Appendix 1

Process Methodology

A1.1 Demand

A1.2 Supply

A1.3 NTS and LTS Capacity Planning

A1.4 Lower Pressure Tier Planning

A1.5 Investment Procedures and Project Management

A1.1 Demand

The purpose of this section is to give a brief overview of the methodology adopted by Transco when developing its annual and peak demand forecasts. This methodology can be categorised into three main modelling areas; annual demand, demand/weather and peak demand modelling.

A1.1.1 Annual Demand Modelling

The development of annual gas demand forecasts considers a wide range of factors from complex econometrics to an assessment of individual load enquiries. For any forecasting process a set of planning assumptions is required, which if necessary can be flexed to create alternative scenarios. In Transco's case these assumptions include economic, fuel prices, environmental and tax policies, etc. A number of these assumptions are based on data from independent organisations. Transco also benchmarks its demand forecasts against a number of recognised external sources, such as the DTI.

To gain a better understanding of how these assumptions are utilized and the modelling approach adopted we need to consider the LDZ and NTS processes separately.

A1.1.1.1 LDZ Modelling

LDZ demand is split into four market sectors according to load size and supply type (i.e. firm or interruptible). For each sector models have been developed that make allowance for economic conditions, local demand intelligence, new large loads enquiries, relative fuel prices, potential new markets and other factors, e.g. Climate Change Levy, that could affect future growth in demand.

By adopting this approach Transco is able to take account of varying economic conditions and specific large loads within different LDZs.

A1.1.1.2 NTS Modelling

Historically NTS demand (i.e. loads with their own connection to the NTS) was limited to a small number of large industrial sites and chemical works. However, with the advent of gas-fired power generation and interconnectors to Ireland and Continental Europe a new methodology had to be developed. This methodology can best be described by looking at each sector in turn.

A1.1.1.3 Power Generation

There are two basic elements to forecasting the power generation sector, firstly, the capacity available to generate and secondly, how frequently this capacity is in operation.

This first element is developed by comparing load enquiry information with Base Plan consultation feedback, National Grid's Seven Year Statement and commercial sources. In addition the impact of new commercial arrangements and Government policies are taken into account when estimating which power stations are built or closed.

To be able to answer the second element a model has been developed to forecast the demand for electricity generation by fuel type and individual station over the forecast period based on actual and forecast bid prices and availability.

These power generation forecasts are then split between Transco supplied stations and those stations with their own dedicated pipeline delivering beach gas directly. There are currently 5 such stations, known as Directs, accounting for approximately 30% of total gas used for generation.

A1.1.1.4 Exports

Forecast flow rates to and from Europe via the Interconnector are based on an assessment of relative gas prices between Europe and UK throughout the year, i.e. allowing for the seasonal variation of UK gas prices.

Exports to Ireland are based on the analysis of Northern and Republic of Ireland energy markets, depletion and development of indigenous supplies, Base Plan feedback and commercial sources.

A1.1.1.5 Industrials

The production of forecasts within this sector is dependent on forecasts of individual new and existing loads based on recent demand trends, Base Plan feedback, load enquiries and commercial sources.

A1.1.2 Demand/Weather Modelling

In order to meet both the demand estimation requirements of the Network Code and planning requirements for forecasts of demand in future years, Transco has developed a consistent methodology for demand/weather modelling. Under this methodology, all demand models utilised by Transco (whether for demand in LDZs or for categories of NDM demand as required under the Network Code) are based on Composite Weather Variables (CWVs) defined and optimised for each LDZ. Details of the modelling approach, definitions of CWVs and current CWV parameters are provided in the Transco document "NDM Profiling and Capacity Estimation Algorithms for 2001/2". Seasonal normal CWVs (one for each day and each LDZ) are produced according to the procedure set out in paragraph H1.5.2 of the Network Code, now using a 71 year historical weather database.

All of Transco's demand/weather modelling is based on a 71 year average condition as per Network Code, however, a set of annual demand forecasts is produced based on a warmer weather condition to make allowance for "global warming".

A1.1.3 Peak Day Demand Modelling

Once the annual demand forecasts and daily demand/weather models have been developed, Transco applies a simulation methodology, using historical weather data for each LDZ, to determine the peak day (in accordance with statutory obligation) and severe winter demand estimates. The peak day demand for the NTS supplied loads, e.g. power stations, is based on the contractual arrangements, where possible, between Transco and its customers. The one exception to this being the treatment of the European Interconnector where it is assumed not to be exporting at times of peak demand due to the high price of UK gas.

A1.2 Supply

A1.2.1 Process Introduction

Transco's 2001 Base Plan indicated a potential shortfall in future supplies as a result of a reduction in new supply developments / activity on the UKCS and increases in annual demand. Although the short term annual supply position appears well covered (based on information received by Transco) the medium to long term position can only be met by new UKCS developments, further imports and reduced peak demand due to high gas prices.

Feedback from the 2001 Base Plan consultation process was generally supportive of Transco's assessment of supplies, however there was a general opinion that the range of forecasts for the St Fergus terminal was excessive. It was agreed there would be a greater need to shift towards import dependency, although there were differences of opinion regarding the likely sources of this gas.

In terms of information received through the consultation process, Transco again received detailed supply information from the majority of producers and to a lesser extent from shippers and other industry players. It is hoped that this can be improved through the Enhanced Base Plan process, which aims to target specific industry groups.

The collective responses through the 2001 consultation process continue to show a potential shortfall of future supplies in line with other forecasts. Whilst external data sources of supply information are limited to a relatively few parties, the trends all show a similar outcome. That is, in terms of annual supplies to meet demand, the UK has a potential supply shortfall in the next few years.

The reporting of an annual supply shortfall is a little misleading as with the seasonal nature of demand any annual shortfall will be initially only evident during times of higher demand. If the new beach supplies do not as expected increase at the same level as demand, the UK will become more reliant on seasonal supplies at times of higher demand. This could take the form of further storage developments, increased Interconnector imports or demand management.

A1.3 NTS and LTS Capacity Planning

Transco's Network Analysis teams develop forecast flow patterns from the supply/demand match, maintaining up to date plans through an annual process taking account of the changes in the gas volume forecasts resulting from changes in the gas market. The forecast is also updated following any major developments.

Transco uses a computer software package, FALCON, to analyse the performance of the transportation system. FALCON identifies the location of potential network capacity constraints and helps in the development of suitable reinforcement options that ensure the appropriate level of system security is maintained. Copies of the FALCON package have been purchased by outside agencies to facilitate an understanding of the NTS network and Transco's investment plans.

Having identified potential constraints on the system, Transco evaluates options for adding capacity to the network that represent a safe, economic and efficient solution, whilst maintaining system security. The options available to Transco to increase capacity include:

- Uprating pipeline operating pressures.
- Constructing new pipelines or storage.
- Uprating or modifying existing compressors or installing new compressor stations.
- Building additional regulators and offtakes.

This is an iterative process. The aim is to produce a robust system to cope with everyday demand including peak day for each of the years selected, consistent with the 1 in 20 criterion.

As well as planning to ensure that the pipelines are designed to the correct size to meet peak demand (1 in 20 level), Transco also has to plan to meet the variations in demand over a 24 hour period. Diurnal storage in the LDZ is used as a cost efficient and

secure way of satisfying these variations. LDZ diurnal storage consists of gas held in LTS linepack, low pressure gasholders, high pressure vessels and salt cavities. Where it is economic to do so, diurnal storage may also be provided by the NTS to those LDZs with a shortfall of storage capacity.

A1.4 Lower Pressure Tier Planning (below 7 bar)

The lower pressure tier system (Distribution System) is designed to meet expected gas flows in any six minute period assuming reasonable diversity of demand. Lower tier reinforcement planning is based on LDZ peak demand forecasts, adjusted to take account of the characteristics of specific networks. The analysis process is similar to the NTS and LTS, but at a lower pressure level.

Network analysis is carried out using pipe data held in the Digital Records System and demand data from the Demand Derivation System. This data is analysed by a Graphical Based Network Analysis (GBNA) computer program and validated against a comprehensive set of actual pressure recordings. The GBNA networks are then used to assess future system performance to predict reinforcement requirements and the effects of additional loads. Reinforcement options are then identified, costed and programmed for completion before the constraint causes difficulties within the network. Reinforcement is usually carried out by installing a new main or by taking a new offtake point from a higher pressure tier. In general, the reinforcement project is of such a size that it can be installed before the following winter.

A1.5 Investment Procedures and Project Management

Transco has a series of business-wide policies designed to ensure that consistent, well considered investment decisions are made at all levels. These have been formalised into a single document referred to as the Investment Procedures, which draws together best practice in terms of making investment decisions.

The Transco Investment Procedures define the methodology to be followed for undertaking individual investments in a consistent and easy to understand manner. Together with the planning and budgeting methodology, the Investment Procedures are used to ensure maximum value is obtained. For non mandatory projects, the key investment focus in the majority of cases is to undertake only those projects that carry an economic benefit. For mandatory projects, such as safety related work, the focus is on minimising the net present cost whilst not undermining the project objectives or the safety or reliability of the network.

The successful management of major investment projects is central to Transco's business objectives. Transco's project management strategy involves:

- Using Engineering for Value (EfV) principles to decide how the project should be carried out.

- Determining the level of financial commitment and appropriate method of funding for the project.

- Monitoring and controlling the progress of the project to ensure that financial and technical performance targets are achieved.

- Post project and post investment review to ensure compliance and capture lessons learnt.

Current practice within Transco is to monitor projects and ensure the timing of investment decisions is optimised.

When a project is approved, a multi-discipline team prepares an Invitation to Tender in accordance with the EC Utilities Directive. For major projects, Transco uses specialist consultants with experience of preparing and evaluating tender documents.

Tenders are received and evaluated against previously agreed technical, quality, safety, financial and programme criteria. They are compared on a cost basis with the Transco database of capital projects. An award is then made to the most economically advantageous tender consistent with these criteria.

The successful contractor completes the project in accordance with an agreed programme of works. It remains the contractor's responsibility to manage and supervise the works. Transco monitors the work on a day-to-day basis and manages the funding of the project by careful cost control. Following completion, Transco carries out a Post Completion Review to provide feedback to management on project performance and improve future decision making processes.

Transco's project management of major investment projects is designed to ensure that they are delivered on time, to the appropriate quality standards at a minimum cost. The project management process in particular makes use of professional consultants and specialist contractors.

Transco continues to work with Ofgem and the industry to improve the transparency of its investment process. This is demonstrated by ongoing discussions with Ofgem to agree a regulatory output framework and a series of business performance measures. These measures will underpin the capital, replacement and operational expenditure requirements for Transco. The framework and the process supporting it, are being developed to ensure Transco continues to provide customer focused outputs in both the short and longer term.

Appendix 2

Gas Demand & Supply Volume Forecasts

A2.1 Demand

A2.2 Annual Supply Data Available to Transco

A2.3 Annual Supply Scenarios

A2.4 Peak Supply Scenarios

A2.1 Demand

TABLE A2.1A - Annual Demand – Split by LDZ & NTS Load Categories (TWh)

Load Category	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
0 to 73 MWh	398	403	408	415	417	421	424	430	432	435
73 to 732 MWh	63	64	65	66	67	68	69	70	71	72
>732 MWh	129	133	138	143	147	151	153	156	156	158
Interruptible	98	104	108	112	114	117	119	122	123	124
LDZ Large Loads	39	41	39	43	47	50	53	54	55	55
Total LDZ	**727**	**744**	**759**	**779**	**792**	**807**	**819**	**832**	**836**	**843**
NTS Power Generation	216	232	242	260	275	281	283	288	290	291
NTS Industrials	35	38	38	40	42	48	50	51	51	51
Exports	158	92	81	53	60	69	74	77	82	83
Total NTS	**408**	**363**	**361**	**353**	**377**	**398**	**408**	**416**	**423**	**425**
Total Formula Volumes	**1136**	**1107**	**1120**	**1133**	**1169**	**1205**	**1226**	**1248**	**1259**	**1268**
Shrinkage	15	15	15	16	16	16	17	17	17	17
Total Throughput	**1151**	**1122**	**1135**	**1148**	**1185**	**1221**	**1243**	**1265**	**1276**	**1285**

Notes

- Volumes are based on a 35 year weather trend.
- Exports include interconnector flows to Ireland and Continental Europe.
- NTS Power Generation includes all large scale gas-fired plants connected to the NTS but excludes the consumption of those stations supplied by third party pipelines and those embedded within Transco's LDZs.
- Demands are shown in LDZ & NTS format, however, to convert to the Regulatory Form of Control basis, simply remove LDZ Large Users from the Total LDZ to give Business & Domestic volumes and add it to the Total NTS to give Total Large Users. Note that LDZ Large Users are those loads that consume more than 1465 GWh (50m therms) per annum.

FIGURE A2.1A - Annual Demand

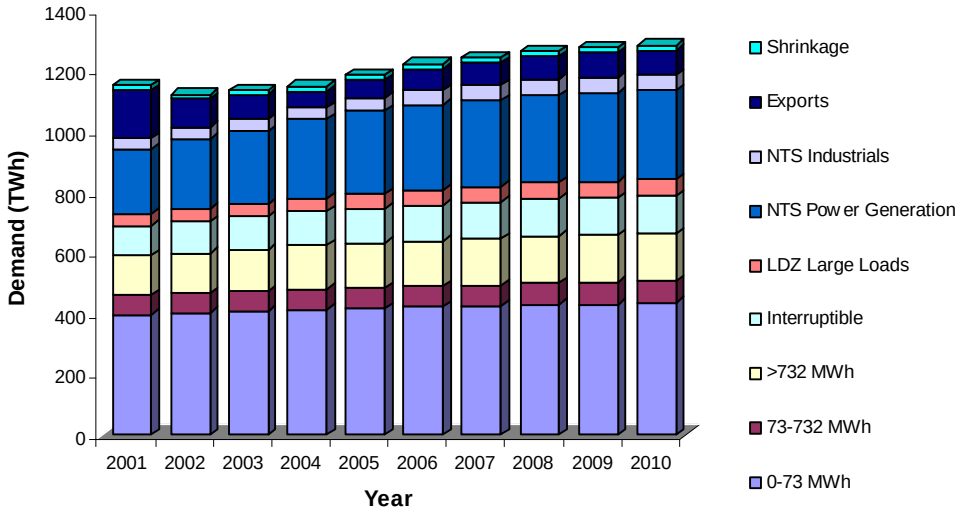


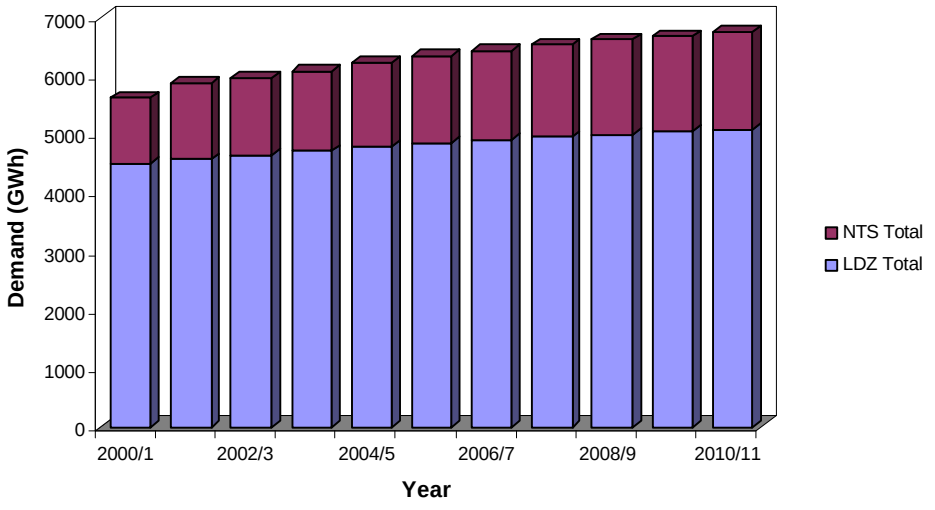
TABLE A2.1B - Forecast 1 in 20 Peak Day Firm Demand by LDZ & NTS (GWh per day)

LDZ	00/1	01/02	02/3	03/4	04/5	05/6	06/7	07/8	08/9	09/10	10/11
SC	330	337	343	348	356	362	367	372	377	382	387
NO	254	258	265	271	278	283	287	291	294	297	300
NW	525	532	538	551	558	563	568	573	578	582	586
NE	269	274	279	283	287	290	293	296	298	301	304
EM	448	454	464	470	477	483	488	493	498	502	507
WM	444	449	454	459	464	470	475	479	482	486	490
WA	242	245	249	253	258	264	268	271	274	277	280
EA	347	353	359	366	372	377	382	387	391	395	400
NT	498	502	508	512	516	520	525	530	534	539	542
SE	496	510	516	523	526	529	532	535	538	540	543
SO	369	374	380	394	402	409	414	418	422	426	431
SW	269	273	279	284	290	295	299	303	306	309	313
LDZ Total	**4489**	**4562**	**4634**	**4714**	**4783**	**4845**	**4899**	**4947**	**4993**	**5039**	**5084**
NTS Total	**1123**	**1309**	**1319**	**1359**	**1424**	**1485**	**1524**	**1575**	**1613**	**1630**	**1659**
Total	**5612**	**5871**	**5953**	**6073**	**6207**	**6330**	**6423**	**6522**	**6606**	**6669**	**6743**

Notes

- NTS Total Peak Day demand excludes European Interconnector flows as its assumed gas will be flowing into the UK at peak times.
- NTS and LDZ peak figures include shrinkage.
- Peak day figures are presented on a supply year basis, that is running from October to September.

FIGURE A2.1B - Forecast 1 in 20 Peak Day Firm Demand

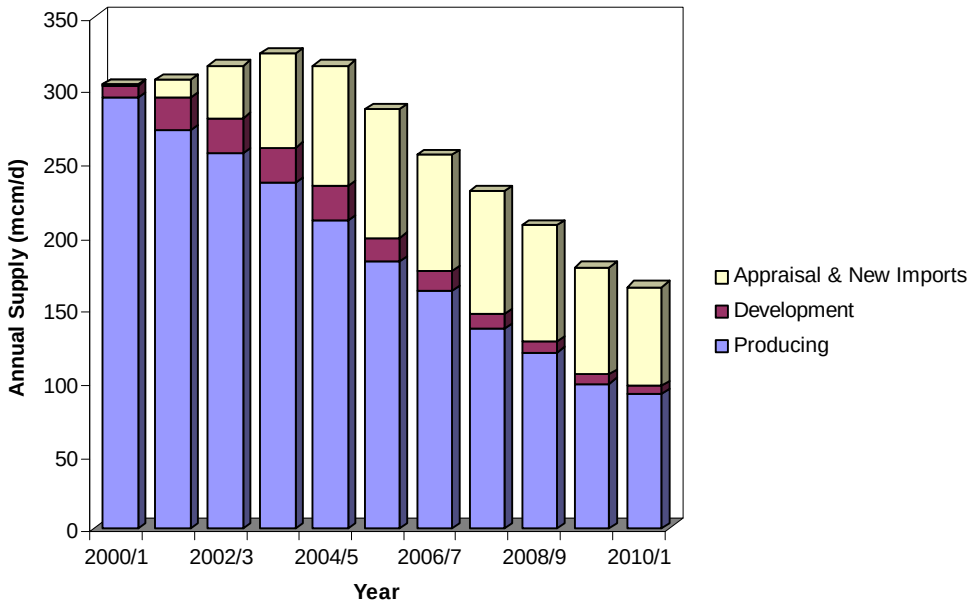


A2.2 Annual Supply Data Available to Transco

TABLE A2.2A - Annual supplies – Information Received by Supply Category (mcm/d)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	9/10	10/11
Producing	294	272	256	236	211	182	162	137	120	99	91
Development	9	22	24	24	23	16	13	10	8	6	6
Appraisal & New Imports	0	12	36	64	82	88	80	83	80	73	68

FIGURE A2.2A - Annual Supplies - Information Received by Supply Category (mcm/d)



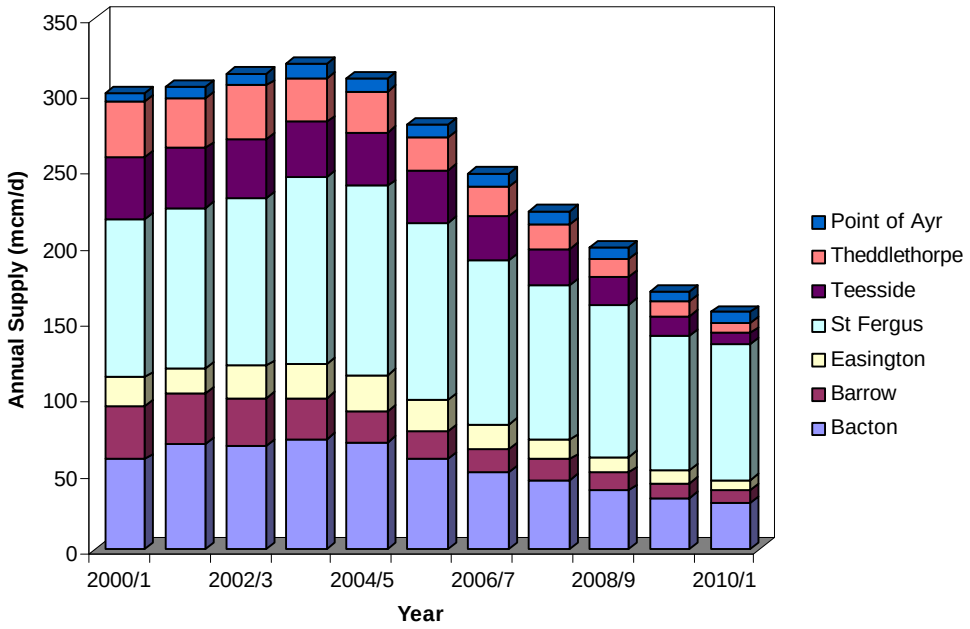
Notes

- Supply volumes include potential by-pass through the European Interconnector.
- Supply figures are presented on a supply year basis, that is running from October to September.

TABLE A2.2B - Annual Supplies – Data Available by Supply Terminal (mcm/d)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	09/10	10/11
Bacton	59	69	68	73	70	59	51	45	39	34	30
Barrow	35	34	32	26	21	18	16	14	12	10	9
Easington	19	16	21	23	24	21	16	13	10	8	6
St Fergus	104	106	111	123	124	117	108	102	100	89	89
Teesside	41	39	39	36	35	35	29	23	18	13	7
Theddlethorpe	36	33	35	29	27	22	19	16	12	10	7
Point of Ayr	6	7	8	10	9	9	9	9	8	7	7

FIGURE A2.2B - Annual Supplies - Data Available by Supply Terminal (mcm/d)



Notes

- Supply volumes include potential by-pass through the European Interconnector.
- Supply figures are presented on a supply year basis, that is running from October to September.

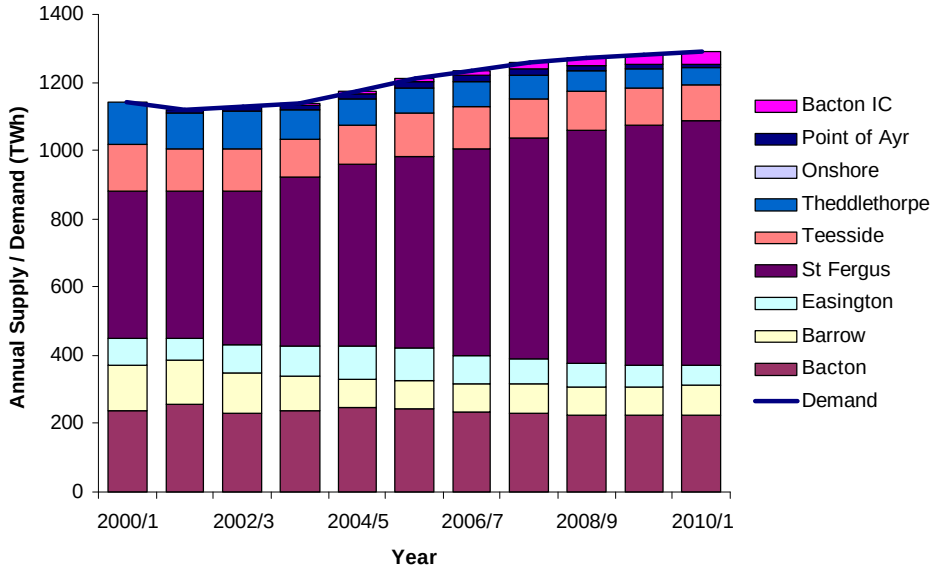
A2.3 Annual Supply Scenarios

A2.3.1 Annual Demand & St Fergus Base Scenario

TABLE A2.3A - Annual Demand & St Fergus Base Scenario (TWh)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	09/10	10/11
Demand	1145	1119	1129	1140	1176	1213	1236	1258	1271	1281	1289
Bacton	238	255	230	238	249	242	234	231	224	225	226
Barrow	136	131	121	100	82	84	84	84	84	84	86
Easington	75	62	81	90	97	95	83	75	69	65	60
St Fergus	433	431	451	495	530	563	605	647	685	700	715
Teesside	139	127	123	110	114	129	122	116	113	112	108
Theddlethorpe	121	105	110	86	82	72	73	66	59	55	49
Onshore	1	1	1	1	0	0	0	0	0	0	0
Point of Ayr	2	7	10	16	13	16	19	18	13	10	11
Bacton Interconnector	0	0	2	4	9	11	15	20	24	29	34
Total	1145	1119	1129	1140	1176	1213	1236	1258	1271	1281	1289

FIGURE A2.3A - Annual Demand & St Fergus Base Scenario



Notes

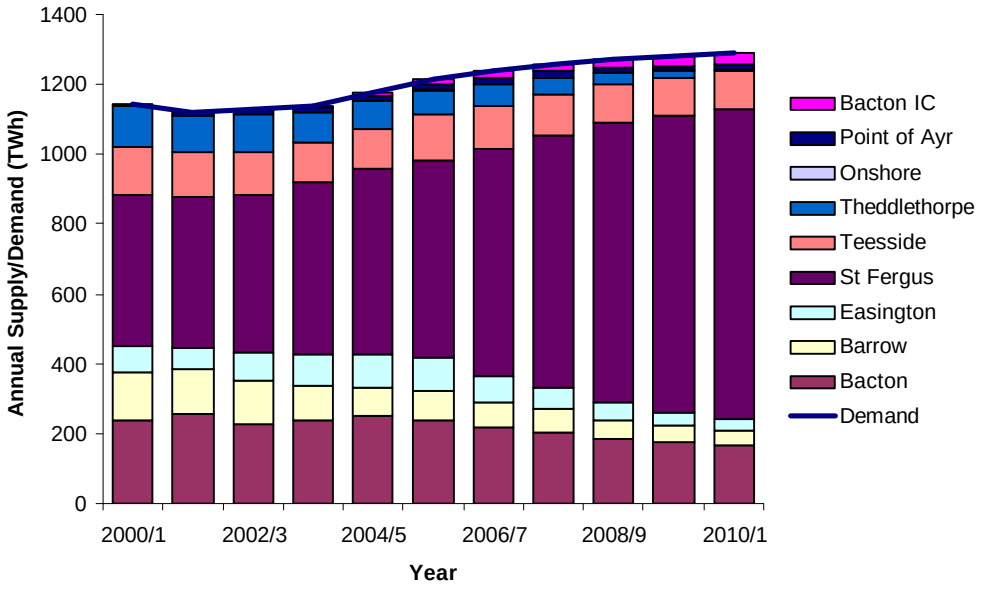
- Supply volumes exclude potential by-pass through the European Interconnector.
- Supply figures are presented on a supply year basis, that is running from October to September.

A2.3.2 Annual Demand & St Fergus Expansion Scenario

TABLE A2.3B - Annual Demand & St Fergus Expansion Scenario (TWh)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	09/10	10/11
Demand	1145	1119	1129	1140	1176	1213	1236	1258	1271	1281	1289
Bacton	238	255	230	238	249	240	219	205	184	174	168
Barrow	136	131	121	100	82	82	71	64	55	48	43
Easington	75	62	81	90	97	94	75	61	50	40	31
St Fergus	433	431	451	495	530	568	652	723	803	849	886
Teesside	139	127	123	110	114	129	123	120	111	111	110
Theddlethorpe	121	105	110	86	82	71	61	46	31	19	7
Onshore	1	1	1	1	0	0	0	0	0	0	0
Point of Ayr	2	7	10	16	14	17	20	19	14	11	12
Bacton Interconnector	0	0	2	4	9	11	15	20	24	28	33
Total	1145	1119	1129	1140	1176	1213	1236	1258	1271	1281	1289

FIGURE A2.3B - Annual Demand & St Fergus Expansion Scenario



Notes

- Supply volumes exclude potential by-pass through the European Interconnector.
- Supply figures are presented on a supply year basis, that is running from October to September.

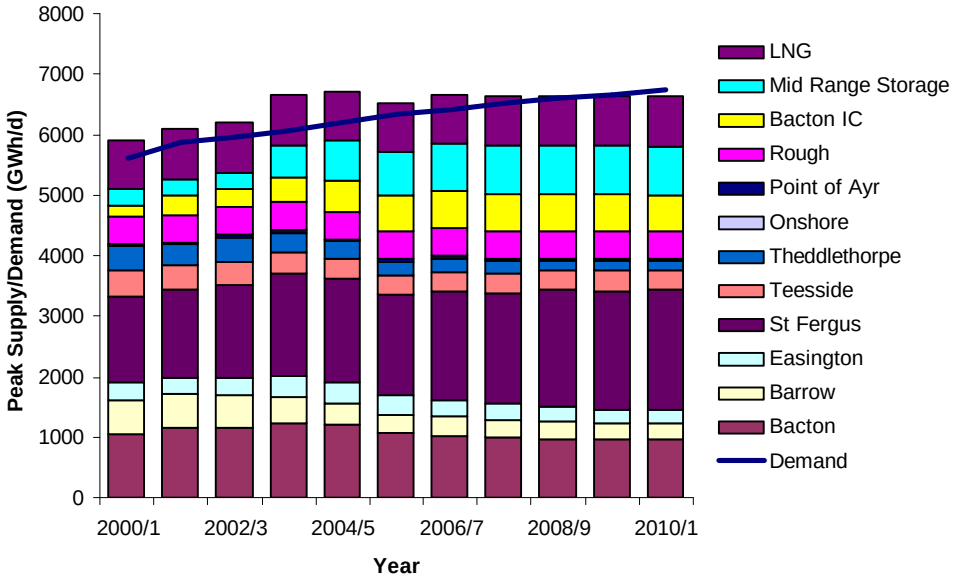
A2.4 Peak Supply Scenarios

A2.4.1 Peak Demand & St Fergus Base Scenario

TABLE A2.4A - Peak Demand & St Fergus Base Scenario (GWh per day)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	091/0	10/11
Demand	5613	5871	5953	6073	6207	6331	6423	6522	6605	6669	6744
Bacton	1038	1160	1149	1228	1200	1064	1031	1003	971	955	956
Barrow	584	570	532	443	348	311	303	297	289	284	283
Easington	296	251	314	349	362	324	283	253	231	214	197
St Fergus	1414	1452	1527	1696	1704	1643	1791	1838	1932	1967	1990
Teesside	422	394	381	347	336	335	323	318	322	333	334
Theddlethorpe	414	366	391	313	284	220	221	200	179	168	152
Onshore	4	4	2	2	1	1	1	1	1	1	0
Point of Ayr	14	32	42	59	45	43	51	45	31	23	23
Rough	455	455	455	455	455	455	455	455	455	455	455
Bacton Interconnector	202	303	303	404	505	606	606	606	606	606	606
Mid Range Storage	254	284	284	542	662	721	781	810	810	810	810
LNG	813	813	813	813	813	813	813	813	813	813	813
Total	5910	6082	6193	6651	6714	6536	6658	6639	6641	6630	6620

FIGURE A2.4A - Peak Demand & St Fergus Base Scenario



Notes

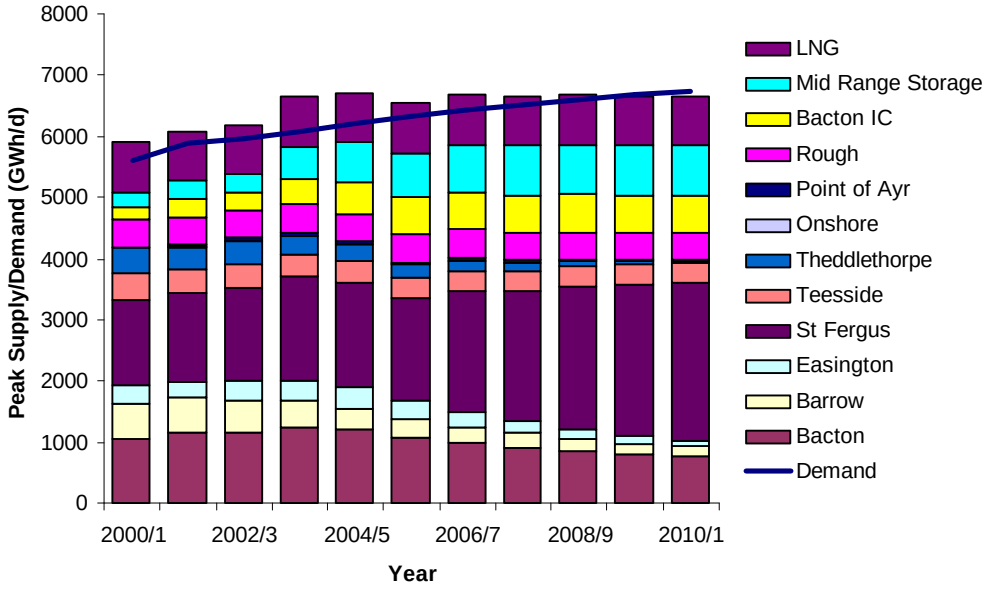
- Supply figures are presented on a supply year basis, that is running from October to September.

A2.4.2 Peak Demand & St Fergus Expansion Scenario

TABLE A2.4B - Peak Demand & St Fergus Expansion Scenario (GWh per day)

	00/1	01/2	02/3	03/4	04/5	05/6	06/7	07/8	08/9	09/10	10/11
Demand	5613	5871	5953	6073	6207	6331	6423	6522	6605	6669	6744
Bacton	1038	1160	1149	1228	1200	1058	979	920	841	795	775
Barrow	584	570	532	443	348	307	261	229	196	167	147
Easington	296	251	314	349	362	321	255	207	168	134	105
St Fergus	1414	1452	1527	1696	1704	1662	1960	2106	2343	2476	2566
Teesside	422	394	381	347	336	336	329	334	316	333	344
Theddlethorpe	414	366	391	313	284	215	179	132	87	51	15
Onshore	4	4	2	2	1	1	1	1	1	1	0
Point of Ayr	14	32	42	59	45	43	51	45	31	23	23
Rough	455	455	455	455	455	455	455	455	455	455	455
Bacton Interconnector	202	303	303	404	505	606	606	606	606	606	606
Mid Range Storage	254	284	284	542	662	721	781	810	810	810	810
LNG	813	813	813	813	813	813	813	813	813	813	813
Total	5910	6082	6193	6651	6714	6537	6670	6658	6668	6664	6658

FIGURE A2.4B - Peak Demand & St Fergus Expansion Scenario



Notes

- Supply figures are presented on a supply year basis, that is running from October to September.

Appendix 3

Actual Flows 2000

A3.1 Annual Flows

A3.2 Compressor Usage

A3.3 Peak & Minimum Flows

This Appendix describes annual and peak flows during the calendar year 2000. Where relevant, more up to date data from the subsequent winter period has been included. Annual flow is used to calculate the revenue which Transco is allowed to recover in accordance with its price control formula, whilst peak flow is used to determine if capacity expansion is required on the network.

A3.1 Annual Flows

Transco's annual forecasts assume that the weather will be "average". Therefore, when comparing actual demand with forecasts, demand has been adjusted by a factor to take account of the difference between the actual weather and the seasonal normal weather. The result of this calculation is the weather corrected demand.

For a number of years Great Britain has seen some of the warmest winters on record and consequently, Transco has adjusted the long term average weather condition to allow for "global warming". Hence both the weather corrected actual and forecast demands are shown assuming a weather condition based on a trend of the last 35 years weather. However no change has been made to Transco's peak forecasts as there is no evidence to suggest that the probability of severe weather occurring has changed.

Tables A3.1A and A3.1B provide a comparison of actual system throughputs in the 2000 calendar year. Actual demands incorporate a reallocation of demand between 0–73 MWh and >73 MWh firm load bands which include an allowance for reconciliation variances, stranded sites, etc. The reconciliation corrected forecast shows the 2000 Ten Year Statement forecast of 2000 annual demand, with reconciliation, etc. applied for 1999, i.e. the base year from which the forecasts were projected are adjusted to be on the same basis as the actual demands.

Annual demands are presented in two formats, firstly by LDZ and NTS load bands/categories (based on the physical design of the system) and secondly split into Business & Domestic and Large User (as set out in Transco's current price control formula that regulates Transco's revenue).

TABLE A3.1A - Annual Demand for 2000 (TWh) – LDZ / NTS Split

TWh	Actual Demand	Weather Corrected Demand	Reconciliation Corrected Forecast
0-73 MWh	382	393	392
73-732 MWh	59	62	60
>732 MWh Firm	142	144	151
Interruptible	123	125	133
LDZ Total	**706**	**724**	**736**
Industrial	31	31	32
Power Generation	195	196	194
Exports	154	154	150
NTS Loads	**380**	**381**	**376**
Total Consumption	**1086**	**1105**	**1112**
Shrinkage	**15**	**15**	**14**
Total Throughput	**1101**	**1120**	**1126**

Due to reconciliation, the sectorial split of the actual and corrected demands & forecasts shown above is different from that presented in Transco's Accounts and 2000 Ten Year Statement.

TABLE A3.1B - Annual Demand for 2000 (TWh) – Business & Domestic / Large User Split

TWh	Actual Demand	Weather Corrected Demand	Reconciliation Corrected Forecast
0-73 MWh	382	393	392
73-732 MWh	59	62	60
>732 MWh Firm	127	129	133
Interruptible	99	101	106
Business & Domestic Total	**667**	**685**	**692**
LDZ Large User	39	39	45
Industrial	31	31	32
Power Generation	195	196	194
Exports	154	154	150
Large Loads Total	**419**	**420**	**420**
Total Consumption	**1086**	**1105**	**1112**
Shrinkage	**15**	**15**	**14**
Total Throughput	**1101**	**1120**	**1126**

Due to reconciliation, the sectorial split of the actual and corrected demands & forecasts shown above is different from that presented in Transco's Accounts and 2000 Ten Year Statement.

Tables A3.1A and A3.1B highlight the impact that warm weather has had on demand by reducing actual volumes by 19 TWh, 2.5% of LDZ demand. Growth in the weather corrected 0 – 73 MWh (domestic), NTS Industrial and Power Generation sectors was in line with expectations, whilst lower than expected growth in the >732 MWh, Interruptible and Export sectors was due to the slow down in manufacturing and a sharp increase in gas prices during the final quarter of 2000.

Total weather corrected demand grew by 9% during 2000 with the strongest growth seen in the Power Generation and Exports sectors. Overall growth was marginally below expectation with a forecast error of only 6 TWh, 0.5% of throughput.

A3.2 Compressor Usage

Table A3.2 shows the gas used at each of the compressor stations during 2000. It also shows the day of maximum compressor use during 2000. Note this occurred on a different day to the maximum demand day.

TABLE A3.2 - Compressor Usage for 2000 (mcm)

Compressor	Total 2000	Max. Compressor Use 28 Jan. 2000
Aberdeen	45.33	0.18
Alrewas	10.78	0
Aylesbury	1.06	0.12
Bathgate	37.77	0.17
Bishop Auckland	40.93	0.14
Cambridge	0.26	0
Carnforth	48.22	0.15
Chelmsford	2.23	0.04
Churchover	20.56	0.14
Diss	10.96	0.12
Hatton	37.75	0.33
Huntingdon	5.73	0.03
Kings Lynn	7.22	0
Kirriemuir	51.23	0.13
Moffat	44.01	0.13
Peterborough	18.06	0.2
Scunthorpe	19.88	0.1
St.Fergus	72.08	0.24
Warrington	33.3	0.15
Wisbech	28.38	0.13
Wooler	30.12	0.12
Wormington	16.27	0.1
Peterstow (electric)	N/A	N/A
Total	**582.13**	**2.72**

A3.3 Peak & Minimum Flows

The maximum demand day during 2000 was on 27 January when 408 mcm was transported via Transco's system. Transco's record demand days occurred on 15 December 1999 and 16 January 2001 when demand reached 415 mcm. The minimum demand during 2000 occurred on 22 July. The flows on these days are detailed here.

A3.3.1 System Entry - Maximum Day and Peak Flows

Table A3.3A shows the flows into the system on the maximum demand day of 2000, compared to the previously forecast 1 in 20 peak for 2000/01 and the highest daily flows by terminal experienced during the winter 2000/01.

TABLE A3.3A - System Entry - Peak Day Flows on 27 January 2000 (mcm per day)

Terminal	**Maximum Day 27 Jan 2000**	**1 in 20 Peak for 2000/01**	**Highest Daily For 2000/01**
St.Fergus	116.90	124.14	123.4
Barrow	58.67	62.91	55.3
Easington (exc. Rough)	19.32	27.81	24.3
Theddlethorpe	40.40	39.36	39.0
Bacton (incl. IC)	91.76	132.96	98.9
Teesside	32.89	40.61	40.1
Burton Point	0.00	1.71	4.9
On Shore	0.40	0.24	0.3
Sub Total	**360.34**	**429.74**	**386.2**
Storage Withdrawal	45.71	89.21	59.4
Total	**406.05**	**518.95**	**445.6**

Notes

- The maximum day for 2000 refers to flows on 27 January 2000. These flows are not necessarily commensurate with current forecasts or with maximum flows at individual terminals.
- 1 in 20 Peak refers to the Baseline Demand Interconnector Balance (Scenario C) in the 2000 Ten Year Statement, published in September 2000. Volumes are based on actual flow CVs.
- Bacton terminal flows include imports via the European Interconnector.
- Highest daily flows by terminal are non-concurrent and relate to the 2000/1 winter period.

A3.3.2 System Entry - Minimum Day Flows

TABLE A3.3B - System Entry Flows on the Minimum Demand Day of 2000.

Terminal	Minimum Day 22 July 2000
St.Fergus	74.28
Barrow	12.13
Easington (exc. Rough)	13.30
Theddlethorpe	12.39
Bacton (incl. IC)	23.92
Teesside	32.91
Burton Point	0.00
On Shore	0.27
Sub Total	**169.20**
Storage Withdrawal	0.00
Total	**169.20**

A3.3.3 System Exit – Maximum Day & Peak Flows

Table A3.3C shows actual peak flows out of the NTS on the maximum demand day of 2000 compared to the previously forecast 1 in 20 peak flow.

TABLE A3.3C - NTS Exit Peak Flows on 27 January 2000 (mcm/d)

LDZ	Maximum Day 27 Jan 2000	1 in 20 Peak for 2000/01
Scotland	22.68	30.55
North	17.06	23.54
North West	36.93	48.74
North East	18.55	25.11
East Midlands	33.18	40.06
West Midlands	29.17	41.17
Wales	18.34	22.98
Eastern	24.57	33.14
North Thames	35.24	45.60
South East	34.62	47.26
South	23.90	33.97
South West	18.80	25.29
LDZ Total	**313.04**	**417.41**
NTS Loads	95.26	101.54
Total	**408.30**	**518.95**

Notes

- The maximum day for 2000 refers to flows on 27 January 2000, however it was an exceptionally mild winter overall and 1 in 20 peak conditions were not experienced. This was the highest overall demand day, but individual systems may have seen higher demands on other days.

- 1 in 20 peak demands are from the Baseline Demand Case in the 2000 Ten year Statement and are firm demands. They have been converted to volume using a CV of 39 $MJ/m^{3.}$

- NTS Loads include European and Irish Interconnector demands.

- The difference between total demand and total supply on the day was due to changes in linepack.

A3.3.4 System Exit - Minimum Day Flows

TABLE A3.3D - Actual NTS Exit Flows on the Minimum Demand Day of 2000.

LDZ	**Minimum Day 22 July 2000**
Scotland	5.37
North	4.77
North West	8.53
North East	5.69
East Midlands	8.93
West Midlands	5.10
Wales	5.61
Eastern	5.00
North Thames	7.54
South East	4.45
South	3.58
South West	3.50
LDZ Total	**68.07**
NTS Loads	101.91
Total	**169.98**

Notes

- The minimum day for 2000 refers to flows on 22 July 2000. This was the lowest overall demand day, but individual systems may have seen lower demands on other days.

- NTS Loads include European and Irish Interconnector demands along with storage injection.

- The difference between total demand and total supply on the day was due to changes in linepack.

Appendix 4

Network Code

A4.1 NGTA

A4.2 Planning, Security (including Storage) – (PSS)

A4.3 SPA / Metering

A4.1 NGTA

The introduction of the New Gas Trading Arrangements (NGTA) heralded fundamental changes to both Capacity and Energy regimes.

The objective of the changes to the Capacity Regime was to provide a better definition of the capacity product. The objective of the changes made to Energy Balancing was to introduce the OCM (On the day Commodity Market) which enables anonymous, financially cleared on the day trading between shippers for the first time. The NGTA also introduced incentives on Transco in both the Energy and Capacity arenas. Development has continued in both regimes as an ongoing process.

A4.1.1 Capacity Regime

Transco makes available quantities of monthly firm capacity via a price auction. However, for the winter period October 2001 to March 2002, there has been a significant change to the methodology used for the release of firm entry capacity to the market due to the implementation of Modification Proposal 0481. The amount of capacity made available is no longer directly linked to the seasonal normal demand, and is instead based on the maximum available entry capacity at individual Aggregate System Entry Points (ASEPs).

Under NGTA a capacity incentive was introduced to encourage Transco to maximise the availability of capacity. However, following implementation of Modification Proposal 0481, it was recognised that the increased likelihood of capacity buy back would increase Transco's risk exposure under its capacity incentive. Consequently, the capacity incentive was revised by the implementation of Modification Proposal 0488 which sets a performance measure for monthly capacity buy back costs (net of any

incremental revenue from release of additional capacity). Transco is incentivised to outperform this predefined measure, allowing it to earn (or be penalised) a maximum monthly incentive amount of £416,000.

A4.1.2 Energy Balancing Regime

Under NGTA an energy incentive regime was introduced to encourage Transco to take prices close to the market average. This incentive was revised by modification Proposal 0414, which not only retains the price efficiency component for taking prices close to the market average but also encourages Transco to consider the volume component in its balancing actions. The volume component encourages Transco to minimise linepack variations so that the end of day linepack level is close to that at the start of the Gas Day.

Shipper balancing tolerances have now been removed in two phases by Modification Proposal 0415. After an initial reduction by 50% from 1 October 2000, the shipper tolerances were fully removed on 1 April 2001. Shippers continue to have an Imbalance Tolerance Quantity which is now solely dependant on shippers' NDM Forecast Deviation.

Under the NGTA system cash out prices were set by trades conducted on the OCM. The method of calculating system cash out prices was revised by Modification Proposal 0433 which was implemented on 1 March 2001. A key element of this modification was the introduction of fixed price differentials for system buys and system sells. This ensured that price differentials were set even on days when Transco did not take a balancing action, thus incentivising shippers to balance their gas inputs and outputs and minimise exposure to system marginal prices.

A4.2 Planning, Security (including Storage) - (PSS)

A4.2.1 Storage Competition

Following the demerger of Lattice from BG Group, there are now four Storage Operators:

Storage Operator	Storage Facilities
BG Storage Limited	Rough and Hornsea
Transco LNG	Avonmouth, Dynevor Arms, Glenmavis, Isle of Grain and Partington
Scottish Power	Hatfield Moor
Aquila	Holehouse Farm

There are proposals for new facilities at Aldbrough (Intergen) and at Byley (Scottish Power).

A4.2.2 Review of LNG

Ofgem's review of LNG has been subsumed into its ongoing Review of exit capacity, interruptibles and LNG arrangements.

The LNG arrangements for 2000 were carried over to 2001.

A4.2.3 Top-up

Modification 0451 extended the funding arrangement for Constrained Top-up established by Modification 0391 for a further year. However there was no requirement for Constrained Top-up in either 2000 or 2001.

There was no requirement for National Top-up in 2000 but there is a requirement of 448 GWh in 2001, booked at Partington and Glenmavis LNG facilities. The existing Top-up rules would have required a booking of 946 GWh in order to obtain the necessary deliverability, but instead it was decided that only 448 GWh should be booked, and the remaining deliverability requirement met using transfers from Operating Margins and / or deliverability overruns. This reduced the storage capacity costs from about £4 million to about £2 million. Transco has raised Modification Proposal 0472 seeking recovery of National Top-up costs.

Modification 0429 made uncontroversial changes to Section P and established a consistent basis for further development. During 2001 the workstream recommended further changes to the Top-up process, and a Modification Proposal will be raised shortly.

A4.3 SPA / Metering

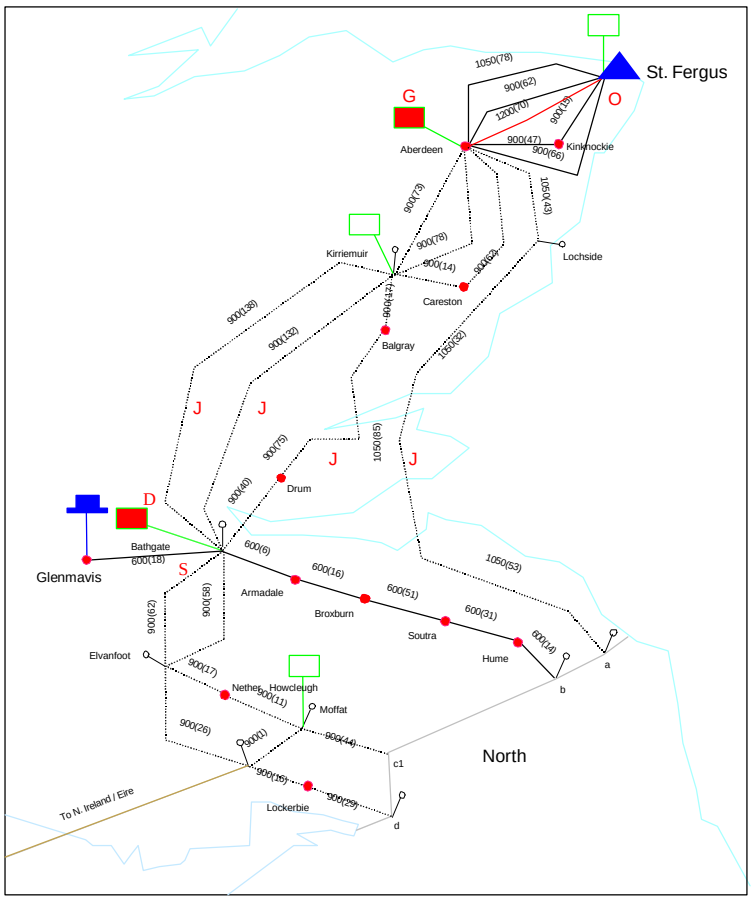
A4.3.1 Meter Reading unbundling

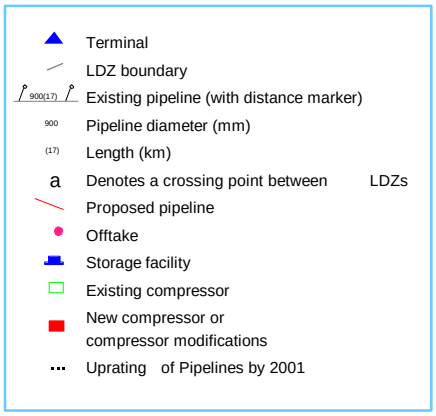
Transco is working with shippers, Ofgem and other interested parties to develop future requirements for the unbundling of supply metering. The objective is to establish an enhanced contractual regime, associated systems and processes by April 2002 in line with stated aspirations for separation of Transco's metering and meter reading businesses.

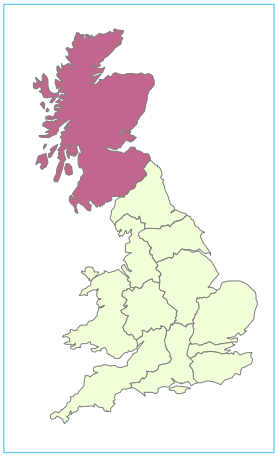
Appendix 5

The Gas Transportation System

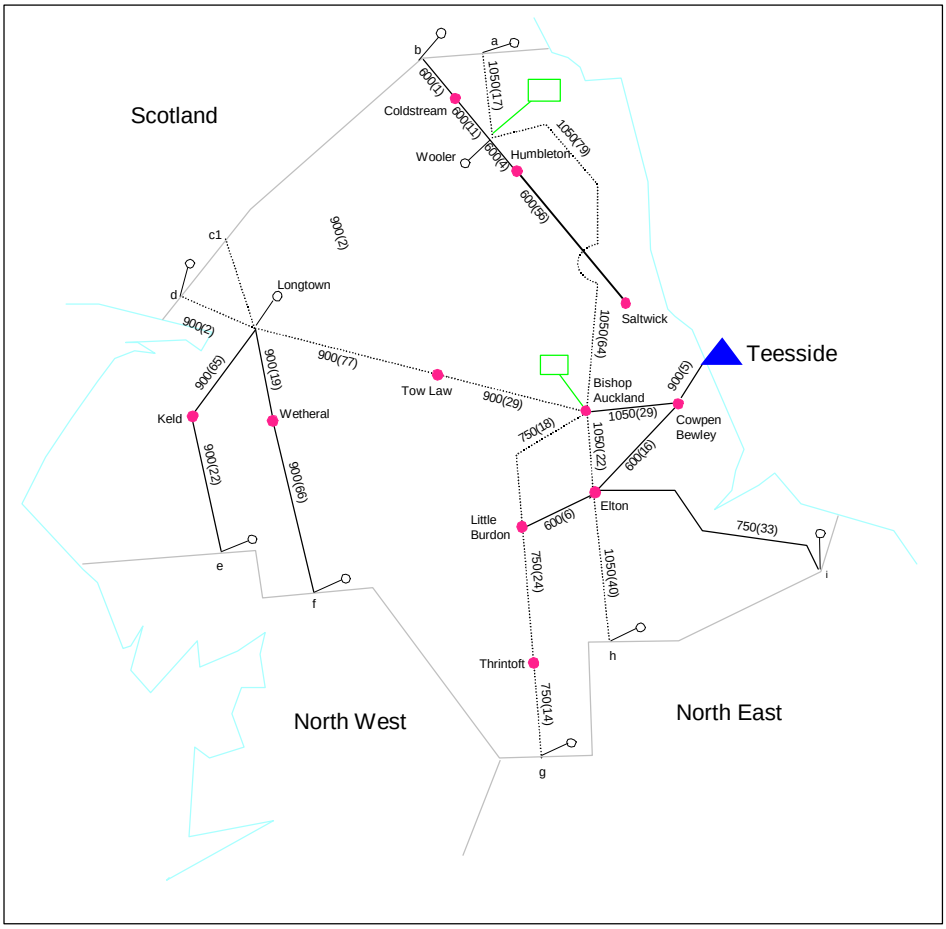
Scotland (SC) – NTS



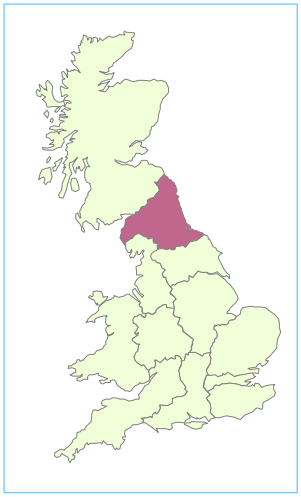




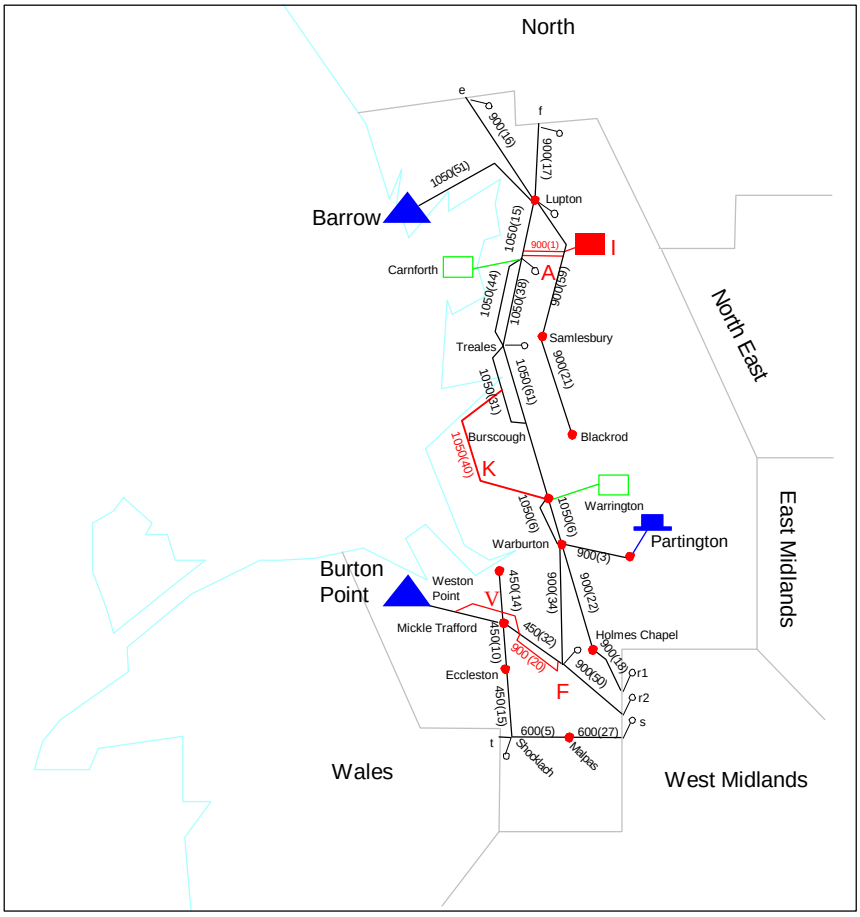
North (NO) – NTS



- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications
- Uprating of Pipelines by 2001



North West (NW) – NTS



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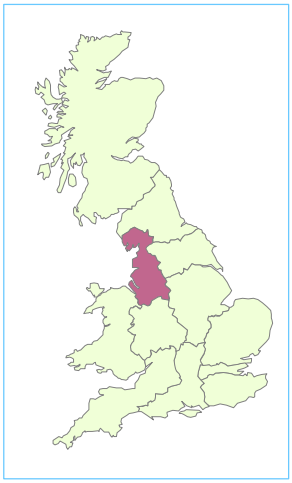
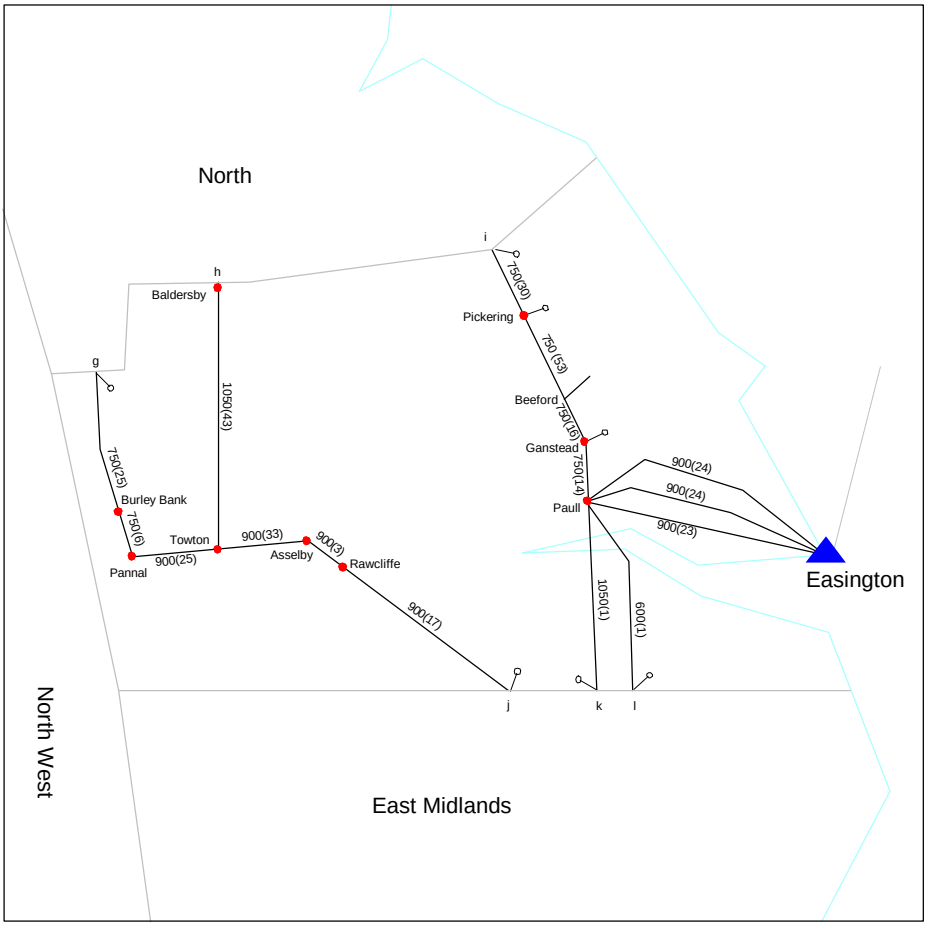
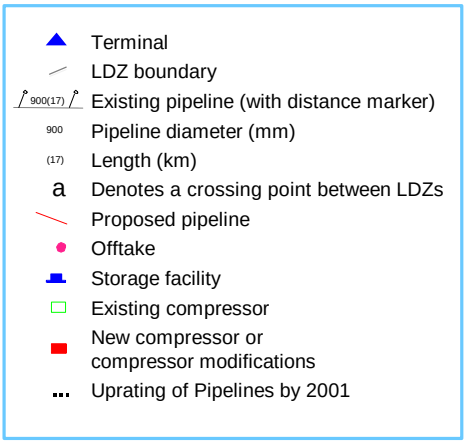
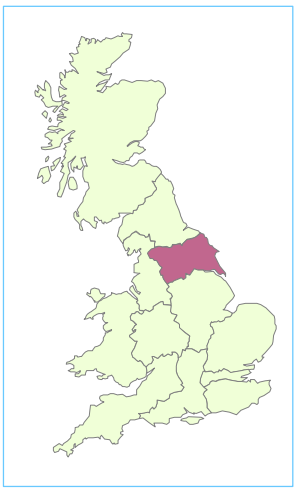


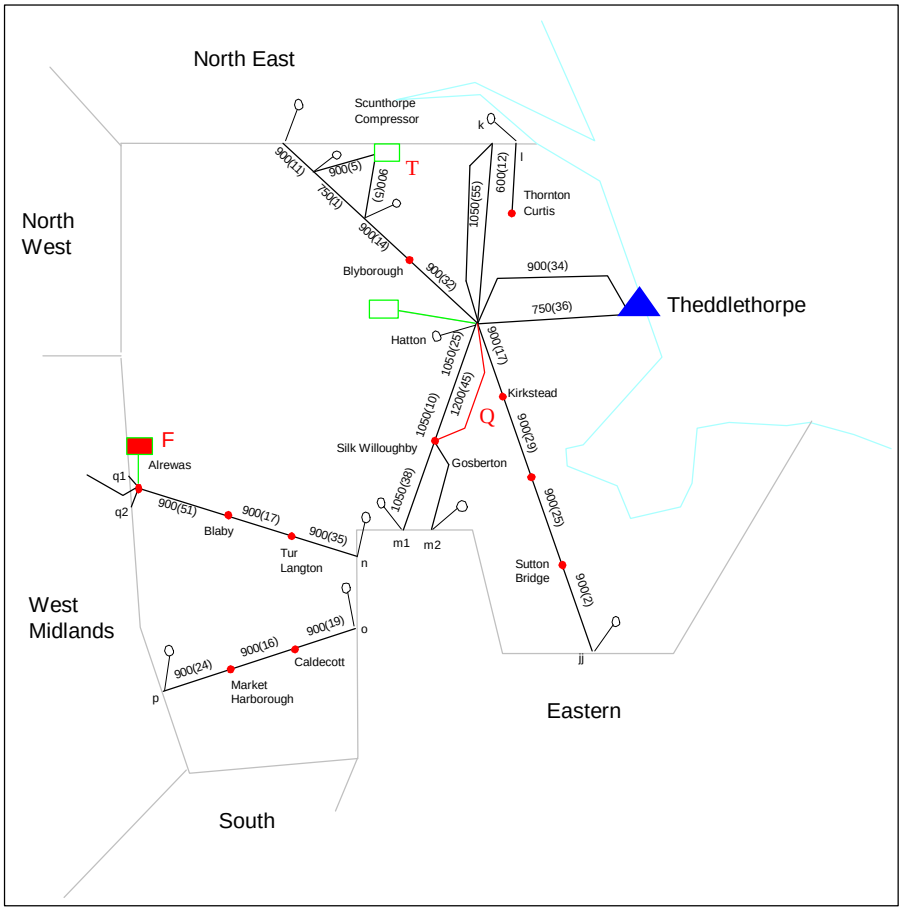
North East (NE) – NTS

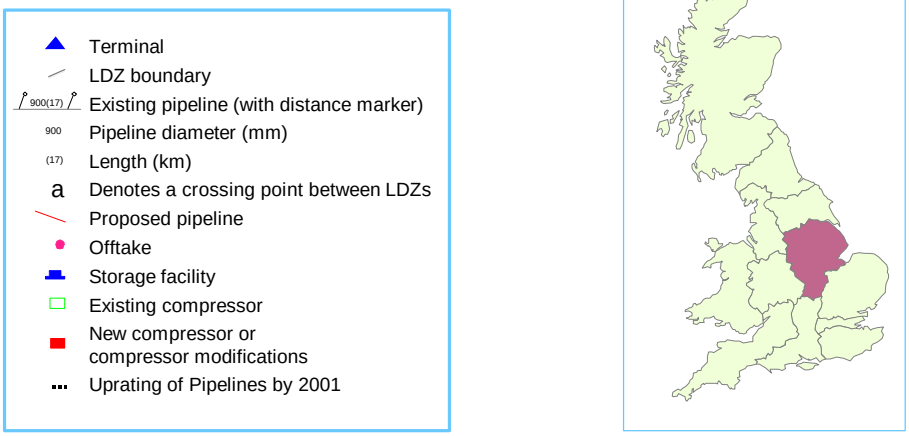




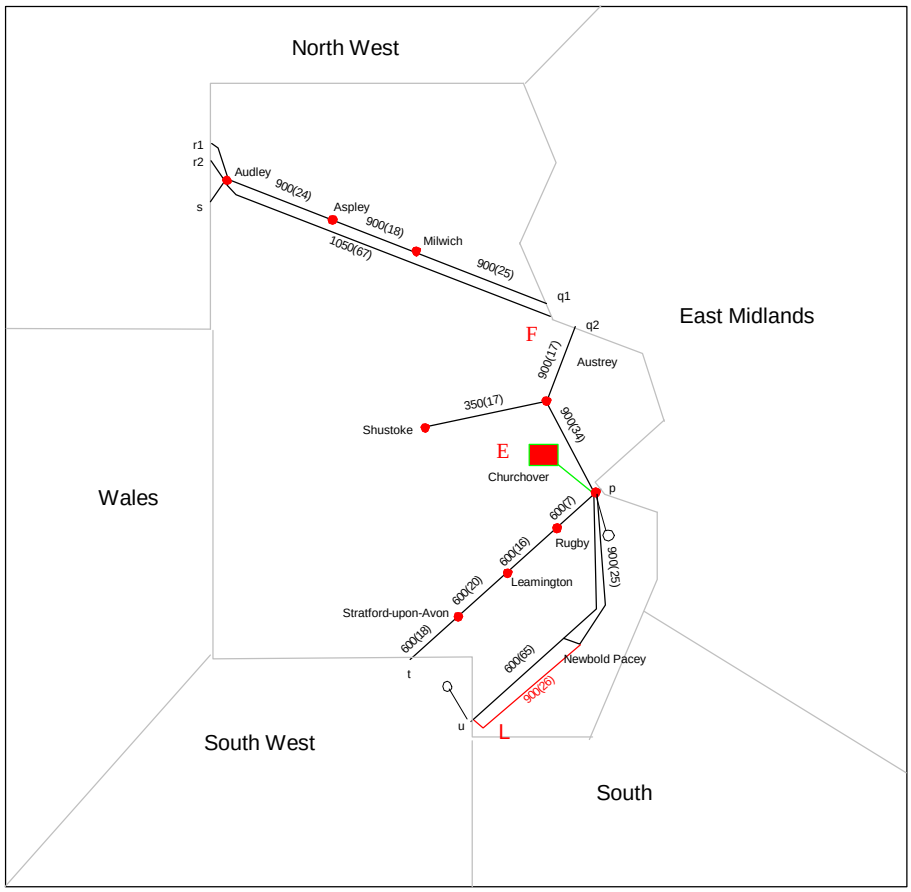


East Midlands (EM) – NTS





West Midlands (WM) – NTS



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- Existing compressor
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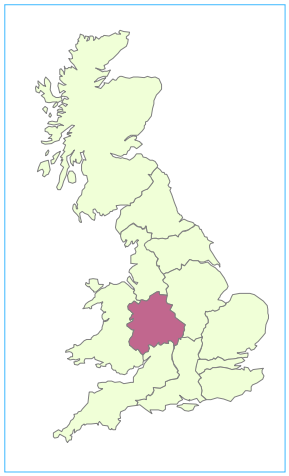
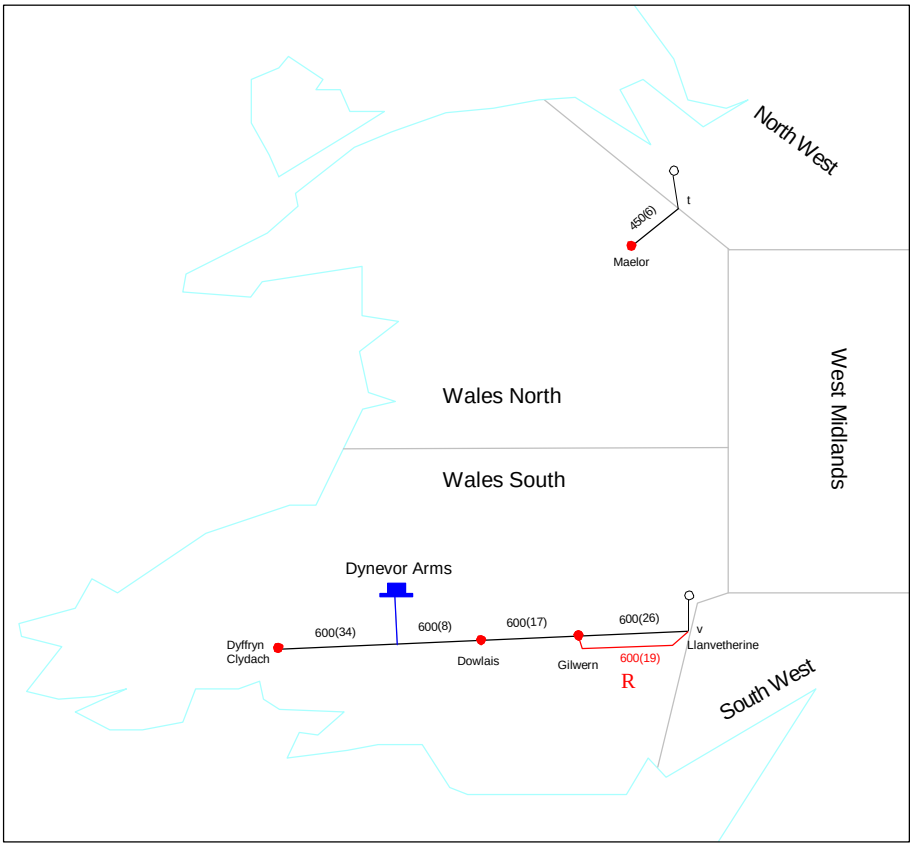
- Uprating of Pipelines by 2001



Wales (WN & WS) – NTS



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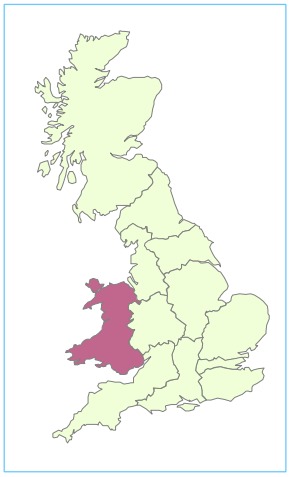
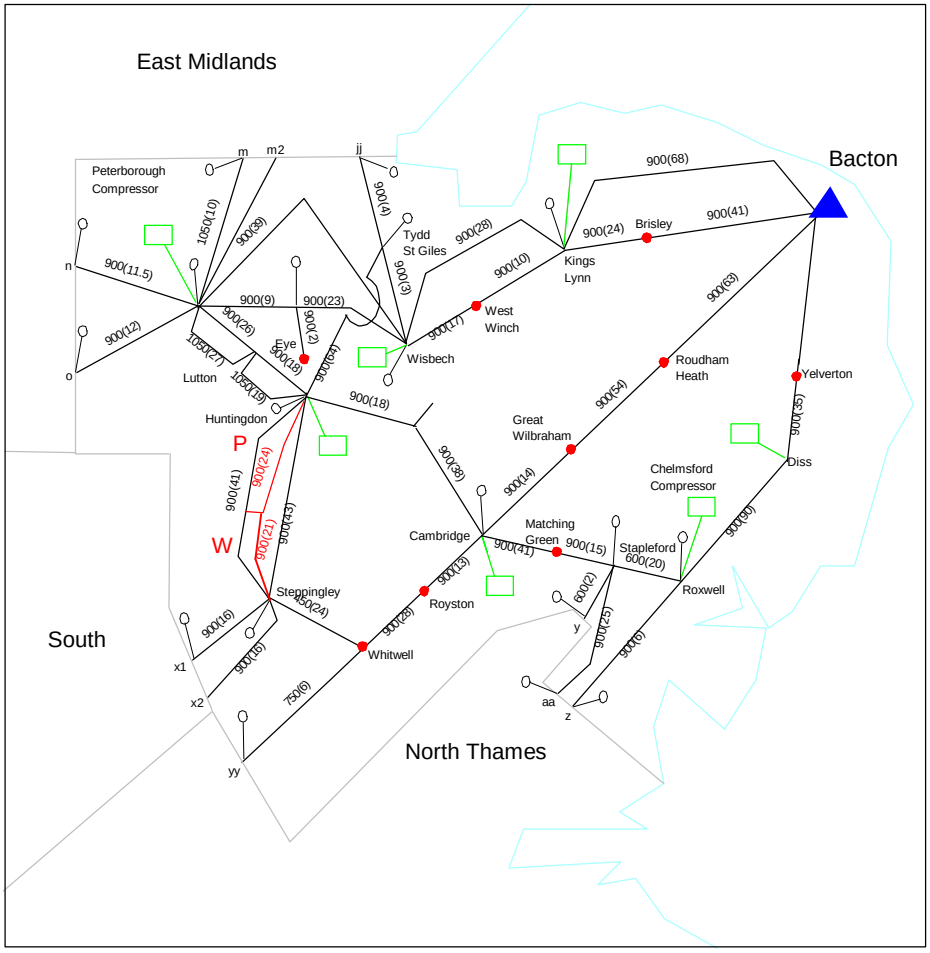


Eastern (EA) – NTS



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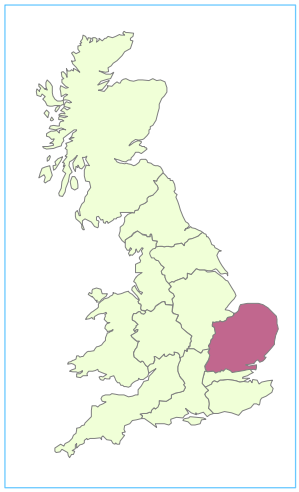
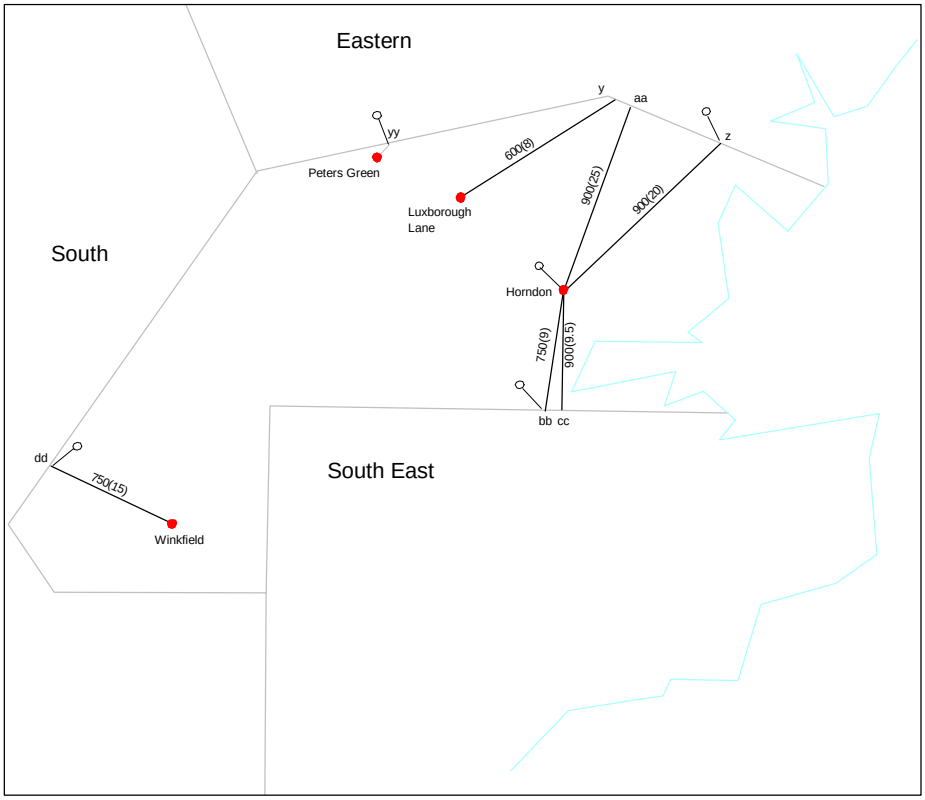
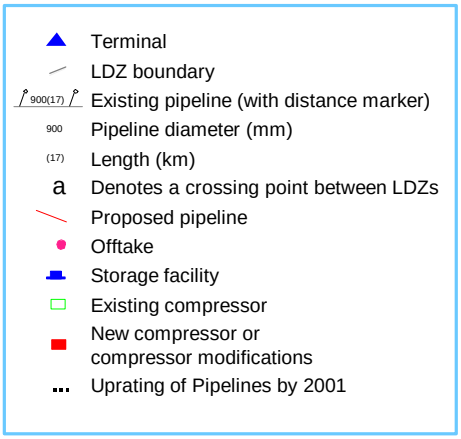
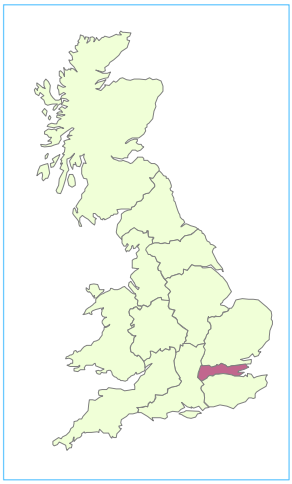


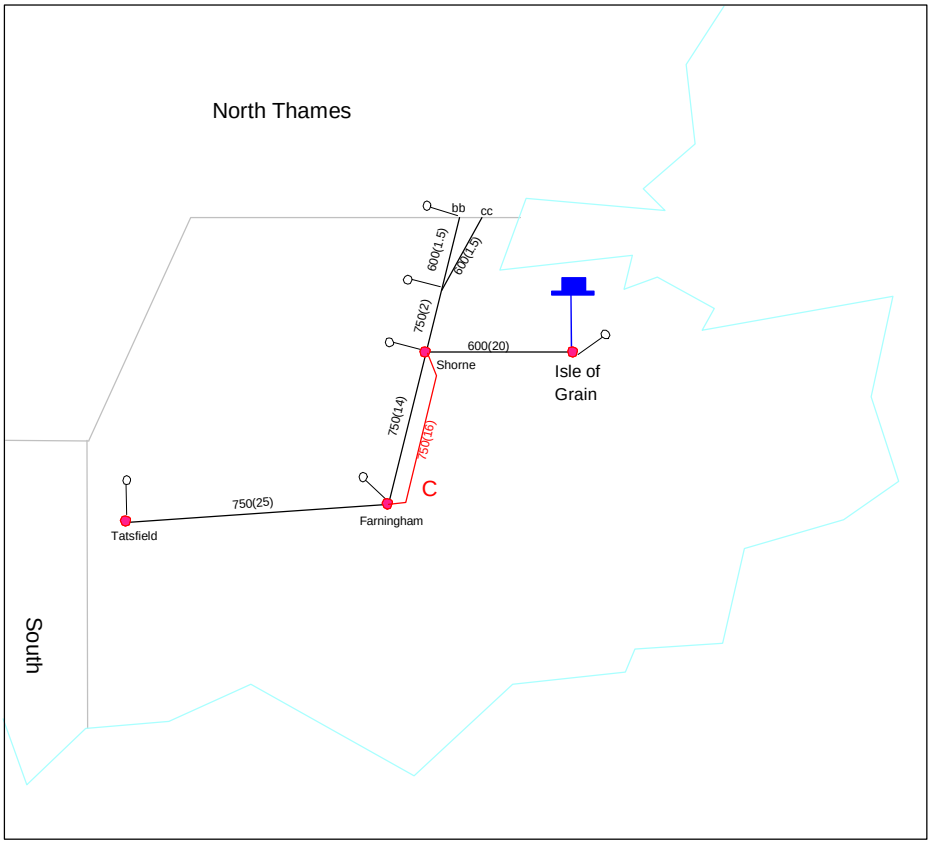
North Thames (NT) – NTS

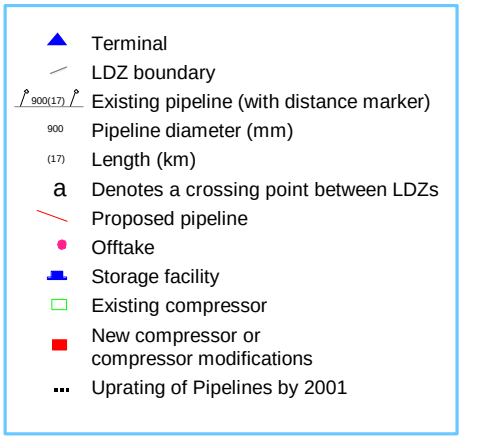


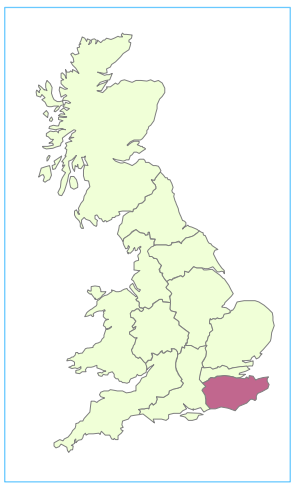




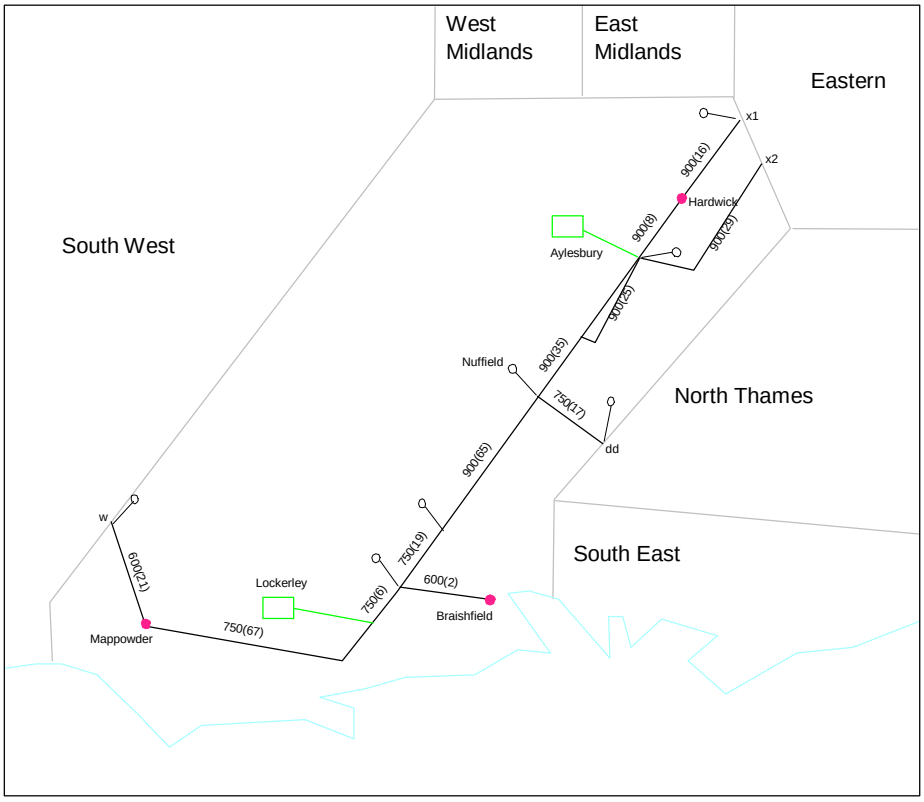
South East (SE) – NTS







South (SO) – NTS



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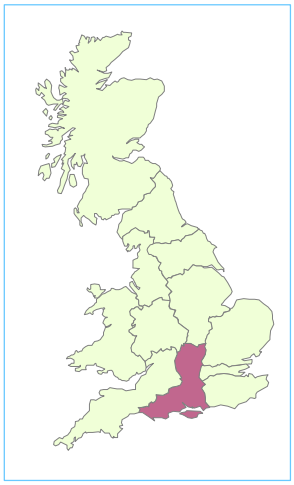
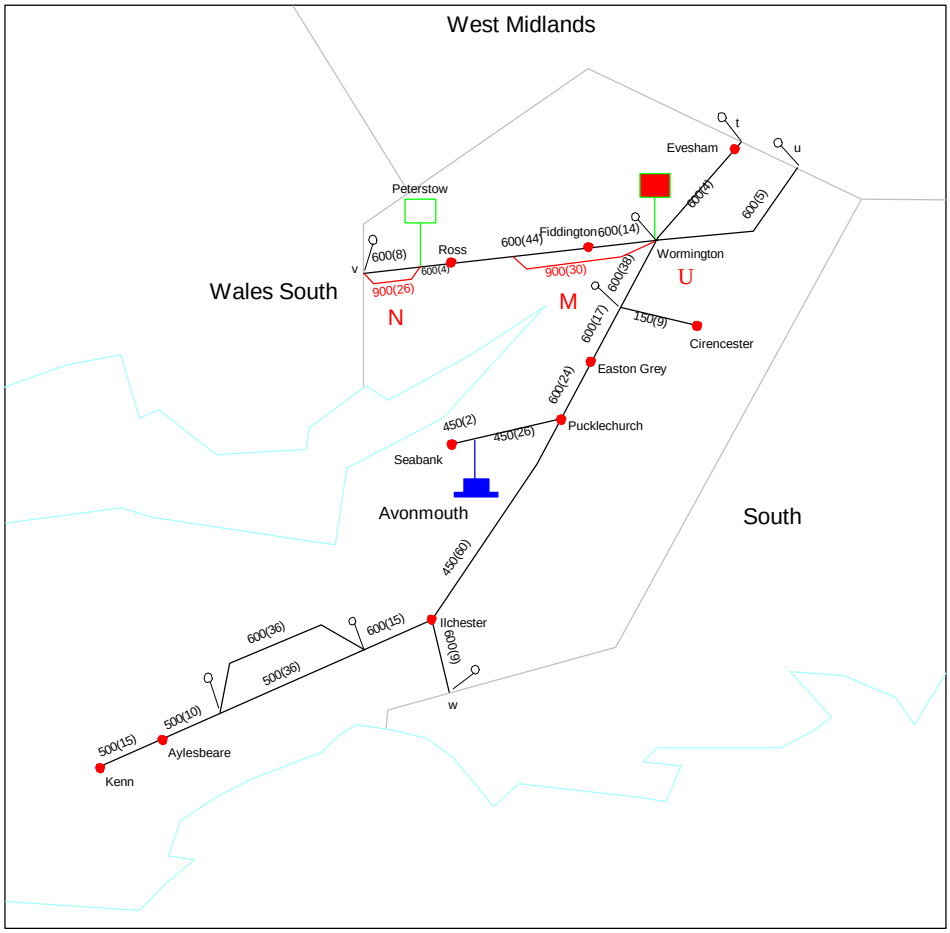
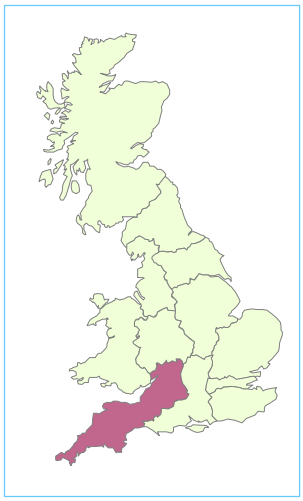


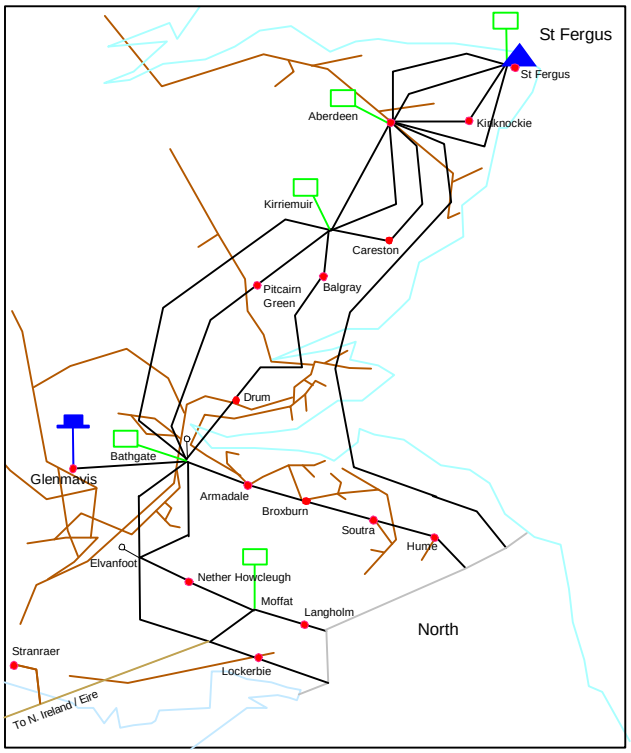
South West (SW) – NTS



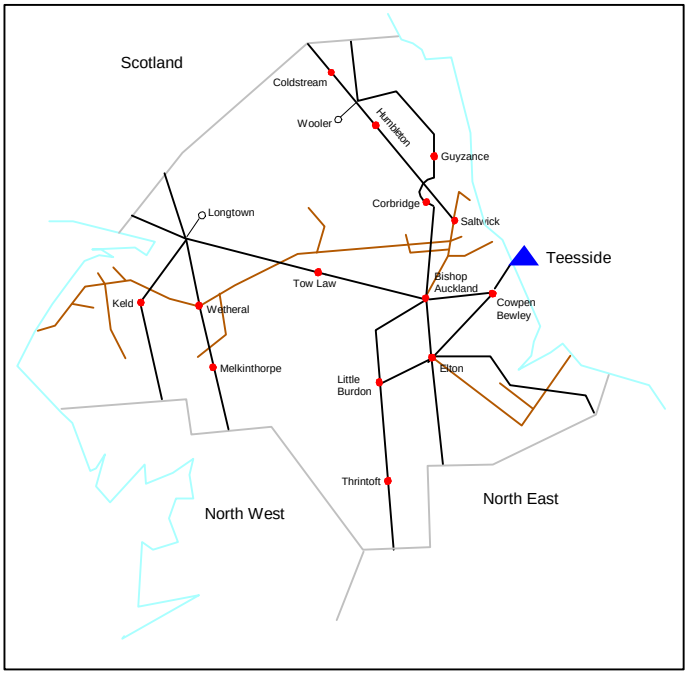
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications
- Uprating of Pipelines by 2001



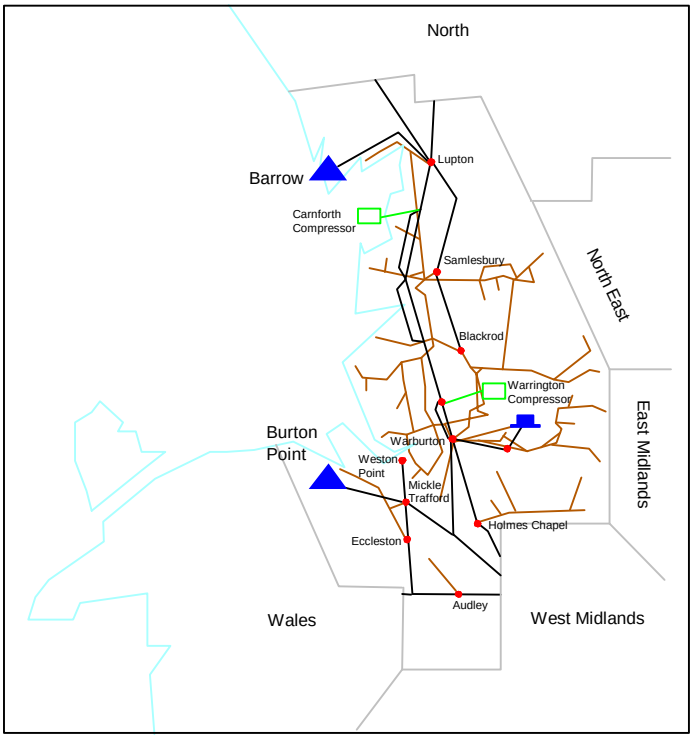
Scotland (SC) – LTS



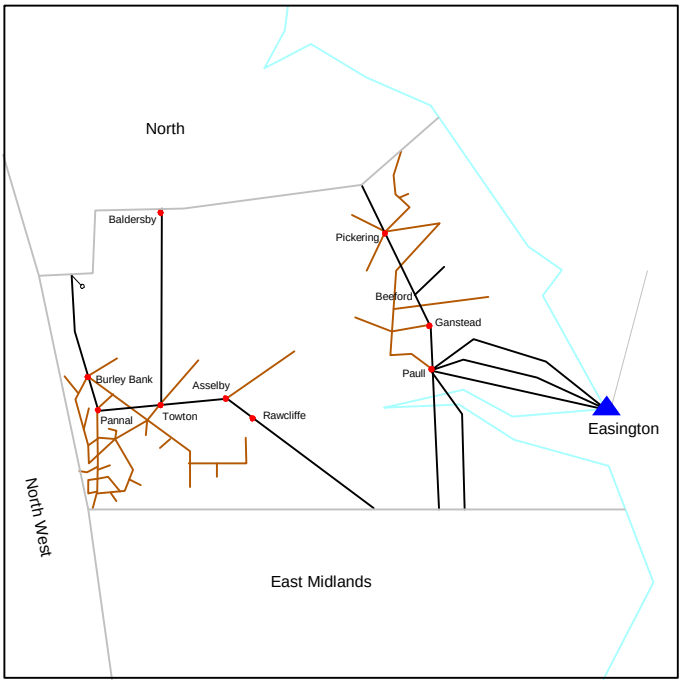
North (NO) – LTS



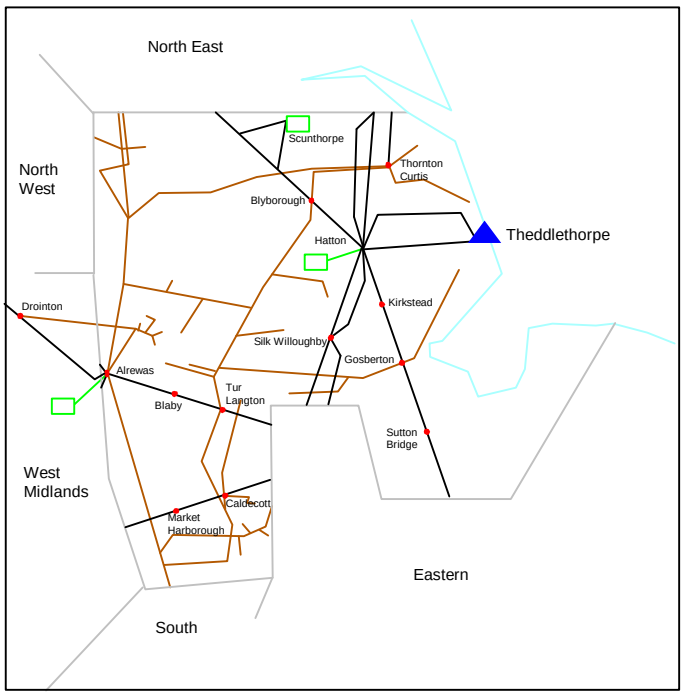
North West (NW) – LTS



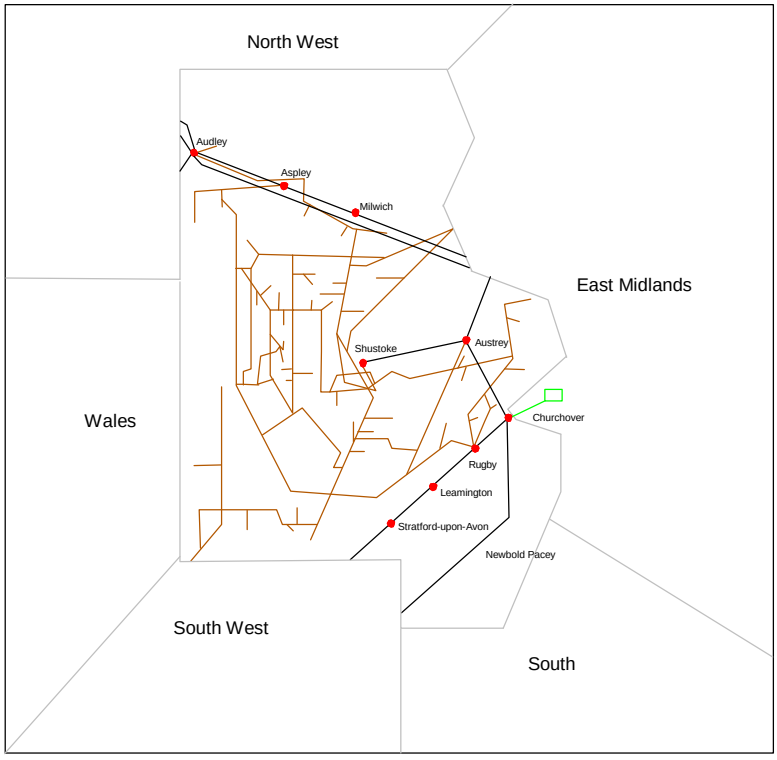
North East (NE) – LTS



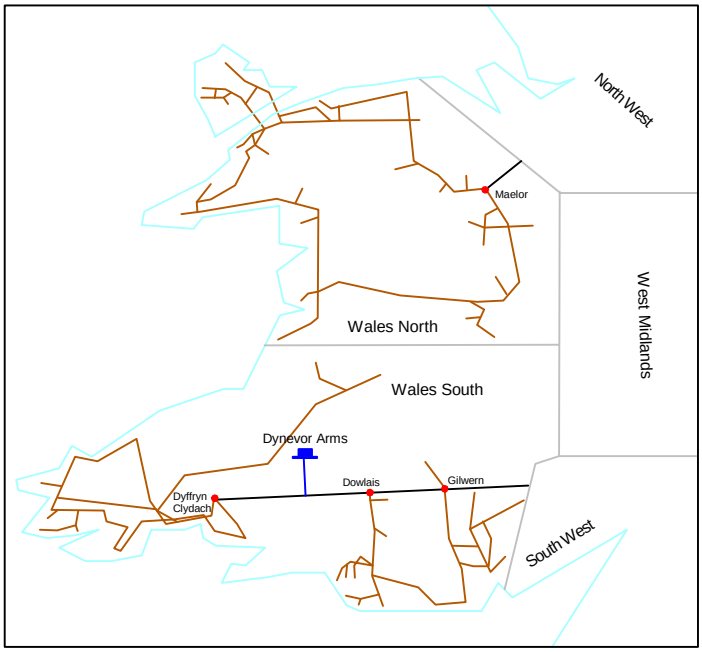
East Midlands (EM) – LTS



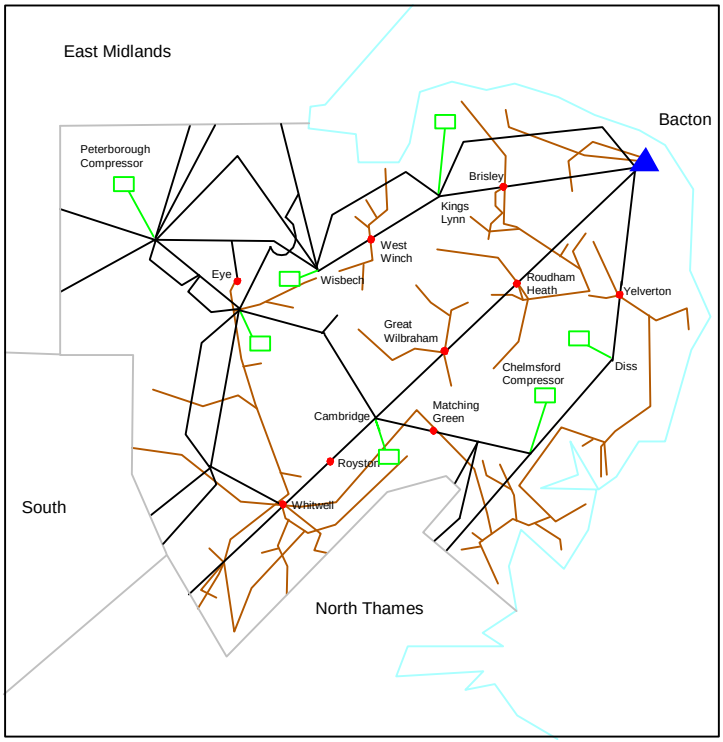
West Midlands (WM) – LTS



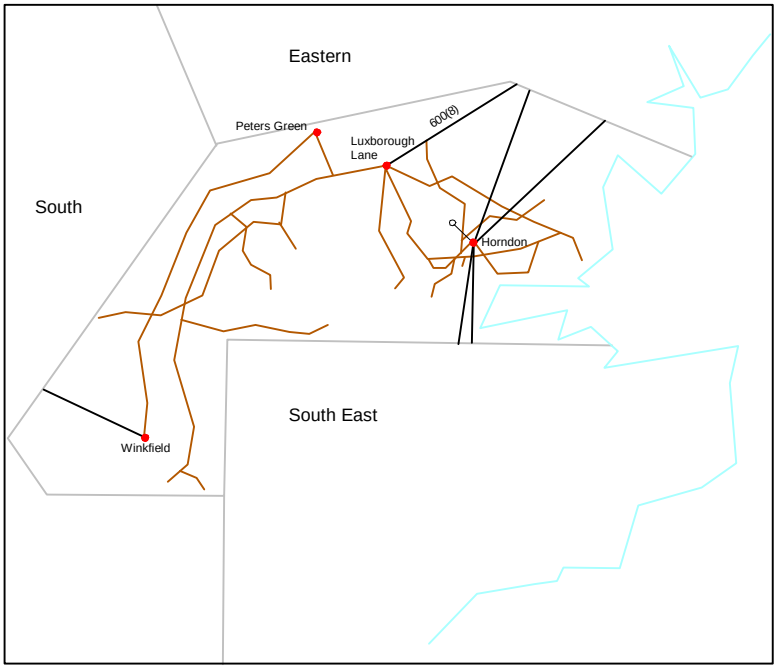
Wales (WN & WS) – LTS



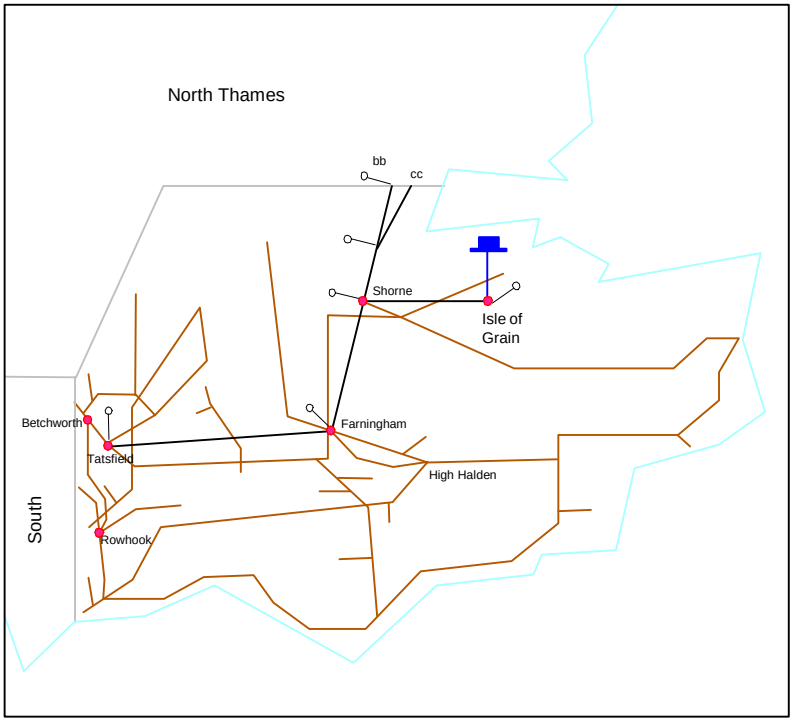
Eastern (EA) – LTS



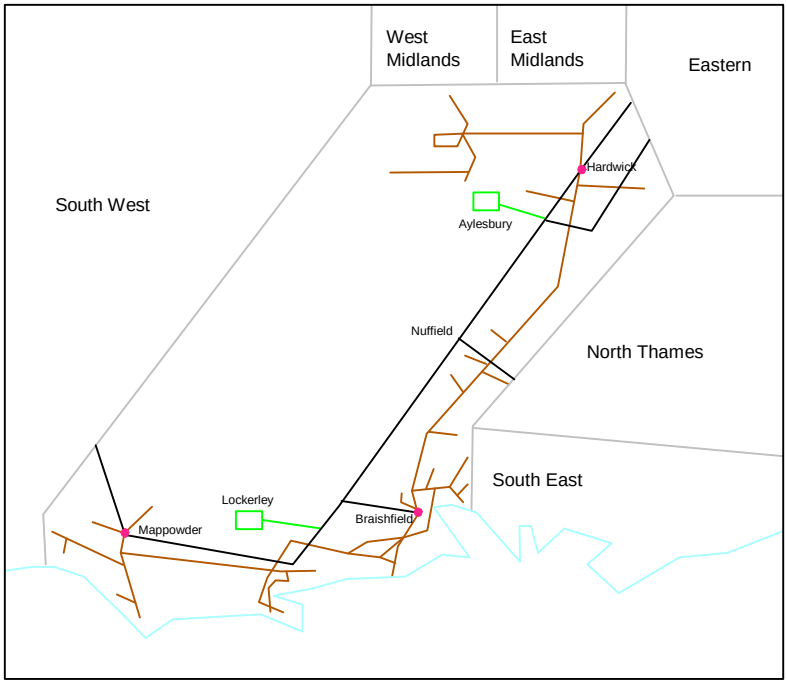
North Thames (NT) – LTS



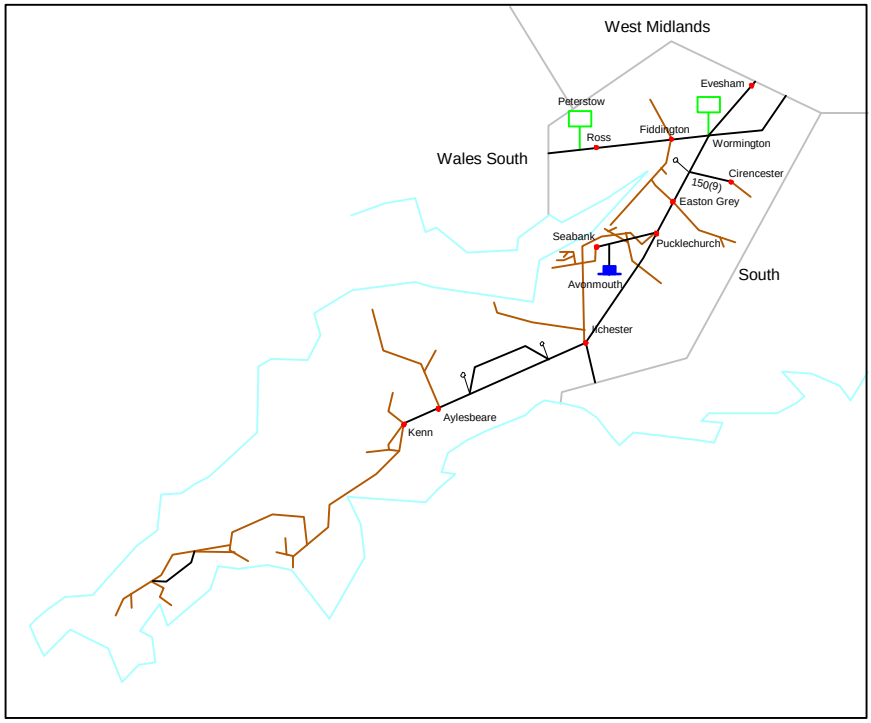
South East (SE) – LTS



South (SO) – LTS



South West (SW) – LTS



Appendix 6

Connections to Transco's System

A6.1 Introduction

This appendix provides an overview of Transco's policy on connections to or from its system.

The UK Gas Industry is in transition between a situation where Transco provided all new connections, to one where customers and developers may choose other parties to build their facilities, and where other Gas Transporters (GTs) can connect their pipeline systems to Transco's system. Any requirement to increase the quantity of gas delivered or offtaken is also treated as a new connection.

Entry Connections are typically connections to delivery facilities processing gas from pipelines associated with offshore or onshore gas producing fields, for the purpose of delivering gas into the Transco system.

Exit Connections are connections which allow gas to be offtaken from the Transco system and can take the form of individual supply points or Connected System Exit Points (CSEPs). There are several types of connected system including:

- A pipeline system operated by another GT.
- Any other non-Transco pipeline transporting gas to premises consuming more than 2,196 MWh per annum.

Storage and Interconnector Connections may both deliver gas to the system and offtake gas from the system and therefore specific arrangements pertaining to both entry and exit connections will apply.

Storage Connections are connections to storage facilities for the purpose of temporarily offtaking gas from the Transco system and delivering the same gas back into the system at a later date.

International Interconnector Connections are connections to pipelines connecting Britain to other countries which may both offtake gas from and deliver gas to the Transco system.

Whilst the requirements for the relatively small number of new Entry Storage and Interconnector Connections are not expected to change significantly, the competitive market for Exit Connections is developing rapidly.

Transco's full connection policy is set out in its published Licence Standard Condition 4B Statement. This is available on the Transco web site (www.transco.uk.com), or by writing to the following address:

Asset Policy Manager
Transco
31 Homer Road
Solihull
B91 3LT

In addition Transco has published a Connection Charging Statement, which lists its standard charges.

It should be noted that, many connection services are available on a competitive basis. Whilst Transco continues to offer connection services in line with its Gas Act obligations it is possible to hire another company to install a connection and have it adopted by Transco, have a connection installed by another gas transporter or, in certain circumstances, have a connection installed and retain ownership of it.

A6.2 System Entry Connections

Transco's policy is that the full capital costs of any connection, including project management costs and any costs associated with an existing or new Transco System Entry facility, should be borne by the party wishing to connect to Transco's system. These will be assessed on a case by case basis.

The location of the connection point will be agreed between the facility operator and Transco. The costs will include the equipment and construction costs of the physical connection and any necessary additional equipment required for metering and gas quality monitoring if these are required to be provided to Transco. The equipment will depend on the particular circumstances, but the basic technical requirement is the minimum level of control and monitoring equipment at the point of connection necessary to safeguard the Transco system, to ensure that Transco's statutory

obligations can be met, and to ensure that gas entering the system meets the agreed gas specification. Additionally, the equipment has to provide the necessary information to allow Transco to run an economic and efficient system. Transco needs to ensure that equipment associated with connections to the system is capable of operating under all anticipated conditions and complies with all relevant industry standards.

Transco will consider individually the possible provision of other equipment that may, depending on the circumstances, be installed either by Transco or the delivery/storage facility operator. Any additional pipeline costs will be subject to negotiation between Transco and the delivery/storage facility operator or the party wishing to connect to the system. If the upstream delivery/storage facility operator funds, constructs and owns the new connecting pipeline, the Transco system entry point will be located at or as close as possible to the point of connection to the system. If Transco is required to complete the connection, Transco will put the contract to competitive tender in the same way that it would for work on other Transco installations or for system modification work.

Whenever a new entry/storage connection or increased entry flow is required, it is important to contact Transco as early as possible in order to discuss requirements.

For all new delivery and storage facilities, Transco will enter into a Network Entry Agreement or Storage Connection Agreement with the respective operator. These agreements will include the gas quality specification, the physical location of the delivery point and the standards to be used for the measurement of quality and flow of the gas.

The following section provides an indication of the Transco gas entry quality specification.

A6.2.1 Network Entry Quality Specification

Transco will discuss allowing gas into the system on a case by case basis. Transco's ability to accept gas into the system is affected, inter alia, by the gas quality, by the location of the entry point on the system, by the volumes entered and by the quality and volume of gas already being transported on the system. Any gas entering the system will only be accepted where Transco can continue to meet its statutory obligations with respect to gas quality (including, but not limited to, the Gas Safety (Management) Regulations 1996). For indicative purposes, the specification set out below would be considered for entry:

1. Hydrogen Sulphide
   - Not more than 3.3 ppm

2. Total Sulphur
   - Not more than 15 ppm

3. Hydrogen
   - Not more than 0.1 mol %

4. Oxygen
   - Not more than 10 ppm

5. Hydrocarbon Dewpoint
   - Not more than -2°C at any pressure up to 75 bar g

6. Water Content
   - Not more than 50 mg/m^3 nor such as would cause a water dewpoint more than minus 10°C at the delivery pressure provided in 15

7. Wobbe Number (real gross dry)
   - Within 48.14 to 51.41 MJ/m^3 range, and
   - In compliance with ICF & SI limits listed below

8. Incomplete Combustion Factor (ICF)
   - Not more than 0.48

9. Soot Index (SI)
   - Not more than 0.60

10. Gross Calorific Value (real gross dry)
   - A value will be set within the band 36.9 to 42.3 MJ/m^3, in compliance with the Wobbe Number, ICF and SI limits described above, subject to a 1 MJ/m^3 variation

11. Inerts
   - Not more than 7.0 mol % subject to
     - Carbon Dioxide: not more than 2.0 mol %
     - Nitrogen: not more than 5.0 mol %

12. Contaminants
   - The gas shall not contain solid, liquid or gaseous material that may interfere with the integrity or operation of pipes or any gas appliance within the meaning of regulation 2(1) of the Gas Safety (Installation and Use) Regulations 1998 that a consumer could reasonably be expected to operate

13. Delivery Temperature
   - Between 1°C and 38°C

14. Odour
   - Gas delivered shall have no odour that might contravene the statutory obligation not to transmit or distribute any gas at a pressure below 7 bar g which does not possess a distinctive and characteristic odour

15. Pressure
   - The delivery pressure shall be the pressure required to deliver natural gas at the Delivery Point into the Transco Entry Facility at any time taking into account

the Transco System back pressure at the Delivery Point as the same shall vary from time to time

- The entry pressure shall not exceed the Maximum Permitted Operating Pressure (MPOP) of the system into which the gas is delivered

Note that the Incomplete Combustion Factor (ICF) and Soot Index (SI) have the meanings assigned to them in the Gas Safety (Management) Regulations 1996 Schedule 3 (GS(M)R).

A6.3 System Exit Connections

A6.3.1 New Connections or Increased Capacity

Transco's policy in respect of exit connections is to charge for the works at a level sufficient to cover its costs including an appropriate level of overhead. Standard charges are applied to certain specific categories of load whilst other more complex connections may be costed on an individual basis utilizing Transco project costing methodology. Some connections are eligible for a connection allowance.

There are different technical and operational requirements for exit connections depending on the pressure tier connected into and on the type of connection required. Any enquiries regarding these requirements and other information on how to obtain a connection should be addressed to the appropriate Transco Asset Office.

Whenever a new connection or increased supply is required, it is important to contact Transco as early as possible to ensure that the requirements can be met on time. Where a new connection or increased supply might lead to the need for a major capacity expansion project on Transco's system, it is essential that Transco is given between two and three years notice. In certain circumstances project lead times may even exceed this period.

Anyone can contact Transco for a connection, whether a shipper, operator, developer or end user, but gas can only be offtaken where the supply point so created has been confirmed by a Network Code shipper.

Transco is working with the gas industry to establish an open market for the provision of connections to the Transco system. Already, Transco has set up an internal organisation, Connections, to carry out connections on Transco's behalf. This development has led to increased competition in this market and, in most instances, customers should be able to obtain competing quotes from other companies. To obtain a quotation from Transco for a new connection or increased load, the customer should contact the appropriate Transco Asset office.

A6.3.2 NTS Offtake Pressures

The applicable offtake pressure for the NTS is 25 bar. Although system pressure is typically higher, it will be subject to variation over time and location on the network. Transco's policy is to provide, on reasonable request, forecast information and illustrative historical records for specific NTS connection enquiries and notify with 36 months notice to relevant shippers any significant reduction to the NTS anticipated

normal offtake pressure. Transco's system is planned and operated to meet its statutory duty to develop and maintain an efficient and economic pipeline system. In doing so there is a potential consequential effect on NTS offtake pressures. Generic information on NTS offtake pressures is as follows:

There are many factors which affect NTS offtake pressures at any location at any time and these include; system demand, entry pressures, compressor operation, proximity to pressure sources, pipeline size and maximum operating pressure, and special operations such as maintenance and system development works. Time variation of offtake pressure is within day, from day to day, season to season and year to year. Transco currently plans normal NTS operations with start of day pressures no lower than 33 bar, but this is not guaranteed as it may compromise overall system efficiency. NTS offtake pressures tend to be higher at pressure sources such as entry points and outlets of operating compressors, and lower at the system extremities and inlets to operating compressors.

A6.3.3 Self Lay Pipes or Systems

Where a party wishes to lay their own service pipe, to premises expected to consume 2,196 MWh (75,000 therms) per annum or less, ownership of the pipe will vest in Transco, once the connection to the Transco system is made. This is in accordance with S.10(6) of the Gas Act.

The connection may only be made providing that:

- The pipe is laid to a relevant main.
- It meets fitness for purpose requirements.
- The appropriate Transco self lay procedure has been followed.

Where the connection is for a pipe laid to premises expected to consume more than 2,196 MWh (75,000 therms) per annum or the connection is to a pipe in the Transco system which is not a relevant main, self laid pipes do not automatically vest in Transco. Transco will take ownership of pipes to premises expected to consume more than 2,196 MWh (75,000 therms) per annum and operating at up to 7 bar providing that it is economic and efficient to do so and the appropriate Transco self lay procedure has been followed.

Transco is currently developing proposals through a series of pilot schemes for taking ownership of self laid pipes operating at a pressure exceeding 7 bar.

Parties considering laying a pipe that will either vest in Transco or is intended to come into Transco ownership should make contact with the appropriate Transco Asset office.

A6.3.4 Reasonable Demands for Capacity

Transco has an obligation to develop and maintain an efficient and economical pipeline system and, subject to that, to comply with any reasonable request to connect premises, provided that it is economic to do so.

Specific system reinforcement may be required to maintain system pressures for the winter period after connecting a new supply. Transco will normally fund this work subject to the load meeting certain economic criteria. Where the load does not meet these criteria the customer may have the option of making a contribution to the costs in order for the new load to be connected.

Details of how Transco charges for reinforcement and the basis on which contributions may be required can also be found in its Connection Charging Statement.

When making a request for capacity, the shipper should allow sufficient time for any required reinforcement to be undertaken. As mentioned in section A6.3.1, it is essential that Transco is given between two and three years notice of any project requiring the construction of high pressure pipelines or plant although in certain circumstances project lead times may exceed this period. Requests for firm supplies in a shorter time scale may not be reasonable.

Appendix 7

System Entry

A7.1 System Entry Point Maximum Physical Capabilities

A7.2 Monthly System Entry Capacities

The entry capacity associated with terminals on the National Transmission System (NTS) is influenced by the installed pipelines and other plant. However, the amount of gas entering the NTS on a particular day cannot greatly exceed demand. Effective entry capacity typically reduces as demand reduces and therefore has a seasonal dependence.

The complex interaction of flows on the NTS is such that the pattern of supply and demand affects the maximum amount of gas that can be accepted at any particular terminal. It is, therefore, not a simple matter to quantify entry capacities. For the purpose of this Appendix, entry capacity profiles are shown for individual terminals based on seasonal normal weather conditions, and the associated projected patterns of supply and demand. Under most circumstances shippers will have some flexibility in the quantities that they wish to have transported from individual terminals.

The entry capacity profiles shown for individual terminals are indicative only, because they apply only to the specific conditions and assumptions described. The capacity profiles indicated reflect the anticipated availability of pipeline and plant. No allowance for effects of summer maintenance has been made since the timetable for such work had not been determined at the time these capacity projections were made.

A7.1 System Entry Point Maximum Physical Capabilities

The terminal capabilities quoted relate to the maximum physical capability and these may exceed expected delivery in 2001/2002. This reflects the maximum physical flow that could be accommodated at the terminal and would necessitate high demand

conditions and demand and other supply patterns that would enable such flows. System entry point capabilities have been derived by proportioning the Aggregate System Entry Point maximum physical capability in 2001/2002 in proportion to forecast maximum flows, consequently, the capabilities shown for some system entry points may exceed the ability of those entry points to deliver gas.

TABLE A7.1 - System Entry Point Maximum Physical Capabilities 2001/20002 (mcm per day)

Terminal	System Entry Point	Capability
Bacton	Bacton-Phillips	15.2
	Bacton-Amoco	16.5
	Bacton-Shell	49.0
	Bacton-SEAL	21.5
	Bacton-Interconnector	26.7
	Total Bacton	**129.0**
Barrow	**Barrow-HRL**	**67.0**
Easington	Easington-BP West Sole	6.1
	Easington-BP Dimlington	17.8
	Easington-BG Amethyst	4.2
	Easington-BG Rough	50.9
	Total Easington	**79.0**
St Fergus	St Fergus-Mobil	52.4
	St Fergus-Total Oil Marine	50.3
	St Fergus-Shell	29.3
	Total St Fergus	**132.0**
Teesside	Teesside-Enron	6.0
	Teesside-Amoco	44.0
	Total Teesside	**50.0**
Theddlethorpe	**Theddlethorpe-Conoco**	**50.0**

The system entry point maximum physical capabilities show how the delivery facility flows would be accommodated within the maximum terminal flow. They are indicative only and do not reflect the actual physical capacity of delivery facilities connected to the Transco system, nor will they be used for the purposes of determining input curtailment advice.

A7.2 Monthly System Entry Capacities

The following graph and table show the amount of Monthly System Entry Capacity determined in accordance with the methodology defined in Section B2.2 of the Network Code, which has been suspended for winter 2001/2. The capacity varies with the projected demand through the year with the determined system entry capacity in each month summing in total to 110% of the monthly average seasonal normal demand. The demand used is derived from those shown in Appendix 2 of this document and is presented in the form of monthly demands over a year. The

methodology takes account of historic gas delivery patterns, projected peak deliveries and the anticipated physical capability of the system under average seasonal normal conditions for the month. It is possible that a different amount of capacity may be available at any terminal on any given day, this will depend on the distribution of demand, the level of supplies at other terminals and the availability of pipeline and plant in Transco's system.

The entry capacity profiles shown for individual beach terminals are indicative only, because they apply only to the specific conditions and assumptions described.

FIGURE A7.2A - Monthly System Entry Capacity Profile 2001/2002

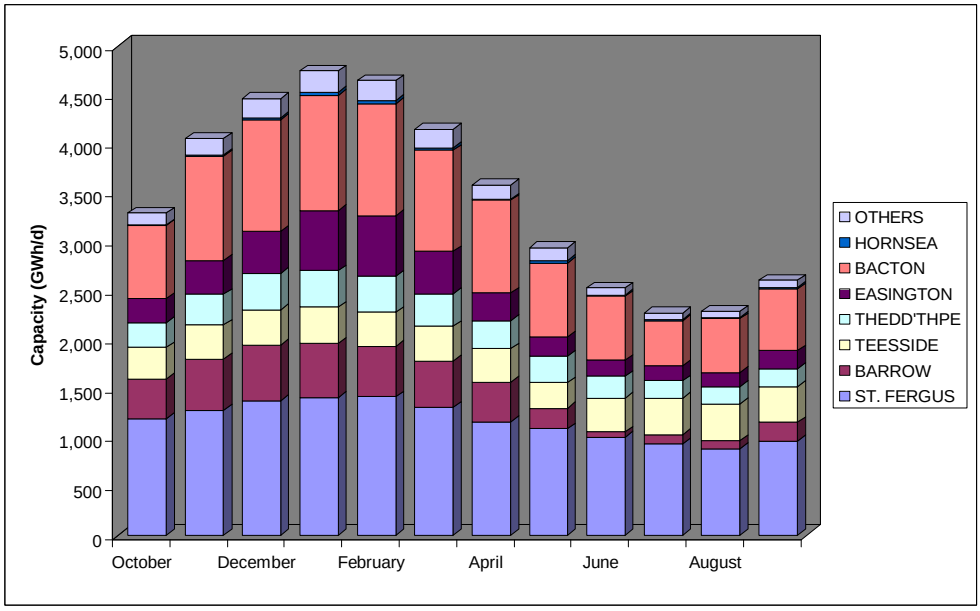


TABLE A7.2A - Monthly System Entry Capacity Profile 2001/2002 (GWh/d)

	St Fergus	Barrow	Teesside	Thedd	Eas'ton (inc Rough)	Bacton	Hornsea	Other	01/02 SND + 10%
October	1191.5	402.8	321.8	258.9	241.0	746.9	9.7	116.1	3288.7
November	1280.8	520.4	345.5	316.9	343.7	1065.3	13.8	166.9	4053.3
December	1373.8	569.6	362.8	368.8	430.7	1137.9	26.2	191.7	4461.5
January	1411.2	549.2	369.3	374.0	614.1	1179.7	29.7	213.3	4740.5
February	1413.4	517.2	348.1	368.0	615.6	1148.4	32.9	199.5	4643.1
March	1304.4	474.1	357.2	330.6	433.4	1033.5	29.7	185.4	4148.3
April	1156.1	408.9	341.7	285.8	281.4	946.8	11.3	151.0	3583.0
May	1089.7	209.1	255.8	276.6	193.1	760.9	20.1	132.3	2937.6
June	1006.7	48.9	345.3	223.2	163.1	654.1	13.9	70.3	2525.5
July	935.5	90.4	371.0	181.4	152.9	463.5	13.7	65.2	2273.6
August	883.9	85.0	376.5	172.7	144.5	549.7	13.3	63.1	2288.7
September	964.1	188.7	365.5	184.9	181.4	633.3	15.5	72.1	2605.5

Note 1: Other includes all Onshore Fields, LNG sites and other storage facilities.

Note 2: The figures shown in the table above do not include maintenance.

Note 3: The SND figures are based on a 71 year average weather condition as per Network Code. This condition is colder than that used for the demand forecasts shown in Appendix 2 and hence results in higher volumes, however, the underlying growth is consistent.

In addition to the quantities indicated in table A7.2A, the Network Code methodology defines an approach for determining maximum expected capacity availability under SND conditions. These are shown below in Table A7.2B:

TABLE A7.2B - Maximum Monthly System Entry Capacity Available (GWh/d)

	St Fergus	Barrow	Teesside	Thedd	Eas'ton (inc Rough)	Bacton	Hornsea	Other
October	1250.6	422.8	337.7	284.8	564.6	979.5	136.0	423.3
November	1356.0	551.0	365.8	348.9	681.8	1130.2	167.6	565.2
December	1445.4	599.3	381.7	405.7	681.8	1173.3	184.5	646.7
January	1492.7	585.3	393.5	411.4	799.0	1216.3	196.0	687.2
February	1475.7	582.1	391.8	404.8	756.3	1184.0	192.0	662.9
March	1434.8	521.8	392.9	363.7	671.1	1065.6	171.5	580.1
April	1271.7	459.1	375.9	314.4	626.6	1044.1	148.1	575.3
May	1198.7	249.6	281.4	304.3	513.7	796.5	121.5	536.4
June	1107.4	57.5	379.8	245.5	441.6	764.2	104.4	463.0
July	1029.1	99.8	392.2	199.5	397.6	688.9	94.0	400.2
August	972.3	99.3	392.2	197.0	400.2	699.7	94.6	400.2
September	1060.5	215.6	402.1	224.2	455.6	764.2	107.7	473.1

Note: The numbers shown above are maximum system entry capacities calculated in accordance with paragraph B2.3.13c of the Network Code and are not necessarily the same as those shown in Table A7.1.

For the winter of 2001/2002, the amount of Monthly System Entry Capacity to be made available in the primary entry capacity auctions for the 2001/2002 winter period has been amended via Network Code Modification 0481, such that the amount offered in each month at a terminal is equal to the greatest value for that terminal in table A7.2B, as shown in Table A7.2C:

TABLE A7.2C - Monthly System Entry Capacities Offered for Sale Following Modification 0481

	St Fergus	Barrow	Teesside	Thedd	Eas'ton (inc Rough)	Bacton	Hornsea	Other
October	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2
November	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2
December	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2
January	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2
February	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2
March	1492.7	599.3	393.5	411.4	799.0	1216.3	196.0	687.2

Appendix 8

Glossary

Advanced Reservation of Capacity Agreement (ARCA)
An agreement between Transco and Shippers relating to future NTS pipeline capacity for large sites in order that Shippers can book NTS Exit Capacity in accordance with Network Code provision to meet gas requirements of large projects at a later date.

Annual Quantity (AQ)
The AQ of a supply point is its annual consumption over a 365 day year, under conditions of average weather.

Bar
The unit of pressure that is approximately equal to atmospheric pressure (0.987 standard atmospheres). One millibar equals 0.001 bar.

Base Plan Assumptions (BPA)
A document produced by Transco on an annual basis that describes its supply and demand forecasts for the next ten years.

Calorific Value (CV)
The ratio of energy to volume measured in Megajoules per cubic metre (MJ/m^3) which for a gas is measured and expressed under standard conditions of temperature and pressure.

Composite Weather Variable (CWV)
A single daily measure of weather for each LDZ, incorporating the effects of both temperature and wind speed. A separate composite weather variable is defined for each LDZ.

Combined Cycle Gas Turbine (CCGT)
A Combined Cycle Gas Turbine is a unit whereby electricity is generated by a gas powered turbine and also a second turbine. The hot exhaust gases expelled from the first turbine are fed into a heat exchanger to generate steam which powers the second turbine.

Combined Heat and Power (CHP)
The simultaneous generation of electricity and heat for use within buildings or processes, by recovery of the heat produced in the power generation process. As such, CHP represents the most efficient method of generating electricity.

Compressor Station
An installation that uses either gas turbine powered jet engines or electric driven compressors to boost pressures in the pipeline system to increase transmission capacity and move gas through the network.

Connected System Exit Point (CSEP)
A connection to a more complex facility than a single supply point. For example a connection to a pipeline system operated by a Public Gas Transporter other than Transco.

Cubic Metre (m^3)
The unit of volume, approximately equal to 35.34 cubic feet. One million cubic metres (mcm) equals 10^6 cubic metres, one billion cubic metres (bcm) equals 10^9 cubic metres.

Daily Flow Notification (DFN)
A communication between a Delivery Facility Operator (DFO) and Transco, indicating hourly and end of day entry flows from that facility.

Daily Metered Supply Point
A supply point fitted with equipment (e.g. a datalogger) that enables meter readings to be taken on a daily basis.

Datalogger
An electronic device that automatically records, stores and transmits meter readings (such transmission usually being via PSTN lines).

Delivery Facility Operator (DFO)
Operators of the reception terminals, which process and meter gas deliveries from offshore pipelines before transferring the gas to Transco's system.

Distribution System
A network of mains operating at three pressure tiers: intermediate (2 to 7 bar), medium (75 mbar to 2 bar) and low (less than 75 mbar).

Diurnal Storage
Gas stored for the purpose of meeting the variations in demand during the day. Gas can be stored in special installations (e.g. gas holders), or by line pack within the pipeline system.

Eastern Trough Area Project (ETAP)
A combination of seven distinctive oil and gas fields in the Central North Sea.

Exit Zone
A geographical area (within an LDZ) that consists of a group of supply points that, on a peak day, receive gas from the same NTS offtake.

FALCON
A computer program which simulates the operation of the transmission system. It is used to optimise future system expansion plans as forecast supply and demand change over time.

Gas Transporter (GT)
Formerly Public Gas Transporter (PGT). Transco is licensed by the Gas and Electricity Markets Authority to transport gas to consumers, along with other GTs, of which Transco is the largest.

Gasholder
A vessel used to store gas for the purposes of providing diurnal storage.

Interconnector
A pipeline transporting gas to another country. The Irish interconnector transports gas across the Irish Sea to both Eire and Northern Ireland. The European interconnector transports gas to or from Zeebrugge in Belgium.

Interruptible Service
A service that offers lower transportation charges but where, at times of high demand, Transco can interrupt the flow of gas to the supply point.

Kilowatt hour (kWh)
The unit of energy used by the gas industry. Approximately equal to 0.0341 therms. One Megawatt hour (MWh) equals 10^3 kWh, one Gigawatt hour (GWh) equals 10^6 kWh, and one Terawatt hour (TWh) equals 10^9 kWh.

Linepack
Linepack is the volume of gas within the National or Local Transmission System. The volume is related to pressure and the available linepack is the volume that can be released by reducing the pressure.

Liquefied Natural Gas (LNG)
Gas stored in liquid form. Can be firm or constrained (CLNG). Shippers who book a constrained service agree to allow Transco to use some of their gas to balance the system.

Load Duration Curve (1 in 50 Severe)
The 1 in 50, or severe, load duration curve is that curve which, in a long series of years, with connected load held at the levels appropriate to the year in question, would be such that the volume of demand above any given demand threshold (represented by the area under the curve and above the threshold) would be exceeded in one out of fifty years.

Load Duration Curve (Average)
The average load duration curve is that curve which, with connected load held at the levels appropriate to the year in question, the average volume of demand above any given threshold, in a long series of years, is represented by the area under the curve and above the threshold.

Local Distribution Zone (LDZ)
A geographic area supplied by one or more NTS offtakes. Consists of LTS and Distribution System pipelines.

Local Transmission System (LTS)
The pipeline system that takes gas from NTS offtakes and transports it to the Distribution system and direct to some large users.

National Balancing Point (NBP)
A notional point which represents the NTS for balancing purposes.

National Transmission System (NTS)
High pressure system consisting of terminals, compressor stations, pipeline systems and offtakes. Designed to operate at pressures up to 85 bar. NTS pipelines transport gas from terminals to NTS offtakes.

National Transmission System Offtake
An installation defining the boundary between the NTS and the LTS or a very large consumer. The offtake installation includes equipment for metering, pressure regulation, etc.

Network Code
The document that defines the contractual relationship between Transco and System Users.

Non-Daily Metered (NDM)
A meter that is read monthly or at longer intervals. For the purposes of daily balancing, the consumption is estimated, using an agreed formula, and for supply points consuming more than 73.2 MWh pa, reconciled individually when the meter is read.

Odourisation
The process by which the distinctive odour is added to gas supplies to make it easier to detect leaks. Transco provides odourisation at NTS offtakes.

Office of Gas and Electricity Markets (Ofgem)
The regulatory agency responsible for regulating the UK's gas and electricity markets.

On the day Commodity Market (OCM)
This market enables anonymous financially cleared on the day trading between market participants.

Operating Margins
Gas used by Transco to maintain system pressures under circumstances including periods immediately after a supply loss or demand forecast change before other measures, such as the flexibility mechanism, become effective; and in the event of plant failure, such as pipe breaks and compressor trips.

Own Use Gas (OUG)
Gas used by Transco to operate the transportation system. Includes gas used for compressor fuel, heating and venting.

Price Control Review (PCR)
Ofgem's review, currently in progress, of Transco's allowed returns for the period April 2002 to March 2007.

Peak Day Demand (1 in 20 Peak Demand)
The 1 in 20 peak day demand is the level of demand that, in a long series of winters, with connected load held at the levels appropriate to the winter in question, would be exceeded in one out of 20 winters, with each winter counted only once.

Seasonal Normal Composite Weather Variable (SNCWV)
The seasonal normal value of the CWV for a LDZ on a day is the smoothed average of the values of the applicable CWV for that day in a significant number of previous years (currently 71 such historical years of data).

Shearwater Elgin Area Line (SEAL)
The offshore pipeline from the Central North Sea (CNS) to Bacton.

Shipper or Network Code Registered User
A company with a Shipper Licence that is able to buy gas from a producer, sell it to a supplier and employ a GT to transport gas to consumers.

Shrinkage
Gas that is input to the system but is not delivered to consumers or injected into storage. It is either Own Use Gas or Unaccounted for Gas.

Supplier
A company with a Supplier's Licence contracts with a shipper to buy gas which is then sold to consumers. A supplier may also be licensed as a shipper.

Supply Hourly Quantity (SHQ)
The maximum hourly consumption at a supply point.

Supply Offtake Quantity (SOQ)
The maximum daily consumption at a supply point.

Supply Point
A group of one or more meters at a site.

System Average Price (SAP)
The SAP is set by all Transco and shipper trades on the OCM on a day.

System Marginal Price (SMP)
The SMPs (Buy and Sell) are set at a fixed differential from SAP unless Transco's actions affect either SMP at a more extreme level. The fixed price differentials are: SMP Buy = SAP+0.0287p/kWh, and SMP Sell = SAP-0.0324p/kWh.

Therm
An imperial unit of energy. Largely replaced by the metric equivalent: the kilowatt hour (kWh). 1 therm equals 29.3071 kWh.

Unaccounted for Gas (UAG)
Gas lost during transportation. Includes leakage, theft and losses due to the method of calculating the Calorific Value.

UK-Link
A suite of computer systems that supports Network Code operations. Includes AT-Link for energy balancing; Supply Point Administration; Invoicing; and the Sites and Meters database.

Ullage
Ullage is the difference between pipeline capacity and actual / forecast pipeline flow.

Unbundled Service
An optional service, offered and priced separately from Transco's core transportation services.

United Kingdom Continental Shelf (UKCS)
The UKCS is the area of seabed surrounding the UK that falls under UK jurisdiction.

Appendix 9

Conversion Matrix

To convert from the units on the left hand side to the units across the top multiply by the values in the table.

From:	To: Multiply	GWh	Mcm	Mths	Ttoe
	GWh	1	0.092	0.034	0.086
	Mcm	10.833	1	0.370	0.932
	MThs	29.307	2.710	1	2.520
	Ttoe	11.630	1.073	0.397	1

GWh = Gigawatt Hours

Mcm = Million Cubic Metres

MThs = Million Therms

Ttoe = Thousand Tonne of Oil Equivalent