

## Knottingley PARCA ExCS Informal Notice - Appendix 1

30 November 2016

Our Ref: 2016 - Knottingley 2 - PARCA

This Appendix relates to the proposed substitution of NTS Exit Capacity from **Keadby Blackstart, West Burton, Pannal, Burley Bank, Goole Glass, Ganstead and Towton** NTS Exit Points to Knottingley NTS Exit Point.

### 1. Recipient selection:

The PARCA application in respect of Knottingley power station for Enduring Annual NTS Exit (Flat) Capacity was received during the PARCA window triggered by Keadby 2 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, six (6) 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 2016)(GWh/d)
PANNAL	DN	148.41	20.30
GOOLEGLASS	DC	1.62	1.62
KEADBYB	DC	2.38	0.92
WESTBURTON	DC	66.00	66.00
GANSTEAD	DN	23.15	6.29
TOWTON	DN	80.73	20.42
BURLEYBANK	DN	20.31	5.86
COTTAM	DC	19.30	19.30
BLYBOROUGH	DN	79.33	23.04
BRIGG	DC	16.89	15.29
BP SALTEND	DC	9.10	0.04
BALDEBSBY	DN	1.34	0.21
THORNTON CURTIS DN	DN	118.19	22.66

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NTS Exit Point	Type	Obligated Capacity (GWh/d)	Unsold Capacity (at 1st October 2016)(GWh/d)
THORNTONCURTIS PS	DC	91.00	69.30
STALLINGBOROUGH	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 flow
Knottingley	PANNAL	45
	GOOLEGLASS	25.46
	KEADBY B	41.88
	WESTBURTON	62.78
	GANSTEAD	69.35
	TOWTON	48.75
	BURLEYBANK	51.45
	COTTAM	63.75
	BLYBOROUGH	63.73
	BRIGG	77.59
	BP SALTEND	87.13
	BALDELSBY	91.50
	THORNTON CURTIS DN	97.01
	THORNTONCURTIS PS	97.01
	STALLINGBOROUGH	110.08
WALESBY	113.37	

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

NTS Exit Point	Type	Recipient /Donor	Current Baseline (kWh/d)	Proposed Baseline (kWh/d)	Remaining unsold capacity (kWh/d)
Knottingley	DC	Recipient	0	71,183,770	0
Pannal	DN	Donor	148,410,000	127,560,152	0
Burley Bank	DN	Donor	20,310,000	14,453,143	0
Goole Glass	DC	Donor	1,620,000	0	0
Keadby Blackstart	DC	Donor	2,380,000	1,457,215	0
West Burton	DC	Donor	66,000,000	22,465,842	22,465,842

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 Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Pannal	20,849,848	20,738,033	1:1.0054
Burley Bank	5,856,857	5,826,492	1:1.0052
Goole Glass	1,620,000	1,631,067	1:0.9932
Keadby Blackstart	922,785	930,258	1:0.9920
West Burton	43,534,158	42,057,920	1:1.0351
<b>Total</b>	<b>72,783,608</b>	<b>71,183,770</b>	<b>1:1.0225</b>

### 3. Network analysis: Supply & demand scenario

- Substitution analysis was conducted for the Gas Year 2019/20 as the first year of the enduring exit capacity period for which substitution could be effected, based on our understanding of the customer's required timescales at that point in time.
- The analysis starting point is our 2019/20 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 DN offtakes from sold and forecast levels for the North East exit zone as detailed in Section 5, and with Easington supplies reduced to a credible minimum.
- The substitution network is created from the North East sensitivity network, with the distribution network NTS Exit Points bounded by the nearest upstream and downstream compressor stations Bishop Auckland and Hatton increased to obligation in accordance with the Methodology, as these were deemed to have a reasonable probability of being donors.
- Knottingley NTS Exit Point was set at the level of prevailing Obligated Exit Capacity in 2019 (Zero).
- This substitution analysis was deemed valid for obligated capacity reservation from 1<sup>st</sup> October 2020, on the grounds that the sold / unsold capacity levels for the donor NTS exit points being considered were the same on both years.

### 4. Enhanced Network

System enhancements for the substation network were as follows;

- None

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

- All North East Direct Connect sites are set at obligated level, with the remaining Direct Connects being scaled back from the forecast so that the aggregate total matches the balance sheet 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 have already been set to their obligated level.

- All other DN NTS Exit Points are 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 4 above, the substitution network demand is 5638 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 1<sup>st</sup> October, 2020, the remaining unsold Annual NTS Exit (Flat) Capacity at the donor exit points is shown in the following table.

NTS Exit Point	Type	Unsold capacity at donor exit points in kWh/d (Post-2019 Knottingley capacity reservation)
Knottingley	DC	0
Pannal	DN	0
Burley Bank	DN	0
Goole Glass	DC	0
Keadby Blackstart	DC	0
West Burton	DC	22,465,842

8. Summary of network analysis key parameter changes:

- The donor/recipient offtakes are sufficiently far from compression/pressure reduction facilities that no significant parameter changes were required between substitution networks.

9. Exchange Rate Validation

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

### Sequence 1

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Pannal	20,849,883	20,739,333	1:1.0053
Goole Glass	1,620,000	1,633,667	1:0.9916
Keadby Blackstart	922,808	922,808	1:1.0000
West Burton	49,631,113	47,887,990	1:1.0364
<b>Total</b>	<b>73,023,804</b>	<b>71,183,798</b>	<b>1:1.0258</b>

### Sequence 2

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Goole Glass	1,620,000	1,603,333	1:1.0104
Keadby Blackstart	922,808	899,167	1:1.0263
West Burton	65,999,998	65,993,415	1:1.0001
Pannal	5,052,970	2,687,750	1:1.8800
<b>Total</b>	<b>73,595,776</b>	<b>71,183,664</b>	<b>1:1.0339</b>

### Sequence 3

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
West Burton	65,999,998	65,953,331	1:1.0007
Pannal	7,533,928	5,230,442	1:1.4404
<b>Total</b>	<b>73,533,926</b>	<b>71,183,773</b>	<b>1:1.0330</b>

### Sequence 4

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
West Burton	20,849,847	20,739,333	1:1.0053
Pannal	52,194,862	50,444,440	1:1.0347
<b>Total</b>	<b>73,044,710</b>	<b>71,183,773</b>	<b>1:1.0261</b>

### Sequence 5

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Pannal	20,849,883	20,739,333	1:1.0053

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Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Burley Bank	5,856,816	5,827,250	1:1.0051
Keadby Blackstart	922,808	928,417	1:0.9940
West Burton	45,165,454	43,688,774	1:1.0338
<b>Total</b>	<b>72,794,962</b>	<b>71,183,773</b>	<b>1:1.0226</b>

### Sequence 6 (Preferred)

Donor Exit Point	Capacity Donated (kWh/d)	Capacity Received (kWh/d)	Exchange Rate (Donor : recipient)
Pannal	20,849,848	20,738,033	1:1.0054
Burley Bank	5,856,857	5,826,492	1:1.0052
Goole Glass	1,620,000	1,631,067	1:0.9932
Keadby Blackstart	922,785	930,258	1:0.9920
West Burton	43,534,158	42,057,920	1:1.0351
<b>Total</b>	<b>72,783,608</b>	<b>71,183,770</b>	<b>1:1.0225</b>