TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG (Comparison based on GB Grid Code Issue 4 Revision <u>13 only and ENSTO - E RFG Internal Version dated 26 June 2012)</u> (Note – Does not include other Industry Codes)

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Table 2 compares the GB Grid Code with the ENTSO-E RfG. This is a detailed Table comparing the exact requirements of the GB Grid Code with the exact ______ Deleted: much more 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.

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.. [1]

... [2])

Key to Table

Symbol	Definition		Formatted Table
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		Formatted: Indent: Left: 0.06
	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		cm
	transparency, proportionality and non discrimination. The establishment of these terms and conditions or their methodologies shall be performed by entities and based on the		Earmattad 511
	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.	1-	Deleted: that any decision
	Y		made by a Relevant Network
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	,	Operator, or Relevant TSO and
	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	1	a Relevant Network Operator or
	threshold shall be coordinated with adjacent I SOs and DSOs and shall be reviewed by the National Regulatory Authority. Power Generating Facility Owners shall assist and	ii,	Power Generator may require
	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	111	agreement with the National
	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	A line	Regulating Authority.
	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	M^{+++}	Farmattad: Fant: (Default)
	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	N1: 1	Arial 9 at
	The Department of the line with Article 33.	$\langle \langle \rangle \langle \rangle$	
Article 3 (6) (c)	Ine Relevant ISO shall have the right to re-assess the determination of the threshold regularly, if relevant circumstances have changed materially, but not more often than		Formatted: Indent: Left: 0
	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	\sim	cm
	to thresholds any Power Generaling 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.		Formatted
<u>Article 3 (6) (d)</u>	The Relevant ISO shall have the non-to re-assess the determination of the threshold requiany. In relevant circumstances have changed materially, but not more often than a service theory and respective the provide the transformation of the tra		Formatted
	every mee years and/especimic the provisions of Antice 413. A public consultation shart be conducted in the traine of the procedule of the additional requirements but will be	No.	
	to the store over Generating Module that has been noved to a new type with official variable to the spectral regulation of the store of	Λ^{\prime}	Formatted Table
	subject to the same procedule as applied to Existing 1 over denerating induces are in the wind and operation. They ensure state operation of the interconnected leaves	$\langle \langle \rangle \rangle$	Earmatted, East, (Dafault)
	allowing the use of ancillary services from generation Furnoe wide	- N i	Arial 9 at
		$\land \land \land$	
1	Directly Applicable (no scope for Member State specificity)		Formatted: List Paragraph
2	Member State specificity can be applied		Eormatted [6]
		-	

Symbol	Definition		Formatted Table
<u>3</u>	A Member state CBA or consultation is required to determine applicability		
<u>4</u>	Further detail is required to implement ENC obligations – need to confirm that governance processes would constitute the necessary NRA consultation		
<u>5</u>	No change is needed to the GB framework (we already meet the requirements).		Formatted: Justified
<u>6</u>	Completely new to the GB framework	11-1	
<u>7</u>	Where different obligations are introduced at interconnection points to deeper in the system – with dual references required to the 2 co-existing obligations		Formatted: Font: 10 pt
<u>8</u>	Where different obligations are introduced for new as opposed to existing parties		
9	GB arrangements go beyond those stipulated in the ENC		

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station 1	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	/pe		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W - 1 MW]	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	DEIOW TTOKV		
			(0=.)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
Frequency Range	Synchronous	<u>2/5</u>	51.5 – 52 Hz for	As per Large	N/A unless directly	As per Type A	As per Type A	As per Type A	51.5Hz – 52.0		
(GB CC.6.1.3	and		15 minutes 51 – 51 5 Hz for		connected				Hz for 15		
Article $8 = 1(a)(1)$	Asynchionous		90 minutes						51 Hz – 51.5 Hz		Deletadi 7
Table 2			49.0 – 51 Hz						for 90 minutes		Deleted. 7
			Continuous						49 Hz – 51 Hz		
			47.5 – 49 Hz 90						Unlimited		
			minutes $47 - 475$ Hz 20						48.5 – 49 HZ – defined by TSO		
			seconds						but respecting		
									provisions of		Deleted: pursuant to
									Article 4(3)		L'electric paredant to
									47.5 – 48.5Hz for		
									47 - 47.5 Hz for		
									20 seconds		
Voltage Operating	Synchronous	<u>1/5</u>	At 400 kV ±5%	As per Large	N/A unless directly	Between 300 kV	Voltage ranges	N/S	N/S		Deleted: As
Range	and		(although voltages		connected	and 400kV	and disconnection				
(GB CC.6.1.4)	Asynchronous		between +5% and			0.9 p.u – 1.05	thresholds at the				
Article $10 - 3a$			longer than 15			and between	defined by the				Deleted: 0
and Article $11 - 2$			minutes)			1.05 p.u and	Relevant Network		+		Deleted: 9
a) – 1 Tables <u>6, 1</u>			At 275 kV ± 10%			1.1p.u for 15	Operator <u>in</u>				Deleted: 0
and <u>6</u> _2)			At_132 kV ± 10%			minutes	_ <u>coordination with</u>	+			Deleted: 5
			Below 132 kV ±			and 300kV	as defined in			111	Deleted: E
			0%			0.9 – 1.10 p.u	Article 10 – 3a)				Deleted: 5
							whilst respecting		1		Deleted: 9
							Article 4(3)	+	+		Deleted: pursuant
L		1			1	1		1	1	- ``,	Deleted: to

Requirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type	
Iype ∠Large Medium SmallDDCBAAFormatted:	Font: 8 pt, Not
> 100 MW (E&W) 50 - 100 MW < 50 MW > 30 MW or 30 - 10 MW (GB) 1 - 10 MW (GB) 800 W - 1 MW Bold	
> 30 MW (SPT) N/A (SPT / < 30MW (SPT) connected at and connected and connected and connected and connected and connected	
> 10 MW SHETL) < 10 MW (SHETL) 110kV or above <u>below 110kV and below 110kV and below 110kV</u>	
Article 4(3) and Article 3 4(3) and Article 3	
Article 6 (d) (6) (c) (6) (b)	
Power Quality Synchronous The harmonic For directly N/A As per Type C N/S but note N/S N/S	ecified by the
Harmonic Content and distortion from all Connected Power requirements for Belevan Nor Belevan Nor	twork Operator
(GB CC.6.1.5(a) Asynchronous sources under Stations – as per Power Quality which shall b	e consistent with
National and	International
Contrade and fault conditions shall N/A for Embedded	es.
complexities and the power Stations – and Article 10 (6)	ITSO-E – Article 9
requirements of specified by DNO. (4) – 6 j1),2)	
the Tables of	
Appendix A of	
Engineering	
G5/4 The	
Electromagnetic	
Compatibility	
levels will be	
specified by NGET	
in the Bilateral	
Agreement	
N/A for Embedded	
Power Stations	
(Specified by	
Prover Quality Synchronous Y For Directly For directly N/A As per Type C The proving month of the synchronic synchroni sy	ecified by the
(GR CC 6.1.5(h)) Asymptronous Under Planned Stations – as per	twork Operator
Outlage Conditions Large.	e consistent with
the maximum covered under the maximum technical rule	niterriational
Phase Voltage N/A for Embedded Article 10 (6) (1)	
Unbalance should Power Stations – <u>and Article 10 (6)</u>	ITSO-E – Article 9
in England and specified by DNO (4)	
vales situitu remain below 1%	

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG]	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	<u>(6) (b)</u>			
			and in Scotland								
			below 2% unless								
			abnormal								
			conditions prevail.								
			N/A for Embedded								
			Power Stations –								
			specified by DNO								
Power Quality	Synchronous	<u>9</u>	For Directly	For directly	N/A	As per Type C	<u>N/S but note</u>	N/S	N/S		Deleted: Specified by the
during infrequent	Asynchronous		Under Planned	Stations – as per			Power Quality				Relevant Network Operator
short duration			Outage Conditions	Large.			Monitoring are				National and International
peaks			stated in	5			covered under				technical rules.
(GB CC.6.1.6)			CC.6.1.5(b)	N/S for Embedded			Article 10 (6) (1)				
▼			duration poaks	Power Stations –			$\underline{and Article 10(6)}$				Deleted: ENTSO-E – Article 9
			with a maximum	specified by DNO			(+)				– 6j 1), 2)
			value of 2% are								
			permitted for								
			phase (voltage)								
			unbalance subject								
			agreement of								
			NGET under the								
			Bilateral								
			Agreement.								
1			N/A for Embedded								
1			Power Stations –					+	+		Deleted: e
			specified by DNO								

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
-	Туре	2	Large	Medium	Small	D	C	BB	A	 Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	 Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		
Voltage	Synchronous	<u>9</u>	For Directly	For directly	N/A	As per Type C	N/S but note	N/S	N/S	 Deleted: Specified by the
Fluctuations	and		Connected Users	Connected Power			requirements for			Relevant Network Operator
(GB CC.6.1.7(a) and (b)	Asynchronous		– Voltage	Stations – as per			Power Quality Monitoring are			which shall be consistent with
and (b)			fluctuations at a	Large.			covered under			National and International
·			Point of Common	N/A for Embedded			Article 10 (6) (1)			 technical fules.
			Coupling with a	Power Stations –			and Article 10 (6)			Deleted: ENTSO-E – Article 9
			fluctuating load	specified by DNO			<u>(4)</u>			– 6 j 1), 2)
			to the Onshore							
			Transmission							
			System shall not							
			exceed (a) in							
			England and							
			voltage level for							
			step changes							
			which occur							
			repetitively. Any							
			large voltage							
			than step changes							
			may be allowed up							
			to a level of 3%							
			provided that this							
			does not constitute							
			Transmission							
			System. In							
			Scotland the limits							
			for voltage level							
			step changes are							

Requirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type	
Type 2 Medium Small DC B A Form	matted: Font: 8 pt, Not
> 100 MW (E&W) 50 - 100 MW < 50 MW > 30 MW or 30 - 10 MW (GB) 1 - 10 MW (GB) 800 M - 1 MW Bold	t
> 30 MW (SPT) N/A (SPT / < 30MW (SPT) connected at and connected and connected and connected	eted: 4
> 10 MW SHETL) < 10 MW (SHETL) 110kV or above below 110kV and below 110kV and below 110kV and below 110kV	
(SHETL) And Subject to Article S	
$\frac{\text{Attribute} + (5) \text{ attribute} + (5) $	
For voltages	
above 132 kV the	
(short term) of 0.8	eted: C
Unit and a Flicker	eted: The Relevant
Severity (Long Network)	work Operator shall define
Term) of 0.6 Unit	Settings necessary to
for voltages of 132	tect the Network taking into
K v and below,	ount the characteristics of
*(Short Term) of	Power Generating Facility.
1.0 Unit and a	ilities and Network Settings
Flicker Severity	vant to the Power
(Long Term) of 0.8	nerating Facility shall be co-
Unit, as set out in ordina	nated and agreed between
Engineering the N	Network Operator and
P28 as current at	herator as defined in Article
the Transfer Date	b) pursuant to Article 4(3).1
	ctrical protection of the
N/S for Embedded Gene	nerating Unit shall take
Power Stations – prece	cedence over operational
contra	trols taking into account
Protection - Synchronous 2.9 Applicable only for Applicable only f	tem security, health and
Times Asymptropole Connections Connections shall define the	ery of stall and the public
CCC 62222(a)	Generating Unit in
Article 9 – 5 (b) The Protection N/A for Embedded N/A for Embedded Sector 4 accord 4	ordance with Article 9 – 6
Depreting Times Connections Connections to protect the b,2).	?).
will be specified by specified by DNO specified by DNO	eted: N/S
NGE I in the Into account the Bilateral Characteristics of	eted: 6
Agreement but the Power	
Shall not be faster Generating Deleter 2).	etea: and Article 9 – 6b) –

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG]		
Requirement	Plant	Key	GB	Power Station T	уре	El	NTSO-E RfG– Ge	nerating Unit Ty	ре			
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not	
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold	
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 1	_
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4	_
			(SHETL)			and subject to	Subject to Article	Subject to Article				
						Article 4(3) and Article 6 (d)	$\frac{4(3) \text{ and Article 3}}{(6) (c)}$	(6) (b)				
			than:-			<u>Antiole o (u)</u>	01 (01	Module. The		-		
								Power Generating				
			At 400kV:- 80ms					Module and				
			At 275kV:- 100ms					Network Settings				
			At 132kV and					relevant to the				
			below:- 120ms					Power Generating				
			The probability					co-ordinated and				
			that the fault					agreed between				
			clearance time					the Relevant				
			stated in					Network Operator				
			accordance with					and Generator as				
			Ine Bilateral					<u>defined in Article 9</u> 5 (b) (1) whilet				
			exceeded by any					respecting the				
			given fault must be					provisions of				
			less than 2%.					Article 4(3). The				
								protection				
			N/A for Embedded					schemes and				
								<u>settings tor</u>				
			specified by DIVO					station faults shall				
								be designed not to				
								jeopardise the				
								performance of a				
								Power Generating				
								<u>iviodule.</u>				
								Electrical				
								protection of the				
								Generating				
								Module shall take				
								precedence over				
								operational		J		

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										1	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
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			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	·	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted. 4
			(SHETL)			Article 4(2) and	SUDJECT TO AFTICLE	SUDJECT TO Article			
						Article 6 (d)	$\frac{4(3) \text{ and Article 3}}{(6) (c)}$	(6) (b)			
						741000 0 (0)	<u></u>	controls taking into			
								account system			
								security, health			
								and safety of staff			
								and the public and			
								damage to the			
								Generating			
								Module in			
								accordance with			
								$\frac{\text{Article 9} - 5 (b)}{(2)}$			
								Whilst respecting		<	Deleted: ¶
								the provisions of		1.	Formatted: Not Highlight
								Article 4(3), any			
								changes to the			
								protection			
								agreed between			
								the Network			
								Operator and			
								Power Generating			
								Facility Owner		1	Deleted: C
								introduction of the		1	Deleted: the Relevant Network
								changes		11	Operator shall define the
Back Up	Synchronous	<u>9</u>	Applicable only to	Applicable only for	Applicable only for	As per Type B	As per Type B	The Relevant	N/S	<i>"</i> "	Settings necessary to protect
Protection	and		directly connected	Direct	Direct			Network Operator		\ <u></u>	the characteristics of the Power
Requirements	Asynchronous		Generators	Connections	Connections			shall define the		N.	Generating Facility as per
GB CC 6 2 2 2 2(b)			In the event that	N/A for Embedded	N/A for Embedded			settings necessary			Article $9 - 6b$) pursuant to the
ENTSO-E Article			clearance times	Connections	Connections –			to protect the			requirements of Article 4(3).
9 – <u>5(</u> b)			defined under	specified by DNO	specified by DNO			Network taking) ``	Deleted: N/S
			CC.6.2.2.2.2(a)					into account the		[*	
											Deleted: 6

			TABLE	2 – GB Grid Co	de Comparison	to ENTSO-E RfC	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
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			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	 Deleted: 1	-
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>	Deleted: 4	_
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	$\frac{4(3)}{(6)}$ and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
			are not met			Article 0 (u)	<u>(0) (C)</u>	characteristics of			
			Generators are					the Power			
			required to provide					Generating			
			Back-up					Module. The			
			Protection. NGET					Power Generating			
			will also provide					Module and			
			back-up					Network Settings			
			Protection. The					relevant to the			
			protections will be					Module shall be			
			co-ordinated to					co-ordinated and			
			provide					agreed between			
			discrimination.					the Relevant			
								Network Operator			
			On a Generating					and Generator as			
			Unit or Power Park					defined in Article 9			
			Module where only					5 (D) (1) Whiist			
			protection is					provisions of			
			provided the back					Article 4(3).			
			up protection								
			provided by the								
			Generator is								
			required to								
			operate within								
			300ms. Where								
			nrotections are								
			provided or for								
			directly connected								
			Generators and								
			Power Park								
			Modules								
			connected at or								

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										1	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	pe		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
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			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
			> 10 IVIV (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	subject to Article	subject to Article	<u>Delow TTUKV</u>		
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
			below 132kV the								
			back up clearance								
			to give a fault								
			clearance time of								
			no slower than								
			800ms in England								
			and Wales and								
			Generators and								
			Power Park								
			Modules shall also								
			be required to								
			tripping the								
			loading incurred								
			by clearance of								
			breaker fail								
			protection or back								
			up protection								
			N/A for Embedded								Deleted: C
			Connections								Deleted: The Belevant
Circuit Brookor	Synchronous	0	The Generator is	Applicable only for	Applicable only for		As por Type B	The Polovant	N/S	11	Network Operator shall define
Fail	and	3	required to provide	Direct	Direct	As per Type 📑		Network Operator	<u>N/S</u>	~	the Settings necessary to
Protection	Asynchronous		circuit breaker fail	Connections	Connections			shall define the		N.	protect the Network taking into
CC.6.2.2.2.2(c)(d)	-		protection for					schemes and		- N - N	account the characteristics of
ENTSO-E –			direct connections	N/A for Embedded	N/A for Embedded			settings necessary		N	as per Article 9 – 6b) but
Article 9 – $\underline{\mathbf{a}}$ D).		· ·	and for direct	specified by DNO				Network taking	+		pursuant to the requirements of
			connections in		opcomed by DNO			into account the		(X, X)	Article 4(3).
			Scotland at 132					characteristics of			Deleted: N/S
			kV. In the event of					the Power			Deleted: 6

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											Formatted: Font: 8 pt, Not
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре	1	Bold
	Туре	2	Large	Medium	Small	D	C	B	A	1	Deleted: 4
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	,	
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: C
			> 10 IVIVV (SHETL)	SHETL)	< TO IVIVY (SHETL)	and subject to	subject to Article	subject to Article	<u>Delow TTUKV</u>		Deleted: Agreed between the
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			Network Operator and Power
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		i	Article 4(3) The protection
			a protection					Generating		1	systems can include the
			system failure					Module. The		$-\frac{h}{h}$	following requirements¶
			is required to					Module and		j j	¶
			initiate tripping so					Network Settings		j,	External and internal short
			as to interrupt fault					relevant to the		4	Asymmetric load (Negative
			current within the					Power Generating		4	Phase sequence)¶
			next 200ms. The					Module shall be		1	Stator and rotor overload¶
			performance for					agreed between		1	Over/under excitation¶
			the System Fault					the Relevant		1	the connection point
			Dependability					Network Operator			Over / under voltage at the
			Index shall be not					and Generator as		1	alternator terminals¶
			1855 than 55 /6.					5 (b) (1) whilst		1	Inter-area oscillations¶
			N/A for Embedded					respecting the			Robustness against power
			Connections					provisions of			voltage stability¶
Drataction	Supebraneus	0.5	specified by DNO	As par Large for	As par Large for	As par time P		Article 4(3).		1	Over and underfrequency¶
Forection Fourinment to be	and	<u>2, 5</u>	connections the	As per Large for Directly connected	As per Large for Directly	As per type b		the Network		1	Asynchronous operation (pole
provided	Asynchronous		following	and Embedded	Connected and			Operator and			Slip)¶ Protection against inadmissible
GB CC.6.2.2.3	,		mandatory	Plant	Embedded Plant			Power Generating			shaft torsions (for example
ENTSO-E Article			requirements are					Module respecting			subsynchronous resonance¶
9 - 5(0) and			necessary					Article 4(3) The	+		Generating Unit line protection
			Loss of Excitation					protection systems		The second	Unit transformer protection¶
			protection					can include the		1.11	protection and switchgea
			No busbar, mesh					following		A WAY	
			corner circuit					requirements		-1	Deleted: 6
			protection					External and			Deleted:
			equipment or AC					internal short			Deleted: – 3), Article 9 – 6 b)
			be worked upon in					Asymmetric load		,	(_ c)
L		1		1	1	1			1	1	Deleted: d

			TABLE	E 2 – GB Grid Co	3					
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	
			(SHETL)			Article 4(3) and	4(2) and Article 2	4(2) and Article 2		
						Article 6 (d)	(6) (c)	(6) (b)		
			the absence of a			<u>,</u>	<u>(0) (0)</u>	(Negative Phase		
			representative					sequence)		
			from NGET					Stator and rotor		
								overload		
			In addition, the					<u>Over/under</u>		
			following					excitation		
			apply as specified					Uver/		
			by NGFT in the					the Connection		
			Bilateral					Point		
			Agreement					Over / under		
			Protection of					voltage at the		
			Interconnecting					Alternator		
			Connections					Terminals		
			Circuit Breaker					Inter-area		
			Pole Slipping					Inrush Current		
			Protection					Asynchronous		
			(Synchronous					operation (pole		
			Plant only)					slip)		
			Signals for Tariff					Protection against		
			Metering					inadmissible shaft		
			and the co-					torsions (for		
			ordination of relay					example evample		
			across the					roconanco		
			Connection Point					Power Generating		
								Module line		
			For Embedded					protection		
			Generators the					Unit transformer		
			requirements will					protection		
			be specified by the					Backup schemes		
			DNO at the					against protection		
			connection point					and switchgear		

Requirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type Type MediumSmallSmall G G G	Formatted: Font: 8 pt, Not
Type 2ArgeMediumSmallDCBAFo	Formatted: Font: 8 pt, Not
	Bold
> 100 MW (E&W) 50 – 100MW < 50MW > 30MW or 30 – 10 MW (<u>GB</u>) 1 – 10 MW (<u>GB</u>) <u>800W – 1 MW </u> Bo	Doiu
> 30 MW (SPT) N/A (SPT) < 30 MW (SPT) connected at and connected and connected and connected and connected	Deleted: 4
SHETL) <10 MW (SHETL) 110kV or above <u>below 110kV and</u> <u>below 110kV and</u> <u>below 110kV and</u> <u>below 110kV and</u>	
Article 4(3) and Article 3 4(3) and Article 3	
other than malfunction	
requirements for Overfluxing (U/f)	
Pole Supping	
Taile Original frequency	
Signals Neutral voltage	
displacement as	
per Article 9 – 5 b)	
In addition with	
regard to priority	
ranking of	
protection and	
<u>control the Power</u>	
generating radius	
organise their	
protections and	
<u>control devices in</u>	
Decision of the content of the conte	
organised in	
decreasing order	
of importance	
Natwork System	
and Generating	
Module Protection	
Synthetic Inertia (if	
applicable)	
Frequency Control (Active Power	

Requirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type Type 2 MediumSmall D A A	-+ NI-+
Type 2LargeMediumSmallDDCC CBA Formatted: Font: 8	-+ NI-+
	DT, INOT
> 100 MW (E&W) 50 – 100 MW < 50 MW > 30 MW or 30 – 10 MW (GB) 1 – 10 MW (GB) 800 M - 1 MW Bold Bold	
> 30 MW (SPT) N/A (SPT / < 30 MW (SPT) connected at and connected and connected and connected and connected below 110(b) (and below 110(b)	
(SHETL) SHETL) < 10 WW (SHETL) 110KV 01 above <u>below 110KV and</u>	
Article 4(3) and Article 3 4(3) and Article 3	
Article 6 (d) (6) (c) (6) (b)	
adjustment) Power Restriction	
and Power	
gradient	
constraints as per Article 9 – 5 c) Deleted: As per Typ	ə B
Deleted: As per type	В
Short Circuit Ratio Synchronous 9 For plant of No less than 0.5 N/A N/S N/S N/S N/S N/S Deleted: No less that	n 0.5
GB CC.6.3.2(a) 1600MVA or unless a lower value of the standard st	s
(ENTSO-E – greater no less state of the requirements of the requir	pursuant f Article
Article 34 – 3. Infan 0.4. (3).	7411010
1600MVA no less	
Short Circuit Ratio Asynchronous 9 Not applicable Not applicable Not applicable Not applicable Not applicable Asynchronous 9 Not applicable N	2(a)¶
	4 – 3.
Deleted: 1	
Reactive Synchronous 2.8 0.85 PF Lead to As per Large N/S As per Type C Where the The Relevant N/S Deleted: 2	
Capability (GB - 0.95 Lag at Rated MW Output at Deleted: 3	
(ENTSO-E Generator Unit Generator Un	
Synchronous – Ierminals Article 12 – 2(a), Ierminals of the	
Article 13 – 2(a)	v the
and (b) <u>transformer or at</u> <u>capability of a</u>	erator at
Advinctionous <u>Vincentiations</u> <u>Vincenti</u>	nals of the
Article 16 – 3(a).	at the
(b) and (c) Reactive Power as // alternator terminals if	no
the Polycopt (a)	per Article
Internetevant Internetevant Internetevant Internetevant Network Operator Internetevant Internetevant Internetevant	he

			TABL	E 2 – GB Grid C	ode Comparison t	o ENTSO-E Rf	G]	
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	nerating Unit Ty	pe		
	Туре	2	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
			SHETL)	SHETL)	< 10 WW (SHETL)	and subject to	subject to Article	subject to Article	DEIOW I TUKV		
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
							while respecting				
							the provisions of				
							compensate for				
							the Reactive				
							Power demand				
							of the high voltage				
							per Article 13 – 2				
							<u>(a).</u>				
							T I N (1)				
							<u>Ine</u> Voltage –				
							defined by the				
							Relevant Network				
							Operator in				
							the Belovant TSO				
							whilst respecting				
							the provisions of				
							Article 4(3) and in				
							accordance with				
							the following				
							The reactive				Deleted: range (at 1p.u
							range shall be				voltage) at the Connection
							between (0.89 PF				Point (ie the HV side of the
							to (0.87 PF to 0.83				Generator Transformer.
							PF) lag in				
							accordance with				
							Figure /. In Great				
							maximum Q/Pmax				

			TABLE	E 2 – GB Grid Co	de Comparison t	to ENTSO-E Rf	G			
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty		
	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	below 110KV and subject to Article	Delow 110KV and subject to Article	DEIOW 110KV	(
			(ONLIL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		
							range is defined			
							as 0.95 which			
							equates to 0.90PF			
							at a steady state			
							voltage range of			
							0.1p.u as per			
							Table 8. The mid			
							adjusted to			
							provide more			
							capability in the			
							leading or lagging			
							mode. The			Deleted: Equates to approx
							Power Generating			0.92 PF lead to 0.876 PF lag at
							Module shall be			Hated MW Output as specified
							capable of moving			4(3).
							to any operating			
							<u>point within its U-</u>			
							appropriate			
							timescales to			
							values specified			
							by the Relevant			
							Network Operator.			
							When operating at			
							an Active Power			
							output below			
							maximum			
							Capacity the synchronous			
							Generating			

			TABL	E 2 – GB Grid Co	de Comparison	to ENTSO-E Rf	G			1	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11-	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
							Module shall be				
							capable of				
							operating over the				
							7 at least down to				
							the minimum				
							Stable operating				
							level.				
	Asynchronous	<u>2, 8</u>	0.95 PF Lead to	As per Large	N/A	As per Type C	¥	The Relevant	<u>N/S,</u>		Deleted: Voltage – Q/P _{max}
			0.95 PF Lag at Rated MW output				<u>Where the</u> Connection Point	Network Operator		N.	range (at 1p.u voltage) at the
			Capability to meet				is not at the	right to specify the		1	Connection Point. Equates to
			requirements of				location of the	reactive capability		1	approx 0.97 PF lead to 0.92 PF
			Fig 1 of				high voltage	of the Power Park		N.	specified by the TSO. At lower
			Connection				terminals of the	Module whilst		N.	Active Power outputs the Power
			Conditions. In				step up	respecting the		\$ S	Park Module must operate as
			Scotland the				the Power Park	Article 4(3)		1	specified by the TSO and
			of 0.95 Power				Module if no step	<u>Article +(0).</u>		1	remain consistent to the Q/P _{max}
			Factor Lead to				up transformer			1	operating diagram of Figure 11
			Power Factor Lag				<u>exists),</u>			1	pursuant to Article 4(3)
			applies at the HV Side of the				supplementary Reactive Power) J	Deleted: As per Type A
			Connecting				may be defined by				Delete de Casalifad hustha
			Transformer at				the Relevant				Belevant DSO in accordance
			132kV, 275kV or				Network Operator				with Article $14 - 1a$) but must
			400KV.				the provisions of				be pursuant to Article 4(3).
							Article 4(3) to				
							compensate for				
							the Reactive				
							Power demand				
							line or cable as				
							INTE UL CADIE do			1	

Requirement Plant Type Key 2 GB Power Station Type ENTSO-E RfG- Generating Unit Type 30 - <td< th=""><th></th></td<>	
Type 2 Large Medium Small D C B A > 100 MW (E&W) 50 – 100MW 50 – 100MW < 50MW > 30MW or 30 – 10 MW (GB) 1 – 10 MW (GB) and connected and connected and connected below 110kV and subject to Article and connected below 110kV and subject to Article and connected below 110kV and subject to Article 4(3) and Article 3 (6) (b) 0 (b) Deleted: 4 Image: Shear Line S	
> 100 MW (E&W) 50 - 100MW < 50MW > 30MW or 30 - 10 MW (GB) 1 - 10 MW (GB) and connected and connected and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) (6) (b) (6) (b) <td< th=""><th>t</th></td<>	t
> 30 MW (SPT) N/A (SPT / SHETL) < 30MW (SPT) connected at 110kV or above and subject to Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 10 (b) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 10 (b) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 10 (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 10 (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected below 110kV and subject to Article 4(3) and Article 3 (6) (c) and connected 4(3) and Article 10 (c) and connected 4(3) and Article 3 (c) <th></th>	
Shert() Shert() Shert() How or above and subject to Article 4(3) and Article 6 (d) Delow Hok V and subject to Article 4(3) and Article 3 (6) (c) Delow Hok V and subject to Article 4(3) and Article 3 (6) (b) Image: Delow Hok V and Subject to Article (G) (c) Image: Delow Hok V and Subject to Article (G) (c) Image: Delow Hok V and Subject to Article (G) (c) Image: Delow Hok V and Subject to Article (G) (c) Image: Delow Hok V and Subject to Article (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) Image: Delow Hok V and (G) (c) <th></th>	
Article 4(3) and Article 6 (d) Article 3(3) and (6) (c) Article 3 (6) (b) Image: Description of Article 4(3) and Article 6 (d) Image: Description of (6) (c) Image: Description of (6) (b) Image: Description of (6) (c) Image: Description of (6) (c) Image: Description of (6) (b) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image: Description of (c) Image:	
Article 6 (d) (6) (c) per Article 16 - 3 (a). For Power Park	
per Article 16 – 3 (a). For Power Park	
For Power Park	
For Power Park	
Modules the	
maximum capacity	
is defined by the	
Relevant Network	
the Relevant TSO	
whilst respecting	
Article 4(3) and in	
accordance with	
the following:-	
range shall be	
between 0.89 PF	
Figure 8. In Great	
Britain the maximum to the second secon	
range is defined	
as 0.66 which	
equates to 0.95	
PF lead to 0.95 PF	

			TABLE	E 2 – GB Grid Co	de Comparison t	o ENTSO-E RfC	3			
Requirement	Plant	Key	GB	Power Station T	уре	El	NTSO-E RfG- Ge	nerating Unit Ty	ре	
-	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	below 110KV and subject to Article	below 110KV and subject to Article	DEIOW 110KV	(
			(OTIETE)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		
							state voltage			
							range of 0.1p.u as			
							<u>per rable 3.</u>			
							When operating at			
							an Active Power			
							output below			
							Capacity, the			
							Power Park			
							Module shall be			
							Capable of a Reactive			
							Capability as			
							specified by the			
							Relevant Network			
							Operator In coordination with			
							the Relevant TSO			
							whilst respecting			
							the provisions of			
							Article 4(3) and in			
							the principles of			
							Figure 9.			
							The second second			
							rance shall be			
							between (0.89 PF			
							and 0.94 PF) lead			
							to (0.93 PF to 0.84			
							accordance with			
							Figure 9. In Great			

			TABLE	E 2 – GB Grid Co	de Comparison	to ENTSO-E Rf	G			1	
Requirement	Plant	Key	GB	Power Station 1	ype .	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	110KV or above	Delow 110KV and subject to Article	below 110KV and subject to Article	DEIOW 110KV		(
			(ONETE)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
							Britain the				
							maximum Q/Pmax				
							as 0.66 which				
							equates to 0.95				
							PF lead to 0.95 PF				
							lag at a steady				
							range of 0 1p µ as				
							per Table 9. The				
							P-Q/Pmax profile				
							can be of any				
							include conditions				
							for reactive power				
							capability at zero				
							Active Power.				
							When operating at				
							an Active Power				
							output below the				
							Maximum				
							Power Park				
							Module shall be				
							capable of				
							providing Reactive				
							operating point				
							inside the inner				Formatted: Highlight
							and outer limits of	+			
							Figure 9.				
							Park units				

			TABLI	E 2 – GB Grid Co	de Comparison	to ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	/pe		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W_1_MW_		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11-1	Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	DEIOW TTOKY		
			(=,			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
							the Rower Park				
							Module the				
							Reactive				
							Capability will be				
Output Power with	Synchronous	2.5	Power Output not		NI/A		reduced.		The Power	-	
Falling Frequency	and	<u>2, J</u>	to fall more than	As per Large	IN/A				Generating	1	Deleted: C
(GB - CC.6.3.3)	Asynchronous		pro-rata with						Module is		Deleted: Specified by TSO
(ENTSO-E			frequency as per						required to	1	pursuant to Article 4(3) but
Article 8 (1) (d)(e)2 - (e)			Figure 2 of					+	<u>maintain</u>	Ň.	Below 49Hz – maximum
			Conditions					+	at its target		reduction rate of 2% of
			1						Active Power	\mathbb{R}^{n}	maximum capability per 1Hz
									value regardless	11.1	frequency drop below 49 Hz¶
									<u>or frequency</u> changes	16. 9	maximum reduction rate of 10%
									<u>onangos.</u>	16.6	of maximum capacity per 1Hz
									In addition the	12.1	frequency drop below 49.5 Hz.
									output power with falling		Deleted: N/S
									frequency shall		Deleted: N/S
									the TSO but		Deleted: Synchronous –
									within the boundaries of	11	Deleted: 2
									Figure 2 which		Deleted: a) and (b)
									are between	1	Deleted: Asynchronous¶
									1) Below 49Hz ◄		
									reduction rate of		Formatted: Centered
									2% of maximum capability at		Formatted: Left

			TABLI								
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (<u>GB</u>)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted. 4
			(SHETL)			Article 4(3) and	<u>SUDJECT to Article</u>	<u>SUDJECT to Article</u>			
						Article 6 (d)	$\frac{4(3)}{(6)} \frac{(6)}{(c)}$	(6) (b)			
						<u>/ ((())) (())</u>	<u>(0/ (0/</u>	<u>(0) (0)</u>	50Hz per 1Hz		
									frequency drop		
									and		
									2) Below 49.5 Hz		
									rate of 10% of		
									the maximum		
									capacity at 50 Hz		
									per 1 Hz		
									frequency drop.		
									This requirement		
									is limited to a		
									selection of		
									affected		
									generation		
									technologies and		
									may be subject		
									to further		
									dofined by the		
									relevant TSO		
									while respecting		
									the provisions of		Deleted: Unit
									Article 4(3).		Deleted: is
Voltage Changes	Synchronous	<u>2, 9</u>	Reactive Power	As per Large	N/A	As per Type C	Power Generating	Relevant Network	N/S	11	
in the normal			output under				Modules are	Operator, to define	+	é	Deleted: DSO
(GB – CC 6 3 4			conditions should				Voltage – Q/P	Article 12- (2)(a)			Deleted: 1
(Synchronous			be within the				curve over a	whilst respecting	+		
ENTSO-E -			voltage range of				varying voltage	the provisions of			Deleted: pursuant to
Article 12-			±5% at 400kV,		_		range at maximum	Article 4(3).			Deleted: 1
(2),(a), Article 13			275kV and 132 kV				<u>capacity</u> as	L			Deletedu 2

			TABLE	E 2 – GB Grid Co	de Comparison t	to ENTSO-E Rf	G			1	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (<u>GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	1	Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			Article 4(3) and	<u>SUDJECT to Article</u>	<u>SUDJECT to Article</u>			
						Article 6 (d)	(6) (c)	(6) (b)			
- 2(b)(1) Article			and lower voltages			7111010-0 (0)	specified by the	<u>(0/ (0/</u>			Deleted: 3 a a nd (set
13 2(b)(3) and							TSO <u>whilst</u>				
Article 13 (2)(c).							respecting Article				Deleted: pursuant to
							4(3) at full load				Palata da barte
							(Article $13 - 2(0)(1)$				Deleted: both
							loads the				Deleted: 23a –
							requirements are				(2)and[9]
							covered under				
							Article 13 - 2(c)				Deleted: 23bat lower
							although the			~~/.	loads [10]
							voltage range are				Formatted: Highlight
							unclear,			1	Deleted: As per Type B.
Voltage Changes	Asynchronous	<u>2, 9</u>	As per	As per Large	N/Ae	As per Type C	Relevant Network	Relevant	<u>N/S</u>		Deleted: DSO to define
In the normal			Synchronous but				<u>Operator to define</u> whilet respecting	to define whilet			requirement as per Article 14 -
(GB – CC 6 3 4			requirements for				the provisions of	respecting the			1(a) pursuant to Article 4(3).
(Asynchronous			voltage and				Article 4(3)	provisions of			Deleted: Bewer Bark Medule
ENTSO-E -			reactive power					Article 4(3)			is required to meet a Voltage –
Article 15 – 2(a),			requirements if								Q/P_{Max} curve as specified by
Article 16 - 3(b)			Embedded and							\mathbf{N}	the TSO pursuant to Article 4(3)
(1) and Article To = 3(c)			and below are also								at both full load (Article 16 -3(b)
- 3(0)			specified								and Article 16 - 3(c) at lower
Black Start	Synchronous	<u>2</u>	Specified by	As per Large	Not applicable	As per Type C	Not a mandatory	N/S	N/S	$\langle \rangle$	
(GB CC.6.3.5)	and		NGET in the				requirement but				Deleted: 41 ([11]
ENTSO-E – Article $10 - 5(a)$	Asynchronous		Agreement				can obtain a quote		+		Deleted: (Asynchronous –
							for a Black Start	+	+	1, ``	Deleted: specified by
							service whilst			N. /	pursuant todepending upon
							respecting the			<i>/</i>	System Security in a
							Article 4(2)			I	Synchronous area. [12]
					1		Article 4(3)		<u> </u>	Y `	Deleted: 9

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG ENTSO-E RfG												
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре				
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Bold		
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4		
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	Delow TTOKV				
			()			Article 4(3) and	4(3) and Article 3	4(3) and Article 3					
		_				Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>	N/0	_			
Frequency Control by continuous Modulation of	Synchronous	2	Requirea	As per Large	Not applicable	As per Type C	Required	N/5	N/S				
(GB – CC.6.3.6(a)													
Article $10 - 2(a)$											Deleted: 9		
2(c).													
Contribution to Frequency Control by continuous	Asynchronous	<u>5</u>	Required unless the Power Park Module is in Scotland and has	As per Large	N/A	As per Synchronous	As per Synchronous	N/S	N/S				
Modulation of Active Power			a Registered Capacity of less								Deleted: 9		
(GB – CC.6.3.6(a)			than 50MW.							1	Deleted: and Asynchronous		
Article <u>10</u> – 2(a)											Deleted: C		
and Article 10 - 2(c)										11/	Deleted: Required as per		
Contribution to	Synchronous	<u>1,5</u>	Required	As per Large	<u>N/A</u>	As per Type B	<u>As per Type B</u>	<u>Synchronous</u>	<u>N/S</u>	<i></i>	4(3).		
Voltage Control by continuous								Power Generating Modules are			Deleted: 1		
Modulation of Reactive Power								required to have a permanent		1	Deleted: a		
(GB - CC.6.3.6(b)) ENTSO-E Article 12 - 2(b)								automatic excitation system to control			Deleted: and (b) and Article 12		
· \								Alternator terminal voltage as per Article 12-2(b)],,,,	Deleted: Required as specified by the Relevant DSO in accordance with Article 11 – 2(a) and (b) and pursuant to Article 4(3)		

		Formatted: Font: 8 pt, Not									
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	1	Bold
	Туре	2	Large	Medium	Small	D D	C	В	A A	1 1	Deleted: 4
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Deleted: Synchronous and
			> 30 MW (SPT)	N/A (SPT / SHETL)	< 30MW (SPT)	110kV or above	below 110kV and	below 110kV and	below 110kV	/	
			(SHETL)	Onere)		and subject to	subject to Article	subject to Article	DEIGWITTORY	11	Deleted: 2
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3		111	Deleted: pursuant to Article
Contribution to	Acypobropous	2.5	Poquirod		NI/A	Article 6 (d)	(6) (C) Required as per	(6) (b) N/S Noto	N/S	111	4(3)
Voltage Control	synchronous			As per Large	<u> </u>		Article 16 – 3 (d)	however that	<u>N/S</u>	ji ,	Deleted: 1
by continuous								<u>Article 15 – 2 (a)</u>			Deleted: 2(a) and (b) and
Modulation of								allows the		11	Article 12 -
(GB – CC 6 3 6(b)								Operator (whilst		11	Deleted: Required as specified
ENTSO-E Article								respecting Article		1 1	by the Relevant DSO in
1 <u>6 </u>								4(3) to provide a		1	accordance with Article 11 -
								Reactive Power		į,	2(a) and (b) and pursuant to
								specify the		j.	
								requirement to		1 1	Deleted: 9
								provide voltage		$i \neq i$	Deleted: pursuant to Article
Requirement for	Synchronous	127	Required	Required	N/A	As ner Tyne C	Required as per	N/S	N/S	11	4(3)
Power Station to	Gynchronous	<u>1, 2, 7</u>	riequired	riequired	IN/A	As per Type O	Article 10 – 2(a)	10/0	14/0	11	Deleted: 9
be fitted with a							and in accordance				Deleted: 2
Proportional Turbino Spood							with the requirements of			111	Delete de 4
Governor							the TSO /			141	Deleted: 4
GB – CC.6.3.7(a)							Relevant Network			14/1	Deleted: a
ENTSO-E - Article							Operator and	+			Deleted: 2
Article $10 - 2(c)$								+	+	1	Deleted: 4
Requirement for	Asynchronous	1, 2, 7	Required except in	Required	N/A	As per Type C	As per	N/S	N/S		
Power Station to	-		relation to Power				Synchronous				Deleted: a
be fitted with a			Park Modules in								Deleted: Required as per
Turbine Speed			have a Registered								Article 9 – 2(a)
Governor			Capacity of less							1	Deleted: 9
GB – CC.6.3.7(a)			than 50MW							1	Deleted: 2
10 - 2(a) and										11	Deletedu 4
Article $10 - 2(c)$			1					t	1	1	
											Deleted: a

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG Requirement ENTSO E RfG CR Requirement ENTSO E RfG												
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре				
	Туре	2	Large	Medium	Small	D	C	B	A	·	Formatted: Font: 8 pt, Not		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold		
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	111	Deleted: 4		
			(SHETL)	SHETE)		and subject to	subject to Article	subject to Article					
			,			Article 4(3) and	4(3) and Article 3	4(3) and Article 3					
De suize se est fez	Currelevenesus	0.5	Demuined exception	Deguined	N1/A	Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>	N//C				
Frequency	Synchronous	2, 5	relation to Power	Required	N/A	As per Type C	Required as	N/5	N/S				
Controller or	Asynchronous		Park Modules in				10 - 2(d) whilst				Deleted: 9		
Governor to be	-		Scotland which				respecting the	[1			
designed and			have a Registered				Article 4(3)				Deleted: e		
appropriate			than 50MW				AILICIE 4(3)				Deleted: pursuant to		
standard /													
specification													
CC 6 3 7(a)(i) (ii)													
ENTSO-E -													
Article <u>10</u> – 2(<u>d</u>).											Deleted: 9		
the Frequency	and	<u>2, 5, 7</u>	(Not applicable to	Required	N/A	As per Type C	Article 10-	Relevant Network	is required whilst		Deleted: e		
Controller or	Asynchronous		Power Park				2 <u>whilst</u>	Operator whilst	the Power	1, 1-	Deleted: Bequired for		
Turbine speed			Modules in				respecting the	respecting the	Generating Modulo in	N. A.	reducing power output in steps		
Control the			have a Registered				Article 4(3) as	Article 4(3) in	operating in		no more than 20% of maximum		
Generating Unit or			Capacity of less				defined in Article	accordance with	Limited Over	1.11	capacity as		
Power Park			than 50MW)				<u>10 - 2</u>	Article 9,-2(a),	<u>Frequency</u>	(1,1)	Deleted: s		
Power with									in accordance		Deleted: N/S		
stability over the									with Article 8 – $1(c)(2)$		Deleted: 9		
range									<u>-1(0)(2)</u>		Deleted: pursuant to		
(GB CC.6.3.7 (b) ENTSO-E - Article											Formatted: All caps		
8 <u>1 (c)(2)</u> Article											Deleted: 8		
$\frac{9-2(a)}{\text{Article }10-2}$										\sim	Deleted: pursuant to Article		
	•	•	•	•			•			- ⁻	4(3).		
										N N			

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG Bequirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type												
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe				
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold		
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4		
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	DEIOW TTOKY				
			()			Article 4(3) and	4(3) and Article 3	4(3) and Article 3					
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		-			
Ability of a	Synchronous	<u>2, 4, 9</u>	Kequired	Required	N/A	As per Type C	Required as	N/S	N/S				
Frequency	Asynchronous		Power Park				Relevant Network						
Controller or			Modules in				Operator in co-						
Governor to			Scotland which				ordination with the						
frequency below			Capacity of less				accordance with		+		Deleted: and		
52Hz unless this			than 50MW)				Article <u>10</u> – 5(b)		l		Deleted: 9		
causes the							whilst respecting						
Power Park							Article 4(3).		+		Deleted: pursuant to		
Module to operate													
below its designed											Deleted: 9		
minimum										/	Deleted: 7		
(GB										11	Deleted: 2		
CC.6.3.7(c)(i)) (ENTSO-E –										14	Deleted: and		
Article <u>10</u> , – 5(b)							5 51 11				Deleted: 9		
Governor Droop or Frequency	Synchronous and	<u>2, 5</u> <u>6*</u>	be between 3 and	Droop Setting to be between 3 and	N/A	As per Type C	For Plant in Limited Under	As per Type A	Not specified for Plant in	- 411	Deleted: d		
Control Droop	Asynchronous		5% (Not applicable to	5%			Frequency Sonsitive Mode		Frequency Sonsitivo Modo	1.11	Deleted: -		
(C)(ii))			Power Park				Droop specified by		For Plant		Deleted:		
ENTSO-E Article			Modules in Scotland which				the <u>Relevant</u> TSO but must be		operating in Limited		Deleted: – Table 3.		
<u>10 -(2) (b) -(1)</u>			have a Registered				between 2 and		Frequency		Deleted: 0		
and Article 10.0 2(c)(1) – Table 4.			than 50MW)				Article $10 - 2(b) - 2(b)$		Droop is defined		Deleted: 9		
			,				(1) - *New to GB		by the TSO but		Deleted: d		
								+	the range of 2		Formatted: Highlight		
							For Plant in		and 12% as per	J ``	Deleted: - Table 3		

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW	-	Bold
			> 30 MW (SPT) > 10 MW	N/A (SPT / SHETL)	< 30MW (SPT) < 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)	0,	(0.12.12)	and subject to	subject to Article	subject to Article	<u></u>		
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 0 (u)	Frequency	<u>(0) (b)</u>	Article 8, - 1(c)(1)		Deleted: 7
							Sensitive Mode Droop specified by				Deleted: 2
							the Relevant TSO				
							between 2 – 12%			1	Deleted: o
							as detailed in			11	Formatted Table
							$\frac{\text{Article 10} - 2(c)(1)}{- \text{Table 4.}}$			11	Deleted: 9
Frequency	Synchronous	<u>2, 5</u>	Deadband to be	Deadband to be	N/A	As per Type C	For Plant in	N/S	N <u>∕</u> S4		Deleted: d
Deadband	Asynchronous		0.03H2 0r ± 0.015Hz	0.03H2 0r ± 0.015Hz			Sensitive Mode				Deleted: 3
Settings (GB			(Not applicable to Power Park				Deadband specified by the				Deleted: 9
CC.6.3.7(c)(iii))			Modules in				Relevant TSO but			111	Deleted: d
Article <u>10, – (2)(c)</u>			have a Registered				0 – 0.5 Hz as				Deleted: 3
- 1 – Table <u>4</u>			Capacity of less				detailed in Article 10 - (2)(c) - 1 -				Deleted: As per Type C
									<u></u>	111	Formatted: Highlight
Target Frequency Settings GB CC.6.3.7 (d)	Synchronous and Asynchronous	<u>9</u>	Unit Load Controller or Power Park Module Load Controller to a Target Frequency	Unit Load Controller or Power Park Module Load Controller to a Target Frequency	N/A	<u>N/S</u>	<u>N/SOnly</u> covered in <u>G&D's</u>	<u>NS</u>	N/S		Deleted: 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)
			either continuously	either continuously							Formatted: Highlight
			of 0.05Hz steps	of 0.05Hz steps							Formatted: Highlight
			over at least the range of 50 +	over at least the							Formatted: Highlight
			0.1Hz (Not applicable to	0.1Hz							Deleted: ENTSO-E Article 9 – 2) d) - 8)
			Power Park						I	l '	Formatted: Highlight

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 6 (d)	$\frac{4(3) \text{ and Article 3}}{(6) (c)}$	(6) (b)			
1			Modules in			Article 0 (u)	<u>(0) (0)</u>	<u>(0) (0)</u>			
			Scotland which								
			have a Registered								
			Capacity of less								
			than 50MW)								
Frequency	Synchronous	<u>2, 6*</u>	Generating Units	Generating Units	N/A	As per Type C	Parameters for	N/S	N/S		
Performance	and		and Power Park	and Power Park			frequency				
Requirements for	Asynchronous		Modules must be	Modules must be			response				
Plant operating in			capable of	capable of			performance				
Sensitive Mode			10% of their	10% of their			Belevant TSO in				
(GB CC 6 3 7(e)			Registered	Registered			accordance with				
and Appendix 3 of			Capacity (when	Capacity (when			Article $10 - (2)$ (c)				Deleted: 9
the GB			subject to a \pm	subject to a ± -			but in general				Deleted. 9
Connection			0.5Hz change or	0.5Hz change or			these are similar			1	Deleted: d
Conditions			greater (and	greater(and			to that required by			×	Deleted: _
(ENTSO-E Article			proportionally for	proportionally for			the GB Grid Code.				Deleted: -
			_ lower_frequency _	<u>lower_frequency</u>			The <u>Relevant</u> TSO				Deleted: 9
			changes)) as	changes)) as			must define the			107-	Deleted: -
			Secondary and	Secondary and			minimum			1.1	Deletedi
			High Frequency	High Frequency			frequency			10 N	Deleted: d
			Response as	Response as			response				Deleted:)
			defined in Figures	defined in Figures			capability as a				Deleteur
			CC.A.3.1,	CC.A.3.1,			percentage of				
			CC.A.3.2 and	CC.A.3.2 and			Registered				
			CC.A.3.3	CC.A.3.3			Capacity (Pmax)				
1			Note – Primary	Note – Primary			which is between				
I			Hesponse –	Response –			<u>1.5</u> – 10%, the		+		Deleted: 2
			additional release	additional release			shall be less than				
1			of Active Power	of Active Power			2 seconds*				Cormotted
			gradually	gradually			(unless justified		+		
			increasing over	increasing over			otherwise for				

Requirement Plant Type Key 2. GB Power Station Type ENTSO-CE RfG-Generating Unit Type	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Type 2. Large Medium Small D C B A > 30 MW (SPT) S0 -100 MV (SW) S0 -100 MV (SW) S0 -100 MV (SH) 30 -100 MV (SH) and connected	Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
> 100 MW (E&W) 50 - 100 MW (CB) 30 - 100 MW (CB) 1 - 10 MW (CB) 1 - 10 MW (CB) and connected below 110kV and below 110kV below 110kV and below 10kV and	-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
> 30 MW (SPT) (SHETL) NA (SPT / SHETL) <30MW (SPT) (SHETL) <30MW (SPT) (SHETL) <30MW (SPT) (SHETL) and connected at subset to Antice subset to An				> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
> 10 MW (SHETL) < 10 MW (SHETL) 10 kW (SHETL) 10 kW (SHETL) below 110 kV and addied 10 kM (SHETL) below 110 kV and addied 10 kM (SHETL) below 110 kV and dW (SHETL) below 110 k				> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	·	Deleted: 4
(SHETL) and subject to Anticle 3 Atticle 4(3) and Atticle 3 (3) and Atticle 3 (5) (c) subject to Anticle 3 4(3) and Atticle 3 (5) (c) Atticle 4 (3) and Atticle 3 (5) (c) the period 0 - 10 seconds and sustained for a turther 20 seconds, Secondary,				> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
Affice 413 and Affice 3 433 and Affice 3 433 and Affice 3 Affice 413 and Affice 3 433 and Affice 3 (5) (2) (5) (2) Affice 413 and Affice 3 (5) (2) (5) (2) (5) (2) seconds and sustained for a further 20 secondary seconds and sustained for a further 20 secondary secondary generation Power gradully released over the period 0 - 30 seconds and sustained for a further 30 minutes and High Frequency Response is the reduction in Active Power to a frequency rise which must be achieved is and sustained for a further 30 minutes and High Frequency rise which must be achieved is and sustained for a further 30 minutes achieved is and sustained for a further 30 minutes achieved is and sustained for a further 30 minutes achieved is the reduction in Active Power to a frequency rise which must be achieved is the reduction in Active Power to a frequency rise which must be achieved is the reduction in Active Power to a frequency rise which must be achieved is the reduction in Active Power to a frequency rise which must be achieved is the reduction in Active Power to a frequency rise which must be achieved within 10 seconds and sustainable thereafter. Frequency Response is the reduction in Active Power to a frequency rise which must be achieved is the reduction in Active Power to a frequency rise which must be achieved is thereafter. Deleted: Unit Deleted: Unit Deleted: Unit Deleted: Unit Deleted: Io				(SHETL)			and subject to	subject to Article	subject to Article			
Image: constraint of the period 0 = 10 seconds and sustainable reduction in Active Power gradually Image: constraint of the period 0 = 10 seconds and sustainable seconds and sustainable achievable within 10 seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable thereafter. Image: constraint of the seconds and sustainable Image: constraint of the seconds and sustaint of the seconds and sustainable Image: constraint of the							Article 4(3) and	$\frac{4(3)}{(6)}$ and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
Image: Seconds and Sustained for a Sustained fo				the period $0 - 10$	the period $0 - 10$		ATTICLE 6 (U)	<u>(0) (0)</u>	<u>(0) (D)</u>			
sustained for a further 20 seconds, seconds, seconds, Seconday, Seconday, Seconday, Seconday, Seconday, Seconday, Seconday, Seconday, Seconday, Power gradually released over the period 0 – 30 seconds and sustained for a sustained for a further 30 minutes further 30 minutes and High Frequency Response - Active Power to a frequency is requency is requence is requence is requence is requence is requence is requence is requency is requence is requence is requence is requence is re				seconds and	seconds and			technologies with				
Image: Secondary secondary Response - Active Secondary Response - Active Power shall be achieved as specified by the Power gradually released over the period 0 - 30 seconds and 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 10 second				sustained for a	sustained for a			inertia_and full				Deleted: (which is not asygrad
secondary Secondary Response - Active Response - Active Power gradually Response - Active Power gradually Response - Active period 0 - 30 period 0 - 30 seconds and seconds and sustained for a sustained for a sustained for a sustained for a and High and High Frequency Frequency Response is the Response is the reduction in Active Power to a Power to a Power to a which must be which must be achievale a Sustainable sustainable thereafter. (Not applicable to Power Park Modules in Socinat whithin Decende and Sustainable Sociand whithin 10 seconds and Sustainable Sustainable subscription in the cub cub cub cub Response (to be specified) by the dotuse ad 30 Sustainable Sustainable Response (to be specified) by the dotuse ad 30 Sustainable Response (to be specified) by the dotuse ad 30 Response (to be specified) by the dot between 15 Sociand whitin Sociand whitin Sociand and sustainable Susta				further 20	further 20			delivery of Active				in the GB Code)
Secondary Secondary Secondary Response - Active Response - Active specified by the Power gradually Power gradually Power gradually Power gradually released over the period 0 - 30 sustained for a sustained for a times are admitted further 30 minutes further 30 minutes turther 30 minutes and High TSO due to System Stability Frequency Frequency Frequency Power to a frequency rise reduction in Active reduction in Active frequency rise capable of which must be which must be which must be achievable within 10 seconds and Sustainable 10 seconds and sustainable Response number 10 seconds and sustainable Response number <th></th> <th></th> <th></th> <th>seconds,</th> <th>seconds,</th> <th></th> <th></th> <th>Power shall be</th> <th></th> <th></th> <th></th> <th></th>				seconds,	seconds,			Power shall be				
Response – Active Response – Active specified by the Power gradually released over the period 0 – 30 seconds and sustained for a 30 seconds sustained for a sustained for a sustained for a and High and High and High Frequency Frequency Stability Response is the reduction in Active Generating Power to a frequency rise which must be achievable within 10 seconds and sustainable Frequency Stability Power to a frequency rise reduction in Active Generating Power to a frequency rise which must be achievable within Active Power 10 seconds and sustainable sustainable Response in the Frequency (Not applicable to Power to a frequency frequency (Not applicable to Power and and High Sustainable Social ad winch Social and Generating Active Power Power Park mist be achievable within Active Power 10 seconds and sustainable Frequency Social ad winch Generating Generating Modules giftered Hereafter.				Secondary	Secondary			achieved as				
Power gradually Power gradually Relevant TSO but released over the period 0 - 30 period 0 - 30 seconds and sustained for a sustained for a sustained for a and High and High Frequency Frequency Frequency Frequency Response is the reduction in Active Response is the reduction in Active Power to a frequency vise trequency vise frequency sis frequency vise thereafter. (Not applicable to Power Park Modules in Social which thereafter. 10 seconds and sustainable (Not applicable to Power Park Modules in Social which have a Registreed Seconds and social which thereafter.				Response – Active	Response – Active			specified by the				
released over the period 0 - 30 period 0 - 30 shall be less than seconds and sustained for a further 30 minutes sustained for a sustained for a unless longer and High Frequency and High Prequency and High Frequency and High Prequency and High Frequency Response is the reduction in Active Response is the Power to a Response is the Power to a Response is the reduction in Active Deleted: Unit 0 Sustainable Active Zower Active Zower Deleted: Unit 10 seconds and sustainable sustainable Sustainable Specified) by the Specified) by the specified) by the specified) by the TisQ for a period TisQ due to Sustainable (Not applicable to Power Park Modules in Social divide Sustainable Specified) by the Specified) by the TisQ for a period TisQ for a period 0 Seconds and Sustainable Sustainable Specified) by the TisQ for a period TisQ for a period 0 Resporse to the Resporse to the readter. TisQ for a period Of between 15 0 Seconds and Sustainable Specified) by the TisQ for a period Specified) by the TisQ for a period				Power gradually	Power gradually			Relevant TSO but				
genod 0 - 30 period 0 - 30 genod 5 and 30 seconds sustained for a sustained for a sustained for a further 30 minutes further 30 minutes further 30 minutes further 30 minutes by the Relevant and High and High further 30 minutes by the Relevant and High and High further 30 minutes further 30 minutes and High frequency Frequency frequency Response is the reduction in Active for events Generating Power to a frequency rise frequency rise frequency rise which must be achievable within achievable within achievable within 10 seconds and 10 seconds and Sustainable Frequency sustainable sustainable sustainable Frequency further after. thereafter. TisO for a period of between 15 Modules in Addites finutes and 30 minutes and 30 Modules in Sociand which Generations must Generations must for evention of here ferequency finutes and 30 minutes and 30				released over the	released over the			shall be less than				
seconds and seconds and seconds and seconds and seconds and sustained for a sustained for a further 30 minutes further 30 minutes times are admitted and High and High TSO due ta TSO due ta by the Relevant Frequency Frequency Response is the reasons. Power reduction in Active Response is the reasons. Power Power to a Power to a Power to a frequency rise frequency rise Generating which must be achievable within Achievable within 10 seconds and 10 seconds and Frequency sustainable sustainable sustainable Response (to be sustained for a thereafter. Tso due ta Power to a (Not applicable to Power Park Response (to be Seconds and Socialard which Andere Alexand Generation Generation have a Registered Operate between Seconds and Generators must of between for a period Generators must Operate between				period 0 – 30	period 0 – 30			30 seconds				
substanted of a further 30 minutes and High substanted of a further 30 minutes and High imites and admitted and High and High and High TSO due to Frequency Frequency Response is the reduction in Active Power to a Power to a frequency rise frequency rise frequency rise which must be achievable within 10 seconds and Sustainable 10 seconds and sustainable sustainable Frequency (Not applicable to Power Park thereafter. TSO for a period (Not applicable to Power Park minutes and 30 minutes and 30 Social dwitch Generators must operate between				seconds and	seconds and			(Unless longer				
Indition of Minutes Indition of Minutes Indition of High and High Frequency Frequency Response is the Response is the reduction in Active Power to a Power to a Power to a frequency rise frequency rise which must be achievable within 10 seconds and 10 seconds and 10 seconds and sustainable thereafter. thereafter. (Not applicable to Power Park Power Park Generation Modules in Scotland which Active a Registered Generation				further 30 minutes	further 20 minutes			hv the Polovant				
and main Frequency Frequency Response is the reduction in Active Response is the reduction in Active Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Power to a frequency rise which must be achievable within 10 seconds and sustainable Deleted: Unit (Not applicable to Power Park Modules in Soctal and which have a Registered Sustainable thereafter Prequency result of the power				and High	and High			TSO due to				
Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Response is the reduction in Active Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Deleted: Unit (Not applicable to Power Park Modules in Scotland which have a Registered 10 seconds and sustainable Frequency thereafter.				Frequency	Frequency			System Stability				
reduction in Active reduction in Active Power to a Generating Power to a frequency rise Power to a frequency rise Modules shall be which must be achievable within achievable within 10 seconds and Sustainable Deleted: Unit 10 seconds and sustainable sustainable sustainable Frequency Response (to be (Not applicable to Power Park thereafter. Intereafter. Thereafter. Thereafter. (Not applicable to Power Park Generators must Operate between Generators must Scotland which have a Registered Generators must Operate between				Response is the	Response is the			reasons. Power				
Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Power to a frequency rise which must be achievable within 10 seconds and sustainable thereafter. Modules shall be capable of providing full Active Power Frequency Response (to be specified) by the TSO for a period of between 15 minutes and Scotland which have a Registered Deleted: Unit				reduction in Active	reduction in Active			Generating				
frequency rise frequency rise capable of which must be which must be providing full achievable within achievable within Active Power 10 seconds and 10 seconds and Frequency sustainable sustainable sustainable thereafter. thereafter. Thereafter. (Not applicable to Power Park Modules in Scotland which have a Registered Generators must operate between Operate between				Power to a	Power to a			Modules shall be				Deleted: Unit
which must be achievable within 10 seconds and sustainable thereafter. which must be achievable within 10 seconds and sustainable thereafter. providing full Active Power Frequency (Not applicable to Power Park Modules in Scotland which have a Registered sustainable thereafter. Sustainable sustainable thereafter. Beleted: to (Not applicable to Power Park Modules in Scotland which have a Registered minutes and Scotland which thereafter. Sustainable thereafter. Sustainable thereafter. Sustainable thereafter.				frequency rise	frequency rise			capable of			11	
achievable within achievable within Active Power 10 seconds and 10 seconds and Frequency sustainable sustainable Response (to be thereafter. thereafter. TSO for a period (Not applicable to of between 15 Power Park minutes and Modules in Generators must Scotland which operate between have a Registered operate between				which must be	which must be			providing full				Deleted: to
In the seconds and sustainable In the seconds and sustainable In the seconds and sustainable sustainable sustainable Response (to be specified) by the TSO for a period (Not applicable to Power Park Modules in Scotland which have a Registered And Scotland W				achievable within	achievable within			Active Power				
Image: Sustainable Sustainable Insection (in beginse (in beginse)) thereafter. thereafter. specified) by the (Not applicable to Image: Sustainable Image: Sustainable Power Park Image: Sustainable Image: Sustainable Modules in Image: Sustainable Image: Sustainable Scotland which Image: Sustainable Image: Sustainable have a Registered Image: Sustainable Image: Sustainable Image: Sustainable Image: Sustainable Image: Sustainable Scotland which Image: Sustainable Image: Sustainable have a Registered Image: Sustainable Image: Sustainable Image: Sustainable Image: Sustainable <t< th=""><th></th><th></th><th></th><th>sustainable</th><th>sustainable</th><th></th><th></th><th>Response (to bo</th><th></th><th></th><th></th><th></th></t<>				sustainable	sustainable			Response (to bo				
Instruction Instruction (Not applicable to Power Park Isocontrol Modules in Scotland which have a Registered Scotland which have a Registered Generators must operate between				thereafter	thereafter			specified) by the				
(Not applicable to Power Park of between 15 Modules in minutes and 30 Scotland which Generators must have a Registered operate between				thereafter.	increation.			TSO for a period				
Power Park minutes and 30 Modules in minutes and Scotland which Generators must have a Registered operate between				(Not applicable to				of between 15				
Modules in minutes and Scotland which Generators must have a Registered operate between				Power Park				minutes and 30				
Scotland which have a Registered Conserve to the second se				Modules in				minutes and				
have a Registered operate between their Active Dever				Scotland which				Generators must				
their Adina Dewar				have a Registered				operate between				
Capacity of ress				Capacity of less				their Active Power	+			Deleted: maximum and
trian SUVIVV) nearrow minimum				than SUIVIVV)				Primary Enormy				minimum
Source See Article								Source See Article				

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		Formatted: Font: 8 pt Not	
	Туре	2	Large	Medium	Small	D D	C	B	A		Bold	
			> 100 MW (E&W) > 30 MW (SPT)	50 – 100MW N/A (SPT /	< 50MW < 30MW (SPT)	> 30MW or connected at	30 – 10 MW (GB) and connected	1 – 10 MW (GB) and connected	800W – 1 MW and connected		Deleted: 4	
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and subject to Article	below 110kV and subject to Article	below 110kV		Deleted: 9	
			(011212)			Article 4(3) and	$\frac{4(3)}{(6)}$ and Article 3	4(3) and Article 3		11	Deleted: d	
						Article 6 (d)	10 - 2(c)(5)(6) and	<u>(d) (d)</u>		11	Deleted: 6	
							(7) including Figure 6 and				Deleted: 1	
							Table 5.			į	Deleted: Unit	
Synchronous	Synchronous	<u>5</u>	Required to have	As per Large	N/A	As per Type B	As per Type B	Required to have	N/S	ĺ į	/ Deleted: 1	
Generating Unit Excitation System Requirements GB CC.6.3.8(a)(i) ENTSO-E Article 12-2(b)	(Not applicable to Asynchronous Plant)		a continuously acting automatic excitation control system to provide constant terminal voltage of the Synchronous Generating Unit without instability over the entire operating range					a permanent automatic excitation control system in order to provide constant <u>Alternator terminal</u> voltage <u>at a</u> <u>selectable setpoint</u> without instability over the entire operating range of the synchronous <u>Power</u> Generating <u>Modula</u> as per			Deleted: 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).	
Synchronous	Synchronous	<u>9</u>	Either specified in	As per Large	N/A	In addition to the	L	Article 12 – 2(b). Not specified other	N/S		appropriate)	
Generating Unit Excitation System	(Not applicable to		the Bilateral Agreement if			requirements of Type B_the		than in respect of the requirement to		11 ····	Deleted: 1	
Performance	Asynchronous		historical plant or			following		have a automatic			Deleted: 3	
GB CC.6.3.8(a)(ii) and Appendix 6 of	r iaiti)		Appendix 6 of the Connection			apply as specified in		system as detailed in Article 12-2(b)			Deleted: b), (c), (d), (e), (f), (g) and (h).	
the Connection			Conditions if the			Article $14 - (2)$		as noted above			Deleted: 1	
(ENTSO-E Article			after 1 January			general the				1.	Deleted: Article 12 – 3(a)(5)	
12-2(b), and			2009. In general the following high			tollowing high level			+		Deleted: 3	
and Article 14 - (3)			level requirements apply,			requirements apply which				[Deleted: b) (c), (d), (e), (f), (g) and (h)	

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG- Ge	enerating Unit Ty	pe		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	$\frac{4(3)}{(6)}$ and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
						shall respect the	<u>(0) (C)</u>	<u>(0) (D)</u>			
			i) The Excitation			provisions of					Deleted: he available to
			System shall			Article 4(3).					Deleted: be pursuant to
			comprise of an								
			Excitation Source,			The parameters					Deleted: i)
			Power System			and settings of					
			Stabiliser and			the components					
			Automatic Voltage			of the voltage					
			Regulator			control system					
			II) Steady State			snall be agreed					
			limit the change in			Generator and					
			terminal voltage			Relevant					
			from no load to full			Network					
			load			Operator in co-					
			iii) Transient			ordination with					
			Voltage Control			the Relevant					
			Performance when			TSO. These					Delated: Steady State Valtage
			on open circuit			shall include:-					Control to limit the change in
			with performance			Specifications				\mathbf{N}	terminal voltage from no load to
			requirements to			and porformance of				N.	full load the parameters being
			voltage being			the AVR				N.	defined by the Relevant
			achieved within			including steady				N.	Network Operator¶
			less than 0.6			state and				X	Delete de :
			seconds and the			transient voltage					Deleted:
			time to settle			<u>control.</u> jii)					Deleted: Transient Voltage
			within 5% of the			Specifications					Control Performance when on
			voltage change			and					open circuit with performance
			achieved within 3			performance of					requirements for the time to
			seconds.			the Excitation					achieve 100% voltage and the
			requirements for			including					une to settle within 5% of the
			the Exciter rise			bandwidth					by the Relevant Network
L L		_		<u> </u>	1	<u></u>	1	1	1	1	Operator.¶

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	vpe		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW <u>(GB)</u>	800W - 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
			Time will be			Article 6 (0)	<u>(6) (C)</u>	<u>(6) (D)</u>		_	
			specified by the			provent tercional					
			TSO but shall			oscillations to					
			generally be			other Users					
			between 50ms			Plant-					Deleted: Poquiromonts for
			and 300ms.			iv) Under and					Excitation System on load
			v) Requirements			Over Excitation					Positive Ceiling Voltage will be
			for Excitation			Limiters,					specified by the Relevant
			System on load			v) <u>Stator Current</u>				1	Network Operator
			Positive Ceiling			limiter				$\langle \cdot \rangle$	B-late de Demission en la fema
			voltage will be			VI) <u>Power</u>				N	Deleted: Requirements for a
			but will conorally			<u>Stabilicor</u>				N X	static oxcitor is omployed will
			be between 2 n u			requiremente as				A A	be specified by the Belevant
			and 4 p µ or Rated			defined by the			+		Network Operator
			field voltage			Relevant TSO				$\mathbf{v} = \mathbf{v} \cdot \mathbf{v}$	
			vi) Requirements			while respecting				$\mathbf{x} = \mathbf{x}$	Formatted: Norwegian
			for a negative			the provisions of					(Bokmāl)
			ceiling voltage of			Article 4(3)				N.	Deleted: Maintenance of free
			80% of the			vii) <u>The Power</u>				x = x	firing when the Generator
			positive ceiling			Generating				N. N.	terminals are exposed to a drop
			voltage if a static			Facility shall				$-\infty$ is	of 25% of rated terminal voltage
			exciter is			also satisty				10 N	Earmatted, English (ILK)
			vii) Maintonanco of			robustnoss				× ×	Formatted: English (U.K.)
			free firing when			criteria to aid					Deleted: The Excitation
			the Generator			angular stability					System (if static) should obtain
			terminals are			under fault					a positive on load ceiling
			exposed to a drop			conditions such					voltage of not less than 80%
			of between 20 -			as fast valving or					upon recovery of the
			30% of rated			breaking					Generating Unit following fault
			terminal voltage			resistors as					ciearance.
			viii) The Excitation			requested by the					
			System (if static)			Relevant TSO					

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG]	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	below 110KV and subject to Article	below 110KV and subject to Article	<u>below 110kv</u>		(
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			Deleted: The overall Excitation
			should obtain a			whilst respecting				1	Control System shall limit the
			positive on load			the provisions of				1	bandwidth of the output signal
			celling voltage of			Article 4(3).				1	so as not to cause torsional
			upon recovery of								oscillations on other plant
			the Generating								connected to the network. The Bandwidth shall be limited to
			Unit following fault								3Hz unless otherwise specified
			clearance.								by the TSO.¶
			IX) The overall Excitation Control								viii) The Excitation System shall
			System shall limit								be equipped with an Under
			the bandwidth of								Excitation Limiter
			the output signal								be equipped with an Over
			so as not to cause								Excitation Limiter ¶
			torsional								x) Co-ordination is required
			other plant								between the Stator Current
			connected to the								Limiter and Overexcitation
			network.								xi) The Excitation System shall
			x) The Excitation								include a Power System
			System shall be								Stabiliser if specified by the
			Linder Excitation								Relevant TSO
			Limiter								Deleted: Power Park Modules
			xi) The Excitation							1	are only required to have a
			System shall be							/	Reactive Power Capability at
			equipped with an							1	the high voltage terminals of the
			Over Excitation							1	step up transformer to the
Power Park	Asynchronous	5	Each Power Park	As per Large	N/A	As per Type C	The Power Park	The Relevant	N/S	/	Point or at the alternator
Module Voltage	(Not	<u> </u>	Module is required				Module shall be	Network Operator	· · · · · · · · · · · · · · · · · · ·	1	terminals, if no step up
Control	applicable to		to have a				capable of	has the right to			transformer exists as defined by
Requirements	Synchronous		continuously				providing Reactive	define the			the Relevant DSO as defined in
GB –	Plant)		acting automatic				Power	capability of a			Article 14 -1(a) pursuant to

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	1111	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	<u>(6) (b)</u>			
CC.6.3.8(a)(iii)			control system to				automatically by	Power Park			Deleted: operation in
Article 15-2(a)			control the voltage				either_Voltage	<u>Module whilst</u>			Deletedi 4
and Article $16 - (3)$			at the Connection				Control mode, Reactive Rewor	respecting the		1200	Deleted: 4
<u>1</u> 3) (<u>1</u> 2)			instability over the				Control Mode or	Article 4(3) as			Deleted: 1
			entire operating				Power Factor	defined in Article			Deleted: e
			range of the				Control Mode as	<u>15 – 2(a)</u>			
			Power Park				defined in Article				Deleted: or by a combination
			Module. Any Plant				16 – <u>(</u> 3) (<u>C</u>).	+			of two of these
			in the provisions of								Deleted: As per type A
			such voltage							<u>``</u> `	Deleted: e
			control may be								
			located at the Power Park Linit								
			Terminals, an								
			intermediate bus								
			bar of the								
Deves Devis	A	_	Connection Point	A	N1/A		La calabita da de a	The Delevent	N/0		
Power Park Medule Veltage	Asynchronous	<u>9</u>	Either specified in	As per Large	N/A	As per Type C	In addition to the	Ine Relevant Notwork Operator	<u>IN/S</u>		Deleted: Power Park Modules
Control	applicable to		Agreement if				Type B. (as	has the right to			Beactive Power Capability as
Performance	Synchronous		historical plant or				appropriate) the	define the		N. Contraction	defined by the Relevant DSO
Requirements	Plant)		detailed in				following	capability of a		$\sum_{i=1}^{n}$	as defined in Article 14 -1(a)
GB –			Appendix 7 of the				requirements	Power Park			and pursuant to Article 4(3).
CC.6.3.8(a)(IV)			Connection Conditions if the				apply as	Module whilst		, î	Deleted: A
the Connection			Connection date is				16 - 3 (d) and (f).	provisions of			
Conditions			after 1 January				In general the	Article 4(3) as			
(ENTSO-E Article			2009. In general				following high	defined in Article		1	Deleted: 4
Article 16 – (3) (d)			level requirements				apply:-	<u>15 – 2(a)</u>	+	<	Deleted: 1
and (f)			apply:-				i) For the purpesses	[Deleted: As per Type A
I <u></u>		1					i) <u>For the purposes</u>			і іх,	Deleted: e
	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG ENTSO E RfG										
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Requirement	Plant	Key	GB	Power Station 1	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deletedu 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	$\frac{4(3)}{(6)}$ and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
			i) Continuous			Article 6 (u)	of providing	<u>(0) (D)</u>			
			steady state				Voltage Control				
			voltage control is				the Power Park				Deleted: T
			required at the				Module shall be				Deleted: 1
			Connection Point				capable of				
			with a setpoint				contributing to				
			voltage and slope				voltage control at				
			characteristic as				the Connection				
			shown in Figure				Point by provision				
			66.A.7.2.2(a)				of Reactive Power				
			system shall be				Network with a				
			capable of				setpoint voltage	+			Deleted: System
			operating to a				covering at least				
			setpoint voltage of				0.95 to 1.05 p.u in				
			between 95% and				steps no greater				
			105% with a				than 0.01p.u with				
			resolution of				a Slope with a				
			0.25%.				range of at least 2-				
			III) The Initial				7% In steps no				
			will be 100% but				The Reactive				
			NGET may specify				Power output shall				
			and alternative				be zero when the				
			setpoint voltage				Grid voltage value				
			within the range of				at the Connection				
			95% to 105%.				Point equals the				
			iv) The setpoint				voltage setpoint.				
			voltage should be				The setpoint may				
			adjustable				be operated with				
			105% to a				doodbond				
			tolerance of 0 25%				selectable in a				
			(ie 95%, 95.25%				range from 0 to				

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	vpe	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
•	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Dolotodi 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(b) (C)	<u>(6) (D)</u>		-	
			95.5%)				notwork voltage in	+	+		Deleted: +
			v) The Slope				steps no greater				Deleted: 10
			be adjustable with				than 0.5%				
			a range of				ii) Following a step				
			between 2 and 7%				change in voltage.				
			with a resolution of				the Power Park				
			0.5% (ie slope				Module shall be				
			settings of 2, 2.5,				capable of				
			3.5 % may be				achieving 90% of				
			specified.				the change in				
			vi) The Voltage				Reactive Power				
			control System				output, within a				Deleted: shall be achieved
			should have a				the Pelevent				
			Sleauy Slale				Notwork Operator				
			over a range of				(whilst respecting				
			setpoint voltages				the provisions of				
			(95% - 105%) and				Article 4(3) in the				Deletedu 1
			slopes 2-7% as				range of 1 – 5				Deleted.
			detailed in Figures				seconds_and				Deleted: second
			CC.A.7.2.2b and				settle at the value				
			CC.a.7.2.2c (in the				defined by the				
			case of 33kV				operating slope				
			Connections or				within <u>a time to be</u>				
			below) of				specified by the				
			Appendix / of the				<u>Relevant INetwork</u>			1	
			Conditions				<u>operator whilst</u>			1	
			vii) If the				provisions of			1	
			operating point of				Article 4(3) in the			1	
			the Power Park				range 5 – 60			1	
			Module deviate so				seconds_seconds				Deleted: 5
			that it is no longer				with a steady state	T	1	1	Deletedi J

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										1	
Requirement	Plant	Key	GB	Power Station T	ype	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
•	Туре	2	Large	Medium	Small	D	C		A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
			on the operating			Article 6 (0)	(0) (C)	<u>(0) (0)</u>			
			charactoristic				no groator than				
			defined by the				5% of the				
			setpoint voltage				maximum				
			and slope the				Reactive Power				
			control system				iii) For Beactive				
			shall act				Power Control				
			progressively to				Mode the Power				
			return the value to				Park Module shall				
			a point on the				be capable of				
			required				setting the				
			characteristic				Reactive Power				
			within 5 seconds				Setpoint, anywhere				Deleted: target
			viii) The automatic				in the Reactive			1	Deleteur target
			control system				Power Range,				
			should also be				defined by Article				
			able to respond to				15 - (2) and Article				
			transient events.				<u>16 – (3) (a) and (b)</u>				
			ix) For an onload				with setting steps				
			step change in				no greater than				
			Connection Point				5MVAr or 5%				
			Voltage the				(whichever is				
			reactive power				smaller) of full				
			output response				Reactive Power,				
			shall commence				controlling the				
			within 0.2 seconds				Reactive Power at				
			of the stop 00% of				Reint to on				
			the full delivery of				accuracy within				
			reactive power				$\pm 5MV/Ar \text{ or } \pm 5\%$				
			shall be achieved				whichever is				
			within 1_second				smaller of the full				Delete di accord
			x) Under transient				reactive Power	+	+		Deletea: seocha
			conditions the				iv) For Power				

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG]	
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
•	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (<u>GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11	Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted: 4
			(SHETL)			Article 4(2) and	SUDJECT TO AFTICLE	SUDJECT TO Article			
						Article 6 (d)	$\frac{4(3) \text{ and Article 3}}{(6) (c)}$	(6) (b)			
			Settling time shall			/	Factor Control, the	<u>(0) (0)</u>			
			be no greater than				Power Park				
			2 seconds from				Module shall be				
			the application of				capable of				
			the step change in				controlling the				
			voltage and the				the Connection				Deleted: Control shall be
			magnitude of any				Point within the				capable of being controlled
			oscillations shall				required Reactive				
			be less than 5% of				Range as defined				
			the change in				by the Relevant				
			steady state				Network Operator				
			Reactive Power				according to				Palata da DOO
			frame				Article $15 - (2)$ or Article $16 - (3) -$			1	Deleted: DSO
			xi) The				(a) and (b) with a			100	Deleted: steps of no greater
			Requirement for a				Target Power			Í	than 0.01.The Relevant
			Power System				Factor value and			1	Network Operator will specify
			Stabiliser will be				tolerance			i i	the tolerance expressed in
			specified in the				expressed in			- /	time following a sudden change
			Bilateral				NVAr or % on the			1	of Active Power or step change
			x) The overall				value issued from			i i	in voltage at the Connection
			voltage control				the conversion of				Point pursuant to Article 4(3).
			system shall				the Power Factor			1	Deletedu The Control Made
			respond to minor				value, within a			i ,	parameter settings and
			variations, steps,				period of time			17	operating point for steady state
			gradual changes				following a sudden			11	Reactive Power exchange at
			or major variations				change of Active			i /	the Connection Point shall be
			xi) The overall				v) vi) The Belevant	+	+	i i	determined by the Relevant
			system shall have				Network Operator	+	+		Network Operator in co-
			a limited				in co-ordination				ordination with the Relevant
			bandwidth output				with the Relevant	+	+	1.	150 pursuant to Article 4(3).
											Deleted: 0

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleteur +
			(SHETL)			Article 4(2) and	SUDJECT TO AFTICLE	SUDJECT TO AFTICIE			
						Article 6 (d)	$\frac{4(3)}{(6)}$ and Article 3	(6) (b)			
			of between 0 – 5			<u>,</u>	TSO (while	(0) (0)			
			Hz.				respecting the				
							provisions of				
							Article 4(3) will				
							determine which				
							Voltage Control				Deleted: reactive power
							Reactive Power				
							Control or Power				
							Factor Control)				
							mode shall apply				Deleted:)
							including the				,
							associated				
							further equipment				
							necessary to				
							permit remote				
							operation.				
							vii) The Relevant				
							TSO <u>(whilst</u>				
							respecting the				
							Article 4(3)) will				
							determine if the				
							Power Park				
							Module is to be				
							fitted with a Power				
							Damping facilities				Delete de Contrib
							(ie a Power	+	+	1	
							System Stabiliser).				Deleted: y
							The voltage and				
							reactive power				
		1					<u>control</u>				

		/	Formatted: Font: 8 pt, Not								
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	1	Bold
	Туре	2	Large	Medium	Small	D	C	B	A	1.1	Deleted: 4
			> 100 MW (E&W) > 30 MW (SPT) > 10 MW	50 – 100MW N/A (SPT / SHETL)	< 50MW < 30MW (SPT) < 10 MW (SHETL)	> 30MW or connected at 110kV or above	30 – 10 MW (<u>GB</u>) and connected below 110kV and	1 – 10 MW (GB) and connected below 110kV and	<u>800W – 1 MW – and connected</u> below 110kV		Deleted: pursuant to Article 4(3)
			(SHETL)			and subject to Article 4(3) and Article 6 (d)	subject to Article 4(3) and Article 3 (6) (c) characteristics shall not adversely affect the damping of power oscillations.	subject to Article 4(3) and Article 3 (6) (b)			Deleted: 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
Other Reactive Power Control	Synchronous	<u>9</u>	Reactive Power and Power Factor	As per Large	N/A	As per Type B and C	None other than in respect of the	Required to have a permanent	N/S		-3(a) (5) pursuant to Article 4(3).
Grid Code			(excluding VAR				Type B.	excitation control		į ;	Deleted: Synchronous
CC.6.3.8(a)(v)			limiters) are not				.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	system in order to			Deleted: 1
ENTSO-E -			specified by NGET					alternator terminal		11%	Deleted: Article 12 –3(a)
Article 12 - 2(b)			in the Bilateral					voltage without		1	Deleted: (5)Asynchron [13]
			Agreement					entire operating			Deleted: 1
								range of the			Deleted: Power Park N [14]
1								Generating Unit as			Formatted Table
								2(b).		11	Deleted: Synchronoug [15]
Other Reactive Power Control	Asynchronous	<u>5</u>	Reactive Power and Power Factor	As per Large	N/A	As per Type C	Defined by the Relevant Network	Relevant Network	<u>N/S</u>		Deleted: 4
Modes			Control Modes				Operator in	have the right to		11	Deleted: -
CC.6.3.8(a)(v)			(excluding VAR limiters) are not				the Relevant TSO	<u>define the</u> <u>Reactive</u>			Deleted: 1
ENTSO-EArticle			required unless				(whilst respecting the provisions of	Capability of a Power Park		M.	Deleted: The Relevant [16]
1 <u>5 –(2)(</u> a)			in the Bilateral				Article 4(3) under	Module whilst			Deleted: e
<u>And</u> Article 16 – 3(<u>d)(5)</u> .			Agreement				<u>Article 16 - 3(d) (5)</u>	provisions of		1	Deleted: 6
								Article 4(3).as per Article 15 – 2(a)			Deleted: As per Type A
Steady State	Synchronous	<u>9</u>	The standard	As per Large	N/A	<u>N/S</u>	<u>N/S</u>	N/S	N/S		Deleted: As per Type C
LUAU INACCUTACIES	anu	1		l	1	1	1	<u> </u>	1]	Deleted: Specified by [[17]

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG GB Power Station Type ENTSO-E RfG– Generating Unit Type												
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре				
	Туре	2	Large	Medium	Small	D D	C	BB	A		Formatted: Font: 8 pt, Not		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>800W – 1 MW</u>		Bold		
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	1111	Deleted: 4		
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	<u>Delow TTOKV</u>				
			(0.12.2)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3					
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		_			
GB CC.6.3.9	Asynchronous		error at steady										
ENTSO-E Article 9 = 2(a)(2)			state load over a										
5-2(a)(z)			must not exceed										
			2.5% of a										
			Genset's Registered							1	Formatted: Highlight		
			Capacity.							12	Formatted: Highlight		
Negative Phase Sequence	Synchronous only	<u>9</u>	Each Synchronous Generating Unit is	As per Large	N/A	Not explicitly	As per Type B	<u>defined but</u>	<u>N/S</u>	<	Formatted: Highlight		
Loadings	(Asynchronou		required to			believed to be		believed to be			Formatted: Highlight		
ENTSO-E Article	under		tripping the			the fault ride		fault ride through			Deleted: 11		
9 – 3(a) and	CC.6.3.15		negative phase			through		requirements of		/	Deleted: (5)		
Article 1 <u>1, - (3)</u>	Fault_Ride		by clearance of a			Article $9 - (3) (a)$		$\frac{\text{Article 9} - (3)(a)}{2}$		5			
	requirements)		close up phase to			for Type B				14	Deleted: 3		
			phase fault by			Power Concrating					Deleted: (a)(5)		
			protection on the			Modules and					Deleted: Specified by the		
			Transmission			<u>Article 11 – (3)</u>					Relevant Network Operator in		
			System.								accordance with Article 11 – 3(a)(5) and pursuant to Article		
Neutral Earthing	Synchronous	<u>5</u>	At nominal system	As per Large	N/A	As per Type C	Specified by the Bolovant Notwork	N/S	N/S		4(3)		
ENTSO-E Article	Asvnchronous		and above the				Operator as per			ТХ,	Deleted: Specified by the		
<u>10</u> – 6(<u>f</u>)	-,		higher voltage				Article <u>10</u> – 6 (<u>f</u>)				Belevant Network Operator in		
			windings of a							e.	accordance with Article 13 -		
			transformer of a							P. S.	3(a)(5)		
			Power Park								Deleted: 9		
			Module must be star connected								Deleted: i		
			with the star point								Deleted: 9		
	I	I	Suitable Ior		I					1 [`]	Deleted: i		

	1										
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	/pe		
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			Article 4(2) and	SUDJECT TO AFTICLE	SUDJECT TO ARTICLE			
						Article 6 (d)	$\frac{4(3) \text{ and Article 3}}{(6) (c)}$	(6) (b)			
			connection to			<u>/ ((())) (())</u>	<u>(0/ (0/</u>	<u>10/10/</u>		-	
			Earth								
Frequency	Synchronous	<u>5</u>	As specified in	As per Large	N/A	As per Type A	As per Type A	As per Type A	Tripping within	1	
Sensitive Relays	and		CC.6.1.3 the						the frequency		
(GB - CC.6.3.12	Asynchronous		System Frequency						and time ranges		
ENISO-E Article			could rise to 52Hz						as specified in		
$\underline{\alpha_r} = (1)(a) and \\ Article 8 = (1)(b)$			Fach Generating					+	$\frac{1}{8} = (1)(a)$ (which		Deleted: 7
			Unit must continue						is broadly similar	57-1	Deleted: Article 1 – (b)
			to operate within						to the GB		Deleted: 7
			range for at least						requirements) to		
			the time periods						be is prohibited		
			defined in						unless otherwise		
			CC.6.1.3 unless						agreed by the		
			NGET has agreed						Relevant TSO		
			within the Bilateral						whilst respecting		
			Agreement to any Frequency level						Article 4(3)		Deleted: pursuant to
			relays or rate of								
			change of						A Generating		
			frequency relays						Unit shall not		
			which will trip the						disconnect from		
			Generating Unit or						the Network due		
			Power Park Modulo						to rates of		
			woulle						Frequency up to		
									a value defined		
									by the Relevant	1	
									TSO whilst	1	
									respecting the	1	
									provisions of		
									Article 4(3) other		Deleted: 2Hz/s
L									11a11 Dy 1055 01	1	

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
-	Туре	2	Large	Medium	Small	D D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW]	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	<u>DEIOW TTUKV</u>		
			(011212)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
									mains protection		
									Article $8 - 1(b)$		Delete de 7
									The rate of		Deleted: 7
									change of		
									frequency type		
									protection will be		
									defined by the		
									Relevant		
									<u>Network</u> Operator in co-		
									ordination with		
									the Relevant		
	0 m d	-	O an anatin a bhaite	A	N1/A	A	A	A	TSO.		
Plant operation /	Synchronous	<u>5</u>	and Power Park	As per Large	N/A	As per Type A	As per Type A	As per Type A	A Generating		
the defined	Asynchronous		Modules will be						capable of		
frequency / time	-		will be responsible						automatic		
operating ranges			for protecting their						disconnection at		
(GB CC.6.3.13 ENTSO-E Article			plant outside the range 52 – 47 Hz						specified frequencies if		
<u>8-1(a)(3)</u>			Should such						required by the		Deleted: 7
			excursions arise it is up to the						Relevant Network		Deleted: 2
			Generating Unit to disconnect their						Operator. Whilst	×.	Deleted: and (3)
			plant for the						provisions of		
			reasons of safety						Article 4(3) the		
			of plant and						terms and		
			apparatus.						automatic		
									disconnection		
									shall be agreed		

	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG GB Power Station Type ENTSO-E BfG- Generating Unit Type												
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре				
	Туре	<u>2</u>	Large	Medium	Small	D D	C	B	Α		Formatted: Font: 8 pt, Not		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold		
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4		
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHEIL)	110KV or above	below 110KV and subject to Article	below 110KV and subject to Article	DEIOW 110KV		(
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3					
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>					
									between the				
									Relevant				
									Network Operator and the				
									Power				
									Generating				
									Facility Owner,		Deleted: or as specified in the		
Fast Start	Synchronous	<u>2, 5</u>	NGET may specify	N/A unless	N/A	As per Type C	Quick re-	N/S	N/S		National Grid Code in		
Capability	and		In the Bilateral	specified by NGEI			synchronisation				accordance with Article 7 –		
(ENTSO-E Article	Asynchronous		requirement for a				required in the				1(a)(2) and (3) pursuant to		
10 - 5(c)			Genset to have a				case of				Article 4(3).		
			Fast Start				disconnection as				Deleted: 9		
			Capability. Such				agreed between						
			Gensets may be				the <u>Relevant</u>						
			Reserve and be				Relevant TSO and						
			initiated by				Power Generating						
			Frequency level				Facility, as per				Deleted: Generator		
			relays in the range				Article <u>10</u> – <u>5(c)</u>				Delete de O		
Eault Bido	Conorol Foult	2.0	49 – 50Hz	As par Largo	NI/A	As par Type P	Ac por Type P	Lindor ENISTO E	N/S	- 12 - L	Deleted: 9		
Through for short	Bide Through	<u>2, 0</u>	Ride Through	As per Large	IN/A	AS per Type B and C except for	Аз рег туре в	The majority of the	N/5	1	Deleted: pursuant to Article		
term faults up to	Requirements		Requirements for			the following		Fault Ride			4(3)		
140ms.	applicable to		Synchronous and			additional		Through					
(CC.6.3.15(a) and	Synchronous		Asynchronous			requirements		requirements are					
Appendix 4A of	and Acurachronous		Plant are broadly			i) The veltage		specified as					
Conditions	Plant		faults up to 140ms			against time		Generating			Formatted: Left		
ENTSO-E Article	<u></u>		in duration the			profile shall be		Module		1			
9 - (3)(a)(1) - (7),			following high level			defined by the		requirements with					
<u>Article 11 – (3)</u>			requirements			TSO as per		minor variations			Deleted: segregated		
and Article 15 –			apply:			Figure 3 (ie the		between Synchronous and			Deleted: 11-3(a)(b))¶		
<u>107</u>	<u> </u>	L	L	I	I	Same as 1 ypes	L		L		Article 13-3(a))		

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG									1		
Requirement	Plant	Key	GB	Power Station 1	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleteu. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
			i) Each Concrating			Article 6 (d) P and (C) but	<u>(6) (C)</u>			-	
			I) Each Generating			<u>D and C) but</u>		Plant unlike GB			
			Park Module shall			<u>with the</u>		Voltage Time			
			remain transiently			defined in		profile is also			
			stable and			Tables 7.1		specified over the			
			connected to the			(Synchronous		whole time frame			
			System for any			Plant) and 7.2		unlike GB which			
			close up solid			(Power Park		specifies the			
			balanced or			Modules)		requirement for			
			unbalanced fault			(instead of		the period			
			operating at			Lables 3.1 and		between 0 –			
			Supergrid Voltage			<u>3.2).</u>		140ms and for			
			(le above 200kv)					140mo			
			clearance time of			shall define and		1401115.			
			up to 140ms A			make publically		I Inder the			
			solid three phase			available (whilst		ENTSO-E Code			
			fault or			respecting the		Power Generating			
			unbalanced earth			provisions of		Modules			
			fault may result in			Article 4(3) the		(Synchronous and			
			zero voltage on			pre-fault and		Asynchronous			
			the faulted phase			post fault		Generators are			
			at the point of the			conditions for		required (as per			
			tault.			the fault ride		Article 9-3(a) to:-			Deleted: 1
			II) Each Concreting Unit or			<u>inrougn</u>		i) The TSO (whilet		12.	Deleted: 1
			Power Park			according to		respecting the		100 N.	
			Module shall be			Article 9 - (3)(3)		provisions of			Deleted: (b) (pursuant to
			designed such that			iii)) For		Article 4(3) will		\uparrow	Article 4(3))
			upon clearance of			Synchronous		define a voltage		<u> </u>	Deleted: pursuant to
			the fault on the			Generating		against time profile			
			Transmission			Modules (Table		according to			
			System and within			<u>7.1) the</u>		Figure 3 at the			
			0.5 seconds of the		1	requirements in		Connection Point			

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	El	NTSO-E RfG– Ge	nerating Unit Ty	pe		
•	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Dolotodu 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
			rectoration of the			<u>Article 6 (d)</u>	<u>(6) (C)</u>	(b) (D) for foult conditions			
			voltage at the			respect of faults		which describes			
			Connection Point			on the		the conditions in			
			to the minimum			Transmission		which the Power			
			levels defined in			Network not in		Generating			
			CC.6.1.4, 90% of			respect of the		Module shall be			
			the pre fault Active			connection		capable of staying			
			Power generated			voltage to which		connected to the			
			by the Generating			the Generating		Network and			
			Unit or Power Park			Unit connects.		continuing stable			
			rostored and			the requirements		operation after the			
			supplied to the			are somewhat		been disturbed by			
			System			different but		Secured Faults on			
			iii) In addition			considered to be		the Network. ji)			Deleted: (within the
			during the period			broadly		The voltage			boundaries defined by Figure 5
			of the fault when			consistent with		against time profile			- minimum voltage at the
			the voltage is			the GB Code.		shall be expressed			connection point being defined
			outside of nominal			Under Table 7.1		by a lower limit of			by the TSO but could range
			limits each			the Power		the <u>course of the</u>		\ \	between 0.3 p.u and 0.05 p.u
			Generating Unit or Bower Bark			Generating Medule must		phase to phase		N.	for between 150ms and 250ms)
			Module shall			remain		Network Voltage		A State	under which the Synchronous
			generate			connected for a		level at the		- N - N	Generating Unit shall stay
			maximum reactive			retained voltage		Connection Point		Ň,	connected and stable after the
			current without			of 0 p.u for a		during a		N N	disturbed by secured faults
			exceeding the			time period of		symmetrical fault		N.	(balanced and unbalanced
			transient rating of			between 140ms		as a function of		N.	faults) on the network unless
			the Generating			<u>– 300ms with</u>		time before during		1 N	the protection scheme requires
			Unit or Power Park			regional		and after the fault.		N.	the disconnection of the
			wodule			variations being		I ne lower limit is			Generating Unit from the
								TSO using			Network ¶
						<u>100.</u>		parameters in			Deleted: as the

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											Earmattadi Eanti 9 pt. Not
Requirement	Plant	Key	GB	Power Station 1	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре	1	Bold
-	Туре	2	Large	Medium	Small	D	C	B	Α	1	
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Deleted: 4
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: Under ENSTO-E The
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Fault Ride Through
			(SHETL)			and subject to	subject to Article	subject to Article			requirements are segregated
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			between Synchronous and
						<u>Article 6 (d)</u>	<u>(6) (c)</u>	<u>(6) (b)</u>		i	Asynchronous Plant unlike GB.
						For Power Park		Figure 3 according		1	A voltage Time profile is also
						Modules (Table		to Table 3.1		i i	specified over the whole time
						7.2) the same		(Synchronous			frame unlike GB which specifies
						voltage profile		Power Generating		i i	the requirement for the period
						exists as in		Modules) and			between 0 – 140ms and for
						Figure 3 with a		Table 3.2 (Power		1	voltage dips after 140ms.
						rotainad valtaga		described in		1	1 Under the ENTRO E Code
						of 0 p u and a		$\frac{\text{described in}}{\text{Article 9} - (3)}$		1	Synchronous Concrators are
						time range of		$\frac{\text{Article 5} - (5)}{\text{iii}}$ For		1	required (as per Article 13-3(a)
						between 140ms		Synchronous		1	(pursuant to Article $4(3)$) to:- \P
						– 250ms.		Generating		i	¶
						iv_		Modules (Table			i) The TSO (pursuant to Article
								3.1) the			4(3)) will define a voltage
								requirements in			against time profile at the
								GB apply in			Connection Point (within the
								respect of faults			boundaries defined by Figure 7
								on the			-minimum voltage at the
								Transmission			connection point being 0 p.u for
								Network not in			150ms up to 250ms) under
								respect of the			which the Synchronous
								connection voltage			Generating Unit shall stay
								to which the			connected and stable after the
								Generating Unit			power system has been
								CONTINUES. FOR			disturbed by secured faults on
								roquiromonte are			unbalanced faulta) unloss the
								somewhat			protoction schome requires the
								different but			disconnection of the Generating
								considered to be			Linit from the Network ¶
								broadly consistent			ii) The voltage against time
								with the GB Code.			profile shall be expressed as
								Under Table 3.1			the lower limit of the lowest
								the Power			phase voltage (in the case of
· · · · · ·					•	•			•	-	asymmetrical faults the [[18]

Requirement Plant Type Key 2. GB Power Station Type ENTSO-E RIG- Generating Unit Type	TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Type 2. Large Medium Small D C B A > 100 MV (SPT) > 100 MV (SPT) > 00 MV (SPT) <	Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
Solow W (ERW) Sol-100MW < 500-W (SPT) Sol W (SPT) Solow (SPT) ShETL) ShETL) ShETL) ShETL) SheTL) ShETL (SHETL) ShETL) ShETL (SheTL) ShETL) ShETL (SheTL)		Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
S > 30 MW (SPT) > 10 MW (SPT) (SHETL) N/A (SPT / SHETL) SHETL) <p< th=""><th></th><th></th><th></th><th>> 100 MW (E&W)</th><th>50 – 100MW</th><th>< 50MW</th><th>> 30MW or</th><th>30 – 10 MW (<u>GB</u>)</th><th>1 – 10 MW <u>(GB)</u></th><th>800W – 1 MW</th><th></th><th>Bold</th></p<>				> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (<u>GB</u>)	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
> 10 MW (SHETL) < 10 MW (SHETL) 110kV or above ad subject to Article Article 4(3) and Article 3 below 110kV and subject to Article 4(3) and Article 3 below 110kV and subject to Article 4(3) and Article 3 Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 3 She true attraction and subject to Article 4(3) and Article 3 She true attraction and subject to Article 4(3) and Article 3 Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 4(3) and Article 3 She true attraction attractio attraction attraction attractio attraction attraction att				> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11	Deleted: 4
Image: Instructure Ande 4(3) and Ande3 Subject to Ande3 Ande4 (3) and Ande3 Anticle 4(3) and Anticle 6(d) Anticle 4(3) and Ande3 (6) (b) (6) (c) Image: Imag				> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted. 4
Article 6 (d) Signal (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c				(SHETL)			Article 4(2) and	<u>SUDJECT to Article</u>	SUDJECT TO Article			
Johnson Johnson Generating Modula must internationated for a related value of the between 0.05 - 0.5 put for a time period of between 190ms Value of the period of between termson Johnson Value of the between 0.05 - 0.15 put and a time case of asymmetrical full the case of asymmetrical full the lowest of hase voltage (in the case of asymmetrical full the lowest of hase voltage (at the lowest of hase voltage							Article 6 (d)	(6) (c)	(6) (b)			
Module must tremine connected tor a retained voltage of between 0.05- 0.3 putor 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 of between 0.05- 0.15 pu and a imer range of between 140ms - 250ms, - iiii fach TSO (whils respecting							744000 0 (0)	<u>(0/ (0)</u>	Generating			
Image: second									Module must			
Image: Sector									remain connected			
Voltage 0 0.3 p.ufor a time period of between 140ms - 300ms with regional variations being specified by the Power Park Modules (Table 3.2)the same voltage or between 1.05 - 0.15 p.u and a time trange of voltage voltage with a traindividuage voltage or voltage or voltage or voltage or voltage or voltage or									for a retained			
Deleted: I. Uor a time period of between 1400ms with regional variations being secience do the TSO., For Park Modules (Table 3.2). the same variations being variations being Body and the same variations being Body and the same variations being Body and the same values of table 3.2). the same as with a saminume retained voltage of between 0.05 - 0.15.5.2									voltage of			
Debugging Debugging period of between 140ms - 300ms with regional variations being specified by the Power Park Modules (Table 3.2) the same voltage profile exists as in Figure 3.4) th a minimum retained voltage of between 1005 0.15 p.u and a time range of between 1005 0.15 p.u and a time range of between 1005 0.15 p.u and a time cange of between 100ms 250ms, r iii) Each TSO with at respecting									0.3 p u for a time			
140ms = 300ms with ration being specified by the TSOFor the Power Parks Modules (Table 3.2.1 with regime 3.3.1 retained voltage profile exists as in Figure 3.3.1 retained voltage of between 0.05 - 0.15 p.u.and a time range of between 0.05 - 0.15 p.u.and a time trange of whilst respecting									period of between			
with regional variations being specified by the TSO. For the Power Pask Modules (Table 3.2) the same voltage partie voltage partie voltage norm									140ms - 300ms			
variations being specified by the TSO. For the Power Park Modules (Table 3.2.1he same voltage profile exists as in Figure 3 with a winimum retained voltage of between 0.05 - 0.15 p.u and a time range of between 140ms - 250ms.v iii) Each TSO (whilst respecting									with regional			
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 iii) Each TSO (in the case of asymmetrical (in the case of asymmetrical the lowest phase voltage (in the case of asymmetrical the lowest phase voltage (in the case of asymmetrical the lowest phase voltage									variations being			
Isour 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 e.p. 0.05 0.15 e.p. und a time range of between 140ms 250ms.v (whilst respecting)									specified by the			
Image: Second									Power Park			
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.v iii) Each TSO (whilst respecting									Modules (Table			
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.v iii) Each TSO (whilst respecting									3.2) the same			
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.v iii) Each TSO (whilst respecting									voltage profile			
3 with a minimum retained voltage of between 0.05 - 0.15 p.u and a time range of between 140ms - 250ms.v iii) Each TSO (whilst respecting									exists as in Figure			
between 0.05 – 0.15 p.u and a time range of between 140ms – 250ms. iii) Each TSO (whilst respecting (in the case of asymmetrical faults the lowest phase voltage									<u>3 with a minimum</u>			
0.15 p.u and a time range of between 140ms – 250ms. ↓ iii) Each TSO (whilst respecting) Deleted: lowest phase voltage (in the case of asymmetrical faults the lowest phase voltage									between 0.05 –			
time range of between 140ms – 250ms. – iii) Each TSO (whilst respecting) Deleted: lowest phase voltage (in the case of asymmetrical faults the lowest phase voltage									0.15 p.u and a			
between 140ms – <u>250ms.</u> iii) Each TSO (whilst respecting) Deleted: lowest phase voltage (in the case of asymmetrical faults the lowest phase voltage									time range of			
250ms. Deleted: lowest phase voltage iii) Each TSO (in the case of asymmetrical (whilst respecting faults the lowest phase voltage									between 140ms -			
III) Each ISO (in the case of asymmetrical (whilst respecting faults the lowest phase voltage									250ms.			Deleted: lowest phase voltage
while the lowest phase voltage									III) Each ISO			(in the case of asymmetrical
the provisions of									the provisions of			faults the lowest phase voltage
Article 4(3)) will subtract draw the other three draw									Article 4(3)) will	+		snall be used irrespective of the
shall define (and shall a define (and shall a shall be as a function of time)									shall define (and		\sim	phases) as a function of time
make publically both during and after the fault.									make publically			both during and after the fault.
available) the pre-									available) the pre-		Ň	Deleted: surguest to
rauit and post rauit Deleted: pursuant to									rauit and post fault			Deleted: pursuant to

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
•	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 6 (d)	$\frac{4(3)}{(6)} \frac{(6)}{(6)}$	(6) (b)			
						741000 0 (0)	(0) (0)	ride through in			
								terms of the			
								conditions for			
								calculation of the			
								pre fault minimum			
								short circuit			
								capacity at the			
								the conditions for			
								pre fault active			
								and Reactive			
								Power operating			
								point of the Power			
								Generating			
								Module at the			Deleted: Unit
								Connection Point			
								and voltage at the			
								and conditions for			
								the calculation of			
								the post fault			
								minimum short			
								circuit capacity at			
								the Connection			
								Point			
								iv) Each <u>Relevant</u>			
								Network Operator			Deleted: (pursuant to Article
								request by the			4(3)
								Power Generating			
								Facility Owner the			Deleted: define
								pre and post fault		1	Deleted. deline
								conditions to be			Deleted: parameters
								considered for		1	parametere

]										
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A	·	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (C)</u>	(b) (D) foult ride through			
								rault ride through			
								capability as an			
								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 <u>Power</u>			
								Generating			Deleted: g
								in Active Dewer			Deletedu unit
								In Active Power			Deleted. unit
								Beactive Power			
								Output at the			
		1						Connection Point			
								and Voltage at the			Deleted: v
								Connection Point	+		
								and the Post fault			Deleted:
								minimum short			
		1						circuit capacity at			
								each Connection			
								Point expressed in			
		1						MVA.			
		1						Alternatively			
		1						generic values for			
1							1	the above		1	

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
								conditions derived			
								from typical cases			
								by the Relevant			
								Network Operator.			
								v) The			Deleted: i
								Undervoltage			
								protection on the			
								Module (as set by			
								the Generator)			
								should be set to			
								the widest			
								unless the			
								Relevant Network			
								Operator requires			
								narrower settings			Deleted: possible range
								Article 9 – (5) (b).			Deleted: Belevant
								The settings to be		11	Deleted: nursuant to
								Generator_		1 11	
								vi) The fault ride		- 19	Deleted: will
								through			Deleted: specify the
								capabilities for		111	requirements for 90% of the
								faults shall be		141	fault clearance measured from
								defined by each		14	the time the voltage has
								TSO (<u>whilst</u>		19	recovered above 85% of the
								respecting the		14	pre-fault nominal voltage value.
								Article 4(3))		1	the maximum recovery period shall be greater than 0.5
								vi) The Relevant	+		seconds and less than 15
L	1	1					1		1	1	seconds.

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	/pe		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>800W – 1 MW</u>		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110KV or above	below 110KV and subject to Article	<u>below 110kV and</u>	<u>below 110kv</u>		(
			(ONETE)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			Formatted: Font: Not Italic
								TSO shall define		1	Deleted: Fault Dide Through
								(whilst respecting		//	for short term faults up to
								Article 4(3) the		-j'	140ms.¶
								time and		$-j_{1}^{\prime}$	(CC.6.3.15(a) and Appendix 4A
								magnitude of the		11	of the Connection Conditions¶
								post fault Active		11	ENTSO-E Article 11-3(a)(b))
								Power Recovery.		11	Article 13-3(a))
	_							^		í · ·	Deleted: Fault Ride Through
L					N/A				+		Requirements
Through for long	and	<u>2, 0</u>	In addition to the	As per Large	IN/A	ENTSO-E RfG	ENTSO-E RfG no	ENTSO-E RfG no	+		Formatted: Left
term faults greater	Asynchronous		fault ride through			no distinction is	distinction is made	distinction is made			Deleted: As per Type B
than 140ms.			requirements for			made between	between short and	between short and			Deleted: (b)
(CC.6.3.15(b) and Appendix 4A of			short duration			short and long	faults See Article	faults See Article		1	
the Connection			faults			see Article 11 -	9 - (3)(a)(1) - (7)	9 - (3)(a)(1) - (7)		11	Deleted: Article 13-3(a) Article
Conditions			each Generating			3(a)	<u>Article 11 – (3)</u>	<u>Article 11 – (3)</u>		11	1/-1(a) and Article 15-3(a) (b).
ENTSO-E Article			- Unit and Power				Article 15 –	and Article 15 -	1		system faults and disturbances
9 - (3)(a)(1) - (7)			Park Module is				$\frac{(2(b)(3) \text{ and}}{(2(b)(3) \text{ and}}$	<u>(2((b)(3)</u>		N.	for Power Park Modules is
$\frac{\text{Article 11} - (3)}{\text{Article 15} - }$			required to:-				<u>Article 16 – $(3)(e)$.</u>			NN.	covered under Article 15 -2. ¶
(2)(b)(3) and											
<u>Article 16 – (3)(e)</u>			i) Remain							\sim	Deleted:
			and connected to								Deleted: 11-3(a)(b) and
			the System							N	Article 15-3(a) (b). The
			without tripping for							- N	Reactive injection during
			any Balanced							N.	system faults and disturbances
			dins anywhere on							N.	for Power Park Modules is
			or above the							l ``	covered under Article 15 -2.
			heavy black line of								Deleted: 11-3I(a)(b), Article
			Figure 5 defined							l	13-3(a), Article $15 - 3(a)$ (b)

	7									
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	(6) (c)	(6) (b)		
			under CC.6.3.15(b). ii) Provide Active							
			 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 							
			 iii) Generate maximum reactive current without exceeding the 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 							

	1										
Requirement	Plant	Key	GB	Power Station 1	Гуре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11-	Deleted: 4
			(SHETL)	SHETL)	< TO MIVE (SHETL)	and subject to	subject to Article	subject to Article	DEIOW TTUKV		
			(011212)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
			been a reduction								
			energy source to								
			the Power Park								
			Module) within 1								
			second of								
			voltage at the								
			Connection Point.								
Fault Ride	Asynchronous	<u>2, 5</u>		As per Large	N/A	As per Type B	As per Type B	Not explicitly	<u>N/S</u>		Deleted: Not explicitly
Requirements			For Power Park					specified but could		N	specified but could be within the
Operation under			MODULES comprising of wind					framework of		N.	tramework of Article 17-1(a) by being specified by the Belevant
high wind speed			turbine generating					Article 15-(3) by			TSO pursuant to Article 4(3).
or emergency			units the fault ride					being specified by		×	Deleted: C
conditions			through								
(GB			not apply when the								Deleted: pursuant to Article
CC.6.3.15.3(i)			wind farm is								
15-(3)			- operating at less					+			Deleted: Article 17-1(a) or
			MW output or								
			when 50 % or								
			more of the wind								
			turbines have								
			due to emergency								
			shut down								
Eauth Diala	A a	0.5	sequence.	A	N1/A			Creatified by the	N/0	-	
Through – Other	Asynchronous	<u>2, 5</u>	Fach Dower Derit	As per Large	N/A	Relevant	As per Type C	Relevant Network	IN/S		
Requirements			Module must be			Network		Operator (whilst			
Negative Phase			able to withstand			Operator (whilst		respecting the			
sequence loading			without tripping the			respecting the		provisions of			Deleted: pursuant to

Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D D	C	BB	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11-	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Beleteur
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
CC.6.3.15.3(ii)			negative phase			provisions of to		Article 4(3)) in			Deleted: pursuant
ENTSO-E -			sequence loading			Article 4(3)) in		accordance with			
Article <u>9 –</u>			incurred by			accordance with		Article 9,-			Deleted: 15
(3)(a)(7) and			clearance of a			Article $11 - 2(a)(4)$		<u>(3)(a)(7)</u> .			
$\frac{\text{Article 11}}{3(2)(4)}$			close up phase to			<u>3(a)(4)</u>					Deleted: 17 – 1(a)
<u>5(a)(+</u>			System Back up								Deleted: 17-1(a) or Article 15-
			Protection on the								3).
			Transmission								
			System operating								
			at Supergrid								
Reactive Current	Synchronous	5	vollage.	As por Largo	NI/A	N/S	N/S	N/S	N/S		
Injection during	Synchronous	2	Movimum	As per Large	11/75	11/3	11/5	11/0	11/3		
System faults and			Reactive Current								
Disturbances			to be injected								
CC.6.3.15			during the period								
•			of the fault without								Deleted: Article 15-2
			exceeding the								
			Transient Rating								
			of the Generating								
			CC 6 3 15								
Reactive Current	Asynchronous	2,6		As per Large	N/A	As per Type B.	As per Type B, In	The Relevant	N/S		- Deleted: S
Injection during			Maximum				addition the	Network Operator			Deleteur
System faults and			Reactive Current				Relevant TSO	in co-ordination			
Disturbances			to be injected				shall define (whilst	with the Relevant			
CC.6.3.15 Article 15-2			during the period				respecting the	the right to require			
ENTSO-E			of the fault without				Article 4(3)) the	(whilst respecting			
15 - 2(b) (c) and			Transient Rating				priority of Active or	the provisions of			
Article 16 - (3)(e)			of the Generating				Reactive Power	Article 4(3)) fast			
			Unit as specified in				injection during	acting additional			
			CC.6.3.15.1(a)				the fault which	reactive Current			

Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		
			and (b).				shall be	injection at the		
							established no	Connection Point		
							later than 150ms	to the pre-fault		
							incention as	injection in the		
							detailed in Article	case of		
							<u>16 – (3)(e).</u>	symmetrical faults.		
								I) The Power Park		
								canable of		
								activating this		
								additional reactive		
								current injection		
								of faults. The		
								Power Park		
								Module shall be		
								capable of either		
								Encurring the		
								<u>- Ensuring the</u>		
								additional reactive		
								Current at the		
								Connection Point		
								(as specified by		
								of the magnitude		
								of this current,		
								depending on the		
								deviation of the		
								Connection Point		
								from its nominal		

]									
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	
			(SHEIL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	(6) (c)	(6) (b)		
								value or		
								- Alternatively		
								deviations at the		
								terminals of the		
								individual units of		
								the Power Park		
								Module and		
								providing an		
								Current at the		
								terminals of these		
								units according to		
								further		
								the Belevant		
								Network Operator		
								in co-ordination		
								with the Relevant		
								TSO of the		
								current depending		
								on the deviation of		
								<u>the Voltage at</u>		
								units terminals		
								from its nominal		
								vaide.		
								Under either of		
								these options the		
								Power Park		
								Module shall be		

Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (<u>GB</u>)	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	Deleteu. 4
			(SHETL)			Article 4(2) and	<u>subject to Article</u>	<u>subject to Article</u>		
						Article 6 (d)	(6) (c)	(6) (b)		
						<u>/ ((())) (())</u>	<u>10/ (0/</u>	providing at least		
								2/3 of the		
								additional reactive		
								current within a		
								time frame		
								Belevant TSO		
								which shall not be		
								less than 10 ms.		
								The target value of		
								this additional		
								reactive current		
								with an accuracy		
								of 10% within 60		
								ms from the		
								moment the		
								voltage deviation		
								has occurred as		
								Article 15(2)(b)(1)		
								The total Reactive		
								Current		
								contribution shall		
								be not more than		
								<u>1 p.u of the short</u>		
								Current Bating		
								(covering up to 0.4		
								seconds) of the		
								Power Park		
								Module or of the		
								the Power Park		
								the Fower Fark]

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	
•	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	Deleteu: 4
			(SHETL)			and subject to	subject to Article	subject to Article		
						Article 6 (d)	$\frac{4(3)}{(6)}$ and Article 3	(6) (b)		
							<u>(0) (0)</u>	Module taking into		
								account the pre-		
								fault reactive		
								Current. If		
								additional real		
								current injection is		
								additional reactive		
								Current injection		
								the total Current		
								contribution can		
								be further limited		
								by the real current		
								the apparent		
								current (is MVA		
								limit) to 1p.u of the		
								short term		
								dynamic Current		
								Power Park		
								Module or the		
								individual units of		
								the Power Park		
								Module.		
								II) The Relevant		
								in co-ordination		
								with the Relevant		
								TSO (whilst		
								respecting the		
								provisions of		
								Article 4(3)) shall		
		I	1					nave the right to	1	

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		Bold
	Туре	2	Large	Medium	Small	D D	C	B	A		
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>800W – 1 MW</u>		Deleted: 4
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: Under the ENSO-E
			> 10 IVIV (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	subject to Article	subject to Article	<u>Delow TTUKV</u>	<i>i</i>	Code a specific new section
			(011212)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			Park Modules relating to
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		1	reactive current injection during
								specify the		/	system faults. These are
								requirements for		1	specified under Article 15 – 2.
								additional reactive		1	I he requirements include:-
								current during		1	For a symmetrical three phase
								asymmetrical		/	fault a Type B Power Park
Orestational	Currente una curre	0.5		A	Natanaliaskis	A T	Δ	faults.	Defined by		Module is required to
Intertripping	and	<u>2, 5</u>	On a different have	As per Large	Not applicable	As per Type A	As per Type A	As per Type A	Belevant		¶ i) Inject fast acting reactive
(GB CC.6.3.17)	Asynchronous		NGET in the						Network		current into the network at the
ENTSO-E –	-		Bilateral						Operator		Connection Point at no less
Article 8, - 1(f)			Agreement					+	As per Article 8 –		than the red line shown in
			depending upon						1 <u>(I) Whiisi</u>	ð.,	Figure 8 of Article $15-2(a)(1).$
			whether this is						provisions of	N. C.	current supplied at the Power
			thermal, voltage or						Article 4(3).	No.	Park Module terminals shall
			stability reasons.							N MAN	contribute at least 2% o [19]
Control Telephony	Synchronous	<u>2, 9</u>		Only required for	Only required for	<u>As per Type B</u>	As pert Type B	Not specifically	Not specifically		Deleted: 7
Telephony	and Asynchronous		Control Telephony	Medium Power	Small Power			required in the	required in the	(1, 1)	Deleted: d
GB CC.6.5.2	Asynchronous		IS a dedicated	Stations.	Stations.			context of an	context of a logic	\mathcal{H}	
ENTSO-E Article			with a high level of					interface port to	interface port to	1.1.	Deleted: 7
$\frac{8 - (1)(f) \text{ and}}{4 \text{ rticlo } 9 - (2)(a)}$			redundancy and	For those Medium	For those Small			reduce Active	cease Active	111	Deleted: d
			 – resilience and – – System Telephony 	which are	which are			detailed in Article	detailed in Article		Deleted: pursuant to
			is based on the	Embedded and	Embedded and			<u>9 – (2)(a).</u>	<u>8 – (1)(f).</u>	$\frac{1}{2}$	Deleted: Control telephony is
			standard Public	SVA registered	SVA registered			Requirements for		1 1	not specifically defined but is
			l elephone Provider (BT)	requirement for	requirement for			information		11	required in the context ([20]
				Control or System	Control or System			exchange in real			Deleted: /S
			Control Telephony	l elephony	I elephony			in Article 9 – (5)(d)			Deleted: N/S
			is required for all	For those Medium	For those Small					Ň	Deleted: 9. 4(b) Article 0
	1		Large Fower	Power Stations	Power Stations					l	2(a) and Article 9 – 5(2).

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG Bequirement Plant Key GB Power Station Type ENTSO-E RfG– Generating Unit Type											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	BB	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	subject to Article	subject to Article	Delow TTUKV		
			(011212)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
			Stations. If NGET	which are CVA	which are CVA						
			telephony is not	Registered and BM Participants	Registered and BM Participants						
			practicable then	there is a	there is a						
			NGET will specify	requirement for	requirement for						
			the use of System	Control or System	Control or System						
			Bilateral	relephony	relephony						
			Agreement								
Operational	Synchronous	<u>2, 9</u>		As specified by	N/A	As per Type B	As per Type B	Specified by the	N/S		
Metering	and		Generator to	NGET in				Relevant Network			
CC.6.4.4	Asynchronous		provide signals	CC.6.5.6 and				Relevant TSO in			
ENTSO-E Article			in accordance with	CC.6.4.4				accordance with			
<u>9 – 5(d)</u>			- the terms of the					Article 9, – <u>5(d)</u>			Deleted: 8
			Agreement and							ALL STREET	Deleted: 4
			NGET will then								Deleted: b
			communications								Deleted: 8
			routes to access the signals at the								Deleted: 4
			Transmission							, , , , , , , , , , , , , , , , , , ,	Deleted: b
			specified in the								
			Bilateral								
			Agreement								
Instructor	Synchronous	<u>2, 9</u>		As per Large-	N/A	As per type C	Instructor Facilities	Instructor Facilities	N/S		
Fax Machines	Asynchronous		All BM Participants	to BM Participants			defined but	defined but			
CC.6.5.7,			appropriate	which has			equivalent facilities	equivalent facilities			
CC.6.5.8 and			electronic data	implications as to			are required	are required			
CC.6.5.9			communication	whether the plant			under Article <u>9</u>	under Article 9 –			
LINI SO-L AILICIE			tacilities to permit	13 GVA ULOVA			<u>5(u), Allicie 10-</u>		+		Deleted: N/S

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG D <th></th>											
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W_1_MW_		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	1111	Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	DEIOW TTOKY		
			()			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
9-5(d), Article 10			the submission of	registered.			(2)(a) (Active Bower Control)				
$\frac{-2(a)}{10} = 6(dL)$			by the Grid Code				and Article 10 –				Deleted: 9.4(b) Article 0
			(EDT). In addition				6(d) (devices for				2(a) and Article 9 – 5(2)
			any Party that				additional system				
			provides all Type 1				operation /				
			and is a BM				security)	+		1	Deleted: 8
			Participant shall								Deleted: – 4(b))
			be required to							Ì.	Deleted: and in the context of
			facilities if they								instructions and
			have a completion								communications facilities in respect of frequency stability
			date after 1								and Black Start are required as
			041041y 2010.								defined in Article $9 - 2(a)$ and
			Each Generator is								Article 9 – 5(2).
			required to install								
		0.5	a Fax Machine			A T 0		N/0	N/0		
Dynamic System	Synchronous	<u>2, 5</u>		As per Large –	Not specified	As per Type C	For Dynamic System	N/S	N/S		
Quality of Supply	Asynchronous		The requirements	some of these			monitoring, Fault				
Monitoring and	,		System Monitoring	requirements vary			Recording and				
Ancillary Services			are specified by	depending on			Quality of Supply				
GB CC.6.5.6.			NGET in the	is SVA or CVA			requirements are			1	Deleted: 9
CC.6.1.6 and OC			Agreement	Registered.			defined Article 10			1.1	Deleted:)
5.4.1 (c) ENTSO-E Article							-6(0)(1), (2), (3) and (4) The			< <u>-</u>	Deleted: e
$\frac{10 - (2)(f)}{4}$ and $\frac{10 - (2)(f)}{4}$			for Ancillary				signals required				Deleted: and Article 9-6)(j).
			Services				Voltage, Active	+	+		Deleted: 9 – 6) (e), Article 9 –
			Monitoring and				Power, Reactive				(6)(j) and Article 9 – 2(g).
			Monitoring are				Power <u>and</u>				Deleted:

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
•	Туре	2	Large	Medium	Small	D	C		A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted: 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(<u>6) (C)</u>	<u>(6) (D)</u>			
			also defined by				Frequency, Ine				Deleted: and Harmonics
			Bilatoral								
			Agreement				respecting the				
			, igi comon				provisions of				Deletedu purquent to
							Article 4(3)) shall				Deleteu. pursuant to
							have the right to				
							add other quality				
							of supply				
							parameters				
							provided				
							reasonable notice				
							sottings				
							triggering sample				
							rates _interfacing				Deletedu perametera
							arrangements				Deleted. parameters,
							and data				
							submission of the				
							monitoring / fault				
							recording				
							equipment shall				
							be agreed with the				
							Operator and				
							Relevant TSO				
							whilst respecting				
							the provisions of				Deleted: pursuant to
							Article 4(3)).	t			Deleten pursuant to
							For Frequency				
							Response				
							monitoring (le				
							Ancillary Services]	

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG Description ENTSO-E RfG]	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре	1	
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (<u>GB</u>)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Beleteur 4
			(SHETL)			Article 4(3) and	A(3) and Article 3	A(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
						<u>,</u>	Modelling in GB	<u>(0) (0)</u>			
							terms) the				
							requirements are				
							defined under				
							Article <u>10</u> -				Deleted: 9
							(2)(<u>c)(f)</u> The				Deleted: a
							interface shall be				Deleted. g
							equipped to				
							transfer on line				
							from the				
							Generator to the				
							Network				
							Operators / 150's				
							least the following				Delete di Network Onersten
							signals				and TSO can request the
							- 3				and 150 can request the
							Status signal of				
							frequency				
							sensitive mode (ie				
							<u>On/OII)</u> Schodulod Activo				
							Power output				
							Actual value of				
							Active Power				
							output				
							Actual parameter				
							set <u>tings for Active</u>				
							Power Frequency				
							droop / deadband				
							arcop/ acadodia.				
							The Relevant				

			TABL	E 2 – GB Grid Co	de Comparison	to ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>800W – 1 MW</u>		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			(SHETL)	SHEIL)		and subject to	subject to Article	subject to Article	DEIOW TTUKV		(
			(011212)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
							Network operator				
							shall define the				
							additional signals				
							to be provided by				
							the Power Concreting Encility				
							in order to verify				
							performance of the				
							Active Power				
							Frequency Response of those				
							participating				
							Power Generating				
Cofety Deleted	Currehreneure	0		Ao por Lorgo	As par Larga	N/C	Modules.	N/C	N/C		Deleted: point value fro
Conditions	and	2	Conturned under	As per Large	As per Large	IN/5	IN/5	11/5	IN/5		frequency response¶
CC.7	Asynchronous		CC 7 and applies								and for Power Park Modules
			to directly								available power reflecting
			Connected Plant								maximum unrestricted power
Ancillary Services	Synchronous	<u>9</u>		As per Large	N/A	Specified	Specified through	Specified through	Specified		taking into account variable
00.0	Asynchronous		Defines the	of Licence Exempt		obligations on	Type C Units	Type B Units	obligations on		wind or solar.
	-,		Ancillary Services	Embedded		Type D Units	(including the	(including the	Type A Units		
			(Part I) and (Part	Medium Power		(including the	specific	specific	(including the		
			II) that Generators	Stations where		specific	requirements for	requirements for	specific		
			are required to	applicable		Synchronous	Power Generating	Power Generating	Synchronous		
			provide.			Power	Modules, and	Modules, and	Power		Deleted: Units
			For Part 1			Modules, and	Modules	Modules	Modules, and	1.	Deleted: Units
			(Frequency			Power Park Modules			Power Park Modules		Deleted: Units
	1		response – in				1			`.	Deleted: Units

			TABLE	2 – GB Grid Co	de Comparison t	o ENTSO-E Rf	G]		
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре			
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A	[]	Formatted: Font: 8 pt, Not	
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW		Bold	
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4	_
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV	C.		
			(SHETL)			Article 4(3) and	<u>Subject to Article</u>	<u>Subject to Article</u>				
						Article 6 (d)	(6) (c)	(6) (b)				
			general required from Large Power Stations except those which are less than 50MW and comprise Power Park Modules and Reactive Capability required from Large and Medium Power Stations.			<u> </u>						
			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									

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted. 4
			(SHETL)			Article 4(3) and	A(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
1			by NGET and the								
			User and dealt								
			with under the								
			terms of the								
			Ancillary Services								
Performance	Synchronous	5	Agreement	Required if the	Not applicable	As per Type A	As per Type A	As per Type A	Each Power	-	
when operating in	and	-	Requires all Large	Medium Power		- 1 71	71	7	Generating		
Limited	Asynchronous		Generating units	Station is only					Module, shall be		Deleted: Unit
Frequency			that are obliged to	required to meet					capable of		
for Over			meet the	of the Balancing					activating the		
frequencies			requirements of	Codes					Active Power		
(BC.3.7.2 and			Codes to	00000					Frequency		
Article 8 1(c).			_ automatically_de						Response		Deleted: 7
			load at a rate of at						according to		Deletedu et
I I			least 2 percent of						in Article 8 –		Deleted: at
			output per 0.1 Hz						(1)(c)(1). The		Deleted: 7
			System						Power		
			Frequencies						Generating		
I			above 50.4 Hz.						Module, shall in		Deleted: unit
									frequency		
									Sensitive Mode		
									overfrequency		
									be capable of		
									activating Active		
									Frequency		
									Response at a		
									frequency		Deleted: threshold
									between and		
									including 50.2Hz		

Requirement Plant Type Key Large > 100 MW (E8W) > 100 MW (E8W) SHETL) S0 - 100 MW (E8W) > 300 MW or Anticle 4(3) and Anticle 4(4)				TABLI	E 2 – GB Grid Co	de Comparison t	to ENTSO-E Rf	G				
Type 2. Large Medium Small D C B A > 100 MV (ESR) 50 - 100 MV (ESR) 50 - 100 MV (ESR) 50 - 100 MV (ESR) 300 W or and subject to Article and connected at and subject to Article	Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	pe		
S 100 WW (EAW) > 30 WW (SPT) > 30 WW (SPT) > 10 MW (SPT) >		Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
> 30 MW (SPT) S10 MW (SPT) (SHETL) NA (SPT) SHETL) < 10 MW (SHETL)				> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
> 10 MW (SHETL) SHETL) < 10 MW (SHETL) 110kV or above and subject to Article Article 4(3) and Article 3 (6) to below 110kV and subject to Article 4(3) and Article 3 (6) to and 50.5Hz with a droop in a range of 2 - 12 %. The actual Frequency Hereshold and droop settings shall be determined by the Relevant TSO. The Power Generating Module shall be apossible of aspossible and reasonably juilied by the shall be activated as fast as technically and 50.5Hz with a droop in a range of 2 - 12 %. The actual Frequency Bower Frequency Hereinal Active Power				> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
(SHETL) And subject to Ancies 3 (a) and Ancies 4(3) anci				> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
Andree 433 and 4433 and <td< th=""><th></th><th></th><th></th><th>(SHETL)</th><th></th><th></th><th>and subject to</th><th>subject to Article</th><th>subject to Article</th><th></th><th></th><th></th></td<>				(SHETL)			and subject to	subject to Article	subject to Article			
Added 5 (d) (b) (c) (b) (c) and 50.5Hz with a droop in a range of 2 - 12 %. The actual Frequency threshold and droop settings shall be determined by the Relevant T5O. The Power Generating Module shall be cabled of a clivating Active Power Response shall be a clivating Active Prever Response shall be a clivating at a special be a short as possible and reasonable an							Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
A and of the actual range of 2 - 12 %. The actual Frequency threshold and droop settings shall be determined by the Relevant TSO. The <u>Power</u> Generating Addue shall be activating Active Power Frequency Response shall be activated as fast as technically feasible with an initial delay that shall be a short as possible and reasonably justified by the	I						Article 6 (d)	<u>(6) (C)</u>	<u>(0) (D)</u>	and 50 5Uz with	-	
a duopina range of 2 - 12 %. The actual Frequency threshold and droop settings shall be determined by the Relevant TSO. The Power Generating Module shall be activating Active Prequency Response shall be activated as fast as technically feasible and reasonably justified by the shall be as short as possible and reasonably justified by the shall be as and reasonably justified by the shall be as short as possible and reasonably justified by the technically technically testified by the shall be as short as possible and reasonably justified by the shall be as short testified by the testified by testified by the testified by the testified by testified by the testified by testified by testified by the testified by testif										and 50.5Hz with		
Sector Sector Sector Sector <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>range of 2 – 12</td><td></td><td></td></td<>										range of 2 – 12		
Frequency threshold and droop settings shall be determined by the Relevant TSO. The <u>Power</u> <u>Cenerating</u> Module shall be <u>capable of</u> 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										%. The actual		
threshold and droop settings shall be determined by the Relevant TSO. The <i>Dower</i> <i>Generating</i> <i>Module shall be</i> <i>estable of</i> <i>activating</i> <i>Module shall be</i> <i>estable of</i> <i>activating</i> <i>Power</i> <i>Frequency</i> <i>Response shall</i> <i>be activated as</i> <i>fast as</i> <i>technically</i> <i>faets as</i> <i>faets as</i> <i>faets as</i> <i>technically</i> <i>faets as</i> <i>faets a</i>										Frequency		
droop settings shall be determined by the Relevant TSO. The Power Generating Module shall be capable of capable of capabl										threshold and		
shall be determined by the Relevant TSO. The Power Generating Module shall be activating Active Power Frequency Response shall be activated as fast as fast as technically feasible with an initial delay the reasonably teasonable and teasonable of activation activated as teasonable of activated as teasonable of										droop settings		
determined by the Relevant TSO. The <u>Power</u> Generating <u>Module shall be</u> capable of activating Active Power Prequency Response shall be activated as fast as technically feasible with an initial delay that shall be as short as possible and reasonaby 										shall be		
The Relevant TSO: The Power Generating Module shall be capable of activating Active Progency Response shall be activated as fast as fast as fast as technically feasible with an initial delay that shall be as short as possible and reasonably justified <u>by</u> the										determined by		
Image: Solution of the second seco										the Relevant		
Image: Constraint of the second se	1									ISO. The		
Module shall be capable of i 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 by the										Generating		
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 by the										Module shall be		
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 by the										capable of		
Power Frequency Response shall be actual as fast as technically feasible with an initial delay that shall be as short as possenably justified by the										activating Active		
Frequency Response shall be activated as fast as technically feasible with an initial delay that shall be as short as possible and reasonably justified by the										Power		
Response shall be activated as fast as technically feasible with an initial delay that shall be as short as possible and reasonably justified by the										Frequency		
be activated as fast as feeshically feasible with an initial delay that shall be as short as possible and reasonably justified by the										Response shall		
Tast as technically feasible with an initial delay that shall be as short as possible and reasonably justified by the justified by the										be activated as		
feasible with an initial delay that shall be as short as possible and reasonably justified by the										tast as		
initial delay that shall be as short as possible and reasonably justified by the										feasible with an		
shall be as short as possible and reasonably justified by the										initial delay that		
as possible and reasonably justified by the										shall be as short		
reasonably justified <u>by the</u>										as possible and		
justified <u>by the</u> Deleted: i										reasonably		
										justified by the		Deleted: i
Power										Power	'	
										Generating		
Eachty Owner to										Hacility Owner to		
										TSO if groater		(<u> </u>
than 2 seconds	·									than 2 seconds		Deleted: f

			TABLI	E 2 – GB Grid Co	de Comparison	o ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W - 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW (SHETL)	SHETL)	< 10 MW (SHETL)	and subject to	below 110KV and subject to Article	below 110KV and subject to Article	DEIOW 110KV		(
			(ONETE)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
									The Power		
									Generating Module shall be		
									capable of either		
									<u>continuing</u>		
									operation at its		
									regulating level		
									when reaching it		
									or further		
									decreasing Active Rewor		
									output in this		
									case as defined		
									by the Relevant		
									<u>ISO while</u>		
									provisions of		
									Article 4(3). The		
									Power Operation		
									<u>Generating</u> Module shall be		
									Stable during		Deleted: operation of the
									LFSM-O	_	Generating Unit
									operation.		
									active the		
									LFSM-O setpoint	1	Deleted: shall be ensured.
									will prevail over	1	Any contradiction between
									any other Active	1	Power Control during LFSM-O
Performance	Synchronous	2.6		Not required	Not required	As per Type C	Each Power	N/S	N/S		operation shall be avoided.
when operating in	and	<u>-, , ,</u>	Not required				Generating Module shall be				Formatted: Left
LITILEO	Asynonionous	I	I				module shall be	l			Deleted: Unit

			TABLE	E 2 – GB Grid Co	de Comparison t	o ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleted. 4
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	$\frac{4(3)}{(6)}$ and Article 3			
Froquopov						Article 6 (d)		<u>(0) (0)</u>			
Sensitive Mode							activating the				
for under							provision of Active				- Deleted: providing
frequencies							Power Frequency				Deleted. providing
ENTSO-E Article							response				
<u>10 – (2)(b) </u>							according to				Deleted: 9
							Figure 4 as			100	Deleted: c
							Articlo 10 (2)(b)				Deleted: C
							$\frac{A(10)E(10) - (2)(0)}{A(10)E(10)}$				
							threshold between				
							49.8 and 49.5 Hz				
							with a droop in a				
							<u>range of 2 – 12%.</u>				
							In the LFSM –U				
							Mode the Power				
							Module shall be				
							capable of				
							providing a power				
							increase up to its				
							maximum				
							capacity. The				
							actual delivery of				
							Active Power Frequency				
							Response in				
							LFSM – U mode				
							depends on the				
							operating and				
							ambient conditions				
							of the Power				
							Generating Medule when this				
							iviodule when this			1	
TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
--	-------	-----	----------------	------------------------	-----------------	------------------	------------------------	-----------------------	---------------	-----------------------------------	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	A	Formatted: Font: 8 pt, Not	
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	Bold	
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	Deleted: 4	
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	A(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
							response is				
							triggered in				
							particular				
							limitations on				
							operation near				
							at low frequencies				
							(Article $8 - (1)$ and				
							available primary				
							energy sources.				
							The actual				
							threshold and				
							droop settings				
							shall be				
							determined by the				
							Relevant TSO.				
							The Active Power				
							response shall be				
							activated as fast				
							as technically				
							feasible with an				
							initial delay as				
							short as possible				
							Generator to the				
							Relevant TSO if				
							greater than 2				
							seconds.				
							Stable energies				
							of the Power				
							Generating				

			TABLI	E 2 – GB Grid C	ode Comparison	to ENTSO-E Rf	G]	
Requirement	Plant	Key	GB	Power Station	Гуре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	_	Large	Medium	Small	D	C	BB	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W_1_MW_		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	11-	Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	DEIOW TTOKY		
			(0			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			Formatted: All caps
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		-	
							LFSM-U shall be ensured and the LFSM-U reference Active Power shall be the Active Power output at the moment of				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 activating Active Power Frequency Beenote at a
							activation of LFSM-U and shall not be changed unless triggered by frequency restoration action.				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
Compliance ENTSO-E – Articles 24 - 51	Synchronous	2	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 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		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 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

			TABLE	E 2 – GB Grid Co	de Comparison	to ENTSO-E RfC	G]	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			(SHETL)	SHEIL)		and subject to	subject to Article	subject to Article	Delow TTOKV		(
			(••••=•=)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
0	A	0		A	N1/A	Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>	0		
ENTSO-E –	Asynchronous	<u> 7</u>	Work is currently	As per Large	N/A	Articles 24 – 51	Articles 24 – 51 as	Articles 24 – 51 as	Articles 24 – 51		
Articles 24 - 51			underway to			as applicable	applicable	applicable	as applicable		
			include								
			in the Grid Code								
			At the present time								
			the requirements								
			Guidance notes								
			for Power Park								
			Developers, issue								
			available from								
			NGET's website.								
			Re testing is captured under								
			OC 5								
Data / Models	Synchronous	<u>2, 4, 5,</u>		As per Large	As per Large	As per Type C	Each <u>Relevant</u>	×	<u>N/S</u>		Deleted: N/S
Code (PC)	Asynchronous	3	Detailed Modelling				in coordination				
Article <u>10 – (6)(c)</u> .			under different				with the relevant				Deleted: 9
			time phases under the Grid Code				to define (whilst				Deleted: f
			Planning Code				respecting the				Deleted: (
			the type of plant				Article 4(3)				Deleted: pursuant to
			and whether or not				simulation models_	+			Deleted: shall have the right to
			It is a Large Medium or Small				reflect the				require
			Generator. There				behaviour of the				
			is no requirement				Module in both				
			IOI MODEL DATA TO		1			+	+		

			TABLE	E 2 – GB Grid Co	de Comparison	o ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Beleteur 4
			(SHEIL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
			be submitted				steady state and				
			under the				dynamic				
			Connection				simulations and				
			Conditions				where appropriate				
							and justified				
							transient				
							simulations. The				
							requirement for				
							simulation models				
							shall include the				
							format in which				
							provided and the				Deleted: they
							provision of				
							documentation of				
							the model				
							structure and				
							The models shall				
							be verified against				
							the results of				
							compliance tests				
							as of Title 4				
							Chapters 5, 6 and				
							studies for				
							continuous				
							evaluation in				
							system planning			1	Deleted: for the purpose of
							and operation.			1	verification of the requirements
										1	or this Network Code and for
							*	+		ŕ	continuous evaluation in system
		1	1		1		1	1		1	planning and operation

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG- Ge	enerating Unit Ty	ре		
-	Туре	<u>2</u>	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW (GB)	1 – 10 MW (GB)	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	4(3) and Article 3	A(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
							For the purpose of	<u>(0) (0)</u>			
							dynamic				
							simulations the				
							model <u>s</u> 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	+			Deleted: and limiters
							<u>Power</u> Generating Module protection				
							models as agreed				Deleted: Unit
							with the relevant				
							Network Operator				
							and Power				
							Generating Facility			1	
							Owner (whilst			1	
							respecting the				
							<u>provisions of</u>	+			Deleted: pursuant
							Article 4(3)) and Converter Models			1.1.	Deleted: t
							for Power Park				
							Modules.				

			TABLI	E 2 – GB Grid Co	de Comparison t	o ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W - 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			(SHETL)	SHETL)		and subject to	subject to Article	subject to Article	Delow TTOKV		
			(-)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>		_	
							The Relevant				
							Network Operator				
							shall provide an				
							estimate of the			1	Deleted: pursuant to
							minimum short			1	Deleted: Unit
							the Connection				Deleted: and Asynchronous
							Point expressed in			= 13	Deleted: Generating Unit
							MVA, as an			14	synchronisation shall be
							Network.			11/1	Generating facility owner
										14	equipped with the necessary
							The Relevant			1111	synchronisation facilities. The
							or Belevant TSO			$i \mid i \mid$	equipped with the necessary
							(whilst respecting			114	synchronisation facilities.
							the provisions of			1111	Synchronisation of Generating
							Article 4(3)) shall have the right to			111	Units shall be possible for
							require Power			$i_{1}i_{2}$	specified in Table 2. The
							Generating			(β)	Network Operator and the
							Module _▼			-11	Power Generating Facility
							to compare the			M = 1	settings of synchronisation
							response of the			11	devices to be concluded prior to
							models with these				operation of the Generating
Synchronication	Synchronous			As por Largo		Synchronication	recordings.	NI/S	N/S	ŧi –	Unit. This agreement shall
In GB covered	Cynonionous,		Eor directly	AS PEI Laige	As per Large	shall be	respect of quick	IN/O	<u> </u>	1	voltage, frequency, phase angle
under the site			connected plant			performed by	re-sycnhronisation			i -	range, phase sequence,
specific Bilateral			specified in the			the Generator	as detailed in				deviation of voltage and
Agreement under			site specific			atter	Article 10 - (5)(C).	+	+	-	9 - 6(a) pursuant to Article 4(3)

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG										
Requirement	Plant	Key	GB	Power Station	Гуре	EI	NTSO-E RfG– Ge	enerating Unit Ty	ре	
	Туре	2	Large	Medium	Small	D	C	B	A	 Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	<u>8</u> 00W – 1 MW	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	 Deleted: 4
				SHETL)	< 10 MW (SHETL)	110KV or above	below 110kV and	below 110KV and	DEIOW 110KV	(
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3		
						Article 6 (d)	(6) (c)	(6) (b)		
Appendix F3 and			Bilateral			authorisation by				
Relevant			Agreement and			the Relevant				
Electrical Standards)			referenced in the Relevant Electrical			<u>Network</u> Operator The				
(ENTSO-E –			Standards			Power				
Article <u>10</u> – <u>5(c)</u>			Clandardo			Generating				 Deleted: 9
and Article 11 –						Module shall be				
<u>(4).</u>						the necessary				Deleted: 6
			N/A for Embedded			synchronisation				Deleted: a
			Plant			facilities.				Deleted:)
						Synchronisation of Power				
						Generating				
						Modules shall be				
						possible for				
						frequencies				
						within the				
						in Table 2. The				
						Relevant				
						<u>Network</u>				
						Uperator and the Power				
						Generating				
						Facility Owner				
						shall agree on				
						the settings of				
						devices to be				
						concluded prior				
						to operation of				
						the Power				
						Generating				

			TABL	E 2 – GB Grid Co	de Comparison t	to ENTSO-E Rf	G			1	
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	<u>2</u>	Large	Medium	Small	D	C	B	Α		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected	· · · ·	Deleted: 4
				SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		
			(SHETL)			Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	(6) (c)	(6) (b)			
						Module. This					
						agreement shall					
						cover the					
						matters: voltage					
						frequency.					
						phase angle					
						range, phase					
						sequence,					
						voltage and					
						frequency as					
						specified in					
						<u>Article 11 – (4).</u>					
						pursuant to					
Auto Beclosure	Synchronous	2.5		Not specified	Not specified	Anticle 4(3).	Single phase or	N/S	N/S		Deleted: As per Type C
GB – Not	and	<u> </u>	Not specified	Not Specified	Not specifica	As per Type o	three phase auto-	100	<u>11/0</u>		
specified	Asynchronous		Not specified				reclosures on				
ENTSO-E Article							meshed lines (if				
<u>10,</u> 4(<u>b)</u>			+				<u>applicable) to this</u> network should be	+			Deleted: 9
							withstood by				Deleted: c
							Power Generating				
							tripping Details of				
							this capability shall				
							be subject to co-				
							ordination and				
							agreements on				
							schemes and				
							settings as				
							detailed in Article				

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			TABLE	E 2 – GB Grid C	ode Comparison t	o ENTSO-E Rf	G				
Requirement	Plant	Key	GB	Power Station	Туре	E	NTSO-E RfG– Ge	nerating Unit Ty	ре	1	
-	Туре	2	Large	Medium	Small	D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW		Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 1
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	<u>below 110kV</u>		Deleted. 4
			(SHETL)			Article 4(3) and	<u>Subject to Article</u>	<u>SUDJECT TO ARTICLE</u>			
						Article 6 (d)	(6) (c)	(6) (b)			
							<u>9-(5)(b).</u>				Deleted: Belevant Network
Provisions for	Asynchronous	6		N/S	N/S	As per Type C	The relevant TSO	N/S	N/S		Operators have the right
Synthetic Inertia	<u>- / logition of locid</u>	<u>~</u>	Not currently	10/0	100	<u>//o por 17po o</u>	shall have the	<u>11/0</u>	<u>10/0</u>		(Pursuant to Article 4(3)) to
GB Grid Code -			within the GB Grid				right to require				request single phase auto-
ENTSO-E Article			Code but under				(whilst respecting				reclosure on Generating Unit
<u>16 – (2)</u>			development as				the provisions				of one or more Generating
			part of the Grid				Afficie 4 (3) In co-				Units to the public network) and
			Code Frequency				other TSO's for a				single phase or three phase
			Working Group				Power Park				auto reclosures on meshed
			working Group				Module which is				Network lines to be withstood
							not inherently				by Generating Units without
							capable of				reclosure attempt is not
							additional Active				successful, a subsequent
							Power to the				attempt will be delayed by at
							Network by its				least 3 seconds.
							inertia and which				
							is greater than a				
							specified by the				
							Relevant TSO to				
							install a feature in				
							the control system				
							which operates				
							Module so as to				
							supply additional				
							Active Power to				
							the Network in				
							order to limit the				
							frequency				
							following a sudden				

TABLE 2 – GB Grid Code Comparison to ENTSO-E RfG											
Requirement	Plant	Key	GB	Power Station T	уре	E	NTSO-E RfG– Ge	enerating Unit Ty	ре		
	Туре	2	Large	Medium	Small	D D	C	B	A		Formatted: Font: 8 pt, Not
			> 100 MW (E&W)	50 – 100MW	< 50MW	> 30MW or	30 – 10 MW <u>(GB)</u>	1 – 10 MW <u>(GB)</u>	800W – 1 MW	1	Bold
			> 30 MW (SPT)	N/A (SPT /	< 30MW (SPT)	connected at	and connected	and connected	and connected		Deleted: 4
			> 10 MW	SHETL)	< 10 MW (SHETL)	110kV or above	below 110kV and	below 110kV and	below 110kV		Deleteti +
			(SHETL)			and subject to	subject to Article	subject to Article			
						Article 4(3) and	4(3) and Article 3	4(3) and Article 3			
						Article 6 (d)	<u>(6) (c)</u>	<u>(6) (b)</u>			
							loss of infeed.				
							The operating				
							principle and				
							associated				
							performance				
							parameters shall				
							be specified by the				
							TSO whilst				
							respecting the				
		1					provisions of				
							Article 4(3).				

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Agreed 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 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 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 Generating Unit Protections Synthetic Inertia (if applicable) Frequency Control (Active Power adjustment) Power Restriction and Power gradient constraints as per Article 9 – 6 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).

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	at lower loads.	
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	specified by	
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	pursuant to	
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	depending upon System Security in a Synchronous area.	
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	(5)Asynchronous Article 14 -1(a) Article 16 $- 3(a)(6)$	
Page 42: [14] Deleted Power Park Modules are onl voltage terminals of the step u if no step up transformer exist	ly required to have a Reactive Power Capability to provide up transformer to the voltage level of the Connection Point s as defined by the Relevant DSO as defined in Article 14	PReactive Power at the high t or at the alternator terminals -1(a) pursuant to Article 4(3).
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Sy	nchronous Article 11 – 2(b) Article 12 –3(a) (5)Asynchrono	ous
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The Relevant Network Operati mode (ie Voltage Control, Rea Article 16 – 3)(e) (6).	or on co-ordination with the Relevant TSO will determine active Power Control or Power Factor Control mode) shall	which reactive power control apply in accordance with
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Specified by Re	levant Network Operator under Article 9 – 2(a)(2) pursuar	it to Article 4(3).
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Under ENSTO-E The Fault Rid Plant unlike GB. A voltage Tir requirement for the period bet	de Through requirements are segregated between Synchine profile is also specified over the whole time frame unlike ween 0 – 140ms and for voltage dips after 140ms.	ronous and Asynchronous are GB which specifies the
Under the ENTSO-E Code Sy	nchronous 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 (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 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 and Voltage at the Connection Point and

iv) Each Network Operator(pursuant to Article 4(3) shall define the 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 in MVA.

iv) The Undervoltage protection on the Generating Unit should be set to the widest possible range by theGenerator

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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 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 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 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 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).

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Control telephony is not specifically defined but is required in the context of instructions and communications 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).