TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG
(Comparison based on GB Grid Code Issue 4 Revision 139 only and ENSTO - E RFG Internal Version dated 264 Juneanuary 2012)
(Note – Does not include other Industry Codes)

Table 2 compares the GB Grid Code with the ENTSO-E RfG. This is a ~~much more~~ detailed Table comparing the exact requirements of the GB Grid Code with the exact requirements of the ENTSO-E RfG. The reader should however be aware that in adopting this comparison there may be elements in the ENTSO-E RfG that have not been identified as and this is where Table 1 is considered to be helpful. The text in highlighted yellow indicates areas which are unclear with the ENTSO-E Code or areas which are worthy of comment.

Key to Table

Symbol	***Definition***
N/A	Not specified in GB Grid Code but other requirements may apply in other industry Codes such as the System Operator Transmission Owner Code (STC) Distribution Code or Engineering Recommendations such as G59, ETR 113 and G83.
N/S	Not specified in ENTSO-E RfG Code often because not deemed to be a cross border issue but other National requirements may apply.
Article 4(3)	Where reference in the Table is given to Article 4(3) this means the determination of the terms and conditions for connection and access to networks or the methodologies to establish them shall be set in accordance with the rules of national law implementing Article 37 (6) (a), (7) and (10) of directive 2009/72/EC and with the principles of transparency, proportionality and non discrimination. The establishment of these terms and conditions or their methodologies shall be performed by entities and based on the legal framework indicated in this Network Code where reference is made to this paragraph, unless the rules of national law at the date of the entry into force of this Network Code assign this establishment to a different entity and according to a different legal framework. ~~that any decision made by a Relevant Network Operator, or Relevant TSO and a Relevant Network Operator or Power Generator may require agreement with the National Regulating Authority.~~
Article 3 (6) (b)	A Power Generating Module is of Type B if its Connection Point is below 110 kV and its Maximum Capacity is at or above a threshold defined by each Relevant TSO while respecting the provisions of Article 4(3). This threshold shall not be above the threshold for Type B Power Generating Modules according to table 1. The definition of the threshold shall be coordinated with adjacent TSOs and DSOs and shall be reviewed by the National Regulatory Authority. Power Generating Facility Owners shall assist and contribute to this determination of the threshold and provide the relevant data as requested by the Relevant TSO. The Relevant TSO shall have the right to re-assess the determination of the threshold regularly, if relevant circumstances have changed materially, but not more often than every three years and respecting the provisions of Article 4(3). A public consultation shall be conducted in the frame of the procedure for re-assessment. Following any change to thresholds any Power Generating Module that has been moved to a new type will not automatically have to comply retroactively with the additional requirements but will be subject to the same procedure as applied to Existing Power Generating Modules in line with Article 33.
Article 3 (6) (c)	The Relevant TSO shall have the right to re-assess the determination of the threshold regularly, if relevant circumstances have changed materially, but not more often than every three years and respecting the provisions of Article 4(3). A public consultation shall be conducted in the frame of the procedure for re-assessment. Following any change to thresholds any Power Generating Module that has been moved to a new type will not automatically have to comply retroactively with the additional requirements but will be subject to the same procedure as applied to Existing Power Generating Modules in line with Article 33.
Article 3 (6) (d)	The Relevant TSO shall have the right to re-assess the determination of the threshold regularly, if relevant circumstances have changed materially, but not more often than every three years and respecting the provisions of Article 4(3). A public consultation shall be conducted in the frame of the procedure for re-assessment. Following any change to thresholds any Power Generating Module that has been moved to a new type will not automatically have to comply retroactively with the additional requirements but will be subject to the same procedure as applied to Existing Power Generating Modules in line with Article 33. Requirements applicable to Type D Power Generating Modules are in particular specific for higher Voltage connected generation with impact on entire system control and operation. They ensure stable operation of the interconnected Network, allowing the use of ancillary services from generation Europe wide.
1	Directly Applicable (no scope for Member State specificity)

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Symbol	*Definition*
2	Member State specificity can be applied
3	A Member state CBA or consultation is required to determine applicability
4	Further detail is required to implement ENC obligations – need to confirm that governance processes would constitute the necessary NRA consultation
5	No change is needed to the GB framework (we already meet the requirements)
6	Completely new to the GB framework
7	Where different obligations are introduced at interconnection points to deeper in the system – with dual references required to the 2 co-existing obligations
8	Where different obligations are introduced for new as opposed to existing parties
9	GB arrangements go beyond those stipulated in the ENC

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Frequency Range (GB CC.6.1.3 ENTSO-E – Article 8~~7~~ 1(a)(1) Table 2	Synchronous and Asynchronous	2/5	51.5 – 52 Hz for 15 minutes 51 – 51.5 Hz for 90 minutes 49.0 – 51 Hz Continuous 47.5 – 49 Hz 90 minutes 47 – 47.5 Hz 20 seconds	As per Large	N/A unless directly connected	As per Type A	As per Type A	As per Type A	51.5Hz – 52.0 Hz for 15 minutes 51 Hz – 51.5 Hz for 90 minutes 49 Hz – 51 Hz Unlimited 48.5 – 49 Hz – defined by TSO but respecting provisions of ~~pursuant to~~ Article 4(3) 47.5 – 48.5Hz for 90 minutes 47 – 47.5 Hz for 20 seconds
Voltage Operating Range (GB CC.6.1.4) (ENTSO-E – Article 10~~9~~ – 3a) and Article 1~~10~~ – 2 a) – 1 Tables 6~~5~~.1 and 6~~5~~.2)	Synchronous and Asynchronous	1/5	At 400 kV ±5% *(although voltages between +5% and +10% will not last longer than 15 minutes)* At 275 kV ± 10% At 132 kV ± 10% Below 132 kV ± 6%	As per Large	N/A unless directly connected	Between 300 kV and 400kV 0.9 p.u – 1.05 p.u unlimited and between 1.05 p.u and 1.1p.u for 15 minutes Between 110kV and 300kV 0.9 – 1.10 p.u	~~As~~Voltage ranges and disconnection thresholds at the Connection Point defined by the Relevant Network Operator in coordination with the Relevant TSO as defined in Article 10~~9~~ – 3a) whilst respecting the provisions ~~pursuant~~ of~~to~~ Article 4(3).	N/S	N/S

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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
Power Quality Harmonic Content (GB CC.6.1.5(a) ENTSO-E – Article 9 – 6 j1),2)	Synchronous and Asynchronous		The harmonic distortion from all sources under both Planned Outage and fault conditions shall comply with the requirements of the Tables of Appendix A of Engineering Recommendation G5/4. The Electromagnetic Compatibility levels will be specified by NGET in the Bilateral Agreement N/A for Embedded Power Stations (Specified by DNO)	For directly Connected Power Stations – as per Large. N/A for Embedded Power Stations – specified by DNO.	N/A	As per Type C	Specified by the Relevant Network Operator which shall be consistent with National and International technical rules. N/S but note requirements for Power Quality Monitoring are covered under Article 10 (6) (1) and Article 10 (6) (4)	N/S	N/S	
Power Quality Phase Unbalance (GB CC.6.1.5(b)) ENTSO-E – Article 9 – 6 j 1), 2)	Synchronous and Asynchronous	9	For Directly Connected Users - Under Planned Outage Conditions the maximum Phase Voltage Unbalance should in England and Wales should remain below 1%	For directly Connected Power Stations – as per Large. N/A for Embedded Power Stations – specified by DNO	N/A	As per Type C	Specified by the Relevant Network Operator which shall be consistent with National and International technical rules. N/S but note requirements for Power Quality	N/S	N?S	

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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			and in Scotland below 2% unless abnormal conditions prevail. N/A for Embedded Power Stations – specified by DNO				Monitoring are covered under Article 10 (6) (1) and Article 10 (6) (4)		
Power Quality Phase Unbalance during infrequent short duration peaks (GB CC.6.1.6) ~~ENTSO-E – Article 9 – 6j 1), 2)~~	Synchronous and Asynchronous	9	For Directly Connected Users - Under Planned Outage Conditions stated in CC.6.1.5(b) infrequent short duration peaks with a maximum value of 2% are permitted for phase (voltage) unbalance subject to the prior agreement of NGET under the Bilateral Agreement. N/A~~e~~ for Embedded Power Stations – specified by DNO	For directly Connected Power Stations – as per Large. N/S for Embedded Power Stations – specified by DNO	N/A	As per Type C	~~Specified by the Relevant Network Operator which shall be consistent with National and International technical rules.~~ N/S but note requirements for Power Quality Monitoring are covered under Article 10 (6) (1) and Article 10 (6) (4)	N/S	N/S

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Voltage Fluctuations (GB CC.6.1.7(a) and (b) ~~ENTSO-E – Article 9 – 6 j 1), 2)~~	Synchronous and Asynchronous	9	For Directly Connected Users – Voltage fluctuations at a Point of Common Coupling with a fluctuating load directly connected to the Onshore Transmission System shall not exceed (a) in England and Wales, 1% of the voltage level for step changes which occur repetitively. Any large voltage excursions other than step changes may be allowed up to a level of 3% provided that this does not constitute a risk to the Transmission System. In Scotland the limits for voltage level step changes are defined in P28	For directly Connected Power Stations – as per Large. N/A for Embedded Power Stations – specified by DNO	N/A	As per Type C	~~Specified by the Relevant Network Operator which shall be consistent with National and International technical rules.~~ N/S but note requirements for Power Quality Monitoring are covered under Article 10 (6) (1) and Article 10 (6) (4)	N/S	N/S	

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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			For voltages above 132 kV the Flicker Severity (short term) of 0.8 Unit and a Flicker Severity (Long Term) of 0.6 Unit for voltages of 132 kV and below, Flicker Severity *(Short Term) of 1.0 Unit and a Flicker Severity (Long Term) of 0.8 Unit, as set out in Engineering Recommendation P28 as current at the Transfer Date. N/S for Embedded Power Stations – specified by DNO.						
Protection - Fault Clearance Times (CC.6.2.2.2.2(a) Article 9 – 56 (b) and Article 9 – 6b) – 2).	Synchronous and Asynchronous	2, 9	Applicable only for Direct Connections The Protection Operating Times will be specified by NGET in the Bilateral Agreement but shall not be faster	Applicable only for Direct Connections N/A for Embedded Connections specified by DNO	Applicable only for Direct Connections N/A for Embedded Connections specified by DNO	As per Type BC	As per Type BThe Relevant Network Operator shall define the Settings necessary to protect the Network taking into account the characteristics of the Power Generating	N/S The Relevant Network Operator shall define the schemes and settings necessary to protect the Network taking into account the characteristics of the Power Generating	N/S

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			than:- At 400kV:- 80ms At 275kV:- 100ms At 132kV and below:- 120ms The probability that the fault clearance time stated in accordance with the Bilateral Agreement will be exceeded by any given fault must be less than 2%. N/A for Embedded Connections specified by DNO				~~Facility. The Power Generating Facilities and Network Settings relevant to the Power Generating Facility shall be co-ordinated and agreed between the Network Operator and Generator as defined in Article 9 6 b) pursuant to Article 4(3).~~ ~~Electrical protection of the Generating Unit shall take precedence over operational controls taking into account system security, health and safety of staff and the public and mitigation of the damage to the Generating Unit in accordance with Article 9 – 6 b),2).~~	Module. The Power Generating Module and Network Settings relevant to the Power Generating Module shall be co-ordinated and agreed between the Relevant Network Operator and Generator as defined in Article 9 5 (b) (1) whilst respecting the provisions of Article 4(3). The protection schemes and settings for internal power station faults shall be designed not to jeopardise the performance of a Power Generating Module. Electrical protection of the Generating Module shall take precedence over operational	

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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
								controls taking into account system security, health and safety of staff and the public and mitigation of the damage to the Generating Module in accordance with Article 9 – 5 (b) (2). Whilst respecting the provisions of Article 4(3), any changes to the protection schemes shall be agreed between the Network Operator and Power Generating Facility Owner prior to the introduction of the changes		
Back Up Protection Requirements GB CC.6.2.2.2.2(b) ENTSO-E Article 9 – 56(b)	Synchronous and Asynchronous	9	Applicable only to directly connected Generators In the event that clearance times defined under	Applicable only for Direct Connections N/A for Embedded Connections specified by DNO	Applicable only for Direct Connections N/A for Embedded Connections – specified by DNO	As per Type BC	As per Type Bthe Relevant Network Operator shall define the Settings necessary to protect the Network taking	N/S The Relevant Network Operator shall define the schemes and settings necessary to protect the Network taking	N/S	

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			CC.6.2.2.2.2(a) are not met, Generators are required to provide Back-up Protection. NGET will also provide back-up Protection. The two back-up protections will be co-ordinated to provide discrimination. On a Generating Unit or Power Park Module where only One Main protection is provided the back up protection provided by the Generator is required to operate within 300ms. Where two main protections are provided or for directly connected Generators and Power Park Modules				~~into account the characteristics of the Power Generating Facility as per Article 9 – 6b) pursuant to the requirements of Article 4(3)..~~	into account the characteristics of the Power Generating Module. The Power Generating Module and Network Settings relevant to the Power Generating Module shall be co-ordinated and agreed between the Relevant Network Operator and Generator as defined in Article 9 5 (b) (1) whilst respecting the provisions of Article 4(3).		

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			connected at or below 132kV the back up clearance time shall operate to give a fault clearance time of no slower than 800ms in England and Wales and 300ms in Scotland Generators and Power Park Modules shall also be required to withstand, without tripping, the loading incurred by clearance of breaker fail protection or back up protection N/A for Embedded Connections specified by DNO						
Circuit Breaker Fail Protection CC.6.2.2.2.2(c)(d) ENTSO-E – Article 9 – 56(b).	Synchronous and Asynchronous	9	The Generator is required to provide circuit breaker fail protection for direct connections at 400 or 274kV and for direct connections in Scotland at 132	Applicable only for Direct Connections N/A for Embedded Connections– specified by DNO	Applicable only for Direct Connections N/A for Embedded Connections – specified by DNO	As per Type BC	As per Type BThe Relevant Network Operator shall define the Settings necessary to protect the Network taking into account the characteristics of	N/S The Relevant Network Operator shall define the schemes and settings necessary to protect the Network taking into account the characteristics of	N/S

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			kV. In the event of a protection system failure circuit breaker fail is required to initiate tripping so as to interrupt fault current within the next 200ms. The target performance for the System Fault Dependability index shall be not less than 99%. N/A for Embedded Connections specified by DNO				the Power Generating Facility as per Article 9 – 6b) but pursuant to the requirements of Article 4(3).	the Power Generating Module. The Power Generating Module and Network Settings relevant to the Power Generating Module shall be co-ordinated and agreed between the Relevant Network Operator and Generator as defined in Article 9 5 (b) (1) whilst respecting the provisions of Article 4(3).	
Protection Equipment to be provided GB CC.6.2.2.3 ENTSO-E Article 9 – 56(b) – 3), Article 9 – 6 b) c) and Article 9 (5) d(c)	Synchronous and Asynchronous	2, 5	For direct connections the following mandatory requirements are necessary Loss of Excitation protection No busbar, mesh corner circuit breaker fail protection equipment or AC or DC wiring may	As per Large for Directly connected and Embedded Plant	As per Large for Directly Connected and Embedded Plant	As per type BC	As per Type BAgreed between the Network Operator and Power Generating Facility pursuant to Article 4(3). The protection systems can include the following requirements External and internal short circuit	Agreed between the Network Operator and Power Generating Module respecting the provisions of Article 4(3). The protection systems can include the following requirements External and internal short circuit	

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			be worked upon in the absence of a representative from NGET In addition, the following requirements shall apply as specified by NGET in the Bilateral Agreement Protection of Interconnecting Connections Circuit Breaker Fail Pole Slipping Protection (Synchronous Plant only) Signals for Tariff Metering and the co-ordination of relay settings across the Connection Point. *For Embedded Generators the requirements will be specified by the DNO at the*				~~Asymmetric load (Negative Phase sequence)~~ ~~Stator and rotor overload~~ ~~Over/under excitation~~ ~~Over / under undervoltage at the connection point~~ ~~Over / under voltage at the alternator terminals~~ ~~Inter-area oscillations~~ ~~Robustness against power swings (for example angle and voltage stability~~ ~~Over and underfrequency~~ ~~Asynchronous operation (pole slip)~~ ~~Protection against inadmissible shaft torsions (for example subsynchronous resonance~~	Asymmetric load (Negative Phase sequence) Stator and rotor overload Over/under excitation Over / undervoltage at the Connection Point Over / under voltage at the Alternator Terminals Inter-area oscillations Inrush Current Asynchronous operation (pole slip) Protection against inadmissible shaft torsions (for example subsynchronous resonance Power Generating Module line protection Unit transformer protection Backup schemes against protection	

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			connection point other than requirements for Pole Slipping protection and Tariff Metering Signals				~~Generating Unit line protection Unit transformer protection Backup schemes against protection and switchgear malfunction Overfluxing Inverse power Rate of change of frequency Neutral voltage displacement as per Article 9 – 6 b) 3).~~ ~~In addition with regard to priority ranking of protection and control the Power generating facility shall organise their protections and control devices in compliance with the following priority ranking organised in decreasing order of importance~~ ~~Network System~~	and switchgear malfunction Overfluxing (U/f) Inverse power Rate of change of frequency Neutral voltage displacement as per Article 9 – 5 b) 3). In addition with regard to priority ranking of protection and control the Power generating facility owner shall organise their protections and control devices in compliance with the following priority ranking organised in decreasing order of importance Network System and Generating Module Protection Synthetic Inertia (if applicable) Frequency Control	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~and Generating Unit Protections Synthetic Inertia (if applicable) Frequency Control (Active Power adjustment)~~ Power Restriction and Power gradient constraints as per Article 9 – ~~6~~ 5 c). ~~In the event of loss of stability of a single generating unit it shall automatically disconnect in order to support system security and prevent damage to the Generating Unit as per Article 9 – 6 – d) pursuant to the requirements of Article 4(3).~~	(Active Power adjustment) Power Restriction and Power gradient constraints as per Article 9 – 5 c).	
Short Circuit Ratio GB CC.6.3.2(a) (ENTSO-E – Article 34 – 3.	Synchronous	9	For plant of 1600MVA or greater no less than 0.4. For Plant less than 1600MVA no less	No less than 0.5	N/A	~~As per Type B~~N/S	~~As per type B~~ N/S	N/S~~No less than 0.5 unless a lower value is specified by the TSO pursuant to the requirements of~~	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
			than 0.5					Article 4(3).		
Short Circuit Ratio GB CC.6.3.2(a) (ENTSO-E – Article 34 – 3.	Asynchronous	9	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	
Reactive Capability (GB - CC.6.3.2) (ENTSO-E Synchronous – Article 121 – 2(a), Article 132 – 23(a) and (b) Asynchronous Article 154 21)(a), Article 16 – 3(a), (b) and (c)	Synchronous	2, 8	0.85 PF Lead to 0.95 Lag at Rated MW Output at Generator Unit Terminals	As per Large	N/S	As per Type C	Where the Connection Point is not at the location of the high voltage terminals of the step up transformer or at the Alternator Terminals, supplementary Reactive Power may be defined by the Relevant Network Operator while respecting the provisions of Article 4(3) to compensate for the Reactive Power demand of the high voltage line or cable as per Article 13 – 2 (a). The Voltage – Q/P_{max} profile is	The Relevant Network Operator shall have the right to define (while respecting the provisions of Article 4(3)) the capability of a synchronous Power Generating Module to provide Reactive Power as per Article 12 -2 (a). Specified by the Relevant Network Operator at the high voltage terminals of the step up transformer at the Connection Point or at the alternator terminals if no transformer exists as per Article 11 – 2a) pursuant to the requirements of Article 4(3).	N/S	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							defined by the Relevant Network Operator in coordination with the Relevant TSO whilst respecting the provisions of Article 4(3) and in accordance with the following:- ~~.range (at 1p.u voltage) at the Connection Point (ie the HV side of the Generator Transformer.~~ The reactive range shall be between (0.89 PF and 0.92 PF) lead to (0.87 PF to 0.83 PF) lag in accordance with Figure 7. In Great Britain the maximum Q/Pmax range is defined as 0.95 which equates to 0.90PF lead to 0.9 PF lag at a steady state voltage range of 0.1p.u as per Table 8. The mid		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							point can be adjusted to provide more capability in the leading or lagging mode. ~~Equates to approx 0.92 PF lead to 0.876 PF lag at Rated MW Output as specified by the TSO pursuant to Article 4(3).~~ The Synchronous Power Generating Module shall be capable of moving to any operating point within its U-Q/Pmax profile in appropriate timescales to values specified by the Relevant Network Operator. When operating at an Active Power output below maximum Capacity the synchronous Generating Module shall be		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							capable of operating over the full range of Figure 7 at least down to the minimum Stable operating level.		
	Asynchronous	2, 8	0.95 PF Lead to 0.95 PF Lag at Rated MW output. Capability to meet requirements of Fig 1 of Connection Conditions. In Scotland the reactive capability of 0.95 Power Factor Lead to Power Factor Lag applies at the HV Side of the Connecting Transformer at 132kV, 275kV or 400kV.	As per Large	N/A	As per Type C	~~Voltage – Q/P_{max} range (at 1p.u voltage) at the Connection Point. Equates to approx 0.97 PF lead to 0.92 PF lag at Rated MW Output as specified by the TSO. At lower Active Power outputs the Power Park Module must operate as specified by the TSO and remain consistent to the Q/P_{max} range anywhere in the operating diagram of Figure 11 pursuant to Article 4(3)~~ Where the Connection Point is not at the location of the	~~As per Type A~~The Relevant Network Operator shall have the right to specify the reactive capability of the Power Park Module whilst respecting the provisions of Article 4(3).	N/S~~Specified by the Relevant DSO in accordance with Article 14 – 1a) but must be pursuant to Article 4(3).~~

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							high voltage terminals of the step up transformer or at the Power Park Module if no step up transformer exists). supplementary Reactive Power may be defined by the Relevant Network Operator while respecting the provisions of Article 4(3) to compensate for the Reactive Power demand of the high voltage line or cable as per Article 16 – 3 (a). For Power Park Modules the Voltage – Q/P_{max} profile at maximum capacity is defined by the Relevant Network Operator in coordination with the Relevant TSO		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							whilst respecting the provisions of Article 4(3) and in accordance with the following:- .The reactive range shall be between (0.89 PF and 0.94 PF) lead to (0.93 PF to 0.84 PF) lag in accordance with Figure 8. In Great Britain the maximum Q/Pmax range is defined as 0.66 which equates to 0.95 PF lead to 0.95 PF lag at a steady state voltage range of 0.1p.u as per Table 9. When operating at an Active Power output below maximum Capacity, the Power Park Module shall be capable of a Reactive		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							Capability as specified by the Relevant Network Operator in coordination with the Relevant TSO whilst respecting the provisions of Article 4(3) and in accordance with the principles of Figure 9. The reactive range shall be between (0.89 PF and 0.94 PF) lead to (0.93 PF to 0.84 PF) lag in accordance with Figure 9. In Great Britain the maximum Q/Pmax range is defined as 0.66 which equates to 0.95 PF lead to 0.95 PF lag at a steady state voltage range of 0.1p.u as per Table 9. The P-Q/Pmax profile can be of any shape and shall		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** ~~2~~	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							include conditions for reactive power capability at zero Active Power. When operating at an Active Power output below the Maximum Capacity the Power Park Module shall be capable of providing Reactive Power at any operating point inside the inner and outer limits of Figure 9. With some Power Park units unavailable within the Power Park Module the Reactive Capability will be reduced.		
Output Power with Falling Frequency (GB - CC.6.3.3) (ENTSO-E ~~Synchronous –~~ Article 8 (1) (d)(e)2 – ~~2~~(e)~~a)~~	Synchronous and Asynchronous	2, 5	Power Output not to fall more than pro-rata with frequency as per Figure 2 of Connection Conditions	As per Large	N/A	As per Type ~~A~~C	As per Type A~~Specified by TSO pursuant to Article 4(3) but within the boundaries of Below 49Hz –~~	As per Type A~~N/S~~	~~N/S~~ The Power Generating Module is required to maintain constant output at its target

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
~~and (b) Asynchronous (Not Specified)~~							~~maximum reduction rate of 2% of maximum capability per 1Hz frequency drop below 49 Hz Below 49.5 Hz up to a maximum reduction rate of 10% of maximum capacity per 1Hz frequency drop below 49.5 Hz.~~		Active Power value regardless of frequency changes. In addition the output power with falling frequency shall be specified by the TSO but within the boundaries of Figure 2 which are between :- 1) Below 49Hz falling by a reduction rate of 2% of maximum capability at 50Hz per 1Hz frequency drop and 2) Below 49.5 Hz by a reduction rate of 10% of the maximum capacity at 50 Hz per 1 Hz frequency drop. This requirement

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
									is limited to a selection of affected generation technologies and may be subject to further conditions defined by the relevant TSO while respecting the provisions of Article 4(3).
Voltage Changes in the normal operating Range (GB – CC.6.3.4 (Synchronous ENTSO-E – Article 121 – (2),(a), Article 132 – 23(ba)(1), a Article 13 2(b)(3) and Article 13 (2)(c),nd (b))	Synchronous	2, 9	Reactive Power output under steady state conditions should be within the voltage range of ±5% at 400kV, 275kV and 132 kV and lower voltages	As per Large	N/A	As per Type C	Power Generating ModulesUnit areis required to meet a Voltage – Q/P_{Max} curve over a varying voltage range at maximum capacity as specified by the TSO whilst respectingpursuant to Article 4(3) at both full load (Article 132 - 23(ba) (1) and (3) – (2). For lower loads the requirements are covered under and Article 132 - 23(cb) although	Relevant Network Operator DSO to define requirement as per Article 121-(2)(a) whilst respecting the provisions of pursuant to Article 4(3).	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							the requirements on voltage range are unclear ~~at lower loads.~~		
Voltage Changes in the normal operating Range (GB – CC.6.3.4 (Asynchronous ENTSO-E – Article 1~~5~~4 – 2~~1~~(a), Article 16 - 3(b) (1) and Article 16 – 3(c) ~~(Asynchronous –~~	Asynchronous	2, 9	As per Synchronous but in addition requirements for voltage and reactive power requirements if Embedded and connected at 33kV and below are also specified	As per Large	N/Ae	As per Type C	Relevant Network Operator to define whilst respecting the provisions of Article 4(3)~~Power Park Module is required to meet a Voltage – Q/P$_{Max}$ curve as specified by the TSO pursuant to Article 4(3) at both full load (Article 16 - 3(b) and Article 16 - 3(c) at lower loads.~~	~~As per Type B.~~ Relevant Network Operator to define whilst respecting the provisions of Article 4(3)	N/S~~DSO to define requirement as per Article 14 - 1(a) pursuant to Article 4(3).~~
Black Start (GB CC.6.3.5) ENTSO-E – Article 10~~9~~ – 5(a)	Synchronous and Asynchronous	2	Specified by NGET in the Bilateral Agreement	As per Large	Not applicable	As per Type C	Not a mandatory requirement but ~~specified by~~ the Relevant TSO can obtain a quote for a Black Start service whilst respecting the provisions of ~~pursuant to~~ Article 4(3) ~~depending upon System Security in a Synchronous~~	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) ~~area.~~	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	~~8~~400W – 1 MW and connected below 110kV
Contribution to Frequency Control by **continuous** Modulation of Active Power (GB – CC.6.3.6(a) ENTSO-E – Article ~~9~~10 – 2(a) and Article 10 – 2(c).	Synchronous	5	Required	As per Large	Not applicable	As per Type C	Required	N/S	N/S
Contribution to Frequency Control by **continuous** Modulation of Active Power (GB – CC.6.3.6(a) ENTSO-E – Article 10~~9~~ – 2(a) and Article 10 - 2(c)	Asynchronous	5	Required unless the Power Park Module is in Scotland and has a Registered Capacity of less than 50MW.	As per Large	N/A	As per Synchronous	As per Synchronous	N/S	N/S
Contribution to Voltage Control by continuous Modulation of Reactive Power (GB – CC.6.3.6(b) ENTSO-E Article 12~~1~~ – 2(ba) ~~and~~	Synchronous ~~and Asynchronous~~	1, 5	Required	As per Large	N/A	As per Type B~~C~~	As per Type B~~Required as per Article 12 – 3 pursuant to Article 4(3).~~	Synchronous Power Generating Modules are required to have a permanent automatic excitation system to control	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** ~~2~~	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
~~(b) and Article 12 – 3~~								Alternator terminal voltage as per Article 12-2(b).~~Required as specified by the Relevant DSO in accordance with Article 11 – 2(a) and (b) and pursuant to Article 4(3)~~		
Contribution to Voltage Control by continuous Modulation of Reactive Power (GB – CC.6.3.6(b) ENTSO-E Article 161 ~~– 2(a) and (b) and Article 12 – 3~~(d)	~~Synchronous and~~ Asynchronous	2, 5	Required	As per Large	N/A	As per Type C	Required as per Article 162 – 3 (d) ~~pursuant to Article 4(3)~~.	N/S – Note however that Article 15 – 2 (a) allows the Relevant Network Operator (whilst respecting Article 4(3) to provide a Reactive Power Capability but not specify the requirement to provide voltage control. ~~Required as specified by the Relevant DSO in accordance with Article 11 – 2(a) and (b) and pursuant to Article 4(3)~~	N/S	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Requirement for Power Station to be fitted with a Proportional Turbine Speed Governor GB – CC.6.3.7(a) ENTSO-E - Article 109 – 2(a) and Article 102 – 24(ca)	Synchronous	1, 2, 7	Required	Required	N/A	As per Type C	Required as per Article 109 – 2(a) and in accordance with the requirements of the TSO / Relevant Network Operator ~~pursuant to Article 4(3)~~ and Article 102 – 24(ca)	N/S	N/S
Requirement for Power Station to be fitted with a Proportional Turbine Speed Governor GB – CC.6.3.7(a) ENTSO-E - Article 109 – 2(a) and Article 102 – 24(ca)	Asynchronous	1, 2, 7	Required except in relation to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW	Required	N/A	As per Type C	~~Required as per Article 9 – 2(a)~~ As per Synchronous	N/S	N/S
Requirement for Frequency Controller or Governor to be designed and operated to an appropriate standard / specification (GB - CC.6.3.7(a)(i),(ii) ENTSO-E –	Synchronous and Asynchronous	2, 5	Required except in relation to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW	Required	N/A	As per Type C	Required as specified in Article 109 – 2(de) whilst respecting the requirements of ~~pursuant to~~ Article 4(3)	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Article 109 – 2(de).									
Requirement for the Frequency Controller or Turbine speed Governor to Control the Generating Unit or Power Park Module Active Power with stability over the entire operating range (GB CC.6.3.7 (b) ENTSO-E - Article 8 1 (c)(2). – 2 and Article 9 – 2(a) and Article 10 – 2.	Synchronous and Asynchronous	2, 5, 7	Required (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	Required	N/A	As per Type C	Required as per Article 109 – 2 whilst respecting the requirements of pursuant to Article 4(3) as defined in Article 10 - 2	Required for reducing power output in steps no more than 20% of maximum capacity as Sspecified by Relevant Network Operator whilst respecting the requirements of Article 4(3) in accordance with Article 98 – 2(a) pursuant to Article 4(3).	N/SStable operation is required whilst the Power Generating Module is operating in Limited Over Frequency Sensitive Mode in accordance with Article 8 – 1(c)(2)
Ability of a Generating Unit Frequency Controller or Governor to control system frequency below 52Hz unless this causes the Generating Unit or Power Park Module to operate	Synchronous and Asynchronous	2, 4, 9	Required (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	Required	N/A	As per Type C	Required as specified by Relevant Network Operator in co-ordination with the Relevant and TSO in accordance with Article 109 – 5(b) whilst respecting the provisions of pursuant to Article 4(3).	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
below its designed minimum operating level. (GB CC.6.3.7(c)(i)) (ENTSO-E – Article 109 – 5(b)									
Governor Droop or Frequency Control Droop (GB CC.6.3.7 (c)(ii)) ENTSO-E Article 87 – 1(c)(12), and Article 109 –(2)(bd) – (1) – Table 3. and Article 10 0 2(c)(1) – Table 4.	Synchronous and Asynchronous	2, 5 6*	Droop Setting to be between 3 and 5% (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	Droop Setting to be between 3 and 5%	N/A	As per Type C	For Plant in Limited Under Frequency Sensitive Mode Droop specified by the Relevant TSO but must be between 2 and 120% as detailed in Article 109 – 2(bd) – (1) - *New to GB Framework – Table 3 For Plant in Frequency Sensitive Mode Droop specified by the Relevant TSO but must be between 2 – 12% as detailed in Article 10 – 2(c)(1) – Table 4.	As per Type A	Not specified for Plant in Frequency Sensitive Mode. For Plant operating in Limited Frequency Sensitive Mode Droop is defined by the TSO but must be between the range of 2 and 12% as per Article 87 – 1(c)(12)
Frequency Control /Governor	Synchronous and	2, 5	Deadband to be 0.03Hz or ±	Deadband to be 0.03Hz or ±	N/A	As per Type C	For Plant in Frequency	N/S	No/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Deadband Settings (GB CC.6.3.7(c)(iii)) ENTSO-E - Article 109 – (2)(cd) - 1 – Table 43	Asynchronous		0.015Hz (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	0.015Hz			Sensitive Mode Deadband specified by the Relevant TSO but must be between 0 – 0.5 Hz as detailed in Article 109 – (2)(cd) – 1 - Table 43		
Target Frequency Settings GB CC.6.3.7 (d) ~~ENTSO-E Article 9 – 2) d) - 8)~~	Synchronous and Asynchronous	9	Unit Load Controller or Power Park Module Load Controller to a Target Frequency either continuously or in a maximum of 0.05Hz steps over at least the range of 50 ± 0.1Hz (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	Unit Load Controller or Power Park Module Load Controller to a Target Frequency either continuously or in a maximum of 0.05Hz steps over at least the range of 50 ± 0.1Hz	N/A	~~As per Type C~~N/S	~~Defined by the TSO with the target frequency range set between 49.9 and 50.1 Hz as defined in Article 9 – 2) d) - 8)~~N/S - Only covered in G&D's	N/S	N/S
Frequency Performance Requirements for Plant operating in Frequency Sensitive Mode	Synchronous and Asynchronous	2, 6*	Generating Units and Power Park Modules must be capable of providing at least 10% of their	Generating Units and Power Park Modules must be capable of providing at least 10% of their	N/A	As per Type C	Parameters for frequency response performance specified by the Relevant TSO in	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
(GB CC.6.3.7(e) and Appendix 3 of the GB Connection Conditions (ENTSO-E Article 109 – (2 (cd))			Registered Capacity (when subject to a ± 0.5Hz change or greater (and proportionally for lower frequency changes)) as Primary, Secondary and High Frequency Response as defined in Figures CC.A.3.1, CC.A.3.2 and CC.A.3.3 Note – Primary Response – defined as additional release of Active Power gradually increasing over the period 0 – 10 seconds and sustained for a further 20 seconds, Secondary Response – Active Power gradually released over the period 0 – 30 seconds and	Registered Capacity (when subject to a ± 0.5Hz change or greater(and proportionally for lower frequency changes)) as Primary, Secondary and High Frequency Response as defined in Figures CC.A.3.1, CC.A.3.2 and CC.A.3.3 Note – Primary Response – defined as additional release of Active Power gradually increasing over the period 0 – 10 seconds and sustained for a further 20 seconds, Secondary Response – Active Power gradually released over the period 0 – 30 seconds and			accordance with Article 109 – (2) (cd)– but in general these are similar to that required by the GB Grid Code. The Relevant TSO must define the parameters for minimum frequency response capability as a percentage of Registered Capacity (Pmax) which is between 1.52 – 10%, the Initial delay time shall be less than 2 seconds* (unless justified otherwise for generation technologies with inertia(which is not covered in the GB Code) and full delivery of Active Power shall be achieved as specified by the Relevant TSO but			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			sustained for a further 30 minutes and High Frequency Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. (Not applicable to Power Park Modules in Scotland which have a Registered Capacity of less than 50MW)	sustained for a further 30 minutes and High Frequency Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter.			shall be less than 30 seconds (unless longer times are admitted by the Relevant TSO due to System Stability reasons. Power Generating ModuleUnits shallto be capable of providing full Active Power Frequency Response (to be specified) by the TSO for a period of between 15 minutes and 30 minutes and Generators must operate between their maximum and minimumActive Power headroom and Primary Energy Source See Article 109 – 2(cd)(56)(6) and (7) including Figure 6 and Table 5.		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Synchronous Generating Unit Excitation System Requirements GB CC.6.3.8(a)(i) ENTSO-E Article 121 – 2(b)	Synchronous (Not applicable to Asynchronous Plant)	5	Required to have a continuously acting automatic excitation control system to provide constant terminal voltage of the Synchronous Generating Unit without instability over the entire operating range	As per Large	N/A	As per Type B	As per Type B	Required to have a permanent automatic excitation control system in order to provide constant Alternator terminal voltage at a selectable setpoint without instability over the entire operating range of the synchronous Power Generating ModuleUnit as per Article 121 – 2(b).	N/S
Synchronous Generating Unit Excitation System Performance Requirements GB CC.6.3.8(a)(ii) and Appendix 6 of the Connection Conditions (ENTSO-E Article 121-2(b), Article 12 – 3(a)(5) and Article 134 – (2) and Article 14 - (3)b) (c), (d), (e), (f), (g) and (h)	Synchronous (Not applicable to Asynchronous Plant)	9	Either specified in the Bilateral Agreement if historical plant or detailed in Appendix 6 of the Connection Conditions if the Connection date is after 1 January 2009. In general the following high level requirements apply, i) The Excitation System shall comprise of an	As per Large	N/A	In addition to the requirements of Type B and Type C (as appropriate) the following requirements apply as specified in Article 143 – (2) and (3) b), (c), (d), (e), (f), (g) and (h). In general the following high level requirements apply which	None other than in respect of the requirements of Type B. The Relevant Network Operator will specify what additional facilities are installed on the Synchronous Power Generating Facility in order to carry out voltage and Reactive Power control within its area as detailed in Article 12 – 3(a)(5)	Not specified other than in respect of the requirement to have a automatic excitation control system as detailed in Article 121-2(b) as noted above	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			Excitation Source, Power System Stabiliser and Automatic Voltage Regulator ii) Steady State Voltage Control to limit the change in terminal voltage from no load to full load iii) Transient Voltage Control Performance when on open circuit with performance requirements to achieve 100% voltage being achieved within less than 0.6 seconds and the time to settle within 5% of the voltage change achieved within 3 seconds. iv) Performance requirements for the Exciter rise Time will be specified by the TSO but shall generally be			shall respect the provisions of~~be pursuant to~~ Article 4(3). ~~i)~~ The parameters and settings of the components of the voltage control system shall be agreed between the Generator and Relevant Network Operator in co-ordination with the Relevant TSO. These shall include:- ~~Steady State Voltage Control to limit the change in terminal voltage from no load to full load the parameters being defined by the Relevant Network Operator~~ ii) Specifications	~~pursuant to Article 4(3).~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			between 50ms and 300ms. v) Requirements for Excitation System on load Positive Ceiling Voltage will be specified by NGET but will generally be between 2 p.u and 4 p.u or Rated field voltage vi) Requirements for a negative ceiling voltage of 80% of the positive ceiling voltage if a static exciter is employed vii) Maintenance of free firing when the Generator terminals are exposed to a drop of between 20 – 30% of rated terminal voltage viii) The Excitation System (if static) should obtain a positive on load ceiling voltage of not less than 80%			and performance of the AVR including steady state and transient voltage control.~~Transient Voltage Control Performance when on open circuit with performance requirements for the time to achieve 100% voltage and the time to settle within 5% of the voltage change being specified by the Relevant Network Operator.~~ iii) Specifications and performance of the Excitation System including bandwidth limitations to prevent torsional oscillations to other Users			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			upon recovery of the Generating Unit following fault clearance. ix) The overall Excitation Control System shall limit the bandwidth of the output signal so as not to cause torsional oscillations on other plant connected to the network. x) The Excitation System shall be equipped with an Under Excitation Limiter xi) The Excitation System shall be equipped with an Over Excitation Limiter.			Plant ~~Requirements for Excitation System on load Positive Ceiling Voltage will be specified by the Relevant Network Operator~~ iv) Under and Over Excitation Limiters ~~Requirements for a negative ceiling voltage if a static exciter is employed will be specified by the Relevant Network Operator~~ v) Stator Current limiter~~Maintenance of free firing when the Generator terminals are exposed to a drop of 25% of rated terminal voltage~~ vi) Power System			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						Stabiliser requirements as defined by the Relevant TSO while respecting the provisions of Article 4(3) ~~The Excitation System (if static) should obtain a positive on load ceiling voltage of not less than 80% upon recovery of the Generating Unit following fault clearance.~~ vii) The Power Generating Facility shall also satisfy appropriate robustness criteria to aid angular stability under fault conditions such as fast valving or breaking resistors as requested by the Relevant TSO whilst respecting			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						the provisions of Article 4(3). ~~The overall Excitation Control System shall limit the bandwidth of the output signal so as not to cause torsional oscillations on other plant connected to the network. The Bandwidth shall be limited to 3Hz unless otherwise specified by the TSO.~~ ~~viii) The Excitation System shall be equipped with an Under Excitation Limiter~~ ~~ix) The Excitation System shall be equipped with an Over Excitation Limiter~~ ~~x) Co-ordination~~			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						is required between the Stator Current Limiter and Overexcitation Limiter xi) The Excitation System shall include a Power System Stabiliser if specified by the Relevant TSO.			
Power Park Module Voltage Control Requirements GB – CC.6.3.8(a)(iii) Article 154 -21(a) and Article 16 – (3) (de)	Asynchronous (Not applicable to Synchronous Plant)	5	Each Power Park Module is required to have a continuously acting automatic control system to control the voltage at the Connection Point without instability over the entire operating range of the Power Park Module. Any Plant or Apparatus used in the provisions of such voltage control may be located at the Power Park Unit	As per Large	N/A	As per Type C	The Power Park Module shall be capable of providing Reactive Power automatically by operation in either Voltage Control mode, Reactive Power Control Mode or Power Factor Control Mode or by a combination of two of these as defined in Article 16 – (3) (de).	The Relevant Network Operator has the right to define the capability of a Power Park Module whilst respecting the provisions of Article 4(3) as defined in Article 15 – 2(a) As per type A	N/SPower Park Modules are only required to have a Reactive Power Capability at the high voltage terminals of the step up transformer to the voltage level of the Connection Point or at the alternator terminals, if no step up transformer exists as defined by the Relevant DSO as defined

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
			Terminals, an intermediate bus bar of the Connection Point						~~in Article 14 -1(a) pursuant to Article 4(3).~~	
Power Park Module Voltage Control Performance Requirements GB – CC.6.3.8(a)(iv) and Appendix 7 of the Connection Conditions (ENTSO-E Article 15~~4~~ -2~~1~~(a) and Article 16 – (3) (d~~e~~) and (f)	Asynchronous (Not applicable to Synchronous Plant)	9	Either specified in the Bilateral Agreement if historical plant or detailed in Appendix 7 of the Connection Conditions if the Connection date is after 1 January 2009. In general the following high level requirements apply:- i) Continuous steady state voltage control is required at the Connection Point with a setpoint voltage and slope characteristic as shown in Figure CC.A.7.2.2(a) ii) The control system shall be capable of operating to a setpoint voltage of	As per Large	N/A	As per Type C	In addition to the requirements of Type B~~A~~ (as appropriate) the following requirements apply as specified in Article 16 – 3) (d~~e~~) and (f). In general the following high level requirements apply:- i) For the purposes of providing Voltage Control t~~T~~he Power Park Module shall be capable of contributing to voltage control at the Connection Point by provision of Reactive Power exchange with the Network~~System~~ with a setpoint voltage covering at least 0.95 to	The Relevant Network Operator has the right to define the capability of a Power Park Module whilst respecting the provisions of Article 4(3) as defined in Article 15 – 2(a) ~~As per Type A~~	N/S ~~Power Park Modules are only required to have a Reactive Power Capability as defined by the Relevant DSO as defined in Article 14 -1(a) and pursuant to Article 4(3).~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			between 95% and 105% with a resolution of 0.25%. iii) The initial setpoint voltage will be 100% but NGET may specify and alternative setpoint voltage within the range of 95% to 105%. iv) The setpoint voltage should be adjustable between 95% and 105% to a tolerance of 0.25% (ie 95%, 95.25%, 95.5%...) v) The Slope setting should also be adjustable with a range of between 2 and 7% with a resolution of 0.5% (ie slope settings of 2, 2.5, 3.5 %... may be specified. vi) The Voltage control System should have a steady state				1.05 p.u in steps no greater than 0.01p.u with a Slope with a range of at least 2-7% in steps no greater than 0.5%. The Reactive Power output shall be zero when the Grid voltage value at the Connection Point equals the voltage setpoint. The setpoint may be operated with or without a deadband selectable in a range from 0 to ±+510% of nominal network voltage in steps no greater than 0.5%. ii) Following a step change in voltage, the Power Park Module shall be capable of achieving 90% of the change in Reactive Power output ~~shall be achieved~~ within a		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			operating range over a range of setpoint voltages (95% - 105%) and slopes 2-7% as detailed in Figures CC.A.7.2.2b and CC.a.7.2.2c (in the case of 33kV Connections or below) of Appendix 7 of the Connection Conditions. vii) If the operating point of the Power Park Module deviate so that it is no longer on the operating characteristic defined by the setpoint voltage and slope the control system shall act progressively to return the value to a point on the required characteristic within 5 seconds viii) The automatic control system				time specified by the Relevant Network Operator (whilst respecting the provisions of Article 4(3))1 in the range of 1 – 5 seconds ~~second~~ and settle at the value defined by the operating slope within a time to be specified by the Relevant Network Operator whilst respecting the provisions of Article 4(3) in the range 5 – 60 seconds 5 seconds with a steady state reactive tolerance no greater than 5% of the maximum Reactive Power.. iii) For Reactive Power Control Mode the Power Park Module shall be capable of setting the Reactive Power		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			should also be able to respond to transient events. ix) For an onload step change in Connection Point Voltage the reactive power output response shall commence within 0.2 seconds of the application of the step 90% of the full delivery of reactive power shall be achieved within 1 ~~second~~second. x) Under transient conditions the Settling time shall be no greater than 2 seconds from the application of the step change in voltage and the peal to peak magnitude of any oscillations shall be less than 5% of the change in steady state Reactive Power within this time				Setpoint~~target~~ anywhere in the Reactive Power Range, defined by Article 15 - (2) and Article 16 – (3) (a) and (b) with setting steps no greater than 5MVAr or 5% (whichever is smaller) of full Reactive Power, controlling the Reactive Power at the Connection Point to an accuracy within ±5MVAr or ±5% whichever is smaller of the full reactive Power. iv) For Power Factor Control, the Power Park Module shall be capable of controlling the Power Factor ~~Control shall be capable of being controlled~~ at the Connection Point within the required		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			frame. xi) The Requirement for a Power System Stabiliser will be specified in the Bilateral Agreement x) The overall voltage control system shall respond to minor variations, steps, gradual changes or major variations xi) The overall voltage control system shall have a limited bandwidth output of between 0 – 5 Hz.				Reactive Range as defined by the Relevant Network Operator according to Article 15 – (2) or Article 16 – (3) – (a) and (b) ~~DSO~~ with a Target Power Factor value and tolerance expressed in MVAr or % on the Reactive Power value issued from the conversion of the Power Factor value, within a period of time following a sudden change of Active Power output. ~~steps of no greater than 0.01.The Relevant Network Operator will specify the tolerance expressed in MVAr of % within a period of time following a sudden change of Active~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~Power or step change in voltage at the Connection Point pursuant to Article 4(3).~~ v) ~~The Control Mode, parameter settings and operating point for steady state Reactive Power exchange at the Connection Point shall be determined by the Relevant Network Operator in co-ordination with the Relevant TSO pursuant to Article 4(3).~~ vi) The Relevant Network Operator ie~~n~~ co-ordination with the Relevant TSO (while respecting the provisions of Article 4(3) will determine which ~~reactive power~~ control mode (ie Voltage Control, Reactive Power		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							Control or Power Factor Control) mode) shall apply including the associated Setpoints and further equipment necessary to permit remote operation. vii) The Relevant TSO (whilst respecting the provisions of Article 4(3)) will determine if the Power Park Module is to be fitted with a Power Oscillation Damping facilitfacilitiesy (ie a Power System Stabiliser). The voltage and reactive power control characteristics shall not adversely affect the damping of power oscillations. pursuant to Article 4(3).		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Other Reactive Power Control Modes Grid Code CC.6.3.8(a)(v) ENTSO-E – ~~Synchronous~~ Article 12~~1~~ – 2(b) ~~Article 12 –3(a) (5)Asynchronous Article 14 -1(a) Article 16 – 3(e)(6).~~	Synchronous	9	Reactive Power and Power Factor Control Modes (excluding VAR limiters) are not required unless specified by NGET in the Bilateral Agreement	As per Large	N/A	As per Type B and C	None other than in respect of the requirements of Type B. ~~The Relevant Network Operator will specify what additional facilities are installed on the Synchronous Power Generating Facility in order to carry out voltage and Reactive Power control within its area as detailed in Article 12 –3(a) (5) pursuant to Article 4(3).~~	Required to have a permanent automatic excitation control system in order to provide constant alternator terminal voltage without instability over the entire operating range of the synchronous Generating Unit as per Article 12~~1~~ – 2(b).	N/S
Other Reactive Power Control Modes Grid Code CC.6.3.8(a)(v) ENTSO-E – ~~Synchronous Article 11 – 2(b) Article 12 –3(a) (5)Asynchronous~~ Article 15~~4~~ ~~–~~ (2)~~1~~(a) And Article 16 –	Asynchronous	5	Reactive Power and Power Factor Control Modes (excluding VAR limiters) are not required unless specified by NGET in the Bilateral Agreement	As per Large	N/A	As per Type C	Defined by the Relevant Network Operator in coordination with the Relevant TSO (whilst respecting the provisions of Article 4(3) under Article 16 - 3(d) (5)~~The Relevant Network Operator on co-ordination with the Relevant TSO will~~	Relevant Network Operator shall have the right to define the Reactive Capability of a Power Park Module whilst respecting the provisions of Article 4(3).as per Article 15 – 2(a)~~As per Type A~~	N/S~~Power Park Modules are only required to have a Reactive Power Capability to provide Reactive Power at the high voltage terminals of the step up transformer to the voltage level of the Connection Point~~

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
3(de)(56).							~~determine which reactive power control mode (ie Voltage Control, Reactive Power Control or Power Factor Control mode) shall apply in accordance with Article 16 – 3)(e)(6).~~		~~or at the alternator terminals if no step up transformer exists as defined by the Relevant DSO as defined in Article 14 -1(a) pursuant to Article 4(3).~~
Steady State Load Inaccuracies GB CC.6.3.9 ENTSO-E Article 9 – 2(a)(2)	Synchronous and Asynchronous	9	The standard deviation of load error at steady state load over a 30 minute period must not exceed 2.5% of a Genset's Registered Capacity.	As per Large	N/A	N/S~~As per Type C~~	N/S~~Specified by Relevant Network Operator under Article 9 – 2(a)(2) pursuant to Article 4(3).~~	N/S	N/S
Negative Phase Sequence Loadings GB CC.6.3.10 ENTSO-E Article 9~~11~~ – 3(a)~~(5)~~ and Article 1~~13~~ – (3)~~(a)(5)~~	Synchronous only (Asynchronous captured under CC.6.3.15 Fault Ride Through requirements)	9	Each Synchronous Generating Unit is required to withstand without tripping the negative phase loading incurred by clearance of a close up phase to phase fault by system back up protection on the Transmission	As per Large	N/A	Not explicitly defined but believed to be covered under the fault ride through requirements of Article 9 – (3) (a) for Type B Power Generating Modules and Article 11 –	As per Type B	Not explicitly defined but believed to be covered under the fault ride through requirements of Article 9 – (3) (a) ~~Specified by the Relevant Network Operator in accordance with Article 11 – 3(a)(5) and pursuant to~~	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			System.			(3)~~Specified by the Relevant Network Operator in accordance with Article 13 – 3(a)(5)~~		~~Article 4(3)~~	
Neutral Earthing (GB CC.6.3.11 ENTSO-E Article 10~~9~~ – 6(~~f~~i)	Synchronous and Asynchronous	5	At nominal system voltages of 132kV and above the higher voltage windings of a transformer of a Generating Unit or Power Park Module must be star connected with the star point suitable for connection to Earth	As per Large	N/A	As per Type C	Specified by the Relevant Network Operator as per Article 10~~9~~ – 6 (~~f~~i)	N/S	N/S
Frequency Sensitive Relays (GB - CC.6.3.12 ENTSO-E Article 8~~7~~ – (1)(a) and Article 8 - (1)(b) ~~Article 1 – (b)~~	Synchronous and Asynchronous	5	As specified in CC.6.1.3 the System Frequency could rise to 52Hz or fall to 47Hz. Each Generating Unit must continue to operate within this frequency range for at least the time periods defined in CC.6.1.3 unless	As per Large	N/A	As per Type A	As per Type A	As per Type A	Tripping within the frequency and time ranges as specified in Table 2 of Article 8~~7~~ – (1)(a) (which is broadly similar to the GB Frequency / time requirements) to be is prohibited unless otherwise agreed by the

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			NGET has agreed within the Bilateral Agreement to any Frequency level relays or rate of change of frequency relays which will trip the Generating Unit or Power Park Module						Relevant TSO whilst respecting the provisions of ~~pursuant to~~ Article 4(3) A Generating Unit shall not disconnect from the Network due to rates of change of Frequency up to a value defined by the Relevant TSO whilst respecting the provisions of Article 4(3) ~~2Hz/s~~ other than by loss of mains protection as specified in Article ~~8~~7 – 1(b). The rate of change of frequency type loss of mains protection will be defined by the Relevant Network Operator in co-ordination with

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
									the Relevant TSO.
Plant operation / protection outside the defined frequency / time operating ranges (GB CC.6.3.13 ENTSO-E Article 87- 1(a)(32) and (3).	Synchronous and Asynchronous	5	Generating Units and Power Park Modules will be will be responsible for protecting their plant outside the range 52 – 47 Hz. Should such excursions arise it is up to the Generating Unit to disconnect their plant for the reasons of safety of plant and apparatus.	As per Large	N/A	As per Type A	As per Type A	As per Type A	A Generating Unit shall be capable of automatic disconnection at specified frequencies if required by the Relevant Network Operator. Whilst respecting the provisions of Article 4(3) the terms and settings for automatic disconnection shall be agreed between the Relevant Network Operator and the Power Generating Facility Owner or as specified in the National Grid Code in accordance with Article 7 – 1(a)(2) and (3)

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
									pursuant to Article 4(3).	
Fast Start Capability GB CC.6.3.14 (ENTSO-E Article 109 – 5(c))	Synchronous and Asynchronous	2, 5	NGET may specify in the Bilateral Agreement the requirement for a Genset to have a Fast Start Capability. Such Gensets may be used for Operating Reserve and be initiated by Frequency level relays in the range 49 – 50Hz	N/A unless specified by NGET	N/A	As per Type C	Quick re-synchronisation capability is required in the case of disconnection as agreed between the Relevant Network Operator, Relevant TSO and Power Generating FacilityGenerator as per Article 109 – 5(c). pursuant to Article 4(3)	N/S	N/S	
Fault Ride Through for short term faults up to 140ms. (CC.6.3.15(a) and Appendix 4A of the Connection Conditions ENTSO-E Article 9 – (3)(a)(1) – (7), Article 11 – (3) and Article 15 – (3) 11-3(a)(b)) Article 13-3(a))	General Fault Ride Through Requirements applicable to Synchronous and Asynchronous Plant	2, 8	In GB the Fault Ride Through Requirements for Synchronous and Asynchronous Plant are broadly the same. For faults up to 140ms in duration the following high level requirements apply: i) Each Generating Unit and Power Park Module shall remain transiently	As per Large	N/A	As per Type B and C except for the following additional requirements i) The voltage against time profile shall be defined by the TSO as per Figure 3 (ie the same as Types B and C) but with the parameters defined in	As per Type B	Under ENSTO-E, The majority of the Fault Ride Through requirements are specified as general Power Generating Module requirements with minor variations segregated between Synchronous and Asynchronous Plant unlike GB. A voltage Time	N/S	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			stable and connected to the System for any close up solid balanced or unbalanced fault operating at Supergrid Voltage (ie above 200kV) for a total fault clearance time of up to 140ms. A solid three phase fault or unbalanced earth fault may result in zero voltage on the faulted phase at the point of the fault. ii) Each Generating Unit or Power Park Module shall be designed such that upon clearance of the fault on the Transmission System and within 0.5 seconds of the restoration of the voltage at the Connection Point to the minimum			Tables 7.1 (Synchronous Plant) and 7.2 (Power Park Modules) (instead of Tables 3.1 and 3.2). ii) Each TSO shall define and make publically available (whilst respecting the provisions of Article 4(3) the pre-fault and post fault conditions for the fault ride through capability according to Article 9 - (3)(3). iii)) For Synchronous Generating Modules (Table 7.1) the requirements in GB apply in respect of faults on the Transmission		profile is also specified over the whole time frame unlike GB which specifies the requirement for the period between 0 – 140ms and for voltage dips after 140ms. Under the ENTSO-E Code Power Generating Modules (Synchronous and Asynchronous Generators are required (as per Article 191-3(a)(b) (pursuant to Article 4(3)) to:- i) The TSO (whilst respecting the provisions of pursuant to Article 4(3) will define a voltage against time profile according to Figure 3 at the Connection Point	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			levels defined in CC.6.1.4, 90% of the pre fault Active Power generated by the Generating Unit or Power Park Module shall be restored and supplied to the System. iii) In addition during the period of the fault when the voltage is outside of nominal limits each Generating Unit or Power Park Module shall generate maximum reactive current without exceeding the transient rating of the Generating Unit or Power Park Module			Network not in respect of the connection voltage to which the Generating Unit connects. For Type D units the requirements are somewhat different but considered to be broadly consistent with the GB Code. Under Table 7.1 the Power Generating Module must remain connected for a retained voltage of 0 p.u for a time period of between 140ms – 300ms with regional variations being specified by the TSO. For Power Park Modules (Table 7.2) the same voltage profile		for fault conditions which describes the conditions in which the Power Generating Module shall be capable of staying connected to the Network and continuing stable operation after the power system has been disturbed by Secured Faults on the Network. ~~(within the boundaries defined by Figure 5 – minimum voltage at the connection point being defined by the TSO but could range between 0.3 p.u and 0.05 p.u for between 150ms and 250ms) under which the Synchronous Generating Unit shall stay connected and stable after the~~	

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Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						exists as in Figure 3 with a minimum retained voltage of 0 p.u and a time range of between 140ms – 250ms. iv~~Under ENSTO-E The Fault Ride Through requirements are segregated between Synchronous and Asynchronous Plant unlike GB. A voltage Time profile is also specified over the whole time frame unlike GB which specifies the requirement for the period between 0 – 140ms and for voltage dips after 140ms.~~ ~~Under the ENTSO-E Code Synchronous~~		~~power system has been disturbed by secured faults (balanced and unbalanced faults) on the network unless the protection scheme requires the disconnection of the Generating Unit from the Network~~ ii) The voltage against time profile shall be expressed by a~~as the~~ lower limit of the course of the phase to phase Voltages on the Network Voltage level at the Connection Point during a symmetrical fault as a function of time before during and after the fault. The lower limit is defined by the TSO using parameters in Figure 3 according to Table 3.1	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
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			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						~~Generators are required (as per Article 13-3(a) (pursuant to Article 4(3)) to:-~~ ~~i) The TSO (pursuant to Article 4(3)) will define a voltage against time profile at the Connection Point (within the boundaries defined by Figure 7 - minimum voltage at the connection point being 0 p.u for 150ms up to 250ms) under which the Synchronous Generating Unit shall stay connected and stable after the power system has been disturbed by secured faults on the network~~		(Synchronous Power Generating Modules) and Table 3.2 (Power Park Modules) as described in Article 9 – (3). iii) For Synchronous Generating Modules (Table 3.1) the requirements in GB apply in respect of faults on the Transmission Network not in respect of the connection voltage to which the Generating Unit connects. For Type B units the requirements are somewhat different but considered to be broadly consistent with the GB Code. Under Table 3.1 the Power Generating Module must	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						~~(balanced and unbalanced faults) unless the protection scheme requires the disconnection of the Generating Unit from the Network.~~ ~~ii) The voltage against time profile shall be expressed as the lower limit of the lowest phase voltage (in the case of asymmetrical faults the lowest phase voltage shall be used irrespective of the voltage drop on the other two phases) as a function of time both during and after the fault.~~ ~~iii) Each TSO (pursuant to Article 4(3))will define the pre-fault and post~~		remain connected for a retained voltage of between 0.05 – 0.3 p.u for a time period of between 140ms – 300ms with regional variations being specified by the TSO. For the Power Park Modules (Table 3.2) the same voltage profile exists as in Figure 3 with a minimum retained voltage of between 0.05 – 0.15 p.u and a time range of between 140ms – 250ms. ~~lowest phase voltage (in the case of asymmetrical faults the lowest phase voltage shall be used irrespective of the voltage drop on the other two phases) as a function of time~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						~~fault conditions for fault ride through in terms of the pre fault minimum short circuit capacity at the Connection Point, the conditions for pre fault active and Reactive Power operating point of the Generating Unit at the Connection Point and Voltage at the Connection Point and conditions for the calculation of the post fault minimum short circuit capacity at the Connection Point iv) Each Network Operator(pursuant to Article 4(3) shall define the~~		~~both during and after the fault.~~ iii) Each TSO (whilst respecting the provisions of ~~pursuant to~~ Article 4(3)) will shall define (and make publically available) the pre-fault and post fault conditions for fault ride through in terms of the conditions for calculation of the pre fault minimum short circuit capacity at the Connection Point, the conditions for pre fault active and Reactive Power operating point of the Power Generating Module~~Unit~~ at the Connection Point and Voltage at the Connection Point and conditions for the calculation of the post fault minimum short	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						~~pre and post fault parameters for fault ride through capability as an outcome of the calculations at the Connection Point regarding the pre-fault minimum short circuit capacity at each Connection Point expressed in MVA, the pre fault operating point of the generating unit expressed in Active Power output and Reactive Power Output at the Connection Point and voltage at the Connection Point, the Post fault minimum short circuit capacity at each Connection Point expressed~~		circuit capacity at the Connection Point iv) Each Relevant Network Operator ~~(pursuant to Article 4(3)~~ shall provide on request by the Power Generating Facility Owner ~~define~~ the pre and post fault conditions~~parameters~~ to be considered for fault ride through capability as an outcome of the calculations at the Connection Point as defined in Article 9 –(3) (a) point (3) regarding the pre-fault minimum short circuit capacity at each Connection Point expressed in MVA, the pre fault operating point of the Power Ggenerating Module~~unit~~ expressed in	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						~~in MVA.~~ ~~iv) The Undervoltage protection on the Generating Unit should be set to the widest possible range by theGenerator~~		Active Power output and Reactive Power Output at the Connection Point and Vvoltage at the Connection Point and ~~,~~ the Post fault minimum short circuit capacity at each Connection Point expressed in MVA. Alternatively generic values for the above conditions derived from typical cases may be provided by the Relevant Network Operator. iv) The Undervoltage protection on the Power Generating Module~~Unit~~ (as set by the Generator) should be set to the widest technical capability unless the Relevant Network Operator requires	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								narrower settings according to Article 9 – (5) (b). The settings to be justified by the Generator.~~possible range~~ vi) The fault ride through capabilities for asymmetrical faults shall be defined by each ~~Relevant~~ TSO (whilst respecting the provisions of~~pursuant to~~ Article 4(3)). ~~will specify the requirements for 90% of the Active Power to be restored on fault clearance measured from the time the voltage has recovered above 85% of the pre-fault nominal voltage value. The maximum recovery period shall be greater than 0.5 seconds~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
								~~and less than 15 seconds.~~ vi) The Relevant TSO shall define (whilst respecting the provisions of Article 4(3) the time and magnitude of the post fault Active Power Recovery.		
~~Fault Ride Through for short term faults up to 140ms. (CC.6.3.15(a) and Appendix 4A of the Connection Conditions ENTSO-E Article 11-3(a)(b)) Article 13-3(a))~~	~~Fault Ride Through Requirements~~									
Fault Ride Through for long term faults greater than 140ms. (CC.6.3.15(b) and Appendix 4A of the Connection Conditions ENTSO-E Article 9 – (3)(a)(1) – (7), Article 11 – (3),	Synchronous and Asynchronous	2, 6	In addition to the fault ride through requirements for short duration faults (CC.6.3.15(a) each Generating Unit and Power Park Module is required to:-	As per Large	N/A	Under the ENTSO-E RfG no distinction is made between short and long duration faults see Article 11 – 3(a)~~(b)~~, ~~Article 13-3(a) Article 17-1(a) and Article 15-3(a)~~	~~As per Type B~~ Under the ENTSO-E RfG no distinction is made between short and long duration faults. See Article 9 – (3)(a)(1) – (7) Article 11 – (3) Article 15 – (2((b)(3) and	Under the ENTSO-E RfG no distinction is made between short and long duration faults. See Article 9 – (3)(a)(1) – (7) Article 11 – (3) and Article 15 – (2((b)(3) ~~11-3(a)(b) and Article 15-3(a)~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
Article 15 – (2)(b)(3) and Article 16 – (3)(e)~~11-3l(a)(b), Article 13-3(a), Article 15 – 3(a) (b) and Article 17-1(a)~~			i) Remain transiently stable and connected to the System without tripping for any Balanced Supergrid Voltage dips anywhere on or above the heavy black line of Figure 5 defined under CC.6.3.15(b). ii) Provide Active Power output at least in proportion to the retained balanced voltage at the Connection Point allowing for a reduction in the power output of a Power Park Module where the primary energy source has reduced iii) Generate maximum reactive current without exceeding the			~~(b). The Reactive injection during system faults and disturbances for Power Park Modules is covered under Article 15 -2.~~	Article 16 – (3)(e).	~~(b). The Reactive injection during system faults and disturbances for Power Park Modules is covered under Article 15 -2.~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			transient rating of the Generating Unit or Power Park Module during the period of the voltage dip iv) Restore Active Power output to at least 90% of its pre fault output (unless there has been a reduction in the primary energy source to the Power Park Module) within 1 second of restoration of the voltage at the Connection Point.						
Fault Ride Through – Other Requirements Operation under high wind speed or emergency shutdown conditions (GB CC.6.3.15.3(i) ENTSO-E – ~~Article 17-1(a) or~~ Article 15-(3)	Asynchronous	2, 5	For Power Park Modules comprising of wind turbine generating units the fault ride through requirements do not apply when the wind farm is operating at less than 5% of Rated MW output or	As per Large	N/A	As per Type B~~Not explicitly specified but could be within the framework of Article 17-1(a) by being specified by the Relevant TSO pursuant to Article 4(3).~~	As per Type B~~C~~	Not explicitly specified but could be within the framework of Article 15-(3) by being specified by the Relevant TSO~~. pursuant to Article 4(3).~~	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			when 50 % or more of the wind turbines have been shut down due to emergency shut down sequence.						
Fault Ride Through – Other Requirements Negative Phase sequence loading CC.6.3.15.3(ii) ENTSO-E – Article 9 – (3)(a)(7) and Article 11 – 3(a)(4)17-1(a) or Article 15-3).	Asynchronous	2, 5	Each Power Park Module must be able to withstand without tripping the negative phase sequence loading incurred by clearance of a close up phase to phase fault by System Back up Protection on the Transmission System operating at Supergrid Voltage.	As per Large	N/A	Specified by the Relevant Network Operator (whilst respecting the provisions ofpursuant to Article 4(3)) in accordance with Article 11 – 3(a)(4)17 – 1(a)	As per Type C	Specified by the Relevant Network Operator (whilst respecting the provisions ofpursuant to Article 4(3)) in accordance with Article 915 – (3)(a)(7).	N/S
Reactive Current Injection during System faults and Disturbances CC.6.3.15 Article 15-2	Synchronous	5	Maximum Reactive Current to be injected during the period of the fault without exceeding the Transient Rating of the Generating Unit as specified in	As per Large	N/A	N/S	N/S	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			CC.6.3.15.						
Reactive Current Injection during System faults and Disturbances CC.6.3.15 Article 15-2 ENTSO-E 15 – 2(b) (c) and Article 16 – (3)(e)	AsSynchronous	2, 6	Maximum Reactive Current to be injected during the period of the fault without exceeding the Transient Rating of the Generating Unit as specified in CC.6.3.15.1(a) and (b).	As per Large	N/A	As per Type B.	As per Type B, In addition the Relevant TSO shall define (whilst respecting the provisions of Article 4(3)) the priority of Active or Reactive Power injection during the fault which shall be established no later than 150ms from fault inception as detailed in Article 16 – (3)(e).	The Relevant Network Operator in co-ordination with the Relevant TSO shall have the right to require (whilst respecting the provisions of Article 4(3)) fast acting additional reactive Current injection at the Connection Point to the pre-fault reactive Current injection in the case of symmetrical faults. i) The Power Park Module shall be capable of activating this additional reactive current injection during the period of faults. The Power Park Module shall be capable of either - Ensuring the supply of	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								additional reactive Current at the Connection Point (as specified by the Relevant TSO) of the magnitude of this current, depending on the deviation of the Voltage at the Connection Point from its nominal value or - Alternatively measuring voltage deviations at the terminals of the individual units of the Power Park Module and providing an additional reactive Current at the terminals of these units according to further specifications by the Relevant Network Operator in co-ordination with the Relevant TSO of the magnitude of this	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								current depending on the deviation of the Voltage at units terminals from its nominal value. Under either of these options the Power Park Module shall be capable of providing at least 2/3 of the additional reactive current within a time frame specified by the Relevant TSO which shall not be less than 10 ms. The target value of this additional reactive current shall be reached with an accuracy of 10% within 60 ms from the moment the voltage deviation has occurred as further specified in Article 15(2)(b)(1). The total Reactive	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								Current contribution shall be not more than 1 p.u of the short circuit dynamic Current Rating (covering up to 0.4 seconds) of the Power Park Module or of the individual units of the Power Park Module taking into account the pre-fault reactive Current. If additional real current injection is given priority over additional reactive Current injection the total Current contribution can be further limited by the real current based on limiting the apparent current (is MVA limit) to 1p.u of the short term dynamic Current Rating of the Power Park Module or the	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								individual units of the Power Park Module. ii) The Relevant Network Operator in co-ordination with the Relevant TSO (whilst respecting the provisions of Article 4(3)) shall have the right to specify the requirements for fast acting additional reactive current during asymmetrical faults. ~~Under the ENSO-E Code a specific new section has been included for Power Park Modules relating to reactive current injection during system faults. These are specified under Article 15 – 2. The requirements include:-~~ ~~For a symmetrical~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
								~~three phase fault a Type B Power Park Module is required to~~ ~~i) Inject fast acting reactive current into the network at the Connection Point at no less than the red line shown in Figure 8 of Article 15-2(a)(1).~~ ~~ii) As a minimum the reactive current supplied at the Power Park Module terminals shall contribute at least 2% of the rated current per percent of voltage deviation.~~ ~~iii) The Power Park Module shall be capable of feeding the required reactive current no later than 40ms after fault inception allowing the voltage to be~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								~~measured at each Power Park Units terminals.~~ ~~iv) The relevant Network Operator (pursuant to Article 4(3)) shall define in co-ordination with relevant TSO the parameter settings for the fast acting reactive current injection.~~ ~~v) If required the reactive current supply during the fault duration shall not be less than 1p.u of the short term dynamic rating of the equipment (>=1.0p.u) between 50% and 40% retained voltage (respectively in the case of a voltage drop between 50% and 60%) at the Connection Point. Below 40% retained voltage reactive current~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
								~~shall be supplied as far as technically feasible.~~ ~~vi) In the case of unbalanced faults the Relevant Network Operator in co-ordination with the Relevant TSO will specify the Reactive Current injection requirements pursuant to Article 4(3)~~ ~~vii) If a Power Park Module fails to provide the reactive support necessary then if required by the Relevant TSO the Power Park Module causing the Network Disturbance shall be disconnected from the Network after 0.5 seconds if the positive phase sequence voltage at the connection point~~	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
								~~falls and remains at a value of 85% or below the reference voltage (based on the highest phase voltage) and a resetting ratio of 0.98 and at the same time the direction of the Reactive Power at the connection point is reversed (ie into the Power Park Module).~~		
Operational Intertripping (GB CC.6.3.17) ENTSO-E – Article ~~8~~7 – 1(~~f~~d)	Synchronous and Asynchronous	2, 5	Specified by NGET in the Bilateral Agreement depending upon whether this is required for thermal, voltage or stability reasons.	As per Large	Not applicable	As per Type A	As per Type A	As per Type A	Defined by Relevant Network Operator As per Article ~~7~~8 – 1(~~f~~d) whilst respecting the provisions of ~~pursuant to~~ Article 4(3).	
Control Telephony and System Telephony GB CC.6.5.2 ENTSO-E Article 8 – (1)(f) and Article 9 – (2)(a)~~8 -4(b), Article 9 –~~	Synchronous and Asynchronous	2, 9	Control Telephony is a dedicated telephony service with a high level of redundancy and resilience and System Telephony	Only required for directly connected Medium Power Stations. For those Medium Power Stations which are	Only required for directly connected Small Power Stations. For those Small Power Stations which are	As per Type B	As pert Type B~~Control telephony is not specifically defined but is required in the context of instructions and communications~~	Not ~~/S~~specifically defined but required in the context of an interface port to reduce Active Power export as detailed in Article	~~N/S~~Not specifically defined but required in the context of a logic interface port to cease Active Power export as	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
2(a) and Article 9 – 5(2).			is based on the standard Public Telephone Provider (BT) Control Telephony is required for all Large Power Stations. If NGET consider Control telephony is not practicable then NGET will specify the use of System Telephony in the Bilateral Agreement	Embedded and SVA registered there is no requirement for Control or System Telephony For those Medium Power Stations which are CVA Registered and BM Participants there is a requirement for Control or System Telephony	Embedded and SVA registered there is no requirement for Control or System Telephony For those Small Power Stations which are CVA Registered and BM Participants there is a requirement for Control or System Telephony		facilities (Article 8 – 4(b)) and in respect of frequency stability and Black Start as defined in Article 9 – 2(a) and Article 9 – 5(2) pursuant to Article 4(3).	9 – (2)(a). Requirements for information exchange in real time are covered in Article 9 – (5)(d)	detailed in Article 8 – (1)(f).	
Operational Metering (GB CC.6.5.6 and CC.6.4.4 ENTSO-E Article 98 – 54(db).	Synchronous and Asynchronous	2, 9	Generator to provide signals required by NGET in accordance with the terms of the Bilateral Agreement and NGET will then provide the communications routes to access the signals at the Transmission Interface Point as specified in the Bilateral	As specified by NGET in accordance with CC.6.5.6 and CC.6.4.4	N/A	As per Type B	As per Type B	Specified by the Relevant Network Operator and Relevant TSO in accordance with Article 98 – 54(db)	N/S	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
			Agreement							
Instructor Facilities including Fax Machines CC.6.5.7, CC.6.5.8 and CC.6.5.9 ENTSO-E Article 9 – 5(d), Article 10 – 2(a) and Article 10 – 6(d)~~8 4(b), Article 9 – 2(a) and Article 9 – 5(2)~~	Synchronous and Asynchronous	2, 9	All BM Participants must have appropriate electronic data communication facilities to permit the submission of data as required by the Grid Code (EDT). In addition any Party that provides all Type 1 Ancillary Services and is a BM Participant shall be required to automatic logging facilities if they have a completion date after 1 January 2013. Each Generator is required to install a Fax Machine	As per Large- Note the reference to BM Participants which has implications as to whether the plant is SVA or CVA registered.	N/A	As per type C	Instructor Facilities are not specifically defined but equivalent facilities are required under Article 9 – 5(d), Article 10-(2)(a) (Active Power Control) and Article 10 – 6(d) (devices for additional system operation / security).~~8 – 4(b)) and in the context of instructions and communications facilities in respect of frequency stability and Black Start are required as defined in Article 9 – 2(a) and Article 9 – 5(2).~~	Instructor Facilities are not specifically defined but equivalent facilities are required under Article 9 – 5(d)~~N/S~~	N/S	
Dynamic System Monitoring, Quality of Supply Monitoring and Ancillary Services Monitoring	Synchronous and Asynchronous	2, 5	The requirements for Dynamic System Monitoring are specified by NGET in the	As per Large – Note however some of these requirements vary depending on whether the Plant	Not specified	As per Type C	For Dynamic System monitoring, Fault Recording and Quality of Supply Monitoring the	N/S	N/S	

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**				
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**	
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV	
GB CC.6.5.6, CC.6.1.6 and OC 5.4.1 (c) ENTSO-E Article 10 – (2)(f) and Article 10(6)(b)(9 – 6) (e), Article 9 – (6)(j) and Article 9 – 2(g).			Bilateral Agreement Note requirements for Ancillary Services Monitoring and Quality of Supply Monitoring are also defined by NGET in the Bilateral Agreement	is SVA or CVA Registered.			requirements are defined Article 109 – 6)(be)(1), (2), (3) and (4) and Article 9-6)(j). The signals required shall include Voltage, Active Power, Reactive Power and, Frequency and Harmonics. The Relevant Network Operator (whilst respecting the provisions of pursuant to Article 4(3)) shall have the right to add other quality of supply parameters provided reasonable notice is given. The settings, triggering, sample rates parameters, interfacing arrangements and data submission of the monitoring / fault recording equipment shall			

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							be agreed with the Relevant Network Operator and Relevant TSO whilst respecting the provisions of pursuant to Article 4(3)). For Frequency Response monitoring (Ie Ancillary Services Modelling in GB terms) the requirements are defined under Article 109 – (2)(cg)(f) The communication interface shall be equipped to transfer on line from the Generator to the Network Operator's / TSO's Control Centre at least the Network Operator and TSO can request the following signals Status signal of		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							frequency sensitive mode (ie on/off) Scheduled Active Power output Actual value of Active Power output Actual parameter settings for Active Power Frequency Response and droop / deadband. The Relevant Network operator and Relevant TSO shall define the additional signals to be provided by the Power Generating Facility in order to verify performance of the Active Power Frequency Response of those participating Power Generating Modules. ~~point value fro frequency response Droop and~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~deadband and for Power Park Modules available power reflecting maximum unrestricted power taking into account variable source of primary power – ie wind or solar.~~		
Safety Related Conditions CC.7	Synchronous and Asynchronous	9	Captured under CC.7 and applies to directly Connected Plant	As per Large	As per Large	N/S	N/S	N/S	N/S
Ancillary Services CC.8	Synchronous and Asynchronous	9	Defines the Mandatory Ancillary Services (Part I) and (Part II) that Generators are required to provide. For Part 1 Ancillary Services (Frequency response – in general required from Large Power Stations except those which are	As per Large except in the case of Licence Exempt Embedded Medium Power Stations where they are not applicable	N/A	Specified through the obligations on Type D Units (including the specific requirements for Synchronous Power Generating ModulesUnits and Power Park Modules	Specified through the obligations on Type C Units (including the specific requirements for Synchronous Power Generating ModulesUnits and Power Park Modules	Specified through the obligations on Type B Units (including the specific requirements for Synchronous Power Generating ModulesUnits and Power Park Modules	Specified through the obligations on Type A Units (including the specific requirements for Synchronous Power Generating ModulesUnits and Power Park Modules

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key 2**	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			less than 50MW and comprise Power Park Modules and Reactive Capability required from Large and Medium Power Stations. In terms of Part II Ancillary Services such as Frequency Control, Black Start and Operational intertripping these are defined by NGET in the Bilateral Agreement. Commercial Ancillary Services are those over and above the minimum requirements which are agreed by NGET and the User and dealt with under the terms of the						

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
			Ancillary Services Agreement						
Performance when operating in Limited Frequency Sensitive Mode for Over frequencies (BC.3.7.2 and Article 87 - 1(c).	Synchronous and Asynchronous	5	Requires all Large Generating units that are obliged to meet the requirements of the Balancing Codes to automatically de-load at a rate of at least 2 percent of output per 0.1 Hz deviation of System Frequencies above 50.4 Hz.	Required if the Medium Power Station is only required to meet the requirements of the Balancing Codes	Not applicable	As per Type A	As per Type A	As per Type A	Each Power Generating ModuleUnit shall be capable of activating the provision of Active Power Frequency Response at according to Figure 1 defined in Article 78 – (1)(c)(1). The Power Generating Moduleunit shall in Limited frequency Sensitive Mode overfrequency be capable of activating Active Power Frequency Response at a frequency threshold between and including 50.2Hz and 50.5Hz with a droop in a range of 2 – 12

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
									%. The actual Frequency threshold and droop settings shall be determined by the Relevant TSO. The Power Generating Module shall be capable of activating Active Power Frequency Response shall be activated as fast as technically feasible with an initial delay that shall be as short as possible and reasonably justified ~~i~~by the Power Generating Facility Owner to the Relevant TSO if ~~f~~ greater than 2 seconds. The Power Generating Module shall be

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
									capable of either continuing operation at its minimum regulating level when reaching it or further decreasing Active Power output in this case as defined by the Relevant TSO while respecting the provisions of Article 4(3). The Power Generating Module shall be Stable ~~operation of the Generating Unit~~ during LFSM-O operation. When LFSM-O is active, the LFSM-O setpoint will prevail over any other Active Power Setpoints. ~~shall be ensured. Any contradiction between LFSM-O speed Control~~

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
									and Power Control during LFSM-O operation shall be avoided.
Performance when operating in Limited Frequency Sensitive Mode for under frequencies ENTSO-E Article 109 – (2)(bc)	Synchronous and Asynchronous	2, 6	Not required	Not required	Not required	As per Type C	Each Power Generating Module Unit shall be capable of activating the provision ofproviding Active Power Frequency response according to Figure 4 as described in Article 10 – (2)(b) at a Frequency threshold between 49.8 and 49.5 Hz with a droop in a range of 2 – 12%. In the LFSM –U Mode the Power Generating Module shall be capable of providing a power increase up to its maximum capacity. The actual delivery of Active Power	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							Frequency Response in LFSM – U mode depends on the operating and ambient conditions of the Power Generating Module when this response is triggered in particular limitations on operation near maximum capacity at low frequencies (Article 8 – (1) and available primary energy sources. The actual frequency threshold and droop settings shall be determined by the Relevant TSO. The Active Power frequency response shall be activated as fast as technically feasible with an initial delay as short as possible		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							and justified by the Generator to the Relevant TSO if greater than 2 seconds. Stable operation of the Power Generating Module during LFSM-U shall be ensured and the LFSM-U reference Active Power shall be the Active Power output at the moment of activation of LFSM-U and shall not be changed unless triggered by frequency restoration action. ~~Sensitive Mode – Under Frequency (LFSM-U) in accordance with Figure 2 as defined in Article 9 – 2)(c)(1). The Generating Unit shall in the LFSM-U mode be capable of~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~activating Active Power Frequency Response at a frequency threshold between 49.8Hz and 49.5 Hz with a droop in a range of 2 – 12% by providing a power increase up to its maximum capacity taking account of limitations for some generation technologies from operation near maximum capacity at low frequencies. The Active Power Frequency Response shall be as fast as technically feasible with an initial delay that shall be as short as possible and reasonably justified if greater than 2 seconds. Stable operation of the Generating Unit during LFSM – U operation shall~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** ~~2~~	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~be ensured. Any contraction between power and speed control during Limited Frequency Sensitive Mode (underfrequency) shall be prohibited. When in LFSM-U operation the Generating Unit will also simultaneously be in LFSM-O Mode~~.		
Compliance ENTSO-E – Articles 24 - 51	Synchronous	?	Work is currently underway to include Compliance issues in the Grid Code. At the present time the requirements are defined in Guidance notes for Synchronous Generators, issue 11 which is available from NGET's website. Re testing is captured under	As per Large	N/A	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable

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			OC 5						
Compliance ENTSO-E – Articles 24 - 51	Asynchronous	?	Work is currently underway to include Compliance issues in the Grid Code. At the present time the requirements are defined in Guidance notes for Power Park Developers, issue 2 which is available from NGET's website. Re testing is captured under OC 5	As per Large	N/A	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable	Covered under Articles 24 – 51 as applicable
Data / Models GB Planning Code (PC) Article 109 – (6)(cf).	Synchronous and Asynchronous	2, 4, 5, 9	Detailed Modelling Data is required under different time phases under the Grid Code Planning Code depending upon the type of plant and whether or not it is a Large Medium or Small Generator. There	As per Large	As per Large	As per Type C	Each Relevant Network Operator in coordination with the relevant TSO (has the right to define (whilst respecting the provisions of pursuant to Article 4(3)) shall have the right to require simulation models that shall properly	N/S	N/S

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Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
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			is no requirement for model data to be submitted under the Connection Conditions				reflect the behaviour of the Power Generating ModuleUnit in both steady state and dynamic simulations and where appropriate and justified electromagnetic transient simulations. The requirement for simulation models shall include the format in which models they shall be provided and the provision of documentation of the model structure and block diagrams. The models shall be verified against the results of compliance tests as of Title 4 Chapters 5, 6 and 7 and for use in studies for continuous evaluation in system planning		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
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							and operation. ~~for the purpose of verification of the requirements of this Network Code and for the use in all studies for continuous evaluation in system planning and operation~~. For the purpose of dynamic simulations the models provided shall contain the following sub-models depending on the existence of the mentioned components Alternator and prime mover Speed and power control Voltage control including PSS functionality (if applicable) and excitation system ~~and limiters~~		

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			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							Power Generating Module ~~Unit~~ protection models as agreed with the relevant Network Operator and Power Generating Facility Owner (whilst respecting the provisions ~~pursuant to~~f Article 4(3)) and Converter Models for Power Park Modules. The Relevant Network Operator shall provide an estimate of the maximum and minimum short circuit capacity at the Connection Point expressed in MVA, as an equivalent of the Network. The Relevant Network Operator or Relevant TSO (whilst respecting the provisions of		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** ~~2~~	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~pursuant to~~ Article 4(3)) shall have the right to require Power Generating Module ~~Unit~~ recordings in order to compare the response of the models with these recordings.		
Synchronisation In GB covered under the site specific Bilateral Agreement under Appendix F3 and Relevant Electrical Standards). (ENTSO-E – Article 109 – 56(ca)) and Article 11 – (4).	Synchronous ~~and Asynchronous~~		For directly connected plant specified in the site specific Bilateral Agreement and referenced in the Relevant Electrical Standards N/A for Embedded Plant	As per Large	As per Large	Synchronisation shall be performed by the Generator after authorisation by the Relevant Network Operator. The Power Generating Module shall be equipped with the necessary synchronisation facilities. Synchronisation of Power Generating Modules shall be possible for frequencies within the ranges specified	N/S other than in respect of quick re-sycnhronisation as detailed in Article 10 – (5)(c). ~~Generating Unit synchronisation shall be performed by the Power Generating facility owner equipped with the necessary synchronisation facilities. The Generating Unit shall be equipped with the necessary synchronisation facilities. Synchronisation of Generating Units shall be possible for frequencies within the ranges~~	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
						in Table 2. The Relevant Network Operator and the Power Generating Facility Owner shall agree on the settings of synchronisation devices to be concluded prior to operation of the Power Generating Module. This agreement shall cover the following matters: voltage, frequency, phase angle range, phase sequence, deviation of voltage and frequency as specified in Article 11 – (4). pursuant to Article 4(3). As per Type C	specified in Table 2. The Network Operator and the Power Generating Facility Owner shall agree on the settings of synchronisation devices to be concluded prior to operation of the Generating Unit. This agreement shall cover the following matters: voltage, frequency, phase angle range, phase sequence, deviation of voltage and frequency as specified in Article 9 – 6(a) pursuant to Article 4(3).		
Auto Reclosure GB – Not	Synchronous and	2, 5	Not specified	Not specified	Not specified	As per Type C	Single phase or three phase auto-	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
specified ENTSO-E Article 109 – 4(be)	Asynchronous						reclosures on meshed lines (if applicable) to this network should be withstood by Power Generating Modules without tripping. Details of this capability shall be subject to co-ordination and agreements on protection schemes and settings as detailed in Article 9-(5)(b). ~~Relevant Network Operators have the right (Pursuant to Article 4(3)) to request single phase auto-reclosure on Generating Unit supply lines (radial connection of one or more Generating Units to the public network) and single phase or three phase auto reclosures on~~		

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
Requirement	**Plant Type**	**Key** 2	**GB Power Station Type**			**ENTSO-E RfG– Generating Unit Type**			
			Large	**Medium**	**Small**	**D**	**C**	**B**	**A**
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							~~meshed Network lines to be withstood by Generating Units without tripping. If the first auto-reclosure attempt is not successful, a subsequent attempt will be delayed by at least 3 seconds.~~		
Provisions for Synthetic Inertia GB Grid Code – ENTSO-E Article 16 – (2)	Asynchronous	6	Not currently within the GB Grid Code but under development as part of the Grid Code Frequency Response Working Group	N/S	N/S	As per Type C	The relevant TSO shall have the right to require (whilst respecting the provisions Article 4 (3) in co-operation with other TSO's for a Power Park Module which is not inherently capable of supplying additional Active Power to the Network by its inertia and which is greater than a MW size to be specified by the Relevant TSO to install a feature in	N/S	N/S

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TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									
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			> 100 MW (E&W) > 30 MW (SPT) > 10 MW (SHETL)	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above and subject to Article 4(3) and Article 6 (d)	30 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c)	1 – 10 MW (GB) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b)	8400W – 1 MW and connected below 110kV
							the control system which operates the Power Park Module so as to supply additional Active Power to the Network in order to limit the rate of change of frequency following a sudden loss of infeed. The operating principle and associated performance parameters shall be specified by the TSO whilst respecting the provisions of Article 4(3).		

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