Warwick Technology Park
Gallows Hill, Warwick
CV34 6DA

Keadby3 Carbon Capture Power Station ExCS Informal Notice - Appendix 1 - Revised

16th June 2023
Our Ref: 2023 – Keadby3 Carbon Capture Power Station ExCS

This Appendix relates to the proposed substitution of NTS Exit Capacity to Keadby3 Carbon Capture Power Station from West Burton Power Station DC, Blyborough DN, and Blyborough (Cottam) DC exit points.

1. Recipient selection:

The PARCA application is in respect of Keadby3 Carbon Capture Power Station for Enduring Annual NTS Exit (Flat) Capacity. The request triggered the opening of a PARCA Exit Window, but no further PARCA applications were received.

2. Donor selection:

Substitution from individual donor NTS exit points were 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.

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

NTS exit Point	***Type***	***Obligated Capacity (GWh/d)***	***Substitutable Capacity[1] (at 31st December 2027) (GWh/d)***
West Burton Power Station	DC	23.0	23.0
Blyborough (Cottam)	DC	19.3	19.3
Blyborough OT	DN	79.3	29.3
Thornton Curtis OT	DN	118.2	11.8
Thornton Curtis (Humber Refinery aka Immingham)	DC	67.0	48.6
Thornton Curtis (Killingholme)	DC	91.0	91.0

[1] NTS Exit Capacity required as a result of demand forecasts provided via Exit Capacity Planning processes as per Standard Special Condition A57 and the Exit Capacity Planning Guidance will not be Substitutable.

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*calls will be recorded and may be monitored

The pipeline distances to the potential donor NTS exit points are:

From	***To***	***Pipeline distance (km)***
Keadby3 Carbon Capture Power Station	West Burton Power Station	27.9
	Blyborough (Cottam)	28.8
	Blyborough OT	28.8
	Thornton Curtis OT	102.6
	Thornton Curtis (Humber Refinery aka Immingham)	102.6
	Thornton Curtis (Killingholme)	102.6

As a result of these analyses, the final NTS exit points selected were as follows;

NTS Point	***Type***	***Recipient / Donor***
Keadby3 Carbon Capture Power Station	DC	Recipient
West Burton Power Station	DC	Donor
Blyborough OT	DN	Donor
Blyborough (Cottam)	DC	Donor

3. Network analysis: Supply & demand scenario

- Substitution analysis was conducted for the Gas Year 2027/28 as the first year the capacity will be required by Keadby3 Carbon Capture Power Station.
- The analysis starting point is our 2026/27 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 GDN offtakes from sold and forecast levels for the North East 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 NTS exit points in the area increased to obligation in accordance with the Methodology.
- Keadby3 Carbon Capture Station is a new NTS exit point and as such has initially been set at 0 kWh/d.

4. Enhanced Network

- No enhancements

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

    - All North East DC sites and GDN offtakes that are potential donors as listed above are increased to their obligated level, with scaling back at other exit points so that the aggregate total matches the forecast total.
    - All other GDN NTS exit points in the North were at forecast undiversified levels, with the remaining GDN exit points scaled accordingly so that the aggregate total matches the sold total.

6. Flow adjustments:

    - Flow adjustments were made in accordance with Paragraph 47 of the Methodology.
    - Flow adjustments are detailed in Section 3 above, and the substitution network demand is 5893 GWh/d, which is higher than the 1 in 20 peak demand (including sold capacity levels at GDN NTS Exit Points).

7. Summary of network analysis key parameter changes:

    - No significant parameter changes were required between substitution networks.

8. Exchange Rate Validation

Three sequences from the list of potential donors were assessed to determine the best exchange rate.The respective exchange rates are listed below in the following tables:

Sequence 1

Donor NTS Exit Points	***Capacity Donated (kWh/d)***	***Capacity Received (kWh/d)***	***Exchange Rate (Donor: Recipient)***
Thornton Curtis (Killingholme)	46,600,000	39,776,149	1.1716:1

Sequence 2

Donor NTS Exit Points	***Capacity Donated (kWh/d)***	***Capacity Received (kWh/d)***	***Exchange Rate (Donor: Recipient)***
Blyborough OT	28,100,000	39,776,149	0.7065:1

Sequence 3 (Selected)

Donor NTS Exit Points	***Capacity Donated (kWh/d)***	***Capacity Received (kWh/d)***	***Exchange Rate (Donor: Recipient)***	***Total Exchange Rate (Donor:Recipient)***
West Burton Power Station	23,035,220	33,500,000	0.6876:1	0.6973:1
Blyborough OT	2,800,000	3,739,982	0.7489:1	
Blyborough (Cottam)	1,900,000	2,536,167	0.7491:1	