlikely to affect the actual capability delivered (the implementation date being in the past), but affect the requirement to have the capability available if the units were commissioned between these dates. Review the volume of plant affected on both systems.
	CC.6.5.6(a)	C	Operational metering. In Scotland anemometer readings required from wind turbines.	Removed by Generic provisions.
	CC.7.2.1	N	In Scotland, work to Safety Rules of RTL, as advised by NGC.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.2.2	N	User Sites in Scotland, NGC to ensure that RTL works to User Safety Rules.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.2.3	N	For Transmission Sites in Scotland NGC seek opinion of RTL as to whether User Safety Rules adequate.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.2.4	N	For a User Site in Scotland NGC may apply to a User for RTL to use RTL Safety Rules	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.

Code	Section	Priority	Context	Notes
	CC.7.2.5	N	Entry and access to Transmission site in Scotland by User RTL rules apply.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.2.6	N	User Sites in Scotland, Users notify NGC of Safety Rules that apply to RTL staff.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.3.1	N	Site Responsibility Schedules in Scotland reference RTL.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.6.1	N	Access, provisions set out in Interface agreement with RTL and Users in Scotland.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.6.2	N	In Scotland unaccompanied access only granted to individuals holding Authority for Access granted by RTL.	BETTA model. Used in relation to safety and RTLs are responsible for safety at sites they own.
	CC.7.7.1	M	Maintenance Standards. E&W NGC has right to inspect test results and maintenance records. In Scotland User responsibility to ensure Users plant tested and maintained.	Review individual requirements / processes. Possible interaction with Safety Rules and Construction / Interface agreements. Current wording implies it is not the Users responsibility in England and Wales. This was explicit in the SGC so carried over, but not extended to England and Wales
	CC.A.1.1.9	N	E&W Site Responsibility Schedule signed on behalf of NGC by NGC Responsible Manager. In Scotland SRS also signed on behalf of RTL by RTL Responsible Manager.	Reflects asset ownership and roles under BETTA.

Code	Section	Priority	Context	Notes
	CC.A.1.1.6 Footnote bottom of page 27	M	Differences in dates from when details of traversing circuits are required.	Investigate harmonisation. Linked to individual safety procedures / requirements. Note implementation date: it is already implemented in E+W. Investigate possibility of agreeing and hard-coding date that is reasonable for the RTLs.
	CC.A.1.1.16	N	Responsible Managers – E&W NGC supplies name of NGC's Responsible Managers in Scotland NGC send Name of RTLs Responsible Manager.	Reflects roles under BETTA, links to CC5.2.
	CC Appendix 3 Title	C	Variation in completion dates (Relates to Frequency Response Profile and Operating Range).	Linked to CC6.3.7 dates, review with CC6.3.7.
	CC.A.3.1	C	Variation in completion dates for generating units and CCGT modules.	Linked to CC6.3.7 dates, review with CC6.3.7.
OC1	OC1.5.5.3	M	In Scotland Suppliers who control Load Management Blocks of Demand>5MW submit a schedule to NGC. Not a requirement in E&W.	Review requirement under GB arrangements and review the MW limit if arrangement justified. Possibly incorporate in longer term OC1/2 proposals.
OC2	OC2.1.8	M	In Scotland where output or demand small NGC may agree to reduce admin burden on Users of producing planning information	Review if still required following Small, Medium and Large review.
	OC2.4.1.3.4 (c)	C	Details of Load Transfer capability available to NGC – E&W 12MW or more, Scotland 10MW or more.	Review justification for different limits along with Small, Medium and Large. Note interaction with existing OC1/2 review, possibly incorporate.
OC5	OC5.5.3 (Table 3	C	Relates to Phase Unbalance and Voltage Fluctuations	Links to the review of the original technical requirement in the CCs

Code	Section	Priority	Context	Notes
	places)			
OC6	OC6.2.2	L	In Scotland may not be possible to meet certain requirements in OC6 and NGC may agree requirements with relevant Network Operator.	Related to the definition of Transmission. Where Demand Control is implementation on a Grid Supply Point basis due to the fact that GSPs in Scotland are at different voltage level an even spread or report on a GSP may not be possible / practicable.
	OC6.6.1	L	Automatic Low Frequency Demand Disconnection – E&W at least 60%, Scotland at least 40% of total Peak Demand.	Influenced by where the relays have historically been required. Review, ensure justification robust.
OC7	OC7.1.6	C	Refers to OC7.6 Operational Switching in Scotland.	Linked to OC7.6.
	OC7.2.4	C	Refers to Operational Switching procedure in Scotland.	Linked to OC7.6.
	OC7.3.1	C	Scope says OC7.6 also applies to RTL	Linked to OC7.6.
	OC7.6	L	Whole of OC7.6 relates to Operational Switching in Scotland	Required to facilitate BETTA switching model. Review scope and applicability of obligation following experience.
OC8	OC8.1.1	N	OC8B applies in Scotland	Purpose of OC8B.
	OC8.3.1	N	Scope, OC8 also applies to RTL	Reflects role of RTLs under BETTA.
	OC8.4.1.1	N	OC8A applies when Safety precautions to be established in E&W when work to be carried out in Scotland	Recognises role of RTLs under BETTA on safety in E+W, cascading Safety Precaution cross the interface.
	OC8.4.2.1	N	OC8B applies when Safety precautions to be established in Scotland when work to be carried out in E&W	Recognises role of NGC under BETTA on safety in Scotland, cascading Safety Precautions across the interface.

Code	Section	Priority	Context	Notes
	OC8A.1.1	N	Introduction recognises OC8B exists	Not a Regional Difference as such.
	OC8B	M	Safety Co-ordination in Scotland	The procedure applicable in Scotland. Review differences between OC8A and OC8B, harmonised if possible. Main impact on Users and RTLs. Ensure relationship between CCs and OC8B is consistent. OC8B was based on SGC OC6, but the split in the SGC between CC and OC6 was different to that in the E+W GC.
OC9	OC9.2.4	N	Objective to describe role of RTL Scotland with respect to Desynchronised Island Procedure and Local Joint Restoration Procedure	Recognises RTL role
	OC9.3.3	N	In Scotland OC9.4 and OC9.5 also apply to RTL	Recognises RTL role
	OC9.4.5.3	L	Black Start Stations - In Scotland LJRP may cover more than 1 BS station and may include RTL's etc	Covers existing procedures in Scotland. Change would have a significant impact on the current Black Start philosophy. Would also need to initiate a fundamental review of the Black Start procedures. Expect to review in future.
	OC9.4.6		Under exception circumstances RTL may invoke LJRP for its own area.	Recognises RTL role, required to maintain standards.
	OC9.4.7.3		Black Start – In Scotland RTL acts on NGC's behalf	Recognises RTL role
	OC9.4.7.4	L	In Scotland Gensets which are not at BS stations but in LJRP may be instructed in accordance with the LJRP. In E&W relates to BS stations only generally.	For BETTA go-live the existing black start procedures were adopted. A review of the obligations in OC9 would need to be carried along with a licensees review of the Black Start philosophy for Scotland.
	OC9.4.7.6	C	Special arrangements for Scotland	To be considered along with OC9.4.7.4

Code	Section	Priority	Context	Notes
	OC9.4.7.11	C	LJRP establishment (a) includes RTL in discussion in Scotland. (c) details provisions in Scotland when LJRP arises.	To be considered along with OC9.4.7.4
	OC9.5.1(b)	N	In Scotland OC9.5 also provides for Transmission connected generation in De Synch Islands.	Allows for RTL to manage an island. Consistent with roles under STC.
	OC9.5.4.1(b), (c)(v)(vi)	N	In E&W De Synch Island Procedure covers all relevant GSPs. In Scotland OC9 De Synch Island Procedure also covers parts of GB Transmission System connected to Users Systems and directly connected Power Stations. Procedure – will include RTL obligations in Scotland.	Allows for RTL to manage an island. Consistent with roles under STC.
OC11	OC11.4.1.1	N	Reference to site owned by RTL in Scotland rather than NGC in E&W	Required by BETTA ownership model
	OC11.4.1.2		Reference to site owned by RTL in Scotland rather than NGC in E&W	Required by BETTA ownership model
	OC11.4.2		Reference to site owned or occupied by RTL in Scotland rather than NGC in E&W	Required by BETTA ownership model
	OC11.4.6		Reference to installation by RTL in Scotland rather than NGC in E&W	Required by BETTA ownership model
BC1	BC1.4.2(a)	U1	Physical Notifications required from BM Units with Demand	Review along with Definition of Small, Medium and Large Power Station

Code	Section	Priority	Context	Notes
			Capacity >50MW in E&W or >5MW in Scotland	
BC2	BC2.5.5.1	C	Demand Capacity <50MW in E&W or <5MW in Scotland	Related to BC1.4.2(a)
	BC2.5.5.2	C	Demand Capacity >50MW in E&W or >5MW in Scotland	Related to BC1.4.2(a)
	BC2.A.2.6	H	Mvar tolerance difference	Review along with Technical requirements
DRC	Sched 1 Page 3	C	Negative sequence resistance required in Scotland	
	Sched 5 Page 1	C	Operating Voltage differences	
	Sched 5 Page 2	C	Operating Voltage differences	
	Sched 5 Page 5	C	Operating Voltage differences	
	Sched 5 Page 7(f)	C	Operating Voltage differences	
	Sched 6 Page 1	C	Load Transfer capability 12MW E&W, 10MW in Scotland	
	Sched 12 Page 1	C	Load Management Blocks of >5MW in Scotland	
GCs	GC.4.2(f)	N	Carry out review of Regional differences.	Consistent, seek to remove if all material regional differences. removed.
	GC.4.3(c)(iv)	N	Scottish Network Operators rep on GCRP.	BETTA model.

Code	Section	Priority	Context	Notes
	GC.15.1(b)	U1	Applies to Embedded Exemptable Medium Power Stations in Scotland until 31st March 2006.	Expires in 2006, in order to allow a review on size definitions to be addressed in a considered manner NGC propose that this be extended to 2007. When this clause expires one of the following must have occurred • A derogation have been put in place, or • The plant compliance is confirmed, or • The Grid Code obligation removed. It would be inappropriate to seek compliance or derogations prior to reviewing the size definition.
	GC.A1.11(d)	N	Potential amendment to the GB Grid Code related to operational liaison including Black Start in Scotland	Transitional
	GC.A2.7	N	Data to be provided to NGC to implement with effect from Go Live the GB Grid Code in relation to Scotland.	Transitional

Review of the Grid Code Definition and Requirements for Small Medium and Large Power Stations

Terms of Reference

1. To identify those clauses within the Grid Code for which there is a regional difference brought about by the exiting definition of a Small, Medium and/or Large Power Station.

2. To identify whether these regional differences could be removed or eliminated through the adjustment of the thresholds for a Small, Medium and/or Large Power Station.

3. Alongside the above review of the regional differences inherent within the definition of Small, Medium and Large Power Stations to undertake a similar review of BC1.4.2 and any identified related clauses. Such a review is to examine whether the regional difference surrounding the Demand Capacity threshold above which submission Parties must submit PNs is appropriate and whether it is possible for the regional difference to be minimised or removed.

4. As part of the review the working groups shall:

   (a) Consider the impact any adjustment to the existing conditions with the GB Grid Code has on the security of supply
   (b) Consider the impact any adjustment to the existing conditions with the GB Grid Code has on information provision
   (c) Consider the impact any adjustment to the existing conditions with the GB Grid Code has on the CUSC and its surrounding contractual framework
   (d) Consider the impact any adjustment to the existing conditions with the GB Grid Code has on the STC

5. The membership of the working group will be drawn from the GCRP or their nominated representatives, the Relevant Transmission Licensees and Ofgem.

6. The working group will aim to complete its work for the GCRP meetings that is to take place in February 2006.