

Confidential – National Grid

Exit Capacity Substitution Notice - Appendix 1

2nd September 2015

This Appendix relates to the proposed substitution of NTS Exit Capacity from 13 NTS Exit Points to Trafford Power Station NTS Exit Point.

1. Recipient selection:

Trafford Power Station was the only NTS Exit Point where an application via a PARCA for Enduring Annual NTS Exit (Flat) Capacity was received and hence was the only NTS Exit Point considered as a recipient within the Exit Capacity Substitution and Revision Methodology Statement v3.0.

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.

In this case Trafford Power Station is located at a system extremity, on a spur from a main feeder and hence there are no exit points directly downstream. For the purposes of the NTS Exit Capacity Substitution analysis, 8 (eight) sequences of NTS Exit points were analysed to determine the best exchange rate. 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)
Trafford Power Station	DC	Recipient	0	84,000,000	0
Partington	GDN (NW)	Donor	87,630,000	55,607,944	0
Warburton	GDN (NW)	Donor	110,620,000	96,345,394	0
Holmes Chapel	GDN (NW)	Donor	22,190,000	18,387,106	0
Audley (NW)	GDN (NW)	Donor	12,140,000	8,037,574	0
Audley (WM)	GDN (WM)	Donor	21,830,000	15,330,890	0
Malpas	GDN (WM)	Donor	990,000	685,222	0
Maelor	GDN (WN)	Donor	57,560,000	49,258,990	0
Ecclestone	GDN (NW)	Donor	21,140,000	16,370,887	0
Shotwick (Bridgewater Paper)	DC	Donor	5,520,000	140,000	0
Shellstar (aka Kemira, not Kemira CHP)	DC	Donor	16,240,000	11,732,444	0
Weston Point	GDN (NW)	Donor	30,640,000	29,900,000	20,451,829
Weston Point (Rocksavage)	DC	Donor	38,190,000	36,860,000	36,860,000
Weston Point (Castner Kelner, aka ICI Runcorn)	DC	Donor	11,700,000	11,340,000	10,753,858

The most favourable donor NTS Exit Points in this case are therefore upstream on the connecting spur (Partington) and downstream of the point at which the connecting spur connects to the NTS. The most favourable donor points are not necessarily the furthest upstream due to changes in pipeline diameter.

Confidential – National Grid

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

From	To	Pipeline flow distance /km	Comment / ordering
Trafford Power Station	Partington	0.00 (upstream)	Donor 1
	Warburton	0.66	Donor 2
	Holmes Chapel	26.37	Donor 3
	Audley (NW)	44.32	Donor 4
	Audley (WW)	44.32	Donor 5
	Malpas	71.86	Donor 6
	Maelor	83.75	Donor 7
	Ecclestone	76.01	Donor 8
	Shotwick (Bridgewater Paper)	78.58	Donor 9
	Shellstar (aka Kemira, not Kemira CHP)	74.71	Donor 10
	Weston Point	80.12	Donor 11
	Weston Point (Rocksavage)	80.12	Donor 12
	Weston Point (Caster Kelner, aka ICI Runcorn)	80.12	Donor 13

The capacity of the donors proposed for Substitution is:

Potential donor NTS Exit Point	Type	Post-2015 Exit unsold capacity in 2016 (kWh/d)
Partington	GDN (NW)	32,022,056
Warburton	GDN (NW)	14,274,606
Holmes Chapel	GDN (NW)	3,802,894
Audley (NW)	GDN (NW)	4,102,426
Audley (WW)	GDN (NW)	6,499,110
Malpas	GDN (NW)	304,778
Maelor	GDN (NW)	8,301,010
Ecclestone	GDN (NW)	4,769,113
Shotwick (Bridgewater Paper)	DC	5,380,000
Shellstar (aka Kemira, not Kemira CHP)	DC	4,507,556
Weston Point	GDN (NW)	21,191,829
Weston Point (Rocksavage)	DC	38,190,000
Weston Point (Caster Kelner, aka ICI Runcorn)	DC	11,113,858

The exchange rates for a number of donor combinations were examined. In accordance with paragraph 61 of the Methodology all substitutable capacity from the donor points was utilised in order to satisfy the incremental request, although no single offtake had sufficient substitutable unsold capacity to meet the Trafford Power Station requirement.

Partington donor exit point was identified first as this is on the same spur as Trafford Power Station. The donor exit points from Warburton to Malpas achieved a close to or better than 1:1 exchange rate. The lower exchange rates for the later donor points, including Weston Point, cannot be achieved without the earlier donor points having first being substituted.

Confidential – National Grid

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 Recipient : Donor
Partington	1 : 1.01926868
Warburton	1 : 0.99774047
Holmes Chapel	1 : 0.99748903
Audley (NW)	1 : 0.99998806
Audley (WM)	1 : 0.99999646
Malpas	1 : 1.00011813
Maelor	1 : 1.07922119
Ecclestone	1 : 1.02378104
Shotwick (Bridgewater Paper)	1 : 1.10358974
Shellstar (aka Kemira, not Kemira CHP)	1 : 1.15578359
Weston Point	1 : 0.99893817
Weston Point (Rocksavage)	1 : 0.99893817
Weston Point (Castner Kelner, aka ICI Runcorn)	1 : 0.99893817

Analysis showed that the exchange rate between Trafford Power Station NTS Exit Point and the donor NTS Exit Points could be achieved at or close to a one to one exchange rate.

3. Network analysis: Supply & demand scenario

- Analysis was conducted for 2018 as the first year of the enduring exit capacity period for the proposed release.
- The analysis starting point is our 2018/19 1-in-20 peak day demand network. From this a North West sensitivity network is created, taking the most onerous credible demand levels for power stations and DN offtakes from sold and forecast levels for the NW, WN and WM as detailed in Section 5, and with NW supplies reduced to a credible minimum.
- The substitution network is created from the North West sensitivity network, with the distribution network NTS Exit Points bounded by the nearest upstream and downstream compressor stations (Carnforth and Warrington) increased to obligation in accordance with the Methodology, as these were deemed to have a reasonable probability of being donors.
- Trafford Power Station NTS Exit Point was set at the level of prevailing Obligated Exit Capacity in 2018 (Zero).

4. Enhanced Network

- The substitution scenario was solved by modelling a smaller unit at Hatton to represent the flexibility required to meet the flow conditions.

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

- Sites increased to their obligated level as part of the North West sensitivity network are the potential donors (DN offtakes) listed above; none of these sites have already been sold 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.
- All North West Direct Connect sites are set at obligated level, and the remainder are scaled back from the balance sheet forecast so that the aggregate total matches the balance sheet forecast total.

Confidential – National Grid

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 544 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:

In 2018 the remaining unsold Annual NTS Exit (Flat) Capacity at the donor exit points is shown in the following table.

<i>Donor NTS Exit Points</i>	<i>Type</i>	<i>Unsold capacity Post-2018 Trafford Power Station capacity reservation (kWh/d)</i>
Partington	GDN (NW)	0
Warburton	GDN (NW)	0
Holmes Chapel	GDN (NW)	0
Audley (NW)	GDN (NW)	0
Audley (WW)	GDN (NW)	0
Malpas	GDN (NW)	0
Maelor	GDN (NW)	0
Ecclestone	GDN (NW)	0
Shotwick (Bridgewater Paper)	DC	0
Shellstar (aka Kemira, not Kemira CHP)	DC	0
Weston Point	GDN (NW)	20,451,829
Weston Point (Rocksavage)	DC	36,860,000
Weston Point (Caster Kelner, aka ICI Runcorn)	DC	10,753,858

8. Summary of network analysis key parameter changes:

- The key changes made to the network model are Hatton compressor discharge settings
- The donor/recipient offtakes are sufficiently far from compression/pressure reduction facilities that no significant parameter changes were required between substitution networks.