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26 May 2005

Dear Colleague,

**Consultation on requests from Scottish generators for lifetime derogation against specific Grid Code conditions which have been raised in association with the introduction of BETTA**

In the run up to the introduction of the British Electricity Trading and Transmission Arrangements (BETTA) on 1 April 2005, Ofgem received requests for lifetime derogation from certain generators against specific requirements in the Grid Code. These requests are summarised in the Appendix 1 to this open letter. Ofgem consulted the transmission licensees on these requests and granted temporary derogation, until either September or December 2005, against the Grid Code requirements prior to BETTA go-live, to enable wider consultation to be conducted on any derogation with long term effects.

This consultation invites views more widely from the industry in relation to these requests.

Ofgem published a Guidance Note in October 2003 'Derogation from codes and standards in electricity generation, supply, distribution and transmission licences'<sup>1</sup>. This document explains that in assessing a derogation request, the Authority will consider the following factors:

- the nature of derogations already granted by Ofgem and the likelihood of similar derogation requests in the future
- the effect of dealing with future derogation requests in a consistent manner
- any competitive advantage that may arise from granting the derogation, and
- any other relevant circumstances.

This consultation addresses the derogation requests against each Grid Code requirement in turn. In the interest of conciseness and clarity, the requests from individual generators and the responses from the transmission licensees to these individual requests have been grouped in this consultation under the following categories of relevant Grid Code requirements:

- Connection Condition CC.6.3.2

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<sup>1</sup> [http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4888\\_Derogation\\_Guidance\\_Note\\_21oct03.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/4888_Derogation_Guidance_Note_21oct03.pdf)

- Connection Conditions CC.6.3.6, CC.6.3.7(a), CC.6.3.7(c)(iii) and CC.6.3.7(d), and
- Balancing Code No 2 BC2.A.2.6.

Note that the changes to the Grid Code currently being considered by the Authority under two other consultations<sup>2</sup>, if approved by the Authority, will change the texts of some of the provisions presented here. However, these changes are not expected to materially affect the derogation requests considered in this consultation.

### **Connection Condition CC.6.3.2**

Connection Condition CC.6.3.2 sets out the performance requirements for generating units in relation to the reactive power output and the short circuit ratio. It states that:

*'CC.6.3.2 All **Generating Units** must be capable of supplying rated power output (MW) at any point between the limits 0.85 power factor lagging and 0.95 power factor leading at the **Generating Unit** terminals. The short circuit ratio of **Generating Units** shall be not less than 0.5.'*

The following generators have requested lifetime derogation against either leading power factor or lagging power factor or short circuit ratio or a combination of these. The actual capability of the units as identified in the derogation requests are summarised in Appendix 1.

- British Energy Generation (UK) Ltd in respect of units 7 and 8 at Hunterston B power station and units 1 and 2 at Torness power station.
- ScottishPower Generation Limited (SPG) in respect of units 1, 2, 3 and 4 at Longannet, units 1, 2, 3, and 4 at Crockenzie and units 1, 2, 3 and 4 at Cruachan.
- SSE Generation Limited (SSEG) in respect of units at the following hydro stations: Invergarry, Clunie, Deanie, Glenmoriston, Luichart, Mossford, Errochty, Fasnakyle, Lochay, Nant, Orrin, Quoich and Sloy.

The basis for the generators' requests is that:

- the units were designed and commissioned before the reactive requirements were codified in the Scottish Grid Code in 1991 and the England and Wales Grid Code in 1990. All lifetime derogation requests against CC.6.3.2 are for designed capabilities of the units, except for in the case of Crockenzie units 3 and 4, whose power factor range shortfalls are due to further technical restrictions that arose after commissioning
- the shortfalls against requirements have not caused any system problems in the operation of the Scottish transmission system pre BETTA
- the cost of achieving full compliance of these units would be prohibitive. For example, SPG reported that the replacement of the alternator stator and rotor on a single unit would cost between £4m and £14m
- derogation would not result in a competitive advantage to the generator and similar derogations have been granted to other generators at vesting in England and Wales, and

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<sup>2</sup> Grid Code Consultation H/04 on Grid Code changes to incorporate new generation technologies and DC interconnectors (generic provisions) and Grid Code Consultation SA/2004 on technical requirements for windfarms, 17 January 2005. [http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/9815\\_0705.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/9815_0705.pdf), [http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/9816\\_0805.pdf](http://www.ofgem.gov.uk/temp/ofgem/cache/cmsattach/9816_0805.pdf).

- in the case of Cockenzie units 3 and 4, which were built in the late 1960s, the expected life of the station was a factor in justifying not to carry out investment to restore to the original design capability.

Ofgem consulted with the three transmission licensees: SP Transmission Limited (SPT), Scottish Hydro-Electric Transmission Ltd (SHETL) and National Grid Company plc (NGC).

NGC commented that:

- no derogation should result in a reduction in existing performance capability post BETTA go-live
- in principle, where the non-compliance was related to original power station design and the effect was not considered to have a material impact on the design or operation of the transmission system then lifetime derogation would be appropriate; where lifetime derogations were requested for technical restrictions that arose after commissioning and the justification depended on the life expectancy of the plant, then the closure date should be considered in the derogation
- without detailed operational experience NGC were unable to give any reasonable estimate of potential cost to system operation of the non-compliance. However, no significant impact was expected immediately post BETTA go-live although the non-compliance might affect future transmission investment plans in the longer term, and
- where system operating costs were identified, some form of arrangement for compensation or mitigating actions may be appropriate. In the case of Cockenzie units 3 and 4, appropriate measures have been agreed between NGC and SPG. The agreement would allow NGC to swap units 3 and 4 with units 1 and 2 when required by reactive power support needs, and hence mitigate the potential impact of the shortfall.

SPT commented that the requested derogations did not have any impact on the security of SPT's transmission system.

SHETL commented that:

- the SSEG plant was compliant with the Scottish Grid Code insofar as relevant given the inherent flexibility allowed in that code.
- it had no problems in operating its transmission system within the parameters of the existing plant. Transmission support services have been provided by plant nominated by SSEG and agreed with SHETL as system operator. SHETL believed that SSEG should be able to continue to offer the same range of services to the GB system operator, allowing the grid system operation to continue at the same level of security.

#### Ofgem view on derogation requests against CC.6.3.2

In considering the requested derogations against CC.6.3.2, Ofgem notes that:

- the capability of the generating units post BETTA go-live is not expected to change from their capability pre BETTA go-live

- lifetime derogations against CC.6.3.2 were issued to many generating units in England and Wales at the time of vesting<sup>3</sup> and the introduction of the England and Wales Grid Code requirements. These derogations were based on the actual design capability of the units. Given the similarity in the circumstances between the introduction of the Grid Code in England and Wales at vesting and its application in support of BETTA in Scotland now, granting derogations to plant that was in existence in Scotland at BETTA go-live is not considered to provide undue competitive advantage to such plant, nor is it considered to set new precedent for future derogation requests
- no significant risks have been identified to other relevant licensees or connected customers associated with the non-compliance in the short term after BETTA go-live. In the longer term, whilst NGC was not able to give a detailed forecast, it is conceivable that there could be impact on the overall need for further reactive support in the surrounding area. This issue is influenced by many uncertainties and detailed assessment at this stage is not considered practical. Ofgem is of the view that refurbishing the generators considered in this paper to achieve full compliance with CC.6.3.2 to gain additional reactive capability is unlikely to be as economically efficient as installing reactive compensation on the transmission system. In coming to this view account has been taken of the costs associated with reactive compensation, the view that the optimal locations for it are unlikely to be at the generating stations and the remaining generation plant life that applies in certain cases, and
- for Cockenzie units 3 and 4, although the derogations are for technical restrictions that arose after commissioning, SPG and NGC have agreed mitigating actions for the whole life expectancy of the plant, which would avoid potential impact on other users or the system as a whole.

For the above reasons, Ofgem propose to issue lifetime derogations in accordance with the actual capability as summarised in Appendix 1.

#### **Connection Conditions CC.6.3.6, CC.6.3.7 (a), CC.6.3.7 (c) (iii) and CC.6.3.7(d)**

These Connection Conditions have been grouped together as they are all associated with control of frequency response.

These Connection Conditions are:

‘CC.6.3.6      Each **Generating Unit** must be capable of contributing to **Frequency** and voltage control by continuous modulation of **Active Power** and **Reactive Power** supplied to the **GB Transmission System** or the **User System** in which it is **Embedded**.’

‘CC.6.3.7      (a) Each **Generating Unit** must be fitted with a fast acting proportional turbine speed governor and unit load controller or equivalent control device to provide **Frequency** response under normal operational conditions in accordance with **Balancing Code 3 (BC3)**. The governor must be designed and operated to the appropriate:

(i) **European Specification**; or

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<sup>3</sup> A list of these generating units is given in Appendix 2.

(ii) in the absence of a relevant **European Specification**, such other standard which is in common use within the European Community;

as at the time when the installation of which it forms part was designed or (in the case of modification or alteration to the turbine speed governor) when the modification or alteration was designed.

The **European Specification** or other standard utilised in accordance with sub-paragraph CC.6.3.7 (a) (ii) will be notified to **NGC** as:

- (i) part of the application for a **Bilateral Agreement**; or
- (ii) part of the application for a varied **Bilateral Agreement**; or
- (iii) soon as possible prior to any modification or alteration to the governor;'

'CC.6.3.7(c) The speed governor must meet the following minimum requirements:

(i) Where a **Generating Unit** becomes isolated from the rest of the **Total System** but is still supplying **Customers**, the speed governor must also be able to control **System Frequency** below 52Hz unless this causes the **Generating Unit** to operate below its **Designed Minimum Operating Level** when it is possible that it may, as detailed in BC 3.7.3, trip after a time;

(ii) the speed governor must be capable of being set so that it operates with an overall speed droop of between 3% and 5%;

(iii) in the case of all **Generating Units** other than the **Steam Unit** within a **CCGT Module** the speed governor deadband should be no greater than 0.03Hz (for the avoidance of doubt,  $\pm 0.015\text{Hz}$ ). In the case of the **Steam Unit** within a **CCGT Module**, the speed governor deadband should be set to an appropriate value consistent with the requirements of CC.6.3.7(c)(i) and the requirements of BC3.7.2 for the provision of **Limited High Frequency Response**;

For the avoidance of doubt, the minimum requirements in (ii) and (iii) for the provision of **System Ancillary Services** do not restrict the negotiation of **Commercial Ancillary Services** between **NGC** and the **User** using other parameters;'

'CC.6.3.7(d) A facility to modify, so as to fulfil the requirements of the **Balancing Codes**, the **Target Frequency** setting either continuously or in a maximum of 0.05 Hz steps over at least the range  $50 \pm 0.1$  Hz should be provided in the unit load controller or equivalent device.'

All the lifetime derogation requests against these clauses relate to units owned by SSEG, as summarised in Appendix 1.

The basis for SSEG's request was that:

- as there was no change in the capability of these units pre and post BETTA, and as NGC had been managing frequency for the whole of GB, this non-compliance would already have formed part of NGC's costs and therefore the cost of maintaining appropriate levels of GB response would not increase
- many of its hydro power stations did not have automatic frequency control equipment fitted because they have outflows onto river systems and that statutory water management legislation places various constraints on generating unit operation which would prohibit the use of such automatic control systems
- Peterhead U1 and U2 do not have a boiler master control system. The derogation request relates to U1 when it operates independently of the CCGT combination at the station and for the independent U2 steam turbine. SSEG noted that these generating units were not designed to comply with these obligations and that due to the age of the plant and minimal requirements by the current Scottish system operator to use this plant to manage the system, the economic costs would not justify the remedial work to ensure compliance (approximately £550k per unit)
- Peterhead GT3 and GT4 were not fitted with frequency sensitive load controllers and they had not been required to provide frequency services to the Scottish system operator. SSEG noted that given the very low load factor of these standby generators they did not believe it was economically justifiable to invest in this plant. Their estimate for the work required was either £120k per unit or £750k per unit if modifying the existing controllers was not possible, and
- the level of non-compliance was indeterminate as there was no level of Secondary response specified in the Grid Code applicable to this plant.

Ofgem consulted with the three transmission licensees: SPT, SHETL and NGC.

SHETL commented that:

- the SSEG plant was compliant with the Scottish Grid Code insofar as relevant
- hydro generators on rivers had not been requested to operate in frequency mode due to the safety implications for personnel and statutory restrictions to water level increases, and
- SHETL had had no problems in operating its transmission system within the parameters of the existing plant. Transmission support services had been provided by plant nominated by SSEG and agreed with SHETL as system operator. SHETL believed that SSEG should be able to continue to offer the same range of services to the GB system operator, allowing the grid system operation to continue at the same level of security.

NGC commented that:

- on the hydro units, given the relatively small size, these generating units were unlikely to have a significant national impact and that it may be appropriate for lifetime derogation to be granted, but with the capability maintained at the current level, including the frequency triggered service provided to the Scottish system operator pre BETTA. Whilst not fully achieving the Primary and Secondary Response requirement of the Grid Code, the provision of such service mitigates to some extent the impact of the shortfalls on the system frequency control and therefore should be maintained
- on Peterhead U1 and U2

- the inability of the plant to provide a reliable frequency response service would have cost implications for system operation. NGC estimated additional costs could be in the order of a total of £500k to £850k per annum for the two units. This figure was based on system operator actions at very low demand periods to ensure there was sufficient level of both high and low frequency response holding on the system. NGC believed that the pre-BETTA Scottish arrangements had allowed the Scottish system operator to have a greater influence in the running and outage co-ordination and that this had masked the costs of the absence of frequency response capability
- the above cost estimate assumed the units would be running at times of low system demand. Although SSEG had indicated in discussion that this was unlikely to be the case, its firm commitment to an acceptable running regime or mitigating measures would be required if such impact was to be avoided
- if given reassurance that U1 would normally be run in CCGT mode with gas units GT11, GT12 and GT13, which would achieve compliance with the Grid Code requirements, NGC would wish at least for U2, which would be run on its own, to be made compliant. Otherwise, NGC would need to agree certain measures with SSEG in order to avoid unreasonable system costs for non-compliant units
- on Peterhead GT3 and GT4:
  - these will be the largest open cycle gas turbines on the GB system under BETTA at 120MW each. NGC understood they had a low load factor but noted that the cost and availability of gas might make it economic to run these units at times of low system demand
  - the total cost of not providing response was estimated between £100k and £180k per annum for the two units based on assumption of their running regime. NGC could provide a more accurate forecast if the running regime was known by NGC
  - unless some form of assurance was provided by SSEG about their running regime to mitigate the system cost, there was a case for remedying the non-compliance
- NGC also noted at subsequent discussions with Ofgem and SSEG that all other plant on the GB system to which the relevant frequency response conditions apply were compliant or would be compliant within a specified time period.

#### Ofgem view on derogation requests against conditions relating to control of frequency response

In considering the derogation requests against the frequency response related conditions, Ofgem notes that:

- in the case of the hydro units:
  - NGC would wish SSEG to retain at least the existing frequency response capability and NGC's concern that to lose this current facility would be a reduction in system security as compared with the current arrangements. Ofgem agrees that the capability of the hydro units to contribute to frequency control should not be reduced from that provided pre-BETTA. Specifically, the capacity for providing the frequency triggered service as provided by the hydro units pre-BETTA should be maintained
  - no significant risks have been identified in association with the non-compliances, and
  - given their unique characteristics and the circumstance similar to that at vesting, i.e. that of shortfall in capability of plant which pre-exists the introduction of the Grid Code, Ofgem does not consider that granting derogations for these plant would provide undue competitive advantage to such plant, nor does Ofgem consider that such derogations would set a new precedent for future derogation requests

- in the case of Peterhead U1, U2, GT3 and GT4:
  - the plant capabilities immediately post BETTA go-live are not expected to change from that immediately pre BETTA go-live
  - all other plant on the GB system to which the relevant connection conditions apply are compliant or will be compliant
  - the impact of the non-compliance on system operation could be significant unless appropriate mitigating measures are taken
  - Ofgem considers that, to avoid providing undue discriminatory advantage to Peterhead units as well as to avoid adverse impact on the secure and economic operation of the transmission system, further consideration needs to be given to all factors specific to these units, such as their technical and economic characteristics as well as the existence of any mitigating measures, that may support a case for longer term derogation, and
  - although it was included by Ofgem as a condition of granting the temporary derogation lasting from BETTA go-live to 30 September 2005 for SSEG and NGC to agree mitigating measures to reduce the impact of non-compliance during the temporary derogation, discussion between SSEG and NGC is still ongoing to reach such an agreement.

In view of the situation described above, Ofgem propose:

- for the specified hydro units, to issue lifetime derogation against CC.6.3.6 and CC.6.3.7(a), subject to the condition that the capability of these units to contribute to system frequency control should not be reduced from the pre-BETTA level, including the maintenance of the capacity for providing the frequency triggered service which was provided pre-BETTA.
- for Peterhead U1, U2, GT3 and GT4, not to grant long term derogations at this stage. Ofgem expect that, by the end of the current temporary derogation period, i.e. 30 September 2005, either full compliance of these units is achieved, or SSEG and NGC have formalised an agreement on appropriate mitigating actions that avoid any material adverse impact on other users or the system as a whole. In the case of the latter, SSEG and NGC would be expected to apply, before the expiry of the current derogations, for new derogations based on the agreed mitigating actions. In deciding on such derogation requests, Ofgem will take into account any new information gathered during the temporary derogation period under BETTA. If, however, the generating units continue to be non-compliant without putting in place appropriate mitigating measures, then Ofgem considers that it is unlikely to be appropriate to issue further derogations. If necessary, Ofgem will consider appropriate actions required to address any breach of relevant licence conditions.

### **Balancing Code No 2 BC2.A.2.6**

BC2.A.2.6 sets out a list of the types of instruction for the provision of obligatory ancillary service in relation to reactive power. It states that:

#### **'BC2.A.2.6 Reactive Power**

*As described in BC2.A.2.4 and BC2.A.2.5 instructions for **Ancillary Services** relating to **Reactive Power** may consist of any of several specific types of instruction. The following table describes these instructions in more detail:*



<i>Instruction Name</i>	<i>Description</i>	<i>Type of Instruction</i>
...	...	...
<u>Tap Changes</u>	<p><i>Details of the required generator step-up transformer tap changes in relation to a <b>Genset</b>. The instruction for tap changes may be a <b>Simultaneous Tap Change</b> instruction, whereby the tap change must be effected by the <b>Generator</b> in response to an instruction from <b>NGC</b> issued simultaneously to relevant <b>Power Stations</b>. The instruction, which is normally preceded by advance notice, must be effected as soon as possible, and in any event within one minute of receipt from <b>NGC</b> of the instruction.</i></p> <p><i>For a <b>Simultaneous Tap Change</b>, change <b>Genset</b> generator step-up transformer tap position by one [two] taps to raise or lower (as relevant) <b>System</b> voltage, to be executed at time of instruction.</i></p>	TAPP
...	...	...

SSEG has identified specific areas of non-compliance in that a number of hydro generating units have been designed with off-load tap changers only. They are not able to perform on-load tap changes and will not be capable of complying with BC2.A.2.6 for on-load instructions. SSEG have requested derogations for the following generating units: Fasnakyle G1, Finlarig, Glenmoriston G1 and G2, Invergarry, Lochay G1 and G2, Luichart G1 and G2, Mossford G1 and G2, Nant and Orrin.

In addition, SSEG has stated that at two hydro sites the step-up transformer is shared between sets and a single instruction would affect both generating units. SSEG therefore requested derogation for Pitlochry G1 and G2 and Livishie due to their transformer being shared with other sites (viz Glenmoriston, Clunie).

Ofgem consulted with the three transmission licensees: SPT, SHETL and NGC.

SHETL commented that:

- the SSEG plant was compliant with the Scottish Grid Code insofar as relevant.
- it had had no problems in operating its transmission system within the parameters of the existing plant. Transmission support services had been provided by plant nominated by SSEG and agreed with SHETL as system operator. SHETL believed that SSEG should be able to continue to offer the same range of services to the GB system operator, allowing the grid system operation to continue at the same level of security.

NGC commented that:

- given these non-compliances are due to design limitations, lifetime derogation would be reasonable.
- there was not sufficient information for impact to be assessed in detail. However, no significant impact is expected immediately post-BETTA and the incremental impact on future

transmission investment plans was expected to be minimal too, given that it was not aware of any explicit additional cost under current investment plan discussions.

#### Ofgem view on derogation request against BC2.A.2.6

In considering the derogation request against BC2.A.2.6, Ofgem notes that:

- the capability of these hydro units post BETTA go-live is not expected to change from their capability pre BETTA go-live
- no significant risks have been identified in association with the non-compliances, and
- given their unique characteristics and the circumstance of the shortfall in capability of plant pre-existing the introduction of Grid Code, derogations for these plant are not considered to provide undue competitive advantage to such plant, nor is it considered to set new precedent for future derogation requests.

For the reasons given above, Ofgem proposes to issue lifetime derogation in accordance with the attached schedules for lifetime derogation from BC2 A.2.6 of the Grid Code requirements in relation to these hydro units.

#### Views invited

Ofgem invites views on any of the matters raised in this letter. Replies to this consultation should be sent by 7 July 2005 by email to [bridget.morgan@ofgem.gov.uk](mailto:bridget.morgan@ofgem.gov.uk) marked 'Lifetime derogation consultation', or to the following address:

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All responses will normally be published on the Ofgem website and held electronically in the Research and Information Centre unless there are good reasons why they must remain confidential. Respondents to the consultation are asked to put any confidential material in appendices to their responses. Ofgem prefers to receive responses in an electronic form so they can be placed easily on the Ofgem website. Please contact Bridget Morgan on 020 7901 7080 if you have any queries in relation to the issues in this letter.

Yours sincerely



John Scott  
Technical Director

**Appendix 1 – Summary of lifetime derogation requests received in association with the introduction of BETTA**

**Table 1. Non-compliance against requirements under CC.6.3.2**

Station	Unit	Rated MW	Non-compliance against requirement of pf lag $\leq 0.85$  Designed value (= current value, #if different)	Non-compliance against requirement of pf lead $\leq 0.95$  Designed value (= current value, #if different)	Non-compliance against requirement of scr $\geq 0.5$  Designed value
<b>ScottishPower Generation Ltd</b>					
Longannet	Unit 1	576	0.923	0.984	0.450
Longannet	Unit 2	576	0.923	0.984	0.450
Longannet	Unit 3	576	0.923	0.984	0.450
Longannet	Unit 4	576	0.923	0.984	0.450
Cockenzie	Unit 1	288		0.985	0.457
Cockenzie	Unit 2	288		0.985	0.457
Cockenzie	Unit 3	288	#1.0	0.985 #1.0	0.457
Cockenzie	Unit 4	288	#1.0	0.985 #1.0	0.457
Cruachan	Unit 1	120	0.870		
Cruachan	Unit 2	120	0.870		
Cruachan	Unit 3	100	0.900		
Cruachan	Unit 4	100	0.900		
<b>British Energy Generation (UK) Ltd Expected to transfer to British Energy Generation Ltd from July 2005</b>					
Hunterston B	Unit 7	660		0.97	
Hunterston B	Unit 8	660		0.97	
Torness	Unit 1	685		0.97	
Torness	Unit 2	685		0.97	
<b>SSE Generation Ltd</b>					
Clunie	1	20.4	0.90		
Clunie	2	20.4	0.90		
Clunie	3	20.4	0.90		
Deanie	1	19	0.90		
Deanie	2	19	0.90		
Errochty	1	25	0.90	0.97	
Errochty	2	25	0.90	0.97	
Errochty	3	25	0.90	0.97	
Fasnakyle	1	22	0.98	0.97	

<b>Station</b>	<b>Unit</b>	<b>Rated MW</b>	<b>Non-compliance against requirement of pf lag &lt; = 0.85</b>	<b>Non-compliance against requirement of pf lead &lt; = 0.95</b>	<b>Non-compliance against requirement of scr &gt; = 0.5</b>
			<b>Designed value (= current value, #if different)</b>	<b>Designed value (= current value, #if different)</b>	<b>Designed value</b>
Fasnakyle	3	22	0.98	0.97	
Glenmoriston	1	19.86	0.95		
Glenmoriston	2	19.86	0.95		
Invergarry	1	20		0.97	
Lochay	1	22.5	0.96	0.98	
Lochay	2	22.5	0.96	0.98	
Luichart	1	17	0.91		
Luichart	2	17	0.91		
Mossford	1	6.66	0.90		
Mossford	2	12	0.90		
Nant	1	15	0.90	0.98	
Orrin	1	18	0.90	0.97	
Quoich	1	18	0.96	0.97	
Sloy	2	40	0.95	0.98	
Sloy	3	40	0.95	0.98	

**Table 2. Non-compliance against requirements relating to control of frequency response**

<b>Station</b>	<b>Unit</b>	<b>Rated MW</b>	<b>Non-compliance against CC.6.3.6</b>  <b>Incapable of continuous contribution to frequency control</b>	<b>Non-compliance against CC6.3.7(a)</b>  <b>Insufficient frequency response</b>	<b>Non-compliance against CC.6.3.7(c)(iii)</b>  <b>Insufficient Limited HF Response</b>	<b>Non-compliance against CC.6.3.7(d)</b>  <b>Incapable of modifying frequency target setting</b>
<b>SSE Generation Ltd</b>						
Aigas	1	10	yes	yes		
Aigas	2	10	yes	yes		
Allt Na Lairige	1	6	yes	yes		
Ceannacroc	1	10	yes	yes		
Ceannacroc	2	10	yes	yes		
Culligran	1	22	yes	yes		
Culligran	2	2	yes	yes		
Fasnakyle	comp. set	23	yes	yes		
Gaur	1	7	yes	yes		
Inverawe	1	25	yes	yes		
Invergarry	1	20	yes	yes		
Kilmorack	1	10	yes	yes		
Kilmorack	2	10	yes	yes		
Lochay	1	22.5	yes	yes		
Lochay	2	22.5	yes	yes		
Luichart	1	17	yes	yes		
Luichart	2	17	yes	yes		
Pitlochry	1	7	yes	yes		
Pitlochry	2	7	yes	yes		
Torr Achilty	1	15	yes	yes		
Peterhead	Unit 1	660	yes	yes	yes	yes
Peterhead	Unit 2	660	yes	yes	yes	
Peterhead	GT 3	120		yes	yes	
Peterhead	GT 4	120		yes	yes	

**Table 3. Non-compliance against BC2.A.2.6**

<b>Station</b>	<b>Unit</b>	<b>Rated MW</b>
<b>SSE Generation Ltd</b>		
Fasnakyle	1	22
Finlarig	1	15
Glenmoriston	1	19.86
Glenmoriston	2	19.86
Invergarry	1	20
Livishie	1	15
Lochay	1	22.5
Lochay	2	22.5
Luichart	1	17
Luichart	2	17
Mossford	1	6.66
Mossford	2	12
Nant	1	15
Orrin	1	18
Pitlochry	1	7
Pitlochry	2	7

## **Appendix 2 – List of Generating Units given lifetime derogation<sup>4</sup> against some element of CC.6.3.2 at vesting in England and Wales**

Aberthaw B units B7, B8 and B9. GT7, GT8 and GT9  
Aberthaw A units A2, A3, A5 and A6  
Agecroft units 3 and 4  
Blyth B units 4, 5, 6, 7 and 8  
Blyth A units 1, 2 and 3  
Bold B units 1 and 3  
Didcot units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Drax units 1, 2, 3, 4, 5 and 6. GT7, GT9, GT10, GT11 and GT12  
Eggborough units 1, 2, 3 and 4. GT5, GT6 and GT7  
Fawley units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Ironbridge B units 1 and 2. GT1 and GT2  
Littlebrook D units 1, 2 and 3. GT1A, GT2A and GT3A  
Pembroke units 1, 2, 3 and 4. GT1 and GT4  
Rugeley B units 1 and 2. GT6 and GT7  
Rugeley A units 1, 2, 3, 4 and 5  
Skelton Grange units 11, 12, 13 and 14  
Staythorpe B units 1, 2 and 3  
Stella North units 1, 2, 3 and 4  
Stella South units 1, 2, 3, 4 and 5  
Thorpe Marsh units 1 and 2. GT3 and GT4  
Tilbury B units 7, 8, 9 and 10. GT7, GT9 and GT10  
Uskmouth B unit 15  
Wakefield B units 1, 2, 3 and 4  
West Thurrock units 1, 2, 3, 4 and 5  
West Burton units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Willington B units 5 and 6  
Willington A units 1, 2, 3 and 4  
Meaford B units 1, 2, 3 and 4  
Ocker Hill units 5, 6, 7 and 8  
Norwich units 7 and 8  
Cowes GT units 1 and 2  
Letchworth units 1 and 2  
Lister Drive units 1 and 2

Dinorwig units 1, 2, 3, 4, 5 and 6  
FFestiniog units 1, 2, 3 and 4

Hinkley Point B units B7 and B8  
Hinkley Point A units A1, A2, A3, A4, A5 and A6  
Hartlepool units 1 and 2  
Sizewell A units A1 and A2  
Trawsfynydd units 1, 2, 3 and 4  
Wylfa units 1, 2, 3 and 4  
Oldbury units 1 and 2

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<sup>4</sup> Note that some of these units are at stations that are now closed.

Heysham I units I1 and I2  
Heysham II units II1 and II2  
Dungeness B units B1 and B2  
Dungeness A units A1, A2, A3 and A4

Bulls Bridge GT units 1, 2, 3 and 4  
Carrington units 1, 2, 3 and 4  
Castle Donnington units 1, 2, 3, 4, 5 and 6  
Cottam units 1, 2, 3 and 4  
Drakelow units B5, B6, B7, B8, C9, C10 and C12  
Elland units 1, 2 and 3  
Ferrybridge units B1, B2, B3, C1, C2, C3 and C4. GT5, GT6, GT7 and GT8  
Fiddlers Ferry units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Hams Hall units 1, 2, 3, 4, 5 and 6  
High Marnham units 1, 2, 3, 4 and 5  
Ince units B5 and B6. GT5 and GT6  
Kingsnorth units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Leicester Power GT units 6 and 7  
Ratcliffe on Soar units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Richborough units 1, 2 and 3  
Grain units 1, 2, 3 and 4. GT1, GT2, GT3 and GT4  
Taylors Lane GT units 2 and 3  
Watford GT units 1 and 2