

Knottingley Power Station ExCS Informal Notice - Appendix 1

30th November 2017

Our Ref: 2017 – Knottingley Power Station ExCS

This Appendix relates to the proposed substitution of NTS Exit Capacity to Knottingley power station exit point, from West Burton, Blyborough (Cottam), Saltend HP and Thornton Curtis (Killingholme) DC exit points, and Blyborough and Thornton Curtis DN exit points.

1. Recipient selection:

The PARCA application in respect of Knottingley power station for Enduring Annual NTS Exit (Flat) Capacity was received through a PARCA Exit Window triggered by Sutton Bridge power station. Also during that Window, a further PARCA application was received from Eggborough power station.

Sutton Bridge power station is downstream of Hatton compressor station, while Eggborough and Knottingley are upstream. Thus, for the purpose of substitution, it was deemed best to carry out the assessment for Knottingley and Eggborough power stations separately from that of Sutton Bridge power station.

2. Donor selection:

Substitution from individual donor NTS exit points was assessed by reducing the capacity at the most favourable NTS Exit Points that had Substitutable Capacity. The most favourable donor NTS Exit Points will normally be the furthest downstream NTS Exit Points from the recipient NTS exit point as measured by pipeline distance.

For the purposes of the NTS Exit Capacity Substitution analysis, three (3) donor sequences of NTS Exit Points were analysed to determine the best exchange rate.

The exit points identified as potential donor sites were as follows;

NTS Exit Point	Type	Obligated Capacity (GWh/d)	Unsold Capacity (at 1st October 2017)(GWh/d)
Pannal	DN	148.41	28.23
Asselby	DN	4.59	1.00
Goole (Guardian Glass)	DC	1.62	1.62
Eastoft (Keadby) power station	DC	36.06	36.06
Towton	DN	80.73	21.17
Burley Bank	DN	20.31	6.44
West Burton Power Station	DC	26.84	26.84
Blyborough	DN	79.33	23.50
Blyborough (Cottam) Power Station	DC	19.30	19.30
Ganstead	DN	23.15	6.54
Blyborough (Brigg) Power Station	DC	16.89	15.29
Saltend HP (BP Saltend HP)	DC	9.10	0.04

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NTS Exit Point	Type	Obligated Capacity (GWh/d)	Unsold Capacity (at 1st October 2017)(GWh/d)
Baldersby	DN	1.34	0.21
Pickering	DN	9.38	1.05
Thornton Curtis	DN	118.19	22.85
Thornton Curtis (Killingholme) Power Station	DC	91.00	91.00
Stallingborough Power Station	DC	68.01	15.31
Walesby	DN	0.97	0.44

The pipeline distances to the potential donor NTS Exit Points are:

From	To	Pipeline distance (km)
Eggborough Power Station	Pannal	46.62
	Asselby	15.53
	Goole (Guardian Glass)	23.99
	Eastoft (Keadby) power station	40.40
	Towton	47.28
	Burley Bank	52.92
	West Burton Power Station	61.31
	Blyborough DN	62.26
	Blyborough (Cottam) Power Station	62.29
	Ganstead	67.88
	Blyborough (Brigg) Power Station	76.12
	Saltend BPHP (BP Saltend HP)	85.66
	Baldersby	90.04
	Pickering	136.40
	Thornton Curtis	95.54
	Thornton Curtis (Killingholme) Power Station	95.56
Stallingborough Power Station	108.60	
Walesby	111.90	

As a result of these analyses, the final NTS Exit Points selected were as follows;

NTS Point	Type	Recipient / Donor	Current Baseline (kWh/d)	Proposed Baseline (kWh/d)	Remaining unsold capacity (kWh/d)
Knottingley Power Station	DC	Recipient	0	71,183,770	0
West Burton power station	DC	Donor	26,839,694	0	0
Blyborough power station (Cottam)	DC	Donor	19,300,000	0	0
Saltend HP	DC	Donor	9,100,000	9,055,895	0
Blyborough DN	DN	Donor	79,330,000	55,825,856	0
Thornton Curtis DN	DN	Donor	118,190,411	95,336,450	0
Thornton Curtis (Killingholme) power station	DC	Donor	91,000,001	54,360,001	54,360,001

In accordance with paragraph 62 of the methodology the individual donor NTS Exit Point to recipient NTS Exit Point exchange rate was determined and is as follows:

Donor NTS Exit Points	Exchange Rate (Donor : Recipient)	Total Exchange Rate (Donor : Recipient)
West Burton power station	1.4894 : 1	1.7613 : 1
Blyborough power station	1.4446 : 1	
Saltend HP	2.2053 : 1	
Blyborough DN	1.3697 : 1	
Thornton Curtis DN	2.2808 : 1	
Thornton Curtis (Killingholme) power station	2.4172 : 1	

3. Network analysis: Supply & demand scenario

- Substitution analysis was conducted for the Gas Year 2020/21 as the first year of the capacity will be required by Knottingley power station, and is also the first year Eggborough power station has requested their capacity.
- The analysis starting point is our 2020/21 1-in-20 peak day demand network. From this a North East sensitivity network is created, taking the most onerous credible demand levels for power stations (and other DCs) and DN offtakes from sold and forecast levels for the North East Exit zone as detailed in Section 5, and with North East supplies reduced to a credible minimum.
- The substitution network is created from the North East sensitivity network, with the potential donor distribution network NTS Exit Points in the area increased to

obligation in accordance with the Methodology, as these were deemed to have a reasonable probability of being donors.

- Knottingley power station NTS Exit Point was set at the level of prevailing Obligated Exit Capacity in 2020 (0 kWh/d).

4. Enhanced Network

- No System enhancements for the substitution network were required.

5. Exit points set at obligated, sold or otherwise:

- All North East DC sites are set at obligated level, with the remaining DCs being scaled back from the forecast so that the aggregate total matches the forecast total.
- Sites increased to their obligated level as part of the North East sensitivity network are the potential donors (DN offtakes) listed above; none of these sites had already been set to their obligated level.
- All other DN NTS Exit Points were at Sold level as booked through the annual NTS exit (Flat) Capacity application processes.

6. Flow adjustments:

- Flow adjustments were made in accordance with Paragraph 45 of the Methodology.
- Flow adjustments are detailed in Section 3 above, the substitution network demand is 6121 GWh/d, which is higher than the 1 in 20 peak demand (including sold capacity levels at DN NTS Exit Points).

7. Remaining unsold NTS Exit (Flat) Capacity at the donor NTS Exit Points:

If substitution is effected as stated in this notice on 1st November, 2020, the remaining unsold Annual NTS Exit (Flat) Capacity at the donor exit points is shown in the following tables.

NTS Exit Point	Type	Remaining unsold capacity (kWh/d)
West Burton power station	DC	0
Blyborough power station (Cottam)	DC	0
Saltend HP	DC	0
Blyborough DN	DN	0
Thornton Curtis DN	DN	0
Thornton Curtis (Killingholme) power station	DC	54,360,001

8. Summary of network analysis key parameter changes:

- No significant parameter changes were required between substitution networks.

9. Exchange Rate Validation

In order to validate that the above donor list and the sequence of substitution provides the best exchange rate, three different donor sequences were assessed. These are listed, with their respective exchange rates, in the following tables:

Sequence 1

Recipient NTS Exit Point	Donor NTS Exit Points	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : Recipient)	Total Exchange Rate (Donor : Recipient)
Knottingley power station	West Burton power station	18,109,661	6,039,372	2.9986 : 1	2.9986 : 1
	Eastoft Keadby Power Station	36,060,000	27,949,999	1.2902 : 1	
	Goole Glass	1,620,000	1,410,000	1.1489 : 1	
	Asselby	1,000,269	890,269	1.1236 : 1	
	Staythorpe power station	82,000,000	27,339,995	2.9993 : 1	
	Pickering	1,047,290	357,290	2.9312 : 1	
	Baldersby	213,358	73,358	2.9084 : 1	
	Burley Bank	6,441,849	2,151,849	2.9936 : 1	
	Towton	14,895,027	4,971,638	2.9960 : 1	

Sequence 2

Recipient NTS Exit Point	Donor NTS Exit Points	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : Recipient)	Total Exchange Rate (Donor : Recipient)
Knottingley power station	Blyborough (Cottam) Power Station	709,656	501,382	1.4154 : 1	2.1576 : 1
	Ganstead	6,539,670	5,535,994	1.1813 : 1	
	Blyborough (Brigg) Power Station	15,290,000	11,272,486	1.3564 : 1	
	Saltend HP	44,104	15,004	2.9395 : 1	
	Thornton Curtis	22,853,962	10,036,874	2.2770 : 1	
	Thornton Curtis (Killingholme) Power Station	91,000,000	36,217,464	2.5126 : 1	
	Staythorpe power station	17,150,578	7,604,566	2.2553 : 1	

Sequence 3 (Selected)

Recipient NTS Point	Donor NTS Exit Points	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : Recipient)	Total Exchange Rate (Donor : Recipient)
Knottingley power station	West Burton power station	23,035,220	15,465,700	1.4894 : 1	1.7613 : 1
	Blyborough power station	19,300,000	13,360,000	1.4446 : 1	
	Saltend HP	44,105	20,000	2.2053 : 1	
	Blyborough (DN)	23,504,144	17,160,000	1.3697 : 1	
	Thornton Curtis (DN)	22,853,961	10,020,000	2.2808 : 1	
	Thornton Curtis (Killingholme) power station	36,640,000	15,158,070	2.4172 : 1	

10. Interaction with Eggborough Power Station development

The donor list, exchange rates and baseline modifications described above, takes into consideration development of both Knottingley and Eggborough power stations. If only Knottingley was to progress with the PARCA, for best exchange rates, the donor sequence, and the corresponding exchange rates would be revised as in the following table:

Recipient NTS Point	Donor NTS Exit Points	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : Recipient)	Total Exchange Rate (Donor : Recipient)
Knottingley power station	Pannal	28,230,041	28,330,000	0.9965 : 1	1.0447 : 1
	Burley Bank	6,441,849	6,410,000	1.0050 : 1	
	Asselby	1,000,269	1,010,000	0.9904 : 1	
	Baldersby	213,358	210,000	1.0160 : 1	
	Towton	21,165,329	21,080,000	1.0040 : 1	
	Ganstead	6,539,670	6,000,000	1.0899 : 1	
	Goole Glass	1,620,000	1,900,000	0.8526 : 1	
	Pickering	1,047,290	950,000	1.1024 : 1	
	Blyborough (Brigg) Power Station	8,110,395	5,293,770	1.5321 : 1	

The baseline modifications would be revised as in the following tables:

NTS Exit Point	Type	Recipient / Donor	Current Baseline (kWh/d)	Proposed Baseline (kWh/d)	Remaining unsold capacity (kWh/d)
Knottingley power station	DC	Recipient	0	106,494,300	0
Pannal	DN	Donor	148,410,000	120,179,959	0
Burley Bank	DN	Donor	20,310,000	13,868,151	0
Asselby	DN	Donor	4,586,470	3,586,201	0
Baldersby	DN	Donor	1,340,000	1,126,642	0
Towton	DN	Donor	80,730,000	59,564,671	0
Ganstead	DN	Donor	23,150,000	16,610,330	0
Goole Glass	DC	Donor	1,620,000	0	0
Pickering	DN	Donor	9,380,000	8,332,710	0
Blyborough (Brigg) Power Station	DC	Donor	16,890,000	8,779,605	7,179,605