DATED 2024

NATIONAL ENERGY SYSTEM OPERATOR LIMITED

and

[ ]

REACTIVE MARKET ANCILLARY SERVICES AGREEMENT RELATING TO [ ] POWER STATION

Contract Log No [ ]

SUBJECT TO CONTRACT

Draft: [ ]
Date: [ ]
Ref: [ ]

THIS REACTIVE MARKET ANCILLARY SERVICES AGREEMENT is made the

day of 2024

BETWEEN:-

(1) **NATIONAL ENERGY SYSTEM OPERATOR LIMITED** a company registered in England with number 11014226 whose registered office is at St Catherine's Lodge Bearwood Road, Sindlesham, Wokingham, England, RG41 5BN ("**The Company**" which expression shall include its permitted successors and/or assigns); and

(2) [ ] a company registered in [England/Scotland][1] with number [ ] whose registered office is at [ ] (the "**Generator**" which expression shall include its permitted successors and/or assigns).

WHEREAS:-

(A) **The Company** and the **Generator** are parties to a **Mandatory Services Agreement** [dated [ ]] in respect of [ ]**Power Station** ("the **MSA**").

(B) Clause 3 of the **MSA** gives effect to the provisions of paragraph 2 of Schedule 3, Part I to the **Connection and Use of System Code** ("the **CUSC Schedule**") with respect to the payments to be made by **The Company** to the **Generator** for the provision by the **Generator** of the **Obligatory Reactive Power Service** from the **BM Unit[s]** comprising [a] **CCGT Module[s]** known as [ ] at the [ ] **Power Station** (and the term "relevant **CCGT Unit**" shall be construed accordingly).

(C) For the duration of its term, this Reactive Market Ancillary Services Agreement ("**Market Agreement**") replaces certain provisions of the **MSA** and sets out alternative terms upon which the **Generator** has agreed to provide the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** from the **BM Unit(s)** pursuant to paragraph 3 of the **CUSC Schedule**.

NOW IT IS HEREBY AGREED as follows:-

1. DEFINITIONS, INTERPRETATION AND CONSTRUCTION

Unless the subject matter otherwise requires or is inconsistent therewith or unless expressly defined in Schedule A, the definitions contained or referred to in Section 11 of the **Connection and Use of System Code**, in the **CUSC Schedule** and in Appendix 3 to the **MSA** have the same meanings, interpretations and construction in this **Market Agreement** as though the same were set out in full in this **Market Agreement**. In addition, the further definitions set out in Schedule A to this **Market Agreement** shall apply.

2. COMMENCEMENT, TERM AND SUSPENSION

2.1 This **Market Agreement** shall apply to **Settlement Days** from 1 April 2023 and, subject always to earlier termination in accordance with Clause 5 hereof, shall continue in force and effect until the earlier of:-

(i) 24.00 hours on [ ]; or

[1] To be deleted as applicable depending on whether the Generator is from England/Wales or Scotland.

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

(ii) the date of termination of the **CUSC Schedule** or the **MSA**.

For the avoidance of doubt, in the event this **Market Agreement** is terminated in relation to any individual **BM Unit**, the provisions of this **Market Agreement** shall terminate in relation to that **BM Unit** only.

2.2 For the duration of this **Market Agreement**, in relation to any **BM Unit** to which this **Market Agreement** applies, the provisions of Clause 3 of the **MSA** (except Sub-Clause 3.2) shall be suspended and have no force and effect.

2.3 Nothing in this **Market Agreement** shall affect the rights and obligations of the **Parties** accrued under the terms of Clause 3 of the **MSA** as at the date this **Market Agreement** comes into effect.

3. SERVICE PROVISION AND PAYMENT

3.1 Provision of the [Obligatory][Enhanced][2] Reactive Power Service

3.1.1 Subject as herein provided, the **Generator** hereby agrees to provide the **[Obligatory][Enhanced][2] Reactive Power Service** from each **BM Unit**.

3.1.2 The **Parties** agree that, for the purpose of Appendix 2 to the **CUSC Schedule**:-

(a) the figures set out in Table(s) B of Schedule B, Part I represent for each relevant **CCGT Unit** the **Reactive Power** capability at **Rated MW** [which the **Generator** is obliged to provide under and in accordance with the **Connection Conditions** of the **Grid Code**][which the **Generator** has agreed to provide in excess of that which the **Generator** is obliged to provide under and in accordance with the **Connection Conditions** of the **Grid Code**][2], together with **Reactive Power** capability at **Full Output** and at other levels of MW output as specified therein, in each case by reference to the **Generator Performance Chart** submitted in accordance with **Grid Code OC**2.4.2 and in each case being measured at the generator stator terminals; and

(b) the figures set out in summary Table(s) C of Schedule B, Part I represent for each **BM Unit** the **Reactive Power** capability of each relevant **CCGT Unit** at **Full Output** (derived from Table(s) B) but shown at the high voltage side of the **Generating Unit** step-up transformer by application of the formulae set out in Schedule B, Part II, Section 1; and

(c) the figures set out in Table(s) A of Schedule B, Part I shall constitute for each relevant **BM Unit** the values of QC_{lead} and QC_{lag} referred to in Section 2 of Appendix 3 to the **CUSC Schedule** representing the **Reactive Power** capability of that **BM Unit** at **Nominated Registered Capacity** shown at the **Commercial Boundary**. The **Nominated Registered Capacity** shall be equivalent to the summation of the MW output of each relevant **CCGT Unit** shown in summary Table(s) C,

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

and such **Reactive Power** capability shall be derived by application of the formulae set out in Schedule B, Part II, Section 2.

For the avoidance of doubt, the values of QC_{lead} and QC_{lag} shall remain fixed throughout the duration of this **Market Agreement** notwithstanding any change in the **Registered Capacity** of the **BM Unit** or any change in technical provisions relevant to Schedule B, Part II.

[3.1.3[3] Subject always to Sub-Clause 3.1.4, the **Generator** agrees that, in relation to each **BM Unit** and relevant **CCGT Unit** it shall comply with each of the obligations contained in the **Grid Code** with regard to **Reactive Power** as if the minimum **Reactive Power** capability required by **Grid Code CC**6.3.2 was substituted by the **Reactive Power** capability at **Rated MW** specified in Table B of Schedule B, Part I and the **Grid Code** shall be read and construed accordingly.]

[3.1.4[3] It is hereby acknowledged and agreed that, to the extent a **CCGT Unit** is providing **Reactive Power** by virtue of operating outside of the minimum capability required by the **Connection Conditions** of the **Grid Code**, then notwithstanding **Grid Code CC**6.3.4 the **Reactive Power** output at QC_{lead} and QC_{lag} under steady state conditions shall be available across the voltage range specified in Table D of Schedule B, Part 1.]

[3.1.5[3] Where, as a result of voltage changes on the **System** a **BM Unit**, following the issue of a **Reactive Despatch Instruction** given by **The Company** in accordance with Sub-Clause 3.3.1, is operating outside the **Reactive Power** capability specified in Sub-Clause 3.1.2(c), the **Generator** will not take any action to vary the level of **Leading** or **Lagging** Mvar (as the case may be) being provided by that **BM Unit** except as permitted by **Grid Code BC** 2.5.4.]

[3.1.6[4] The figures for **Reactive Power** capability set out in Table A of Schedule B, Part I are specified at an ambient air temperature of [ ]ºC. It is hereby acknowledged that the level of **Reactive Power** output will vary in accordance with changes in the ambient air temperature as shown in Table E of Schedule B, Part 1.]

3.2 Redeclarations

3.2.1 For the avoidance of doubt, nothing in this **Market Agreement** shall affect the provisions of **Grid Code OC**2 and/or **BC** concerning the redeclaration in relation to any of the **CCGT Units** of a revised capability to provide **Leading** and/or **Lagging** Mvar at the generator stator terminals [for the avoidance of doubt including in relation to the **Enhanced Reactive Power Service**][3]. All such redeclarations submitted pursuant thereto may include the revised capability at the **Commercial Boundary** at the then applicable **Registered Capacity**, which shall be derived by the summation of the revised capability of each relevant **CCGT Unit** at the high voltage side of the **CCGT Unit** step-up transformer (after the application of the formula set out in Schedule B, Part II, Section 1 to the capability of each **CCGT Unit** at the generator stator terminals) and by application of the formulae set out in Schedule B, Part II, Section 2.

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[3] Additional terms to be included if an Enhanced Reactive Power Service is provided by the Generator.

[4] Additional terms which may be included if an Enhanced Reactive Power Service is provided by the Generator

3.2.2 Where a redeclaration of capability of any **CCGT Unit** to provide **Leading** and/or **Lagging** Mvar does not specify the revised capability at the then applicable **Registered Capacity** of the **BM Unit** at the **Commercial Boundary**, then **The Company** shall calculate the revised capability of the **BM Unit** at the then applicable **Registered Capacity** at the **Commercial Boundary** in the manner specified in Sub-Clause 3.2.1.

3.2.3 The **Generator** shall immediately advise **The Company** in accordance with Sub-Clause 3.2.1 of the revised capability of a **CCGT Unit** to provide **Leading** or **Lagging** Mvar (as the case may be) at the then applicable **Registered Capacity** upon any change in **Registered Capacity** of the relevant **BM Unit** from time to time.

3.2.4 Any revised capability of a **BM Unit** at **Registered Capacity** at the **Commercial Boundary**, for the avoidance of doubt including any revised capability of a **BM Unit** following a change in **Registered Capacity** pursuant to Sub-Clause 3.2.3 or a change to data referred to in Schedule B, Part II submitted in accordance with **Grid Code DRC**, shall constitute the respective values of QR_{lead} and QR_{lag} as referred to in Section 2 of Appendix 3 to the **CUSC Schedule**.

3.2.5 Following commencement of this **Market Agreement**, **The Company** shall calculate the values of QR_{lead} and QR_{lag} using the then applicable **Registered Capacity** and the then applicable data referred to in Schedule B, Part II submitted in accordance with **Grid Code DRC**.

3.3 Utilisation

[3.3.1][3] **The Company** shall have the right (but shall not be obliged) at any time to instruct the **Generator** by the issue of a **Reactive Despatch Instruction** to provide **Leading** and/or **Lagging** Mvar from each **BM Unit**.

[3.3.2[3] **The Company** may not issue a **Reactive Despatch Instruction** pursuant to Sub-Clause 3.3.1 in relation to any **BM Unit**, (except in accordance with **Grid Code BC**2) requiring it to produce **Leading** and/or **Lagging** Mvar in excess of those levels shown in Table B of Schedule B, Part I or as amended by any redeclaration as to the capability of any **CCGT Unit** to provide **Leading** and **Lagging** Mvar given by the **Generator** in accordance with Sub-Clause 3.2.1.]

3.4 Payments to Generator

3.4.1 In respect of each **BM Unit**, and in consideration of the **Generator** providing the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** from that **BM Unit**, **The Company** shall pay to the **Generator** in respect of each calendar month in accordance with Paragraph 4.3 of the **Connection and Use of System Code** the aggregate total payments calculated by reference to the prices specified in Schedule C and in accordance with the formulae set out in Appendix 2 to the **CUSC Schedule** and referred to therein as "PTM".

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[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[3] Additional terms to be included if an Enhanced Reactive Power Service is provided by the Generator.

3.4.2 For the purposes of Sub-Clause 3.4.1:-

(a) the system voltage range performance factor (referred to in Appendix 2 to the **CUSC Schedule** as "V") is specified in Schedule B, Part IV;

(b) the relevant configuration factor (referred to in Appendix 2 to the **CUSC Schedule** as "K") is specified in Schedule B, Part V;

(c) without prejudice to Sub-Clause 3.5.1, **The Company** shall use the meters and aggregation principles specified and/or referred to in Schedule B, Part III to ascertain the amount of **Leading** and **Lagging** Mvarh produced in each **Settlement Period** by each **BM Unit**, and such amount of **Leading** and **Lagging** Mvarh shall constitute the respective values of U_{lead} and U_{lag} as referred to in Section 1 of Appendix 3 to the **CUSC Schedule**; and

(d) the **Parties** acknowledge that all meters and metered data used for the purposes of this **Market Agreement** shall comply with the provisions of Appendix 4 to the **CUSC Schedule**.

[Indexation provisions will be incorporated into this Sub-Clause 3.4 where appropriate]

3.5 Monitoring

3.5.1 In order to comply with its obligations contained in **Grid Code OC**5, **The Company** may use its operational metering equipment or operational metering equipment owned by a **Relevant Transmission Licensee** to ensure that, in respect of each **BM Unit** and each **CCGT Unit**, the **Generator** is complying with its obligations to provide the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** in each case in accordance with the **Grid Code** and the terms of this **Market Agreement**.

3.5.2 The **Generator** acknowledges that following the coming into effect of this **Market Agreement, The Company** may wish to install additional monitoring equipment at the **Power Station** to monitor the ability of a **BM Unit** and each **CCGT Unit** to provide the [**Obligatory**][**Enhanced**][2] **Reactive Power Service**, such monitoring equipment to be installed on terms to be agreed with the **Generator** (such agreement not to be unreasonably withheld or delayed). The cost of such additional monitoring equipment and its installation shall be borne by **The Company**.

3.6 Reactive Testing

[3.6.1][3] Where, in accordance with **Grid Code OC**5.4.2.4, **The Company** shall be entitled to require a **Reactive Test**, such test shall be in addition to, and shall not prejudice **The Company**'s right to require, the two annual **Reactive Tests** referred to in **Grid Code OC**5.5.1.1. If a **CCGT Unit** fails a **Reactive**

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[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[3] Additional terms to be included if an Enhanced Reactive Power Service is provided by the Generator.

Test, then **The Company** shall advise the **Generator** that the **CCGT Unit** has so failed whereupon, subject always to resolution of any dispute in accordance with **Grid Code OC**5.5.4 and (where applicable) **OC**5.5.5, the **Generator** shall immediately advise **The Company** of the revised capability of the **CCGT Unit** to provide **Leading** and/or **Lagging** Mvar (as the case may be) in accordance with Sub-Clause 3.2.1.

[3.6.2[3] For the avoidance of doubt, the provisions of **Grid Code OC**5.4.1 shall be deemed to apply to the provision by the **Generator** of the **Enhanced Reactive Power Service** and, notwithstanding **Grid Code OC**5.4.2.4, **The Company** shall be entitled to require a test in accordance with the provisions of **Grid Code OC**5.5.1 (as though the same were set out in full herein) but so that **The Company** shall test the ability of the **BM Unit** and the **CCGT Unit** to provide the **Enhanced Reactive Power Service** rather than the ability of the **CCGT Unit** to meet the requirements of **Grid Code CC**6.3.2. For the avoidance of doubt, any such test shall be in addition to, and shall not prejudice **The Company**'s right to require, the two annual **Reactive Tests** referred to in **Grid Code OC**5.5.1.1. If a **CCGT Unit** fails such a test, then **The Company** shall advise the **Generator** that the **CCGT Unit** has so failed whereupon, subject always to resolution of any dispute in accordance with **Grid Code OC**5.5.4 and (where applicable) **OC**5.5.5, the **Generator** shall immediately advise **The Company** of the revised capability of the **CCGT Unit** to provide **Leading** and/or **Lagging** Mvar (as the case may be) in accordance with Sub-Clause 3.2.]

4. GRID CODE

It is acknowledged by both **Parties** that the provision by the **Generator** of the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** in accordance with the terms hereof shall not relieve it of any of its obligations set out in the **Grid Code** including without limitation its obligations set out in **Grid Code CC**8.1 to provide **Reactive Power** (supplied otherwise than by means of **Synchronous** or **Static Compensation**) in accordance with **Grid Code CC**6.3.2 and **CC**6.3.4.

5. TERMINATION

The Company shall be entitled to terminate the provisions of this **Market Agreement** in relation to any **BM Unit** in the following circumstances:-

5.1 upon a change in the Registered **Capacity** of that **BM Unit** to less than 25MW; or

5.2 upon a continuous period of unavailability of that **BM Unit** to be instructed by **The Company** in accordance with **Grid Code BC**2 extending beyond 84 consecutive days; or

5.3 upon a continuous period in which, for that **BM Unit**, QR_{lead} is less than QC_{lead} extending beyond 28 consecutive days; or

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[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[3] Additional terms to be included if an Enhanced Reactive Power Service is provided by the Generator.

5.4 upon a continuous period in which, for that **BM Unit**, QR_{lag} is less than QC_{lag} extending beyond 28 consecutive days; or

5.5 upon an aggregate period of 42 days in any rolling 365 day period, QR_{lead} is less than QC_{lead}; or

5.6 upon an aggregate period of 42 days in any rolling 365 day period, QR_{lag} is less than QC_{lag},

in each case by giving notice in writing to the **Generator**, not later than 30 days following such occurrence, that such occurrence constitutes an event of default. Once **The Company** has given such notice of an event of default, this **Market Agreement** shall terminate in relation to the **BM Unit** concerned.

6. CONNECTION AND USE OF SYSTEM CODE

The provisions of Paragraphs 4.3, 6.12, 6.14, 6.15, 6.20, 6.21 to 6.26 inclusive of the **Connection and Use of System Code** shall apply to this **Market Agreement** as if set out in full herein.

7. DISCLOSURE OF INFORMATION

The **Generator** hereby consents to the disclosure and use by **The Company** of data and other information relating to this **Market Agreement** and the provision of the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** to the extent necessary to enable **The Company** to comply with its obligations set out in the **CUSC Schedule**.

8. DISPUTE RESOLUTION

It is hereby acknowledged and agreed by the **Parties** that any dispute or difference of whatever nature concerning the obligations of the **Parties** under this **Market Agreement** insofar as and to the extent the same relate to the [**Obligatory**][**Enhanced**][2] **Reactive Power Service** shall be a dispute or difference arising out of or in connection with the **CUSC Schedule**, and accordingly the provisions of Section 7 of the **Connection and Use of System Code** shall apply.

9. HIERARCHY

If any provision of this **Market Agreement** shall be inconsistent with the provisions of the **CUSC Schedule**, the provisions of the **CUSC Schedule** shall prevail to the extent of such inconsistency.

10. VARIATIONS

No variations or amendments to this **Market Agreement** shall be effective unless made in writing and signed by and on behalf of both **Parties**.

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[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

IN WITNESS WHEREOF the hands of the duly authorised representatives of the **Parties** at the date first above written.

SIGNED on behalf of)
NATIONAL ENERGY)
SYSTEM OPERATOR LIMITED)

SIGNED on behalf of)
[ ])

SCHEDULE A

Definitions

"**BM Unit(s)**"	for the purposes of this **Market Agreement**, means those **BM Unit(s)** specified in Schedule B, and "**BM Unit**" shall be construed accordingly;
"**Connection and Use of System Code (CUSC)**"	the meaning attributed to it in the **Transmission Licence**;
"**CUSC Schedule**"	for the purposes of this **Market Agreement**, the meaning attributed to it in the recitals hereto;
"**Market Agreement**"	means this Reactive Market Ancillary Services Agreement;
"**MSA**"	for the purposes of this **Market Agreement**, the meaning attributed to it in the recitals hereto;
"**Nominated Registered Capacity**"	for each **BM Unit**, means the figure (in MW) shown in Table(s) A of Schedule B, Part I;
"**Registered Capacity**"	the meaning attributed to it in the **Grid Code**;
"**Settlement Day**"	the meaning attributed to it in the **BSC**;
"**Static Compensation**"	means the operation of shunt connected static var generator/absorber apparatus, whose output is adjusted to exchange capacitive or inductive current so as to maintain or control parameters of the electrical power system.

SCHEDULE B

Part I

[Enhanced][2] Reactive Power Capability Tables for [ ] Power Station

BM Unit No. [ ]

[ENHANCED][2] REACTIVE POWER CAPABILITY AT COMMERCIAL BOUNDARY (at rated stator terminal and nominal system voltage)

TABLE A	MW	LEAD (Mvar)	LAG (Mvar)
AT NOMINATED REGISTERED CAPACITY			

[ENHANCED][2] REACTIVE POWER CAPABILITY AT GENERATOR STATOR TERMINAL (at rated terminal voltage)

CCGT Unit No. [ ]

TABLE B	MW	LEAD (Mvar)	LAG (Mvar)
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

CCGT Unit No. [ ]

TABLE B	MW	LEAD (Mvar)	LAG (Mvar)
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

CCGT Unit No. [ ]

TABLE B	MW	LEAD (Mvar)	LAG (Mvar)
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[ENHANCED][2] REACTIVE POWER CAPABILITY AT HV SIDE OF STEP-UP TRANSFORMER (at rated terminal voltage and nominal system voltage)

SUMMARY TABLE C	MW	LEAD (Mvar)	LAG (Mvar)
CCGT UNIT			

[VOLTAGE RANGE][3]

TABLE D	QC_{lead}	QC_{lag}
Maximum Voltage (%)		
Minimum Voltage (%)		

[**ENHANCED REACTIVE POWER CAPABILITY AT COMMERCIAL BOUNDARY** at Nominated Genset Registered Capacity (at rated stator terminal and nominal system voltage) at ambient air temperatures as specified][4]

TABLE D	-10ºC	0ºC	10ºC	20ºC	30ºC	40ºC
Lead (Mvar)						
Lag (Mvar)						

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[3] Additional Table to be included if an Enhanced Reactive Power Service is provided by the Generator.

[4] Additional Table which may be included if an Enhanced Reactive Power Service is provided by the Generator.

BM Unit No.[ ]

[ENHANCED][2] REACTIVE POWER CAPABILITY AT COMMERCIAL BOUNDARY (at rated stator terminal and nominal system voltage)

TABLE A	**MW**	**LEAD (Mvar)**	**LAG (Mvar)**
AT NOMINATED REGISTERED CAPACITY			

[ENHANCED][2] REACTIVE POWER CAPABILITY AT GENERATOR STATOR TERMINAL (at rated terminal voltage)

CCGT Unit No. [ ]

TABLE B	**MW**	**LEAD (Mvar)**	**LAG (Mvar)**
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

CCGT Unit No. [ ]

TABLE B	**MW**	**LEAD (Mvar)**	**LAG (Mvar)**
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

CCGT Unit No. [ ]

TABLE B	**MW**	**LEAD (Mvar)**	**LAG (Mvar)**
AT RATED MW			
AT FULL OUTPUT (MW)			
AT MINIMUM OUTPUT (MW)			

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[ENHANCED][2] REACTIVE POWER CAPABILITY AT HV SIDE OF STEP-UP TRANSFORMER (at rated terminal voltage and nominal system voltage)

SUMMARY TABLE C CCGT UNIT	**MW**	**LEAD (Mvar)**	**LAG (Mvar)**

[VOLTAGE RANGE][3]

TABLE D	**QC_{lead}**	**QC_{lag}**
Maximum Voltage (%)		
Minimum Voltage (%)		

[**ENHANCED REACTIVE POWER CAPABILITY AT COMMERCIAL BOUNDARY** at Nominated Genset Registered Capacity (at rated stator terminal and nominal system voltage) at ambient air temperatures as specified][4]

TABLE D	**-10ºC**	**0ºC**	**10ºC**	**20ºC**	**30ºC**	**40ºC**
Lead (Mvar)						
Lag (Mvar)						

[2] To be deleted as applicable depending on whether an Obligatory or Enhanced Reactive Power Service is being provided.

[3] Additional Table to be included if an Enhanced Reactive Power Service is provided by the Generator.

[4] Additional Table which may be included if an Enhanced Reactive Power Service is provided by the Generator.

Part II

Calculation of Reactive Power Capability

at the Commercial Boundary

In accordance with Sub-Clauses 3.2.1 and 3.2.2, the formulae in Section 1 will be used to convert **Reactive Power** capability of a **CCGT Unit** at the generator stator terminals to the capability at the HV side of the **Generating Unit** step-up transformer, and the formulae in Section 2 will be used to calculate the **Reactive Power** capability of the **BM Unit** at the **Commercial Boundary**.

Section 1

$$CQ_{lead} = (Q_{Glead} + Q_u) + \left[\frac{\left[NRC^2 + (Q_{Glead} + Q_U)^2 \right] X_t}{100.MVA_x} \right]$$

Where the **CCGT Unit** has a **Reactive Power** capability (leading), this shall be expressed as a positive integer. Where the **CCGT Unit** does not have a **Reactive Power** capability (leading), Q_{lead} and/or Q_{Glead} shall be the minimum **Reactive Power** capability (lagging) expressed as a negative integer or zero.

$$CQ_{lag} = (Q_{Glag} - Q_u) - \left[\frac{\left[NRC^2 + (Q_{Glag} - Q_U)^2 \right] X_t}{100.MVA_x} \right]$$

Where the **CCGT Unit** has a **Reactive Power** capability (lagging), this shall be expressed as a positive integer. Where the **CCGT Unit** does not have a **Reactive Power** capability (lagging), Q_{lag} and/or Q_{Glag} shall be the minimum **Reactive Power** capability (leading) expressed as a negative integer or zero.

Where:

CQ_{lead}	=	the **Reactive Power** capability (leading) of the **CCGT Unit** at the HV side of the **Generating Unit** step-up transformer in Mvar when the **BM Unit** is operating at **Nominated Registered Capacity**
CQ_{lag}	=	the **Reactive Power** capability (lagging) of the **CCGT Unit** at the HV side of the **Generating Unit** step-up transformer in Mvar when the **BM Unit** is operating at **Nominated Registered Capacity**
NRC	=	**Nominated Registered Capacity**

Q_U = normal auxiliary lagging load (**Reactive Power**) supplied by the **CCGT Unit** at **Rated MW** referred to in Schedule 1 of **Grid Code DRC** in Mvar

X_t = positive sequence reactance, nominal tap, of the **CCGT Unit** step-up transformer in percentage of rating referred to in Schedule 1 of **Grid Code DRC**

Q_{Glag} = the **Reactive Power** capability (lagging) at **Full Output** (as defined in **Grid Code BC**2.A.3.1) of the **CCGT Unit** at the generator stator terminals as set out in Table(s) B of Schedule B, Part I or as redeclared by the **Generator** pursuant to **Grid Code BC**

Q_{Glead} = the **Reactive Power** capability (leading) at **Full Output** (as defined in **Grid Code BC**2.A.3.1) of the **CCGT Unit** at the generator stator terminals as set out in Table(s) B of Schedule B, Part 1 or as redeclared by the **Generator** pursuant to **Grid Code BC**

MVA_X = **CCGT Unit** step-up transformer rated MVA referred to in Schedule 1 of **Grid Code DRC**

Section 2

$$Q_{lead} = \left(\sum_{n}^{CCGTUnits} CQ_{lead}\right) + Q_{ts}$$

$$Q_{lag} = \left(\sum_{n}^{CCGTUnits} CQ_{lag}\right) - Q_{ts}$$

Where

Q_{lead} = the **Reactive Power** capability (leading) of the **BM Unit** at the **Commercial Boundary** in Mvar

$\sum_{n}^{CCGTUnits}$ = the summation over each relevant **CCGT Unit**

Q_{lag} = the **Reactive Power** capability (lagging) of the **BM Unit** at the **Commercial Boundary** in Mvar

Q_{ts} = the relevant reactive load applicable to each of the **BM Units** shown in the table below, the summation of which represents the lagging reactive load in Mvar taken by a **Trading Unit** calculated in accordance with the values for **Demand** (**Active Power**) and Power Factor referred to in **Grid Code PC**.A.4.3.1(a) or **Grid Code PC**.A.5.2.2(a) (as the case may be), or as agreed between **The Company** and the **Generator** from time to time (and where such load is leading, Q_{ts} will be negative)

Reactive Load	
BM Unit	**Q_{ts}**

N.B. All of the above factors referred to in **Grid Code DRC** shall be expressed in such units as are specified in **Grid Code DRC** and to the same number of significant figures as also specified therein (as varied from time to time).

Part III

Meters and Aggregation Principles

BM Unit No:

CCGT Unit No	Meter Identificat-ion No.	Channel Number	Meter Location Code	Meter Type	Loss Adjustme-nt Factor	Outstation ID

Aggregation Methodology

[N/A]

or

[Category A/B/C/D* aggregation principles as set out in the latest published version of the document entitled "Methodology Document for the Aggregation of Reactive Power Metering" shall apply]

**Delete as applicable*

Part IV
System Voltage Range Performance Factor

V = 1

Part V
Configuration Factor

K = 1

SCHEDULE C

Capability Breakpoints and Prices

Note:

1. Where a Capability Breakpoint is not used and is therefore denoted by “null”, the range is correspondingly not used and the corresponding price is denoted by “null”.
2. In the following price tables, Q0 defines a Capability Breakpoint at zero Mvar.

BM Unit No(s):

Leading Capability Breakpoints

Capability Breakpoint	(Mvar)
QC_{lead} =	
$Q2_{lead}$ =	
$Q1_{lead}$ =	

Lagging Capability Breakpoints

Capability Breakpoint	(Mvar)
QC_{lag} =	
$Q2_{lag}$ =	
$Q1_{lag}$ =	

BM Unit No(s):

Leading Utilisation Prices

Range (Mvar)	Price (£/Mvarh)
QC_{lead} to $Q2_{lead}$	$CU3_{lead}$ =
$Q2_{lead}$ to $Q1_{lead}$	$CU2_{lead}$ =
$Q1_{lead}$ to Q0	$CU1_{lead}$ =

Lagging Utilisation Prices

Range (Mvar)	Price (£/Mvarh)
Q0 to $Q1_{lag}$	$CU1_{lag}$ =
$Q1_{lag}$ to $Q2_{lag}$	$CU2_{lag}$ =
$Q2_{lag}$ to QC_{lag}	$CU3_{lag}$ =

BM Unit No(s):

Leading Utilisation Prices

Range (Mvar)	Price (£/Mvarh)
QC_{lead} to $Q2_{lead}$	$CU3_{lead}$ =
$Q2_{lead}$ to $Q1_{lead}$	$CU2_{lead}$ =
$Q1_{lead}$ to Q0	$CU1_{lead}$ =

Lagging Utilisation Prices

Range (Mvar)	Price (£/Mvarh)
Q0 to $Q1_{lag}$	$CU1_{lag}$ =
$Q1_{lag}$ to $Q2_{lag}$	$CU2_{lag}$ =
$Q2_{lag}$ to QC_{lag}	$CU3_{lag}$ =

BM Unit No(s):

Available Leading Capability Prices

Range (Mvar)	Price (£/Mvar/h)
QC $_{lead}$ to Q2 $_{lead}$	CA3 $_{lead}$ =
Q2 $_{lead}$ to Q1 $_{lead}$	CA2 $_{lead}$ =
Q1 $_{lead}$ to Q0	CA1 $_{lead}$ =

Available Lagging Capability Prices

Range (Mvar)	Price (£/Mvar/h)
Q0 to Q1 $_{lag}$	CA1 $_{lag}$ =
Q1$_{lag}$ to Q2 $_{lag}$	CA2 $_{lag}$ =
Q2$_{lag}$ to QC $_{lag}$	CA3 $_{lag}$ =

Synchronised Leading Capability Prices

Range (Mvar)	Price (£/Mvar/h)
QC $_{lead}$ to Q2 $_{lead}$	CS3 $_{lead}$ =
Q2 $_{lead}$ to Q1 $_{lead}$	CS2 $_{lead}$ =
Q1 $_{lead}$ to Q0	CS1 $_{lead}$ =

Synchronised Lagging Capability Prices

Range (Mvar)	Price (£/Mvar/h)
Q0 to Q1 $_{lag}$	CS1 $_{lag}$ =
Q1$_{lag}$ to Q2 $_{lag}$	CS2 $_{lag}$ =
Q2$_{lag}$ to QC $_{lag}$	CS3 $_{lag}$ =

BM Unit No(s):

Available Leading Capability Prices

Range (Mvar)	Price (£/Mvar/h)
QC $_{lead}$ to Q2 $_{lead}$	CA3 $_{lead}$ =
Q2 $_{lead}$ to Q1 $_{lead}$	CA2 $_{lead}$ =
Q1 $_{lead}$ to Q0	CA1 $_{lead}$ =

Available Lagging Capability Prices

Range (Mvar)	Price (£/Mvar/h)
Q0 to Q1 $_{lag}$	CA1 $_{lag}$ =
Q1$_{lag}$ to Q2 $_{lag}$	CA2 $_{lag}$ =
Q2$_{lag}$ to QC $_{lag}$	CA3 $_{lag}$ =

Synchronised Leading Capability Prices

Range (Mvar)	Price (£/Mvar/h)
QC $_{lead}$ to Q2 $_{lead}$	CS3 $_{lead}$ =
Q2 $_{lead}$ to Q1 $_{lead}$	CS2 $_{lead}$ =
Q1 $_{lead}$ to Q0	CS1 $_{lead}$ =

Synchronised Lagging Capability Prices

Range (Mvar)	Price (£/Mvar/h)
Q0 to Q1 $_{lag}$	CS1 $_{lag}$ =
Q1$_{lag}$ to Q2 $_{lag}$	CS2 $_{lag}$ =
Q2$_{lag}$ to QC $_{lag}$	CS3 $_{lag}$ =