EOWG 28th June 2003

NTS Exit Flexibility Capacity Defintion

Background

As part of National Grid's continued efforts to simplify the introduction and implementation of the enduring NTS exit capacity regime and to seek to satisfy the requirements of all stakeholders National Grid has proposed that it may be appropriate to contemplate a release of nodal flexibility that might be released subject to limits defined on a zonal basis.

Specifically as a result of discussions with DNs it has become apparent that the currently formulated "nodal" flexibility product release may generate a requirement for aggregated flexibility booking quantities that might imply requirements that are artificially inflated because of DN users inability to signal intra-LDZ diversity within their bookings. Ofgem has recognised this may generate a risk of inefficiency by introducing unintentional risk of unwarranted investment.

There may therefore be merit in considering an approach that enables greater scope for diversity to be reflected in flexibility capacity bookings. This paper starts to explore whether some zonality principles might be contemplated within the enduring NTS exit reform proposals. The concepts in this paper will be considered in the context of how flow flexibility might be "swapped" within the zones close to gas flow and how short term releases of flexibility and system management might be conducted close to gas flow.

This National Grid analysis recently undertaken in respect of flexibility availability has informed the National Grid NTS view as to the potential release of flexibility capacity that might be expected to be guaranteed on the assumption that it might all be utilised on a simultaneous basis. This paper indicates why National Grid NTS has concluded that the concept of "expanding flexibility" as considered by EOWG this year might not be appropriate. Furthermore this paper explores the basis for the consequential 22 mcm of "Physically Firm" flexibility that might be released for Gas Year 2010/11 and its potential attribution to National Grids recommended zonal definition.

Rejection of the "expanding flexibility capacity"/"bundled NTS exit capacity" concepts

EOWG has considered the concept that as transmission capacity utilisation decreses then generally the ability to deliver offtake flow rate varaiation capability at an offtake might increase.

During the spring of 2006 National Grid NTS conducted substantial network analysis to consider the capability of the NTS to accommodate different levels of flexibility utilisation (ie offtake flow rate variations) under a wide range of supply and demand scenarios.

The Network Analysis that has been performed to inform the flexibility product definition indicates that there is no clear relationship between demand levels and inherent linepack availability.

Mcm		National
TransitUK	D1	31
	D50	30
	D150	26
GlobalLNG	D1	18
	D50	22
	D150	22
Auctions+	D1	17
	D50	32
	D150	34

Further consideration of the results has indicated that whilst the concept of “expanding flexibility” may have theoretical justification in respect of single or very simple networks, such relationships do not hold in complex meshed networks. In this environment, gas flows in parts of the network may vary significantly due to the extent of variations in both input and offtake patterns; specifically different supply side scenarios generate widely varying amounts of available linepack.

Therefore, whilst this approach clearly was attractive, National Grid NTS concludes that the “expanding flex capacity” product concept and “bundled NTS exit capacity” product does not appropriately reflect network capability at an aggregate level. Hence, we conclude that such a product design would not provide efficient signals for network investment nor allow efficient assessment of capacity buyback.

National Grid NTS therefore proposes separate application and allocation processes for “flat” and “flexibility” products. The holding of each type of capacity would be independent; there would be no conversion concept in respect of unused “flat” capacity being translated into a “flex” entitlement.

Aggregated Physically Firm Release Quantity

National Grid NTS has completed substantial network analysis recently to inform assessments of the availability of system capability to accomodate within-day offtake flow rate variations.

National Grid NTS has identified a quantity of Flow Flexibility that could be confidently used by customers. Confidence’, in this respect means that National Grid believes that there is sufficient installed capacity on the NTS to ensure continuity of gas supplies when the aggregate quantity of flow flexibility is utilised on a single day.

This level of confidence is intended to be consistent with ensuring that respective Safety Cases can be satisfied for the relevant Gas Transporters (DNs and National Grid Gas Transmission).

The quantity identified is 22 mcmd.

The following sections explain the basis for this assessment.

1. Background

The transmission system because it cannot be precisely sized to meet demand requirements will generally have some ability to allow offtakes to deviate from a flat 1/24th flow rate profile. Thus an ability to accommodate Flow Flexibility is generated as a by-product of the gas transmission infrastructure. However the level of capability to absorb such offtake flow rate variations is affected by a large number of factors, including the pattern of demand and

supply, demand and supply within-day profiles, availability of compression and required minimum offtake pressures.

A baseline availability of 22 mcmd of flow flexibility has been identified on the NTS for the gas year 2010/11. This is an aggregate quantity that could reasonably be expected to be supported by the National Transmission System (NTS) infrastructure (having due regard to current and envisaged infrastructure including that which would be considered necessary to satisfy any and all of the three supply side scenarios that featured in the network analysis modelling that has underpinned the 22 mcm determination).

2. Basis of the determination

The analysis was carried out on engineering models of the NTS using the Graphical Falcon analysis tool.

Whilst it is normal to apply a flow margin during engineering studies; this has been removed for the purposes of this study to ascertain the maximum quantity of flow flexibility that might be available. Transient analysis was conducted so that within day demand side flow variations could be modelled. The demand profiles were based on historic profiles extracted from SCADA systems during the recent winter period for each offtake.

Offtake profiles were then progressively scaled up until the system break point was established. The break point being a breach of pressure alarms on the NTS entry and exit points or at compressor stations. The scaling factors were applied uniformly. This technique was applied first on a national basis and then applied to each of four zones (dividing the NTS into a north, south, east and west quadrant).

It should be noted that flat ($1/24^{th}$) gas flow was assumed for each entry point.

Analysis was conducted for a range of demand levels including day 1, day 50 and day 150 on an average winter load duration curve. In order to reflect uncertainties associated with gas input patterns the network analysis described above was applied to three supply scenarios as described in National Grids Ten Year Statement, known as Transit UK, Global LNG and Auctions+.

The quantity of flow flexibility that might be accommodated differs depending upon the supply scenario that is used.

For the purposes of deriving flow flexibility the results derived from the Auctions+ scenario have not been used. The rationale for this is that the Auctions+ scenario is regarded as a very low probability outcome for gas supply in 2010. This scenario is based on an assumption that gas flow will not exceed the present baseline level (including previously released incremental capacity). The scenario therefore does not reflect the potential pattern of gas supply that will occur, particularly on the East Coast at Grain, Bacton and Easington.

Of the remaining national demand conditions modelled 18 mcmd could be confidently provided across all scenarios.

The 18-mcmd threshold is set on day 1 of the Global LNG scenario analysis and on such a demand level the winter conditions would tend to develop and be reliably predicted by meteorologists. As such National Grid NTS should be in a position of preparing in advance for such conditions by preparing its plant and equipment as well as packing up the transmission pipelines in critical areas amongst other things. Based on the predictability of such a demand level, and through optimisation of operational configurations, more than 18 mcmd of flow flexibility should be capable of being accommodated.

If the 18-mcmd analysis is discarded, the next threshold is 22 mcmd, which would apply on both day 50 and day 150 of the Global LNG scenario. The logic of predictability for demand conditions could not be applied on days 50 and 150. A cold snap could easily occur and

therefore it would not be prudent to expect that prior preparation could enable this threshold to be increased.

On the basis of the analysis described the level of flow flexibility that could be confidently utilised is 22 mcmd.

3. Operational experience

The greatest level of flow flexibility utilisation that has been experienced on the NTS is approximately 15-mcmd.

A combination of operational experience and engineering judgement applied by a number of Gas Transmission experts within National Grid Gas Operations and Asset Management teams has been used to validate the network analysis results. Based on this judgement, National Grid considers that it would not be prudent to offer more than 22 mcmd of flow flexibility if confidence in deliverability is to be retained.

Identification of the potential for Flow Flexibility Zones

The NTS is divided currently divided into eleven zones for linepack management by National Grid NTS Network Operations.

As part of the overall assessment of ability to accommodate flow flexibility, the composition of these zones was investigated to determine whether they would provide the required level of definition to manage flow flexibility. A key consideration in this analysis was the expected changing flow patterns across the NTS and the planned changes to network infrastructure that are inevitable.

From the initial eleven, the zones which were deemed either too large or containing offtakes separated by one or more compressor stations that might act as material constraints to where offtake flow rate variations might be accommodated were divided into more appropriate zones.

National Grid NTS Network Operations and Network Design assess a total of seventeen zones as being the optimum balance having regard to operational, planning and commercial framework considerations given the expectation of 2010/11 network infrastructure.

From an operational perspective it is anticipated that a 17-zone model will now be developed for flow flexibility management within National Grid control room operations.

Allocation of National capability to Zones

There are a number of approaches to allocating the National capability to the Zones.

A key principle that underpins the attribution is that the sum of the zonal quantities will equal the National availability.

This document includes potential attributions that are made on the basis of two methodologies.

The data set used to define the apportionment covered the period from October 2002 to November 2005. **The data has been the subject of very little validation and a limited sense check of the data has indicated that further work would be necessary to ensure that the data could be relied upon.**

The first approach establishes allocations based on the highest day of simultaneous utilisation of flexibility that occurs in the available data set. This has been established by deriving the actual flexibility utilisation for each offtake on each day. In respect of each day the flexibility utilisations are aggregated to obtain a “national utilisation” on each day. The highest such

utilisation (effectively the highest simultaneous utilisation over all offtakes was 14.883 mcm which occurred on the 22nd November 2005. The zonal utilisations on this day have therefore been uniformly scaled up by a factor of 22/14.883 to attribute the Nationally availability of 22 mcm.

The second approach looks at the maximum flexibility utilisation observed within each zone over the October 2002 to November 2005 period. This approach mirrors the above calculations yielding the highest zonal utilisations but which typically occur on different days. This generates a series of zonal quantities that sum to 35.831 mcm and so the zonal quantities have then been scaled by the application of a multiplicative factor of 22/35.819 to yield the aggregate release quantity of 22 mcm.

The resulting attributions to the 17 zones under either methodology are contained in Appendix 3.

Whilst either approach could be used to attribute the 22 mcm of “physically firm flexibility” capacity the later approach might be considered to provide a more appropriate basis given that it is likely to be more reflective of disaggregated actual peak offtake requirements.

Alternative attribution processes

The two attribution processes defined above are not intended to represent all of the options. There may be scope for considering alternative allocation approaches.

For example concerns have been raised that the fully nodal booking regime associated with separate “flat” and “flexibility” products might generate high levels of booking which might imply potentially misleading investment signals. Such signals might generate an unacceptable risk of unwarranted investment and therefore costs being borne by consumers. Some of this might be mitigated if allocation methods could be found which attribute flexibility closest to users’ zonal requirements

Furthermore specific concerns have been raised that, in response to their obligations, DNs would need to secure longer term access to flexibility (given their obligations) whereas DCs might have greater commercial freedom and so might not need to secure longer term flexibility capacity but could be reliant on shorter term access. To provide further information about this the Appendices therefore include a table that indicates the highest aggregated utilisation within each Zone associated with the aggregate utilisation by DN offtakes within each zone.

Alternative approaches might be based upon:

- MDQ/SOQ levels
- current levels of “flexibility booking” (perhaps for 2009/10 as the latest available year)
- a hybrid between the two.

Interaction with the commercial release of the flexibility product

It is intended that the attributed zonal quantities would be available for release via a long term mechanism that would involve the potential for rationing. It is envisaged that (potentially subject to subsequent swapping of flexibility capacity between nodes in a zone) that flexibility could be purchased at any node.

The release would enable the flexibility (up to the aggregate zonal allocation) to be held at nodes at the election of users (via the outcome of the rationing process where it applies).

As a working assumption no restrictions in respect of the sale of longer term sale of flexibility capacity allocations (via nodal or sub-zonal limitations) are envisaged in this model; effectively flexibility is assumed to be substitutable on a 1:1 basis between nodes within a zone.

It will be necessary to give further consideration to the manner and extent to which "swapping" of flexibility between nodes where desired by users can take place closer to gas flow.

Conclusion

National Grid NTS

- concludes, based on the findings of the network analysis for 2010/11 to inform the flexibility product definition that it is not appropriate to contemplate an "expanded flexibility product".

- considers that having due regard to its obligations and the regulatory framework in which it [and other transporters] operate that it would not be appropriate to sell greater flexibility capacity than it might confidently expect to honour if used on a coincident basis.

- advises 22 mcm as an appropriate quantity of flexibility release for 2010/11 assuming investments are built to satisfy all three contemplated supply side scenarios

- advocates the use of 17 "flexibility zones" for the longer term "constrained" release of the 22 mcm flexibility (unless specific investments are contemplated to increase this)

- advocates that an approach is developed to enable the zonal allocation of the 22 mcm to the zones so that the sum of the zonal allocations equals the 22 mcm.

Further work needs to be done to establish the basis of, and any limitations associated with, "swapping" of flexibility between nodes within a zone close to gas flow.

Views are sought from EOWG about

- pursuing zonal principles to mitigate risks of unintended NTS exit consequences

- adopting a 17 zone framework

- the preferred basis for attributing the national capability to the 17 zones.

Appendix 1

Allocation of NTS offtakes to Zones

The following tables (in both Appendix 1 and Appendix 3) have been derived having regard for offtakes that were operable and associated with physical flows during the analysis period.

Offtake allocation to zones would need to be made on a prospective basis. Similarly approaches to allocating National availability might need to take account of prospective information perhaps anticipated bookings or offtake sizing.

Table 1 – Number of offtakes per "flexibility zone"

Zone	Offtakes
0	12
1	16
2	3
3	24
4	23
5	8
6	5
7	8
8	6
9	12
10	4
11	11
12	12
13	5
14	17
15	5
16	4

Table 2 – Attribution of offtakes to Flexibility Zones

Count	Offtakes	Modelling Zones
1	AberdeenOT	0
2	BalgrayOT	0
3	BPGrngemouthPS	0
4	CarestonOT	0
5	DrumOT	0
6	GlenmavisLNG	0
7	GlenmavisOT	0
8	GowkhallPS	0
9	KinknockieOT	0
10	PeterheadPS	0
11	PitcairnOT	0
12	StFergusOT	0
13	ArmadaleOT	1
14	BroxburnOT	1
15	ColdstreamOT	1
16	HumbletonOT	1
17	HumeOT	1

18	KeldOT	1
19	LangholmOT	1
20	LockerbieOT	1
21	MelkinthorpeOT	1
22	MoffatInt	1
23	NetherHwclghOT	1
24	SaltwickHOT	1
25	SaltwickOT	1
26	SoutraOT	1
27	TowLawOT	1
28	WetheralOT	1
29	AucklandOT	2
30	CorbridgeOT	2
31	GuyzanceOT	2
32	AsselbyOT	3
33	BaldersbyOT	3
34	BASFInd	3
35	BeltoftStor	3
36	BOCTeesInd	3
37	BPSaltendHPInd	3
38	BurleyBankOT	3
39	CowpenBewleyOT	3
40	EltonOT	3
41	EnronPS	3
42	GansteadOT	3
43	GooleGlassInd	3
44	HornseaStor	3
45	ICIBillnghmInd	3
46	LtBurdonOT	3
47	PannalOT	3
48	PaullOT	3
49	PhillipsTeesPS	3
50	PickeringOT	3
51	RawcliffeOT	3
52	RoughStor	3
53	SaltendPS	3
54	ThrintoftOT	3
55	TowtonOT	3
56	AMPaperInd	4
57	BlackburnMInd	4
58	BlackrodOT	4
59	BrdgewaterPInd	4
60	BurtonPointPS	4
61	DeesidePS	4
62	HaysChemInd	4
63	HolmesChapelOT	4
64	ICIRuncornInd	4
65	LuptonOT	4
66	MaelorOT	4
67	MickleTrafdOT	4
68	PartingtonLNG	4
69	PartingtonOT	4

70	RocksavagePS	4
71	RoosecotePS	4
72	SamlesburyOT	4
73	SellafieldPS	4
74	ShellStarInd	4
75	ShottonPaprInd	4
76	WarburtonOT	4
77	WestonPointOT	4
78	WinningtonPS	4
79	BlabyOT	5
80	CaldecottOT	5
81	CorbyPS	5
82	MktHarboroghOT	5
83	PeterborEyeOT	5
84	PeterboroPS	5
85	SilkWilloughOT	5
86	TurLangtonOT	5
87	EveshamOT	6
88	LeamingtonOT	6
89	LowerQuintonOT	6
90	RugbyOT	6
91	StratfrdAvonOT	6
92	AylesbeareOT	7
93	BraishfieldAOT	7
94	BraishfieldBOT	7
95	DidcotPS	7
96	IlchesterOT	7
97	Ipsden1OT	7
98	KennOT	7
99	MappowderOT	7
100	GtWilbrahamOT	8
101	PetersGrnNTOT	8
102	PetersGrnSMOT	8
103	RoudhamHeathOT	8
104	RoystonOT	8
105	WhitwellOT	8
106	BarkingPS	9
107	CorytonPS	9
108	DamheadCreekPS	9
109	FarninghamOT	9
110	GtYarmouthPS	9
111	HorndonOT	9
112	IsleOfGrainLNG	9
113	LuxboroughLnOT	9
114	MedwayPS	9
115	ShorneOT	9
116	TatsfieldOT	9
117	YelvertonOT	9
118	EppingGreenPS	10
119	LtBarfordPS	10
120	MatchngGreenOT	10
121	RyeHousePS	10

122	BlyboroughOT	11
123	BriggPS	11
124	CottamPS	11
125	ImminghamInd	11
126	KeadbyBPS	11
127	KeadbyPS	11
128	Stallingbor1PS	11
129	Stallingbor2PS	11
130	ThorntonCurtOT	11
131	ThorntonCurtPS	11
132	WalesbyOT	11
133	AlrewasEMOT	12
134	AlrewasWMOT	12
135	AspleyOT	12
136	AudleyNWOT	12
137	AudleyWMOT	12
138	AustreyOT	12
139	DrointonOT	12
140	EcclestonOT	12
141	HoleHousFmStor	12
142	MalpasOT	12
143	MilwichOT	12
144	ShustokeOT	12
145	BactonInt	13
146	BactonOT	13
147	BrisleyOT	13
148	KingsLynnPS	13
149	WestWinchOT	13
150	AvonmouthLNG	14
151	BaglanBayPS	14
152	CirencesterOT	14
153	DowlaisOT	14
154	DyffrynClydOT	14
155	DynevorArmsLNG	14
156	EastonGreyOT	14
157	FiddingtonOT	14
158	GilwernOT	14
159	ICISvrnsideInd	14
160	LittletnDrewOT	14
161	PucklechurchOT	14
162	RossSWOT	14
163	RossWMOT	14
164	SeabankBPS	14
165	SeabankOT	14
166	SeabankPS	14
167	GosbertonOT	15
168	KirksteadOT	15
169	SpaldingPS	15
170	SuttonBridgeOT	15
171	SuttonBridgePS	15
172	HardwickOT	16
173	WinkfieldNTOT	16

174	WinkfieldSEOT	16
175	WinkfieldSOOT	16

Appendix 2

Geographical disposition of proposed zones

A colour graphic is available indicated the geographic disposition of the proposed zones. Hard copies could be made available at EOWG and it could be made available on the website but it might be best not be embed in here and clog up too many e-mail accounts.

Appendix 3 – Zonal Flexibility Allocations

Approaches based on highest aggregate "flexibility utilisation" observed Nationally on a single day (22/11/05) or based on the highest Zonal utilisations (derived by considering the highest utilisations on any day over a period).

Max Aggregate Day (22.11.05) Approach

Region	Zones	Flex	%	22 Pro-rated
North	**0**	1.472	9.9%	2.176
North	**1**	0.434	2.9%	0.642
North	**2**	0.114	0.8%	0.169
North	**3**	0.063	0.4%	0.093
North	**4**	3.609	24.2%	5.335
Midlands	**5**	1.043	7.0%	1.542
Midlands	**6**	0.467	3.1%	0.690
West	**7**	1.066	7.2%	1.576
East	**8**	1.077	7.2%	1.592
East	**9**	1.198	8.0%	1.770
East	**10**	0.811	5.4%	1.199
Midlands	**11**	1.181	7.9%	1.745
Midlands	**12**	0.545	3.7%	0.805
East	**13**	0.228	1.5%	0.337
West	**14**	0.166	1.1%	0.245
Midlands	**15**	0.946	6.4%	1.398
East	**16**	0.465	3.1%	0.688
		14.883	**100.0%**	**22.000**

Zonal Maxima Approach

Zones	Flex	%	22 Pro-rated
0	2.347	6.6%	1.441
1	2.153	6.0%	1.323
2	0.659	1.8%	0.405
3	3.430	9.6%	2.106
4	3.987	11.1%	2.449
5	1.390	3.9%	0.854
6	0.966	2.7%	0.593
7	1.420	4.0%	0.872
8	1.332	3.7%	0.818
9	2.040	5.7%	1.253
10	1.268	3.5%	0.779
11	2.146	6.0%	1.318
12	2.589	7.2%	1.590
13	5.317	14.8%	3.265
14	2.106	5.9%	1.293
15	1.172	3.3%	0.720
16	1.498	4.2%	0.920
	35.819	**100.0%**	**22.000**

Appendix 3A – Zonal Flexibility Allocations – Numbers derived in respect of DN offtakes only

Max Aggregate Day (29.01.04) Approach

Region	Zones	Flex	%	22 Pro-rated
North	**0**	1.632	18.4%	4.056
North	**1**	0.846	9.6%	2.102
North	**2**	0.221	2.5%	0.549
North	**3**	-0.011	-0.1%	-0.028
North	**4**	0.706	8.0%	1.755
Midlands	**5**	0.798	9.0%	1.983
Midlands	**6**	0.080	0.9%	0.199
West	**7**	1.185	13.4%	2.945
East	**8**	0.681	7.7%	1.693
East	**9**	0.564	6.4%	1.401
East	**10**	-0.023	-0.3%	-0.058
Midlands	**11**	0.013	0.1%	0.031
Midlands	**12**	0.764	8.6%	1.898
East	**13**	0.156	1.8%	0.387
West	**14**	0.414	4.7%	1.028
Midlands	**15**	0.036	0.4%	0.089
East	**16**	0.793	9.0%	1.971
		8.854	**100.0%**	**22.000**

Zonal Maxima Approach

Zones	Flex	%	22 Pro-rated
0	1.903	9.2%	2.029
1	1.524	7.4%	1.625
2	0.659	3.2%	0.703
3	0.947	4.6%	1.009
4	3.315	16.1%	3.534
5	0.917	4.4%	0.977
6	0.966	4.7%	1.030
7	1.242	6.0%	1.324
8	1.332	6.5%	1.420
9	1.476	7.2%	1.573
10	0.589	2.9%	0.628
11	0.647	3.1%	0.689
12	2.119	10.3%	2.259
13	0.186	0.9%	0.198
14	1.205	5.8%	1.285
15	0.113	0.5%	0.120
16	1.498	7.3%	1.597
	20.636	**100.0%**	**22.000**

NB: Data in the above two tables has been derived from operational data systems and data has not been fully validated and therefore should be regarded as indicative only

Appendix 4 – Mapping of Flexibility Zones to LDZs

Scotland	North	North West	North East	East Midlands	Wales North	Wales South
AberdeenOT	AucklandOT	AMPaperInd	AsselbyOT	AlrewasEMOT	BurtonPointPS	BaglanBayPS
ArmadaleOT	BASFInd	AudleyNWOT	BaldersbyOT	BeltoftStor	DeesidePS	DowlaisOT
BalgrayOT	BOCTeesInd	BlackburnMInd	BPSaltendHPInd	BlabyOT	MaelorOT	DyffrynClydOT
BPGrngemouthPS	ColdstreamOT	BlackrodOT	BurleyBankOT	BlyboroughOT		DynevorArmsLNG
BroxburnOT	CorbridgeOT	BrdgewaterPInd	GansteadOT	BriggPS		GilwernOT
CarestonOT	CowpenBewleyOT	EcclestonOT	GooleGlassInd	CaldecottOT		
DrumOT	EltonOT	HaysChemInd	HornseaStor	CorbyPS		
GlenmavisLNG	EnronPS	HoleHousFmStor	PannalOT	CottamPS		
GlenmavisOT	GuyzanceOT	HolmesChapelOT	PaullOT	DrointonOT		
GowkhallPS	HumbletonOT	ICIRuncornInd	PickeringOT	GosbertonOT		
HumeOT	ICIBillnghmInd	LuptonOT	RawcliffeOT	ImminghamInd		
KinknockieOT	KeldOT	MalpasOT	RoughStor	KeadbyBPS		
LangholmOT	LtBurdonOT	MickleTrafdOT	SaltendPS	KeadbyPS		
LockerbieOT	MelkinthorpeOT	PartingtonLNG	TowtonOT	KirksteadOT		
MoffatInt	PhillipsTeesPS	PartingtonOT		MktHarboroghOT		
NetherHwclghOT	SaltwickHOT	RocksavagePS		SilkWilloughOT		
PeterheadPS	SaltwickOT	RoosecotePS		SpaldingPS		
PitcairnOT	SellafieldPS	SamlesburyOT		Stallingbor1PS		
SoutraOT	ThrintoftOT	ShellStarInd		Stallingbor2PS		
StFergusOT	TowLawOT	ShottonPaprInd		SuttonBridgeOT		
	WetheralOT	WarburtonOT		SuttonBridgePS		
		WestonPointOT		ThorntonCurtOT		
		WinningtonPS		ThorntonCurtPS		
				TurLangtonOT		
				WalesbyOT		

West Midlands	East Anglia	North Thames	South	South West	South East
AlrewasWMOT	BactonInt	BarkingPS	BraishfieldAOT	AvonmouthLNG	DamheadCreekPS
AspleyOT	BactonOT	CorytonPS	BraishfieldBOT	AylesbeareOT	FarninghamOT
AudleyWMOT	BrisleyOT	HorndonOT	DidcotPS	CirencesterOT	IsleOfGrainLNG
AustreyOT	EppingGreenPS	LuxboroughLnOT	HardwickOT	EastonGreyOT	MedwayPS
LeamingtonOT	GtWilbrahamOT	PetersGrnNTOT	Ipsden1OT	EveshamOT	ShorneOT
LowerQuintonOT	GtYarmouthPS	PetersGrnSMOT	MappowderOT	FiddingtonOT	TatsfieldOT
MilwichOT	KingsLynnPS	WinkfieldNTOT	WinkfieldSOOT	ICISvrnsideInd	WinkfieldSEOT
RossWMOT	LtBarfordPS			IlchesterOT	
RugbyOT	MatchngGreenOT			KennOT	
ShustokeOT	PeterborEyeOT			LittletnDrewOT	
StratfrdAvonOT	PeterboroPS			PucklechurchOT	
	RoudhamHeathOT			RossSWOT	
	RoystonOT			SeabankBPS	
	RyeHousePS			SeabankOT	
	WestWinchOT			SeabankPS	
	WhitwellOT				
	YelvertonOT				