This Statement is produced for the purpose of and in accordance with Transco's obligations in Standard Condition 12 of its Public Gas Transporter's Licence and Section O.4.1 of its Network Code in reliance on information supplied pursuant to Section O of its Network Code. Section O 1.3 of its Network Code applies to any estimate, forecast or other information contained in this Statement.

Transco's Ten Year Statement is not intended to have any legal force or to imply any legal obligation, with regard to, but not limited to, capacity planning, future investment and the resulting capacity.

This 1999 edition of Transco's Ten Year Statement is the fourth produced in accordance with Condition 12 of BG's Public Gas Transporter Licence. This requires us to publish annually a ten-year forecast of transportation system usage and likely developments to the system.

The Statement explains our volume forecasts, system reinforcement projects and investment plans. It has been published at the end of the 1999 planning process and follows on from the 1999 Base Plan Assumptions published in December 1998.

Changes For 1999

Following a detailed review of the content of the document, the 1999 Ten Year Statement has been rationalised to remove sections that are already published in other Transco literature. Removal of this duplication is aimed at making the document more focused and convenient whilst continuing to set out information which will be useful to Transco's customers in understanding its future plans and to deliver the requirements of the Licence.

Compared with the 1998 Ten Year Statement the following sections have been excluded or relocated within the document:-

Review of 1998 (formerly Chapter 1) - some elements have been placed in the Appendices and the remainder in other Transco publications, including the Managing Director's Review, June 1999 and Public Standards of Service, August 1999.

Transportation Charges (formerly Chapter 3 and Appendices 11 & 12) - to be included in the 1999 Gas Transportation Charges statement due to be published in September 1999.

Future Developments (formerly Chapter 4) - included in the main text where appropriate

Network Code Operations (Appendix 2) - readers are now referred to the Winter Operations Review 1999, May 1999.

Standards of Service (formerly Appendix 3) - included in Public Standards of Service August 1999.

As the resultant Statement is a more concise document, the executive summary that was previously produced as a separate document, is now incorporated into the front of this publication.

For the first time we have included schematic plans of the Local Transmission Systems within the LDZs to provide more detailed information to assist potential users of the Transco network.

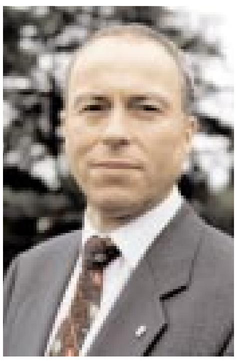
Layout

As a result of the rationalisation the Statement has been slimmed down considerably but still contains essential information on actual volumes, the process for planning the development of the system, including supply and demand forecasts, system reinforcement projects and associated investment.

The main body of the document provides an overview of the key issues, with all the detail contained in the appendices.

I hope you find the 1999 Ten Year Statement both interesting and informative. We always welcome a response from readers, which is why we have attached a feedback form.

I look forward to receiving your views on the Statement, including suggestions as to how it might be further improved.



Rob Verrion, Finance Director.

September 1999.

Contents

Supply, Demand & Investment Forecasts

Appendices

Supply, Demand and Investment Forecasts

1 Executive Summary

The purpose of the Ten Year Statement is to;

i) outline how gas demand could develop over the next ten years;

ii) relate the available information on gas supplies to the demand projection;

iii) explore how this could impact on Transco's investment for developing its transportation network.

Consultation with the industry has taken place on the source material published in the 1999 Base Plan Assumptions (BPA). The gas volume forecasts in this Statement reflect the outcome of the consultation process.

As ever, it is important to recognise the inexact nature of forecasting the outcome of complex energy market developments and how quickly events can change the basis of making forecasts.

The period since publication of the 1998 Statement has been no exception. World economic prospects over the 1998/9 winter were extremely uncertain, with great concern about how the South East Asia financial crisis would impact on worldwide business prospects and, hence, energy demand. Currently, the risks seem much reduced.

This volatility in economic prospects is mirrored in the swings that have occurred in the price of crude oil, from the depressed levels of US$10/barrel seen during the past year to the current price of around US$20.

Such swings can have pronounced effects on market developments and how businesses view the future. A sustained period of low oil prices, for example, can impact significantly on gas supplies (because of the close interaction between oil and gas production) via reduced activity and rationalisation.

In practice, a range of market mechanisms exist to deal with any prospective gas supply shortfalls - prices will rise to stimulate production from existing fields and encourage new developments; demand management can be used (interruption); greater use can be made of storage facilities; and reverse flows (imports) can be made through the European Interconnector.

The above needs to be taken into account when viewing the forecasts in this Statement.

Later sections and the appendices provide detail on Transco's 1999 projections, which in summary indicate:

i) Continuing favourable prospects for gas as the preferred form of energy, both for end users and power generation.

The baseline case assumes that annual demand will grow by nearly 35% over the next ten year period from 1998 to 2008. By the early years of the next century, Transco expects gas' share of primary energy consumption in the UK to be approximately 45%, compare to 38% in 1998.

ii) Uncertainty on the demand forecasts, most notably in the following areas:–

- Impact of Stricter Consents Policy on gas fired power station demand growth (details of assumptions are given in section 2.1);
- the form and impact of the proposed Climate Change Levy (depressed growth has been assumed in the low scenario in section 2.1);
- future flows through the Interconnectors to Continental Europe and Ireland.

iii) As regard the interplay of gas demand and supply, this year's analysis indicates the overhang of surplus supply will be dissipated during the winter of 2000/01. In the 1998 projections the foreseen supply shortfall did not emerge until 2004/05.

The analysis indicates that the more rapid dissipation of the surplus supply from UKCS sources is a function of continuing buoyant gas demand growth on the one hand, and the scaling back or postponement of gas-related upstream activity on the other. This more depressed supply outlook, from the producers' feedback, appears to derive from a turn-down of investment and rig activity triggered initially by low oil prices, and from the reviews being undertaken by some of the new consolidated groupings.

Whether the emerging supply shortfall is filled by a resurgence of upstream activity, stimulated by today's higher oil prices, or by gas imports, underlying gas supply security is not an issue. Western Europe has access to abundant gas supplies, and there is a well-developed infrastructure for transporting it.

iv) A range of investment forecasts which mirror the above uncertainties.

In previous years, additional supplies have only been required for matching purposes towards the end of the ten year planning period and consequently have had limited effect on planning. The reliance on assuming additional supplies post 2000/01 adds considerable uncertainty to Transco's investment plans, which could lie in the range of £3-4bn over the period 1999 to 2003.

The eventual spend will be determined by the effect of sensitivities associated with the possible extension of the 'Stricter Consents Policy' for gas-fired power stations; new gas developments at St Fergus; the levels of connections provided by independent PGTs; the levels of meter activity; and the replacement levels on Transco's distribution network following the tripartite review (by Transco, Ofgem and HSE) of future safety targets.

2 Forecast Demand

Appendix 4 describes demand forecasts which have been updated from the 1999 Base Plan Assumptions, using the 1998 actual demands, load enquiries and information supplied by respondents to the Base Plan consultation process. Both annual and peak day demands are discussed. Annual demand is the main driver of Transco's income, whereas peak day demand drives the system capacity required and is therefore one of the key drivers for Transco's capital expenditure. Annual demand forecasts are presented by LDZ and NTS load bands (for system design purposes).

2.1 Demand Sensitivities

As with previous years, the demand forecasts are based on a wide range of factors including; historical trend information, local demand intelligence, contracts with large end users, nomination of new supply points by shippers, general economic factors, comparative fuel prices, prospective conservation and environmental measures, potential growth areas and possible taxation effects. There is some uncertainty related to these factors which could lead to variation in the rate of demand growth. In particular, the following would lead to increased demand growth compared to the baseline:

- additional Government support for CHP
- further strengthening of the current gas price advantage over other fuels
- increased exports to Ireland, due to additional power generation and accelerated depletion of the Kinsale Head gas field
- increased exports to the continent or less gas by-passing the NTS to the European Interconnector
- the introduction of mains extension projects by PGTs
- further fuel switching to gas due to environmental pressures
- carbon based emissions trading

whereas the following would lead to lower demand growth:

- a continuation of the mild weather seen in recent years. Some recent analysis has revealed evidence of further warming which will be presented in this year's BPA
- the extension of the 'Stricter Consents Policy' for gas-fired power stations, thereby affecting both CHP and CCGT growth (considered below)
- implementation of the proposed Climate Change Levy
- reduced exports to Ireland, due either to an economic downturn, the development of indigenous gas reserves and / or reduced fuel switching
- reduced exports through the European Interconnector or increased usage for import purposes
- an increase in the amount of gas by-passing the NTS to the European Interconnector
- large loads located near terminals building their own pipelines and by-passing the NTS
- the gas price advantage being eroded
- a substantial economic downturn, including reduced housing completions
- changes resulting from the Review of Electricity Trading Arrangements (RETA) which could make new gas fired power generation less attractive in the short term as electricity prices fall

With regard to the Government's review of energy sources for power generation, its conclusions are that new and pending applications for gas fired power generation projects under Section 36 of the Electricity Act 1989 and Section 14(1) and 14(2) of the Energy

Act 1976, would be "inconsistent with the Government's energy policy concerns relating to diversity and security of supply". The Government has also concluded that a number of changes are required to the electricity regime to promote competition and efficiency, and it has set up the "Review of Electricity Trading Arrangements" to address this. A modified policy for giving consent to the construction of new power stations now applies "while market reforms are being addressed" with each station being considered on its merits. Whilst such a policy has brought further uncertainty to Transco's demand forecasts, the baseline forecasts assume that the "modified consents policy" for power stations will continue in the short term, but that CHP will not be adversely affected. Under these circumstances it is expected to have little effect over the short term. The baseline includes 14 new CCGT power stations (of which 10 have Section 36 approval) which with one exception are expected to be commissioned between 1998 and 2005 .

Given the present view of uncertainty it is anticipated the potential range of annual forecasts around the baseline will be +5.3% and -8.0% by 2003.

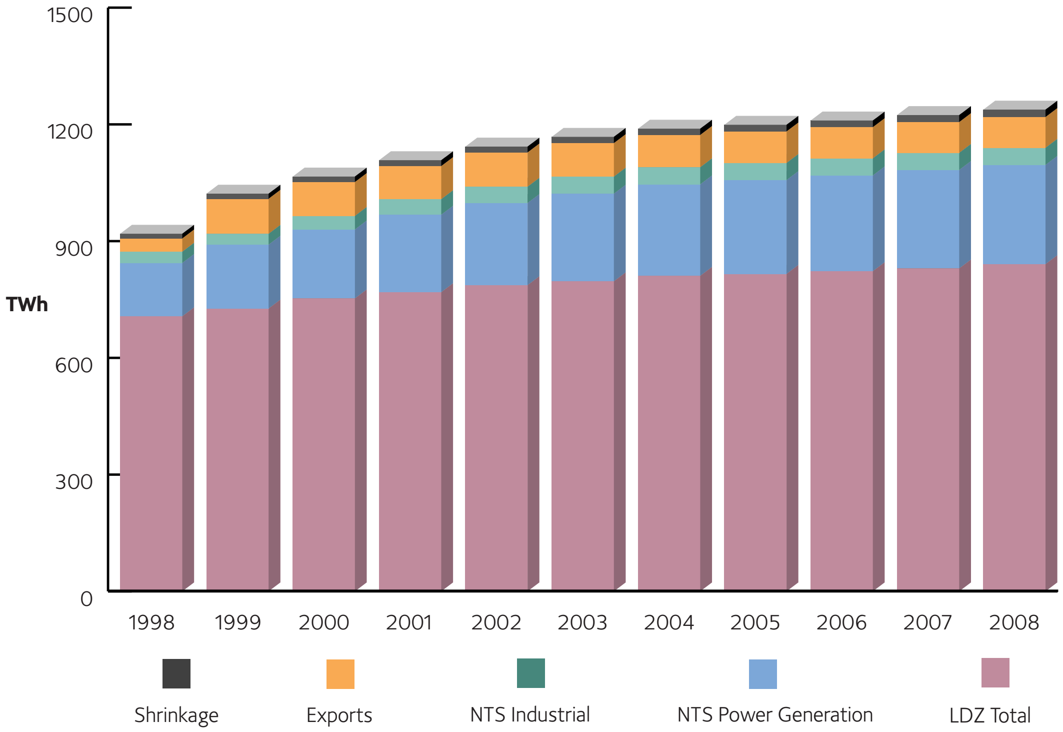
2.2 Baseline Annual and Peak Demands

Although the uncertainties described above lead to a range of forecasts, only a baseline forecast is presented below for illustration. The demand forecasts have been updated from the 1999 Base Plan Assumptions following consultation with the industry.

Key demand side expectations include:

- Overall LDZ demand is forecast to grow by 90 TWh (13%) in the next five years, reflecting the current strong competitive position of gas in relation to other fuels and the introduction of a shallow connection policy for LDZ loads (shallow policy means new loads may not be charged for reinforcement, subject to an economic test).
- Total annual demand is expected to grow by 250 TWh (27%) over the next five years (from 1998 to 2003). The majority of this growth is attributable to the European Interconnector, exports to Ireland and the additional gas fired power stations expected to be commissioned over the period.
- 13 new CCGT power stations (of which 10 have Section 36 approval) are expected to be commissioned by 2005, with a further station to be commissioned soon after
- Exports to both Northern and Southern Ireland are expected to grow significantly over the forecast period as industrial and power station loads switch to gas and Ireland's indigenous supply from the Kinsale Head gas field depletes.
- Flow through Transco's system into the European Interconnector is expected to reach a peak in 1999/2000. However, 50% of the flow is expected to by-pass Transco's system from October 2000, once gas from the SEAL pipeline is landed, growing to 70% throughout the 10 year planning period.

Figure 2a Annual Demand (TWh)



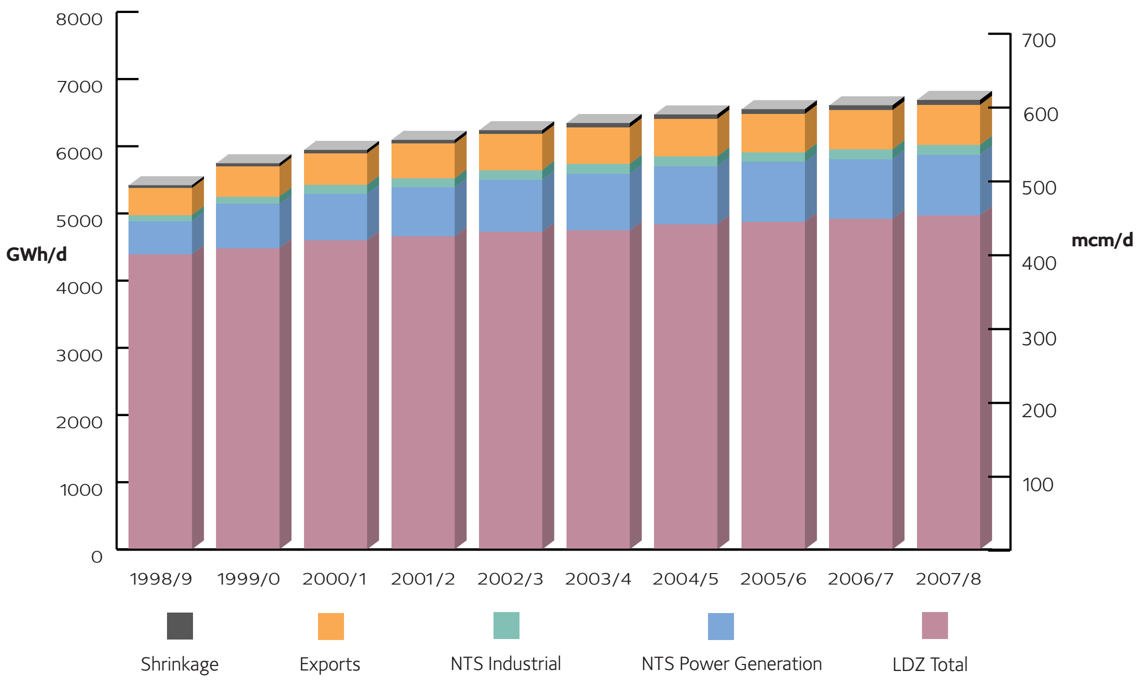
	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
0-73MWh	380	383	389	391	395	399	404	405	408	411	415
>73MWh	208	219	232	241	252	257	262	265	268	270	275
Interruptible	120	125	132	137	141	141	145	146	147	149	150
LDZ total	707	727	753	769	787	797	811	816	823	830	841
NTS power	137	164	177	199	211	225	235	241	246	253	255
NTS industrial	29	28	35	40	42	44	44	44	44	44	44
Exports	34	90	87	85	88	86	83	81	80	79	79
NTS total	199	281	299	324	342	355	363	366	370	376	378
Formula vol'	906	1009	1051	1093	1129	1152	1174	1182	1193	1206	1219
Shrinkage	12	13	14	15	15	16	16	17	17	18	19
System th'put	918	1022	1066	1107	1144	1168	1190	1199	1210	1224	1238

Note: numbers are subject to rounding & years relate to calendar years

- *The annual demand forecasts are based on average weather conditions over the last ten years (mild weather correction). This represents a 2% reduction in annual demand from 65 year seasonal normal weather conditions, more details about the mild weather correction are given in Appendix 4.*
- *The >73 MWh and interruptible bands include the LDZ Large Users (loads with annual consumption greater than 1465 GWh (50 million therms) per annum).*
- *NTS Power Generation includes all stations connected to the NTS, but excludes consumption by stations via their own dedicated pipelines and those embedded within Transco's LDZs.*
- *The load band split for 1998 reflects a different allocation of volumes than that used for the 1998 Annual Accounts as the planning base for volume forecasts has been adjusted to show the impact of reconciliation on actual volumes between 1996 and 1998.*

The peak demand forecast reflects the changes in annual demand and market mix and thus shows an increase compared to the 1999 Base Plan figures. Peak demand is forecast to increase by 970 GWh/d over the next five years (from 1998/9 to 2003/4).

Figure 2b Peak Demand (GWh per day)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
LDZ total	4392	4487	4601	4659	4727	4794	4840	4879	4923	4975
NTS power	495	655	691	730	776	844	865	887	887	902
NTS ind.	90	111	134	134	145	145	145	145	145	145
Exports	402	448	471	521	536	548	560	572	584	596
Shrinkage	41	46	49	52	55	60	64	69	71	73
System Peak	5421	5748	5947	6097	6240	6391	6475	6554	6612	6692

Note: numbers are subject to rounding & years relate to supply years

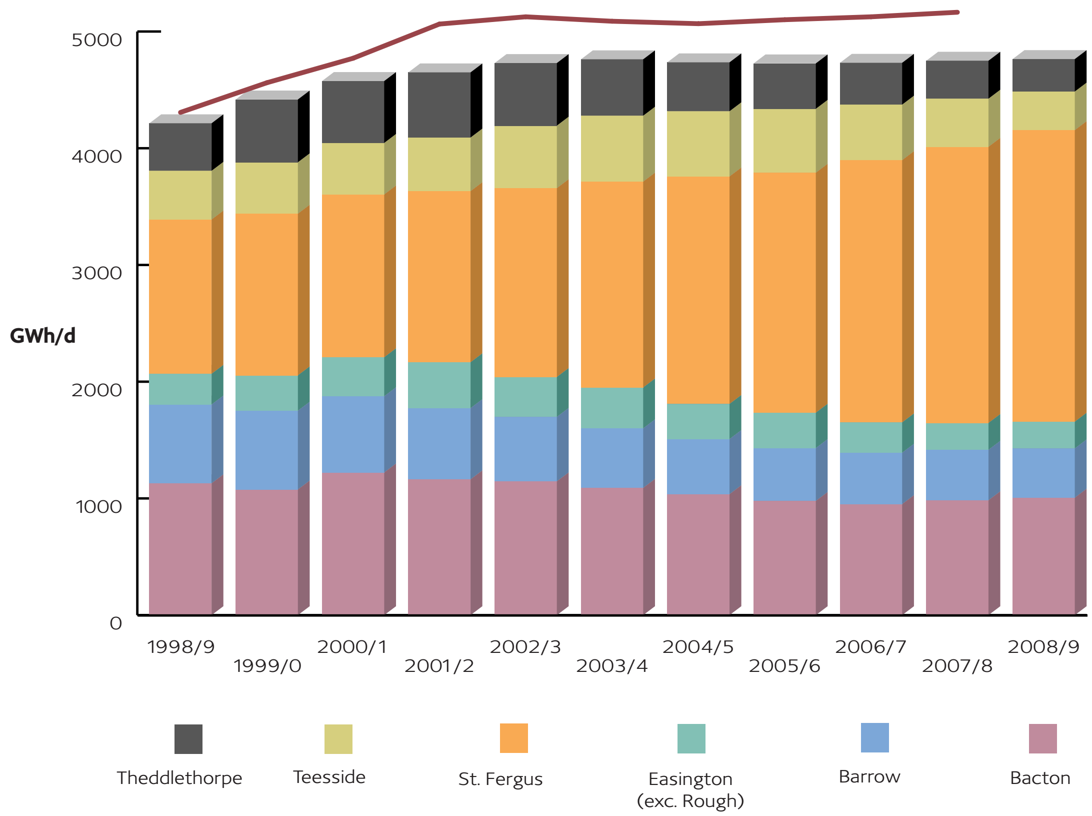
3 Forecast Supply

Appendix 4 also describes a supply case that matches the baseline demand forecast. The supply forecasts have been revised from those published in the 1999 Base Plan Assumptions taking into account information received from shippers and producers. Key supply side expectations include:

- Following discussions with producers and shippers, many supply developments have been scaled back, deferred or postponed. This is seen as the outcome of a depressed oil price (since recovered), and rationalisation following consolidation of producers.

- Bacton supplies increase in 2000/1 with commencement of Elgin, Franklin and Shearwater supplies through the SEAL pipeline. Bacton forecasts are however below those in the 1999 Base Plan Assumptions (BPA) due to reductions in fields currently producing and some deferrals of new developments.
- Barrow supplies have been broadly maintained at previous levels but reduce post 2000 as existing supplies are forecast to decline.
- Easington supplies are forecast to increase with commencement of the Easington Catchment Area (ECA) in October 1999.
- Whilst St Fergus supplies are still expected to provide most of the future increase in supplies to meet demand, as a result of new Norwegian imports and commencement of deliveries through the Miller pipeline, forecasts are below previous 1999 BPA levels as these developments have now been deferred through to 2002/3. With assumed additional supplies to St Fergus from 2001/2 required for a supply/demand match essentially all current increases in St Fergus deliveries are subject to some uncertainty as none of the new UK supplies have yet been granted development approval by the Government.
- Theddlethorpe supplies are forecast to increase in 1999/0 with full deliveries from Phoenix and commencement of other new developments. The increase at Theddlethorpe is above that reported in the 1999 BPA.
- Teesside supplies should increase in 1999/0 to previous forecasts levels with full deliveries from Eastern Trough Area Project (ETAP). A longer term increase in Teesside supplies is now assumed due to inclusion of increased additional supplies.
- New storage facilities include Hatfield Moor which is expected to be operational during 1999/0, Hole House Farm in 2000/1 and Aldbrough which is now expected in 2002/3.

Figure 3 Maximum Beach Supplies (GWh per day)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Bacton	1130	1077	1223	1164	1147	1091	1037	979	952	985	1007
Barrow	675	675	653	610	552	510	472	453	440	432	422
Easington (ex Rough)	263	303	334	393	342	350	301	303	260	230	229
St Fergus	1322	1385	1395	1466	1618	1764	1949	2056	2247	2366	2498
Teesside	417	440	441	459	535	564	558	547	475	412	330
Theddlethorpe	407	538	530	558	536	483	419	389	358	325	278
Total	**4214**	**4417**	**4575**	**4650**	**4729**	**4762**	**4736**	**4726**	**4732**	**4750**	**4765**

Note:numbers are subject to rounding & years relate to supply years

The revised forecasts indicate a reduction in the availability of beach gas compared to the forecasts presented in the 1999 BPA. The Bacton flows assume all SEAL gas as no Interconnector by-pass is assumed at peak.

4 Supply Demand Match

Transco produces a supply/demand match purely for capacity planning purposes, it does not offer any guarantees that gas will be available and Transco has no obligations for security of supply.

The match is a major driver for Transco's investment. For NTS design purposes, Transco matches maximum beach supplies to peak day demand, with any shortfall made up through storage or demand management, with all interruptible loads assumed to be switched off.

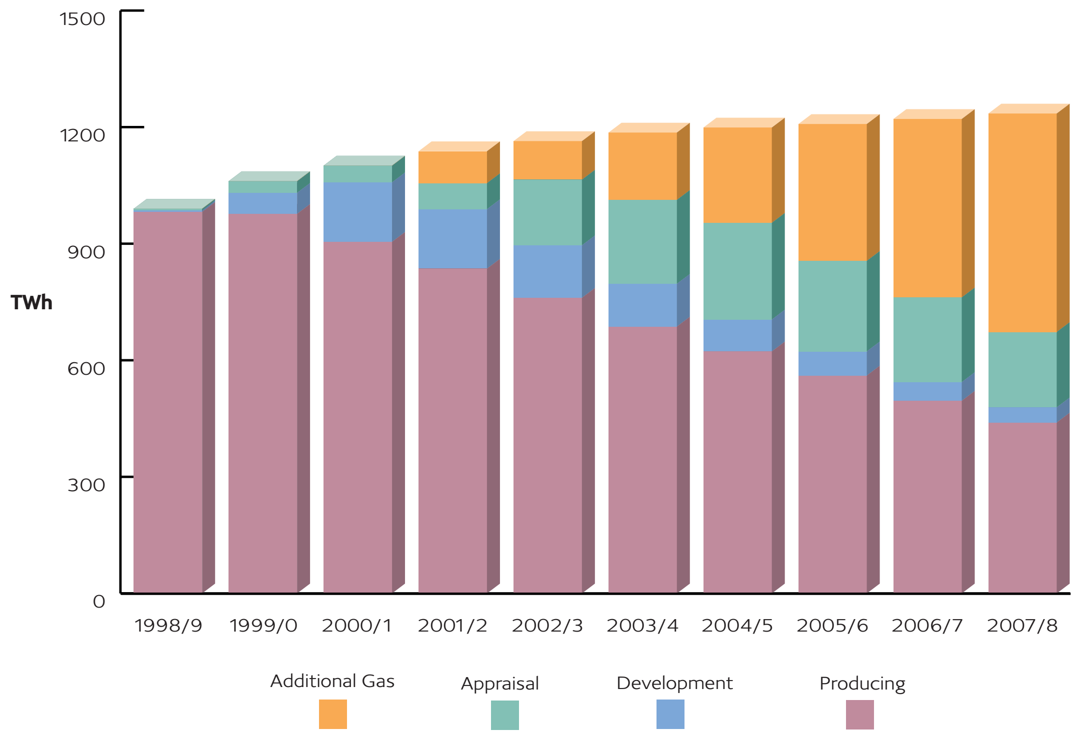
The consequence of a reduction in future developments, which was identified in section 3, is that there is a significant erosion of the surplus of supply (exacerbated by increases in annual demand) followed by a resultant potential shortfall of supplies.

Due to development timescales it is unlikely that the requirement for additional supplies from 2001/2 could be fully met by new supplies. Any resultant supply shortfall is likely to be met through increases from existing supplies or by demand management at times of high demand and high gas prices.

Examining the trend in offshore drilling activity in the UK Continental Shelf has highlighted that the number of rigs in operation is at its lowest level for several years. This would suggest that in order for early field development to take place a substantial increase in activity will be required.

The shortfall impacts directly on the assumptions used for Transco's 10 year match, used to support the calculation of transportation charges and for network planning. Transco use two key assumptions; that any shortfall of supply will be met through general UK reserves; and that these additional supplies will be landed at existing onshore terminals in proportion to the current level of contribution made by each terminal to annual supplies. Previously these assumption only had an impact on the later years of the planning period with no immediate impact on network investment; but the combination of a reduction of supplies and increase in demand has identified the need for additional annual supplies from 2001/2 onwards (see figure 4a).

Figure 4a Supplies to Match Annual Demand (TWh)

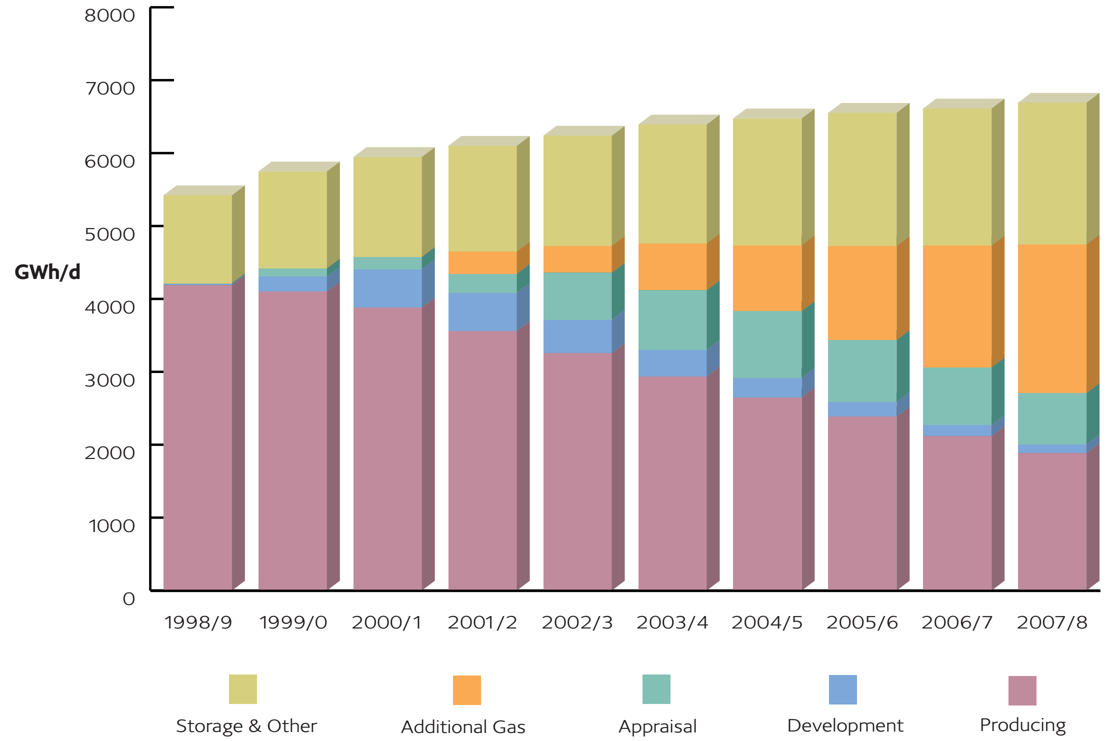


	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
Producing	982	977	905	836	761	687	623	561	496	440
Development	4	54	153	153	135	110	82	62	48	39
Appraisal	4	30	43	67	169	216	249	233	218	194
Additional Gas	0	0	0	82	99	173	245	352	459	562
Total	**989**	**1061**	**1101**	**1138**	**1164**	**1186**	**1198**	**1209**	**1221**	**1235**

Figure 4b Comparisons between 1998 and 1999 Ten Year Statement - Annual Match

1998 10YS	**2001/2**	**2002/3**	**2003/4**	**2004/5**	**2005/6**	**2006/7**
Annual Demand	1,070	1,088	1,104	1,115	1,127	1,135
Annual Supply	1,163	1,181	1,197	1,044	904	806
Deficit				71	223	329
1999 10YS						
Annual Demand	1,138	1,164	1,186	1,198	1,209	1,221
Annual Supply	1,056	1,065	1,013	953	857	762
Deficit	82	99	173	245	352	459

Figure 4c Supplies to Match Peak Day Demand (GWh per day)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Producing	4190	4103	3884	3564	3257	2937	2652	2387	2118	1885	1653
Development	12	204	524	519	458	366	268	200	155	121	101
Appraisal	13	112	169	263	645	817	915	851	790	705	618
Additional Gas	0	0	0	306	369	644	902	1288	1670	2039	2394
Storage & Other	1207	1330	1370	1446	1510	1628	1739	1827	1879	1942	2007
Total	**5422**	**5749**	**5947**	**6097**	**6240**	**6391**	**6475**	**6554**	**6612**	**6692**	**6773**

Note: numbers are subject to rounding & years relate to supply years

The peak day match in figure 4c further highlights the reliance on additional supplies post 2000/1, to the extent that at the end of the ten year planning period these assumed supplies make up approximately half of all supplies. The load factor used for additional supplies is 77%, as this is higher than the demand load factor there is an increasing requirement for storage or demand management to achieve a peak day supply/demand match.

5 System Reinforcement

Transco's Network Analysis team develops forecast flow patterns from the supply/demand match. To keep the planning scenarios up to date, the process is repeated each year in the light of new information and is updated following major developments. Further details of the modelling process are given in Appendix 6.

5.1 Capacity Planning

Transco models the daily dynamics of the National and Local Transmission Systems (NTS and LTS), using a network analysis tool called FALCON, in order to anticipate network capacity constraints and to design efficient reinforcements to ensure the appropriate level of system security is maintained within the network. Having identified potential constraints on the system, Transco analysts evaluate the options that are available to remove the constraint. They then optimise the system by selecting the most economic and efficient combination of alternatives.

The lower pressure tier (Distribution) system is designed to meet expected peak 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 districts. The process is similar to the NTS and LTS, but at a lower pressure level. Reinforcement is usually carried out by installing a new main or by taking a new offtake point from a higher pressure tier.

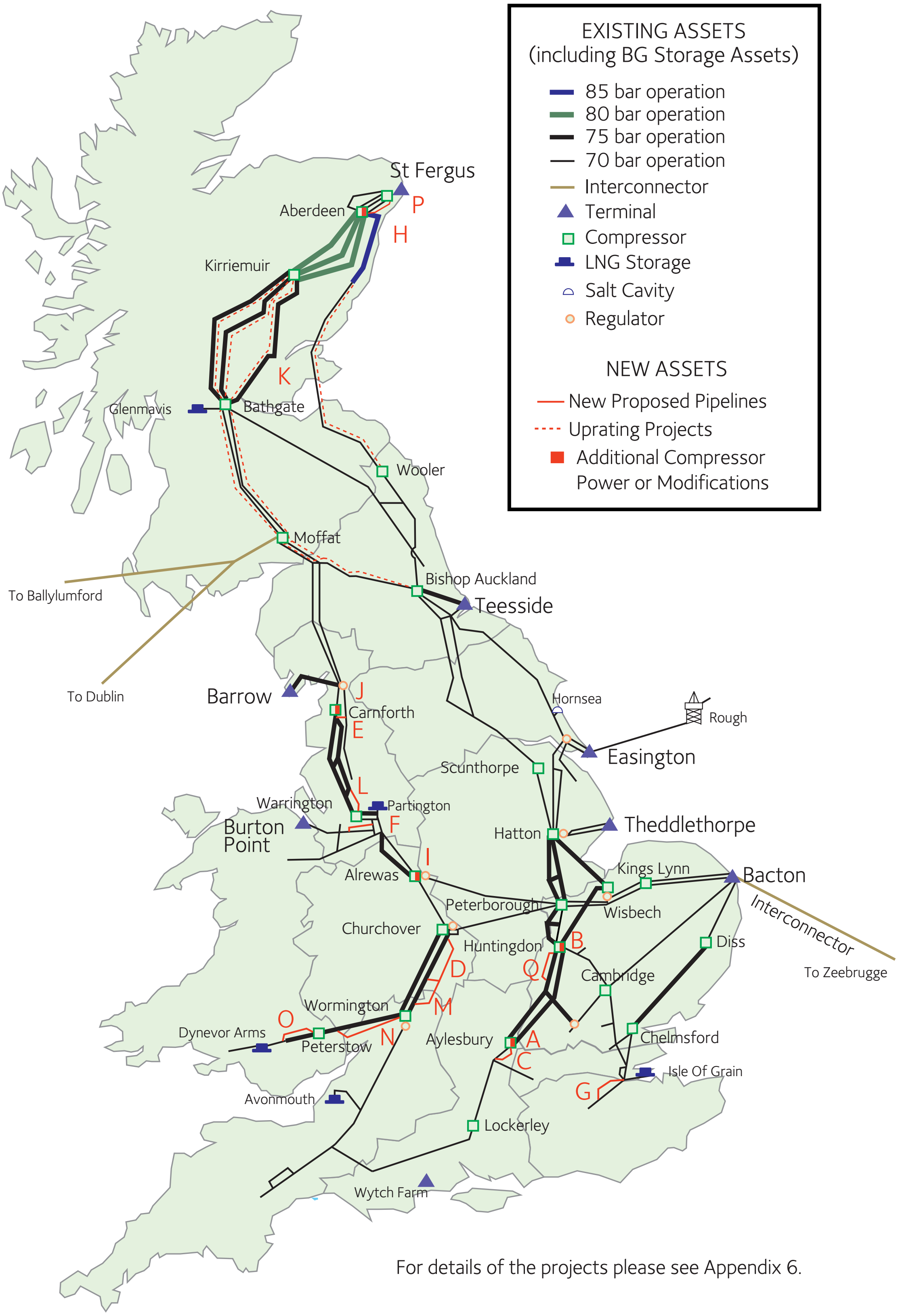
5.2 Development Plans

The NTS development plan represents the most likely scenario based on current information. However, it is heavily dependent on supply and demand forecasts and a number of external factors including the economy and government and regulatory policy.

Transco has initiated a number of major projects which are necessary to meet short term forecast peak flows, including new pipelines and compressors, existing pipeline and compressor uprating and other modifications The projects that are currently approved, under construction and are planned for completion between the end of 1999 and the year 2001 are shown on the following map and a listing by year is contained in Appendix 6 along with more detailed schematics that show sections of the NTS within each LDZ.

The LDZ plan, like the NTS development plan, is based on demand forecasts and modelling to identify projects necessary to provide 1 in 20 security for each LDZ. A list of the major LDZ projects is contained in Appendix 6.

Figure 5 NTS Projects Scheduled for Completion by end of 2001



For details of the projects please see Appendix 6.

6 Investment Plan

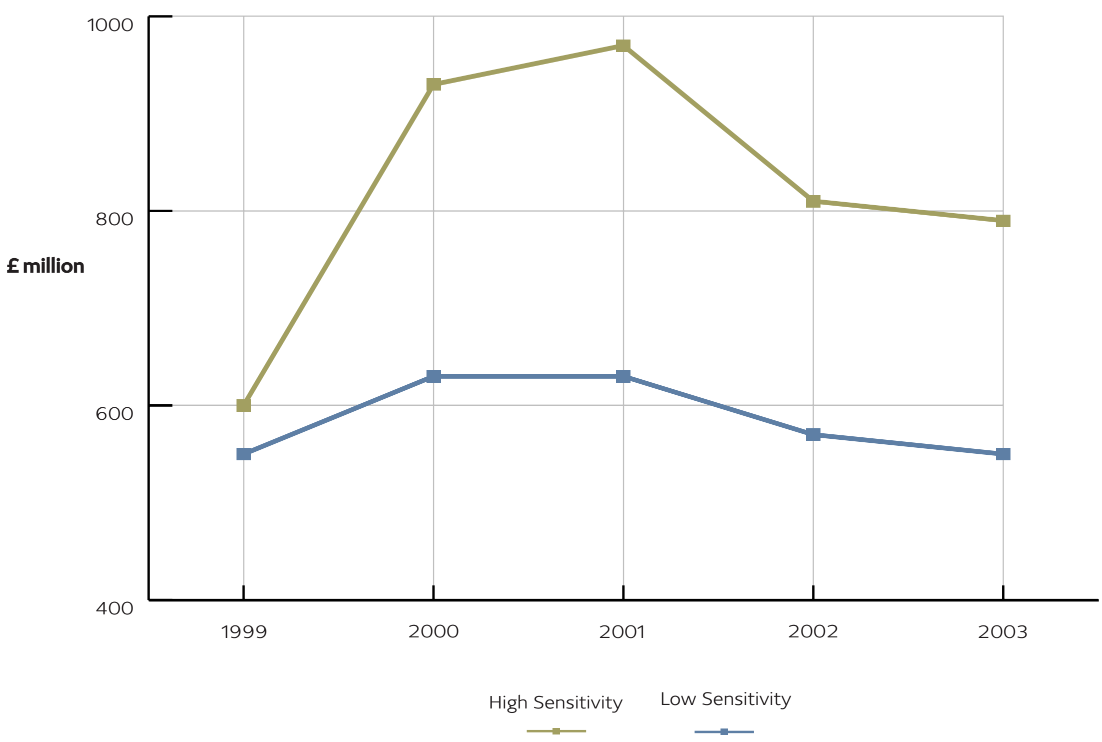
This section outlines Transco's investment ranges for 1999 to 2003. The forecasts are created from NTS and LDZ reinforcement plans and other investment including distribution and meter work. A comprehensive review and challenge of the investment forecasts has been undertaken to ensure that the 1999 investment forecasts fully reflect the prospective requirements and anticipated efficiencies. Further details are provided in Appendix 6.

Significant items of expenditure within this plan include:

- NTS and LDZ reinforcement to meet the supply/demand developments discussed earlier (£360 million invested in 1998)
- replacement of mains and services for system safety (£193 million invested in 1998)
- installation and replacement of meters (£136 million invested in 1998)

In predicting future expenditure requirements there are sensitivities which are captured in the range of investment highlighted in Figure 6. Sensitivities associated with Transco's investment forecasts are largely driven by external factors and include the impact of: how the supply/demand shortfall is assumed to be met e.g.additional Norwegian imports at St. Fergus; shallow connection policy; connections provided by competing PGTs; variation in levels of meter installation and or meter replacement activity; and the replacement levels on Transco's distribution network following the tripartite review (by Transco, Ofgem and HSE) of future safety targets. However it is possible that any major event could cause investment outside this range.

Figure 6 Investment Ranges (£m at 1999 prices)



Transco continues to take a number of steps to improve the transparency of its investment process by involving Ofgem, its customers and other industry players. Some recent initiatives include:

- Continuing to work with shippers, producers and the DTI to improve the information received on gas supplies. Information received from respondents to the 1999 Base Plan Assumptions Consultation, published in December 1998, has seen a continued high level of supply information received, reflecting a higher degree of trust and confidence in the planning process.
- A Gas Industry Forum for SBGI members and IGE industrial affiliates was held in Spring 1999 to discuss Transco's reorganisation and its impact on the wider gas industry, Transco's five year asset and investment plans and Transco's procurement strategy. The positive feedback has proved that the event was well received.

In addition discussions are ongoing to agree a capital monitoring process with Ofgem. Key aspects of the process will be to specify and agree with Ofgem the business outputs on which investment expenditure is incurred, key drivers of expenditure, and treatment of variations between actual and expected expenditure. Public consultation is expected to take place during 1999 regarding the method of monitoring.

Appendix 1

Actual Flows 1998

This Appendix describes annual and peak flows during the calendar year 1998. Where relevant, we have also included more up to date data from the subsequent winter period. 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. The relationship between the annual and peak flows can be used to give an indication of system utilisation.

A1.1 Annual Flows

Within the LDZs, actual demand was adversely affected by the warm weather, despite higher than expected growth brought about by a favourable economic climate, highly competitive gas prices and new CHP projects. The lower than forecast demand from NTS loads is explained in part by the reversal of European Interconnector flow and a slowdown in the build up of new power station loads.

Transco's annual forecasts assume that the weather will be "average". Therefore, when comparing actual demand with forecasts, we have adjusted the demand 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.

Weather corrected and forecast demands are based on the equivalent of a 10 year average of weather conditions which takes account of global warming effects, rather than the full 65 year weather database used historically. This approach was agreed with Ofgem and the MMC during the previous formula review and is equivalent to a 2% reduction in LDZ demand compared to that which would be expected if weather data from the last 65 years was used. 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.

Table A1.1 shows actual and weather corrected demand in the 1998 calendar year. Actual demands include a reallocation of demand between 0 - 73 MWh and >73 MWh firm and Interruptible load bands due to reconciliation variances. The reconciliation corrected forecast shows the 1998 Ten Year Statement forecast for 1998 annual demand, with reconciliation applied.. Total weather corrected demand was 906 TWh, 0.3% higher than the forecast.

Table A1.1 Annual Demand for 1998 (TWh)

LDZ Loads	Actual demand	Weather corrected demand	Reconciliation corrected forecast
0 - 73 Mwh	358	380	377
>73 MWh firm	197	207	202
Interruptible	117	120	119
LDZ Total	672	707	698
NTS loads	199	199	205
Total	**871**	**906**	**903**

Table A1.1 highlights the impact that warm weather has on demand by reducing actual volumes by 35 TWh, 5% of LDZ demand. Growth in the weather corrected 0-73 MWh (domestic) and interruptible sectors was in line with expectations, after allowing for reconciliation, whilst higher than expected growth in the >73 MWh sector was supported by competitive prices and new combined heat and power projects.

Nine new loads fed directly off the NTS were connected during 1998, four power stations, four industrial loads and the European Interconnector. Actual demands from the power and industrial sectors were in line with forecast, whilst exports to Europe were lower than expected mainly due to the low oil price in the second half of 1998.

Overall weather corrected demand was 906 TWh, 5% up on 1997, and consistent with the forecast published in last year's Ten Year Statement.

A1.2 Compressor Usage

The following table shows the gas used at each of the compressor stations during 1998. It also shows the usage on the maximum demand day during 1998 and also the record day during the 1998/9 winter period.

Table A1.2 Compressor Usage for 1998 (mcm)

Compressor	Total 1998	Max. Day 1998 21 Dec 1998	Record Day 9 Feb 1999
Aberdeen	0.8	0.0	0.1
Alrewas	6.4	0.1	0.0
Aylesbury	1.5	0.1	0.1
Bathgate	22.7	0.1	0.0
Bishop Auckland	8.0	0.0	0.1
Cambridge	0.0	0.0	0.0
Carnforth	27.0	0.2	0.2
Chelmsford	3.5	0.1	0.1
Churchover	16.9	0.1	0.1
Diss	9.1	0.1	0.2
Hatton	5.3	0.1	0.3
Huntingdon	11.2	0.2	0.1
Kings Lynn	0.1	0.0	0.0
Kirriemuir	47.4	0.2	0.2
Moffat	30.6	0.1	0.1
Peterborough	20.8	0.1	0.2
Peterstow (electric)	n/a	n/a	n/a
Scunthorpe	8.8	0.1	0.0
Warrington	37.3	0.1	0.2
Wisbech	16.7	0.1	0.1
Wooler	1.2	0.0	0.1
Wormington	11.1	0.1	0.0
Subtotal	286.2	1.9	2.4
St Fergus	51.3	0.1	0.3
Total	**337.5**	**2.0**	**2.6**

The highest usage is at St Fergus, which runs all year round to boost the pressure of gas from the low pressure Total Oil Marine sub-terminal up to NTS pressure.

Transco is undertaking studies to measure and monitor compressor usage to try to optimise efficiency and operation. However as shippers are responsible for daily nominations from terminals, Transco has to run compressors for longer periods to move gas based on actual sourcing, rather than optimum sourcing.

A1.3 Peak Flows

The maximum demand during 1998 was on 21 December, however the maximum demand of the 1998/9 winter period was 9 February 1999. This was a record demand. The flows on both of these days are detailed here.

A1.3.1 Entry Peak Flows

The following table shows the peak flows into the system on the maximum demand day of 1998, compared to the previously forecast 1 in 20 peak for 1998/99. Also shown are flows experienced on the record demand day and the highest daily flows from each terminal during 1998/9.

Table A1.3.1 Entry Peak Day Flows

Terminal	Max. Day 1998 21 Dec 1998	1 in 20 Peak for 1998/9	Record Day1999 9 Feb 1999	Highest Daily for 1998/9
Bacton	89.7	105.5	91.7	100.7
Barrow	63.5	65.1	60.8	64.8
Burton Point	1.7	-	-	2.8
Easington (exc Rough)	22.9	26.7	23.3	23.3
St. Fergus	108.0	117.6	113.5	115.1
Teesside	31.0	41.0	22.4	32.8
Theddlethorpe	32.4	41.4	33.6	36.5
Storage	33.7	86.9	59.3	59.6

Notes:

The maximum day for 1998 refers to flows on 21st December 1998. These flows are not necessarily commensurate with current forecasts or with maximum flows at individual terminals

1 in 20 Peak refers to the 1999 Base Plan Assumptions, published in December 1998

A 1.3.2 Exit Peak Flows

The following table shows actual peak flows out of the NTS on the maximum demand day of 1998 compared to the previously forecast 1 in 20 peak flow and the flows experienced on the record demand day.

Table A1.3.2 NTS Exit Peak Flows

LDZ	Max. Day 1998 21 Dec 1998	1 in 20 Peak for 1998/99	Record Day 9 Feb 1999
East Midlands	35.4	38.9	37.9
Eastern	25.2	31.3	26.6
North East	20.4	21.7	21.3
North Thames	34.2	44.3	36.1
North West	41.2	48.2	42.3
Northern	16.9	23.0	18.4
Scotland	23.4	29.8	25.0
South East	33.0	43.9	35.2
South West	16.9	25.0	18.0
Southern	22.0	32.4	23.5
Wales North	3.2	4.6	3.4
Wales South	12.5	15.7	14.4
West Midlands	28.0	40.0	30.9
LDZ Total	312.3	398.7	333.0
NTS Loads	62.7	85.6	72.3
Total	**374.9**	**484.2**	**405.4**

Notes:

The maximum day for 1998 refers to flows on 21 December 1998, however it was an exceptionally mild winter overall and peak conditions were not experienced. This was the highest overall demand day, but individual LDZs may have seen higher demands on other days.

1 in 20 peak demands are from the 1999 Base Plan Assumptions and are firm demands only. They have been converted to volume using a CV of 39 MJ/m3.

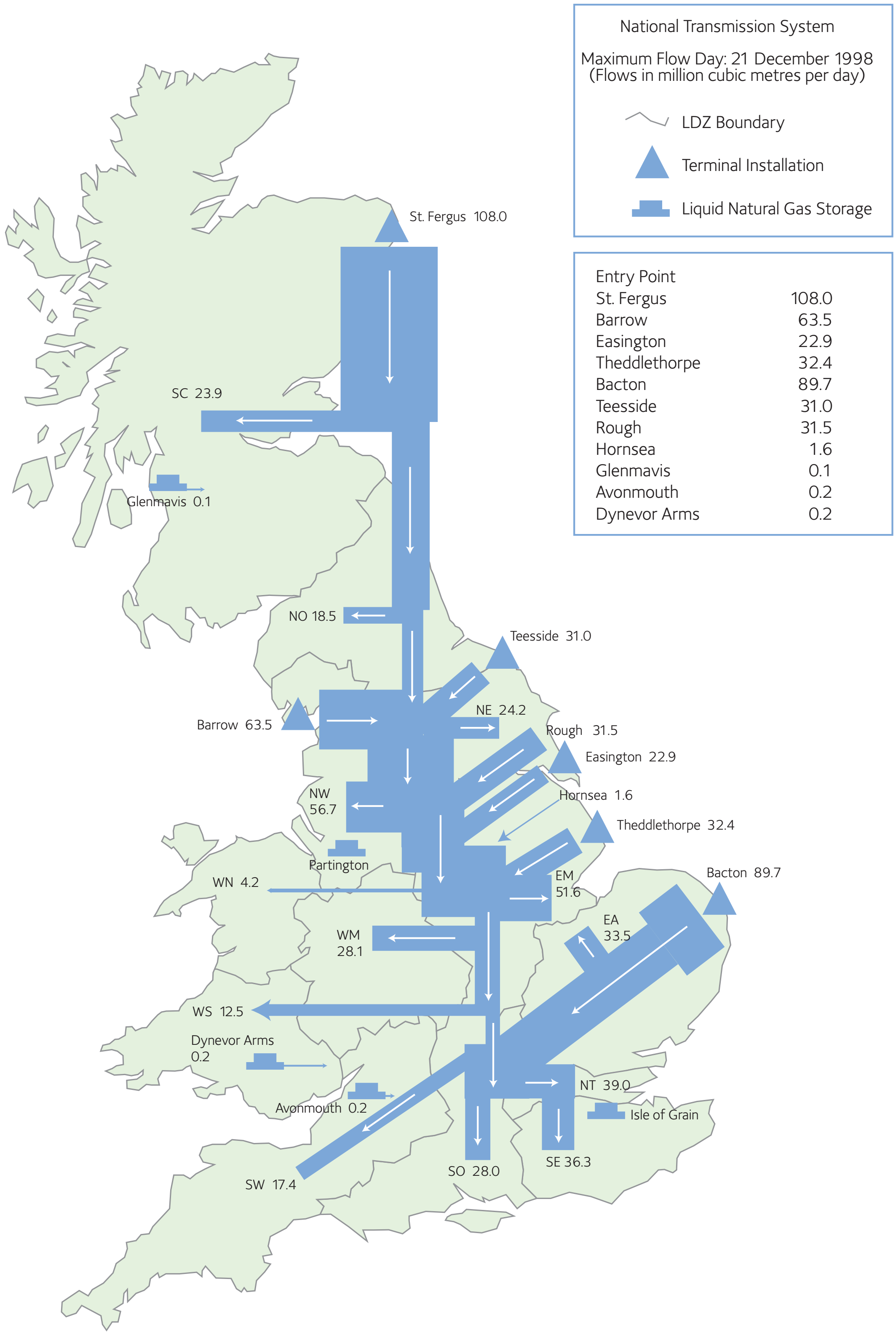
Any difference between total demand and total supply is due to changes in linepack.

Figures A1.3.3a and A1.3.3b show the directions of flow (not the actual NTS pipelines) and total NTS flows on the days of maximum and minimum demand during 1998. The NTS flows include exit flows to NTS loads, changes in NTS linepack, own use gas and injection into storage.

The diagrams show the change in the proportions of total demand that are met by the different terminals between winter and summer, as well as indicating the scale of the difference between maximum and minimum flows. The most noticeable feature is the change in the supply profile of St Fergus; on the maximum flow day St Fergus supplied 29% of total demand, whereas on the minimum flow day it supplied 47% of the reduced total demand, due to increased transportation distances. This can lead to disproportionately higher operating costs during the summer months.

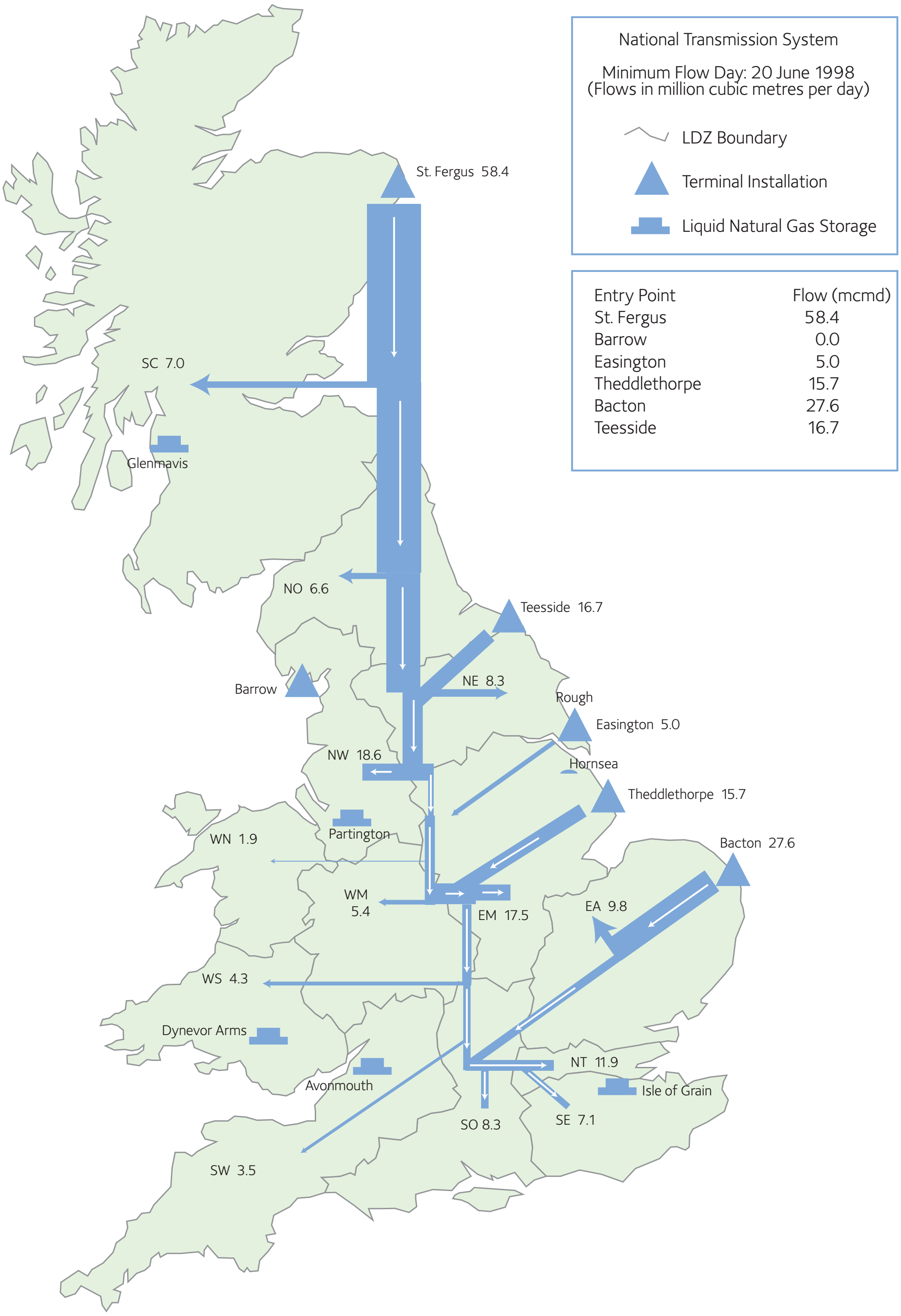
Further information on system utilisation follows. Information on interruption, capacity constraints and entry capacity are all in separate chapters.

Figure A1.3.3a Maximum Flow Day (21 December)



Entry Point	
St. Fergus	108.0
Barrow	63.5
Easington	22.9
Theddlethorpe	32.4
Bacton	89.7
Teesside	31.0
Rough	31.5
Hornsea	1.6
Glenmavis	0.1
Avonmouth	0.2
Dynevor Arms	0.2

Figure A1.3.3b Minimum Flow Day (20 June 1998)



Entry Point	Flow (mcmd)
St. Fergus	58.4
Barrow	0.0
Easington	5.0
Theddlethorpe	15.7
Bacton	27.6
Teesside	16.7

A1.4 System Utilisation

Transco has obligations under the Gas Act to operate an efficient and economic system. The network is designed to deliver a 1 in 20 peak day demand. The NTS and LTS are both designed to transport a 1 in 20 peak demand and under such circumstances are fully utilised. However the weather conditions associated with this demand level occur very rarely and under milder conditions the transportation system is under utilised. One method of measuring the level of system utilisation is using a load factor, this is defined as:

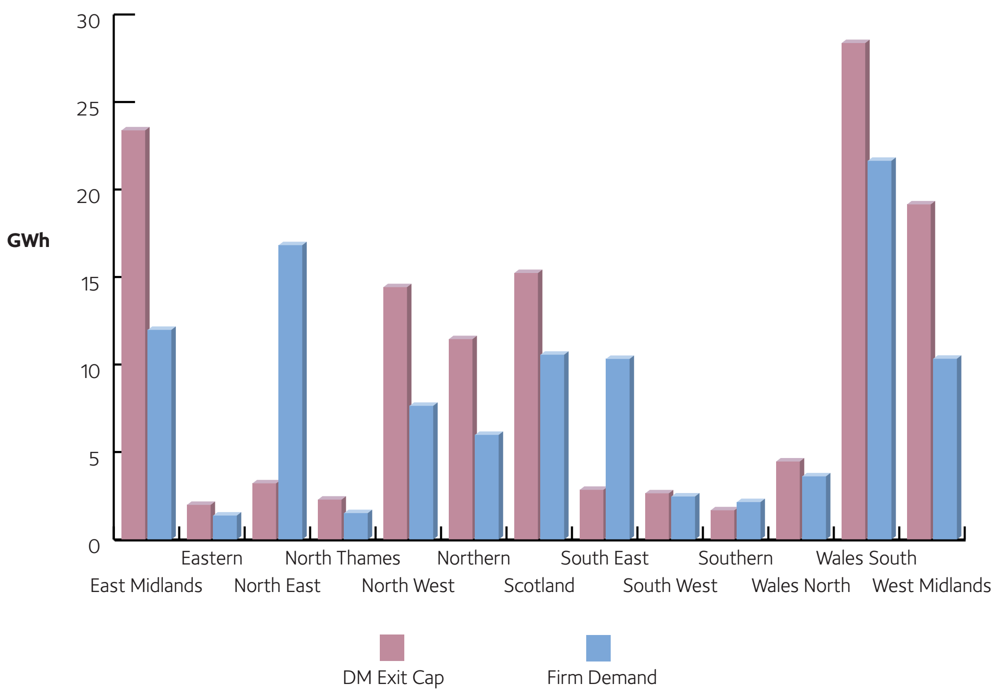
$$\text{Load factor} = \frac{\text{Annual Demand}}{\text{Peak Day Demand x 365}}$$

The operational load factor for 1998 was 45.5% , based on actual annual demand and forecast 1998/9 peak. For comparison, if weather conditions had been closer to seasonal normal the load factor would have been 47.3% . The load factor is expected to increase in the future as the European Interconnector and more gas fired power generation become operational. However, domestic consumers with a load factor of approximately 36% continue to account for much of the peak and, as such, it is unlikely that the total load factor will increase much more. Some of Transco's market development initiatives are aimed at increasing summer utilisation by promoting gas fired air conditioning and natural gas vehicles, thus increasing the load factor.

Another measure of utilisation of Transco's system is a comparison of booked exit capacity against usage. Entry capacity bookings are no longer a measure of utilisation; for the winter 1998/99, Network Code Modification 273 Additional Entry Capacity Services was developed which provided a mechanism for shippers to obtain entry capacity on a daily basis via an auction process before the gas flow day.

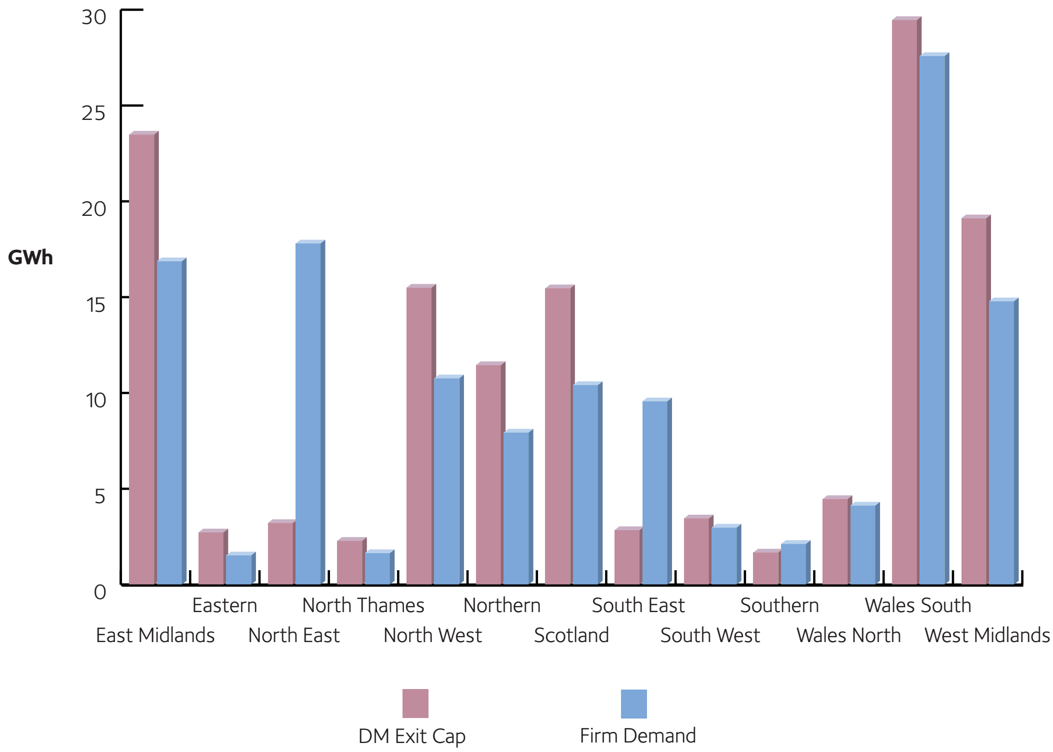
Figure A1.4a compares shippers bookings of LDZ daily metered (DM) exit capacity to firm DM demand on the 21st December 1998.

Figure A1.4a Comparison of DM Exit Capacity bookings vs DM Demand On 21st December 1998



The correlation between exit capacity and demand on the 21st December 1998 was not particularly good with firm demand typically ranging from 50% to 70% of the DM exit capacity. However some extremes were seen; in the North East and South East LDZs firm demand was substantially greater than DM exit capacity, an effect which was also seen on the 16th December 1997. In October 1998 Network Code Modification 0255 came into effect revising the rules for booking DM Exit Capacity, ending the use of the so called "flying wedge" where capacity was booked for a year ahead. This has not changed the overall pattern of exit capacity versus firm demand seen across the LDZs on peak demand days.
Figure A1.4b compares shippers bookings of LDZ DM exit capacity to firm DM demand on the 9th February 1999.

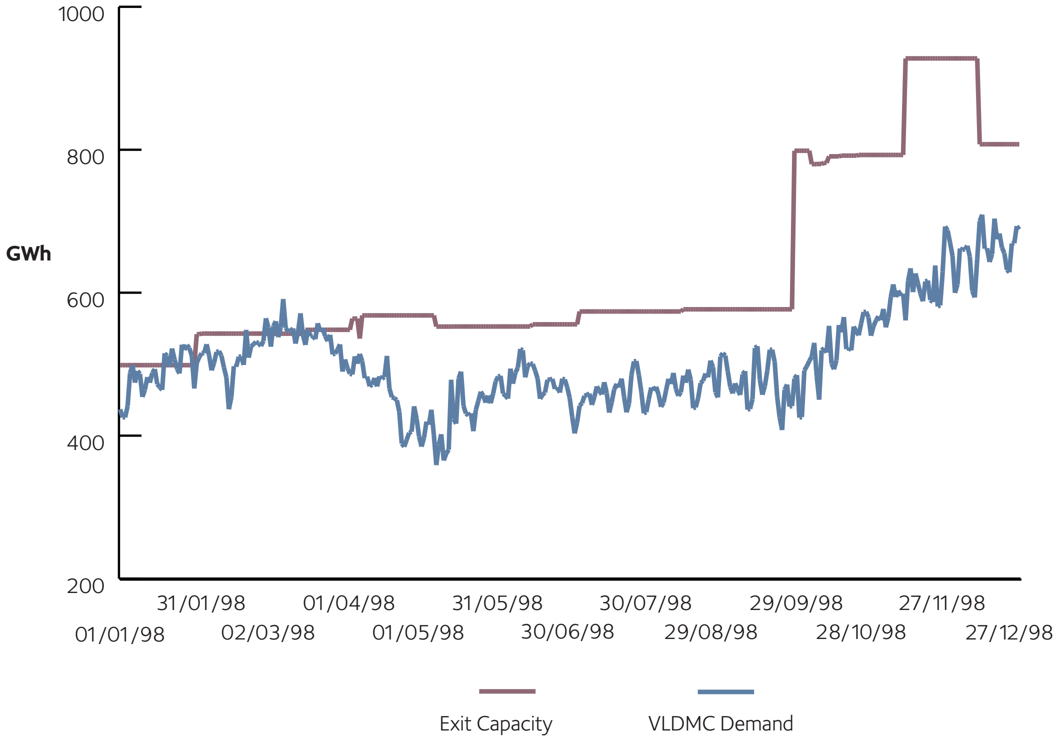
Figure A1.4b DM Exit Capacity Usage For LDZs On 9th February 1999



As with the 21st December 1998 the correlation between exit capacity and demand for the 9th February 1999 was not particularly good, with firm demand typically being about 70% of the DM exit capacity. Again, some extremes were seen; in the North East and South East LDZs firm demand was substantially greater than DM exit capacity, an effect which was also seen on the 16th December 1997 and the 21st December 1998.

Figure A1.4c illustrates exit capacity bookings for Very Large Daily Metered Consumers (VLDMCs) e.g. power stations connected to the NTS. Both capacity (VLDMC) and demand (VLDMC) are relatively constant over the first nine months of the year; however at the beginning of October capacity increased by about 45% and a further increase of about 20% occurred in mid November. Demand increased continuously throughout the last quarter. In contrast to 1997, where booked capacity was two to three times greater than demand, there was good alignment in 1998 between booked capacity and demand. Demand levels in 1998 were approximately twice as high as those seen in 1997 and this is attributed to load growth for the power stations.

Figure A1.4c VLDMC Exit Capacity Usage For 1998



Appendix 2

Network Code Operations

The Energy Balancing Regime operated successfully for the 3rd successive winter. The Network Code Modifications and changes to Operational Guidelines made for the winter 1998/99 provided shippers with a greater opportunity to balance their portfolios and helped to stimulate the gas trading market. There were however problems in terms of constraints and local supply deficits due to changes in gas sourcing patterns. The key features of the operation of the regime in Winter 1998/99 are as follows:

- Transco was able to maintain a physical balance on the system
- The flexibility mechanism provided the majority of system balancing requirements
- improvement in shipper balancing
- Reduction of the buy/sell spread
- Reduced basic balancing costs (comparable to last winter underlying costs)
- New daily capacity services with a high level of take up
- Increase in gas trading levels

but there were concerns:

- The winter was again exceptionally mild and the regime has still not been fully tested
- There were constraints at St. Fergus
- There were local deficits at Bacton
- There was still information flow uncertainty on days with significant price differentials
- There were still costs within the regime driven by the buy/sell spread
- Around 75% of the winter costs came from October 1998

A more detailed analysis of the winter operations is available in the booklet "Transco - Winter Operations Review 1999". Copies are available from:

Commercial Manager
System Operation
Transco
Brick Kiln Street
Hinckley
Leicestershire
LE10 0NA

Tel. 01455 892109
Fax. 01455 236779

Appendix 3

The Transportation System

A3.1 Key Statistics, 1998

A3.1.1 Length of mains in use

- Distribution System (up to 7 bar): 256,200 km
- Local Transmission System: 12,000 km
- National Transmission System: 6,300 km

A3.1.2 Mains & services laid

- New mains laid: 1,446 km
- Replacement mains laid: 1,883 km
- New services laid: 230,000
- Replacement services laid: 168,000

A3.1.3 Terminals

- St. Fergus
- Theddlethorpe
- Easington
- Bacton
- Barrow (owned and operated by others)
- Teesside (not manned - monitoring station)
- Burton Point (owned and operated by others)

A3.1.4 Compression

- Number of sites: 23
- Total installed power: 1,008 MW

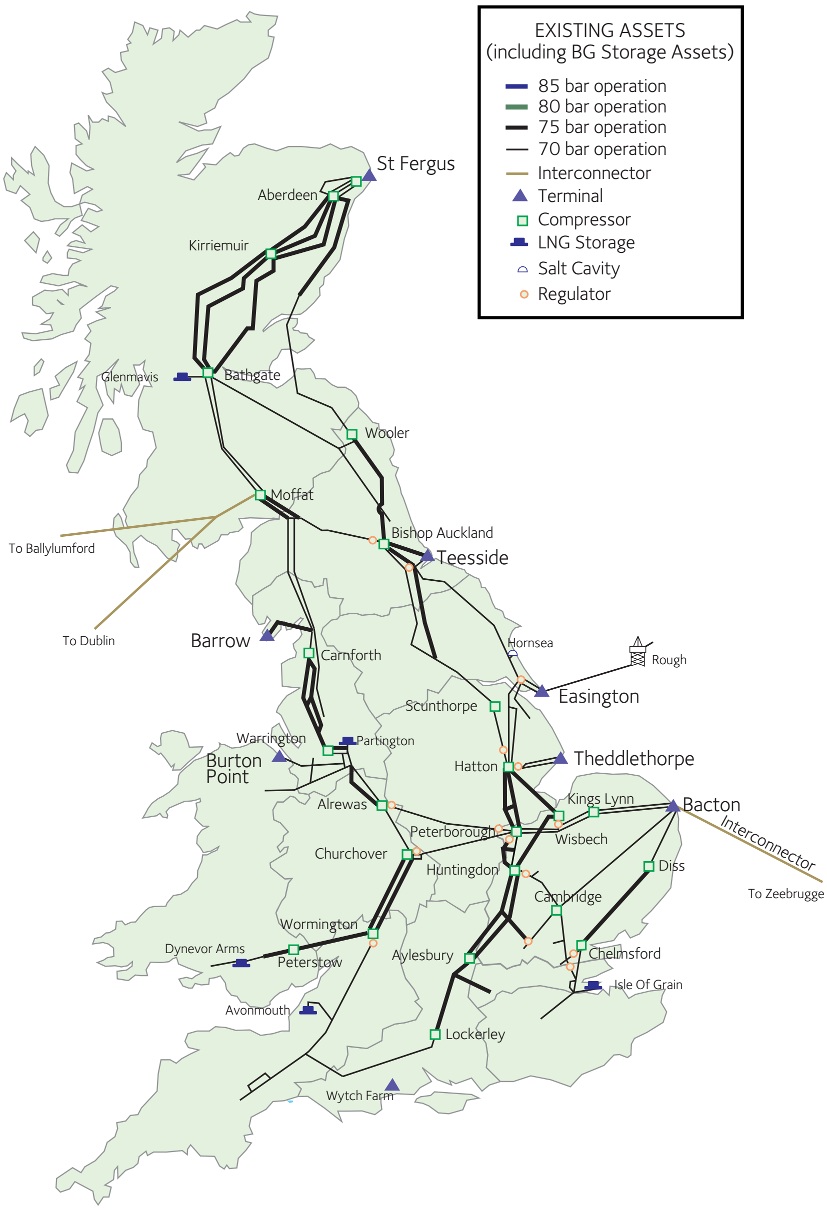
A3.1.5 Gas Sendout

- Average actual daily sendout in 1998 calendar year: 225.4 mcm
- Highest daily sendout in 1998 : 375 mcm on 21 December.

Gas is input at high pressure into National Transmission System and with the aid of compressors is transported to major consumers and Local Distribution Zones (LDZs). Subsequently gas passes through tiers of the distribution system at reducing pressure levels to consumers' sites.

A3.2 National Transmission System

The National Transmission System (NTS) consists of gas reception terminals; compressor stations; a high-pressure pipeline system; offtakes to the 13 LDZs and large industrial and power station loads. The following map shows the main elements of the NTS:



A3.2.1 Gas Reception Terminals

The gas reception terminals receive gas from approximately 100 gas and oil fields in production on the UK Continental Shelf. The producer carries out the processing required to meet the NTS quality specification, whilst the functions carried out by the Transco reception terminal include:

- quality monitoring
- filtering
- mixing
- control of gas flows into different pipelines leaving the Transco terminal
- reception of gas metering signals from the producer
- providing emergency shutoff facilities
- compressing gas (St Fergus only)

Transco operates four terminals: St Fergus, Easington, Theddlethorpe, and Bacton. Teesside is not manned and is primarily used as a monitoring site. Barrow and Burton Point are owned and operated by others. There are also a number of delivery points from onshore gas fields, including Wytch Farm in Dorset that feeds gas directly into the Local Transmission System and Hatfield Moor in South Yorkshire which feeds the Distribution System.

A3.2.3 Compressor Stations

There are 23 compressor station sites, consisting of compressor units driven by gas powered Rolls Royce, General Electric and Orenda jet engines or electrically driven Mopico units. Their function is to boost pressure to increase transmission capacity and move gas through the pipeline network.

During 1998 compressors used 337.5 mcm of gas as fuel. One of Transco's major operational objectives is to minimise the use and hence cost of compression. However, use is increasing as additional volumes of gas are landed at St Fergus.

A3.2.4 National Transmission System Pipeline

The NTS receives gas from reception terminals and transmits it to 13 LDZs and to a number of power stations and other large consumers. Gas also enters the NTS from salt cavity storage and LNG sites at various locations.

The system consists of 6,300 km of steel pipelines rated to operate to pressures up to 85 bar. The pipelines are between 150 and 1,220 mm in diameter and are of relatively modern construction, the majority having been constructed in the 1970s and early 1980s. Transco ensures the integrity of the system by regular maintenance, aerial surveys and on-line inspection to detect any deterioration of the pipelines or external damage. Transco operates, controls and manages the system from the National Control Centre at Hinckley.

At various points on the NTS there are pipeline junctions called Above Ground Installations, consisting of pipework, valves and pigging facilities (which facilitate maintenance of the system).

A3.2.5 Offtakes

Offtakes are installations that transfer gas from the NTS to the LDZs, Storage Installations, Large Industrial Gas Consumers and Interconnectors in a controlled manner. These installations are categorised below:

No. of Installations	System Supplied
118	The Local Distribution Zones
48	Directly Fed Industrial Consumers
1	Salt Cavity Storage Sites
5	Liquefied Natural Gas Sites
1	Gas Field Storage Sites
2	Interconnectors
175	Total

These Offtake installations include some or all of the following components depending on the particular requirements of the system/consumer being supplied:

Remotely Operable Valves
Gas Filtering Facilities
Gas Quality Measurement
Volumetric Flow Measurement
Gas Pre-heating Equipment
Pressure or Flow Control Regulator Streams
Over Pressure Protection Systems
Gas Odorising Plant
Telemetry and Remote Control

A3.3 Local Transmission Systems

The Local Transmission System (LTS) transports gas from NTS offtakes towards and between urban areas, in addition a number of large industrial gas users and power stations are supplied directly.

Gas from the NTS is fed into the LTS steel pipeline network at pressures in the range 70 barg to 38 barg. The LTS consists of 12,000 km of pipelines, which are of relatively recent construction, most having been laid since 1960 when gas began to be produced from distillates.

There are approximately 2,400 Pressure Reduction Stations on the LTS. These installations reduce the pressure of gas from the transmission system to supply the Distribution System.

A3.4 Distribution System

The Distribution System consists of three pressure tiers:

Intermediate pressure, operating between 7 bar and 2 bar

Medium pressure, operating between 2 bar and 75 mbar; and

Low pressure, operating below 75 mbar.

A3.4.1 Intermediate and Medium Pressure Distribution Systems

The intermediate-pressure systems comprise some 5000 km of (mostly) steel mains. In the past few years, polyethylene has been developed to the extent that it is now suitable for operation at pressures up to 7 bar. Intermediate-pressure mains take over the role of bulk transmission from the LTS, carrying gas to smaller towns and villages.

There are about 30,000 km of medium-pressure mains of which about 50% is polyethylene. These mains carry gas to centres of population for low pressure distribution.

There are 14,000 Pressure Reducing Stations on the Intermediate and Medium Pressure Distribution Systems; these installations also known as district governors, generally supply gas into the Low Pressure Distribution System. There are a further 11,500 governor stations that supply gas directly to non-domestic gas users.

A3.4.2 Low Pressure Distribution System

Low pressure mains constitute the greatest length of the pipeline system, with a total of about 221,000 km in use. The low-pressure network in any area is likely to be a complex structure and it is from these mains that the vast majority (98 per cent) of service connections are taken.

Just over 41% per cent of low-pressure mains are cast iron. However, Transco has used polyethylene for distribution mains since 1969 and about 45% of the low-pressure mains population is now polyethylene. Virtually all new low-pressure mains are constructed of polyethylene.

Transco uses electronic control of the low pressure networks to optimise capacity and minimise leakage. This technology is under development and Transco plans for wider applications at the earliest opportunity.

The final part of the supply system, connecting the distribution main to the customers meter, is referred to as the service. Until the advent of polyethylene, most services were laid in steel. As a result of the extensive replacement programme, over 60 % are now polyethylene. Replacement has also removed a large proportion of the older and small diameter mains, either because of condition or for safety reasons.

The Local Transmission and Distribution systems comprise the largest element of the Transco asset base. The maintenance and safe and efficient operation of these systems are fundamental to the success of the organisation.

A3.5 Diurnal Storage

Demand for gas varies through the day, following consumers' patterns of usage. Demand at night is much lower than during the day, however gas is supplied from offshore producers at a constant rate. It is cheaper (and more secure) to provide diurnal storage within the system than to meet instantaneous demand from the production wells. Therefore, the gas supply system is designed to provide diurnal storage to meet the variations in demand during a 24-hour period.

In principle, the NTS supplies gas into the Local Distribution Zones at a constant rate, and the diurnal swing of demand is absorbed by diurnal storage in the LDZs. However, some LDZs supplement their diurnal storage from the NTS. The different types of diurnal storage are described below.

A3.5.1 Low-pressure Gasholders

Low-pressure gasholders provide approximately 43% of storage available within the LDZ. Some 24 mcm is contained in 460 operational holders, ranging in capacity from approx. 0.014 mcm to 0.28 mcm.

No new holders have been constructed since 1975, and there is a policy to decommission holders where the cost of maintenance makes their continued operations uneconomical and the storage can be made available from elsewhere.

A3.5.2 High-pressure storage

A few high-pressure storage installations provide about 3 mcm capacity. The installations are of two types: buried pipe arrays and storage vessels (bullets).

A3.5.3 Line-pack and storage mains

The LTS is designed, where appropriate, to provide diurnal storage by pressure cycling of the pipelines which also provide the transmission capacity. LDZs generate some 26 mcm of storage by this means. Line-pack is generally the least-cost method of providing diurnal storage and has enabled the decommissioning of some gasholders to be considered.

A3.5.4 Salt cavity storage

Two salt cavity installations in the North and North West of England provide 3.2 mcm of diurnal storage. These cavities are at relatively shallow depths and operate at much lower pressures than those at Hornsea. Pressure cycling (withdrawal or injection) is on a daily, rather than seasonal, basis.

A3.5.5 Diurnal storage from the NTS

The NTS has no storage facilities dedicated to providing diurnal storage. The pipeline system can however provide some line-pack storage by increasing the pressure above that required purely for transmission. Limited pressure cycling of NTS pipelines in this way allows the generation of significant quantities of storage for diurnal use.

Diurnal demand variations are met in the first instance by use of storage available in the LDZ and subsequently, if required, by linepack in the NTS.

Transco plans to provide the LDZs with a total of about 9.5 mcm of diurnal storage support from the NTS in 1999/2000.

Appendix 4

Forecast Supply & Demand

The supply and demand forecasts presented in this Appendix have been updated from those published in the 1999 Base Plan Assumptions relying on information received from shippers and producers during the Base Plan consultation process. The information is summarised in Appendix 5; there was a continued high level of supply side data received by Transco and an improvement in the quality of data concerning power generation; however almost no information was supplied regarding smaller loads.

A4.1 The Energy Market

Total UK primary energy demand has remained static over the last 25 years, growing at a rate of less than 0.5% per annum, and therefore the main change has been one of fuel substitution and sectoral change. The gas share of UK primary energy consumption (before conversion and distribution losses) and consumption to final users (non transport energy) has increased significantly over this period from 17% in 1975 to 38% in 1998.

A major event affecting all sectors of the UK energy market over the last few years has been the development of a gas bubble - an excess of supply over demand and the opening up of markets to strong competitive pressures- which has resulted in a reduction in spot and contract prices to levels below what had previously been anticipated. The latest supply forecasts indicate that these conditions could soon change.

A4.2 Forecast Demand

Transco has developed a series of models to enable the production of annual and peak demand forecasts, along with its Network Code demand modelling obligations. The methodology adopted with in these models is briefly described below.

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 Local Distribution Zones (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, CWVs and long run historical values of these have already been disseminated to all network users as part of the discussions that led to the formulation of the Network Code.

Definitions of CWVs and current parameters are provided in the Transco document "NDM Profiling and Capacity Estimation Algorithms for 1999/00". 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, currently using a 65 year historical weather database.

Annual Demand Modelling:

Forecasts of the growth in annual demand forecasts are based on consideration of a combination of : historical trends information, local demand intelligence, contracts with large end users, general economic factors, comparative fuel prices, prospective conservation and environmental measures, potential new growth areas and possible taxation effects, supplemented by specialist consultancy work.

Peak Demand Modelling:

Once the annual demand forecasts and daily demand models have been developed, Transco applies a simulation methodology, using historical weather data for each LDZ, to determine the peak day and severe winter demand estimates. The peak day demands for the NTS supplied loads, e.g. power stations, are based on the contractual arrangements between Transco and its customers.

Assumptions:

Transco's economic and fuel price assumptions are based on forecasts obtained from the following independent organisations; Business Strategies Ltd. for the economic and WEFA for the fuel prices. The assumptions are as follows;

- economic growth is forecast to slow initially before returning to the historical rate of around 2.5% per annum
- initially a `two speed' economy with some industries, mainly manufacturing, and some regions, mainly in the north, slowing while the private services sector and southern regions continue to expand
- inflation reducing to an average of around 2.5% per annum
- consumer spending returning to around 2.5% pa following the end of building society windfall gains
- no material change in real crude oil prices relative to gas prices over the medium term
- competitive position of gas in comparison with alternative fuels particularly within the industrial sectors, is only partly eroded over the forecast period
- no allowances made for the introduction of the Climate Change Levy included in 'baseline' forecast

A4.2.1 Annual Demand

The amount of gas transported on which Transco can earn income is referred to as Formula Volume, whereas the total gas transported through the system is referred to as Throughput, the difference being termed Shrinkage. Shrinkage covers gas used for transportation purposes (notably compressor usage, system leakage, unidentified theft and lost energy caused by the difference between the actual calorific value of the gas and that used for billing purposes).

The following tables show the forecast level of annual demand by calendar year for the period 1998 to 2008. The information provides an update from that presented in the 1999 Base Plan Assumptions, using 1998 actual demands, load enquiry information and responses from the Base Plan consultation process. Table A4.2.1 shows forecast demand split between LDZ and NTS loads (used for system design purposes).

Table A4.2.1 Annual Demand: LDZ & NTS Split (TWh)

	1998	1999	2000	2001	2002	2003	2008
0-73 MWh	380	383	389	391	395	399	415
>73 MWh Firm	208	219	232	241	252	257	275
Interruptible	120	125	132	137	141	141	150
LDZ Total	**707**	**727**	**753**	**769**	**787**	**797**	**841**
NTS Power Gen	137	164	177	199	211	225	255
NTS Industrial	29	28	35	40	42	44	44
Exports	34	90	87	85	88	86	79
NTS Total	**199**	**281**	**299**	**324**	**342**	**355**	**378**
Formula Volumes	**906**	**1009**	**1051**	**1093**	**1129**	**1152**	**1219**
Shrinkage	12	13	14	15	15	16	19
System Throughput	**918**	**1022**	**1066**	**1107**	**1144**	**1168**	**1238**

Note:

Volumes are based on 10 year average weather conditions including 1998.

Exports includes both Interconnectors to Ireland and Europe.

NTS Power Generation includes all stations connected to the NTS and 'centrally dispatched' by National Grid, but excludes consumption by stations via their own dedicated pipelines and those embedded within Transco's LDZs.

Actual demand includes a reallocation of demand between 0-73 MWh and > 73 MWh Firm and Interruptible load bands due to reconciliation .

A4.2.2 LDZ Demand Forecasts

Historically LDZ demand growth has been driven by the competitive price of gas in relation to other fuels. For example, fuel substitution became popular in the industrial and commercial sectors with companies switching to gas in order to cut down on the additional storage costs associated with fuels such as fuel oil. Coupled with this, LDZ demand growth was further enhanced through the implementation of various development schemes by the Government which sought to encourage new industry and business into economically deprived areas, such as Wales.

In more recent times, a favourable economic climate and highly competitive prices have supported strong growth, particularly in the business sector over the last two years. Although prices have started to rise, probably as shippers endeavour to improve margins, the price differential is large enough for gas to remain competitive. In addition there has been a drive towards energy efficiency supported by Government and trade association initiatives which have promoted in particular the use of CHP. This has put the gas industry in a strong position to exploit this growth market.

Growth in the domestic sector has fallen behind historical rates following the curtailment of mains extension projects. Whilst fuel substitution played an important part in growing the business sector it is unlikely to have a similar effect in the domestic sector following the liberalisation and convergence of the gas and electricity markets and the formation of “energy” companies which offer dual fuel schemes to their customers.

Current demand forecasts have been influenced by the implementation of a change in Transco’s LDZ reinforcement towards so-called shallow. In this way, subject to an economic test, new loads may no longer incur charges for reinforcement work within the LDZ.

The overall forecast is that LDZ demand will increase by 90 TWh over the next 5 years, an increase of 13%.

A4.2.3 NTS Demand Forecasts

Historically NTS demand (i.e. loads with their own connection to the NTS) was limited to a small number of large industrial and chemical works. However, in more recent times, the main driver behind NTS demand growth has been the emergence of the power generation market.

There are currently 24 gas fired stations connected to Transco’s NTS that are centrally despatched by the National Grid which burnt a total of 137 TWh of gas in 1998 (15% of Transco’s throughput). The forecasts assume an additional 14 power stations (10 of which have Section 36 approval, some have Section 14 approval outstanding). 13 of these stations are currently planned for commissioning between 1998 and 2005.

Power station consumption profiles and load factors are based on an assessment of the share of total power generation market met by gas. However, there is some uncertainty surrounding the power station loads and several issues need to be considered which could limit the impact of these new stations:

- prolonged Stricter Consent Policy and a strict interpretation of the Government’s new energy policy
- increased competition for the gas share of the generating market
- higher beach prices for gas

These factors could result in the postponement of new stations and lower load factors as more stations become mid merit; however, over the medium term the new energy policy will have only a limited impact. Transco’s forecast of gas’ proportion of the generation market in England and Wales is set to increase from 33% in 1998 to around 50% by 2005, mainly at the expense of coal.

In 1998 there were five gas fired power stations with their own pipelines delivering beach gas directly to the power station, thus by-passing Transco’s system. Last year these power stations (directs) accounted for around 35% of total gas power generation demand. In future the directly supplied share of the overall market is forecast to fall as nearly all new stations are expected to be connected to the NTS. A risk to Transco is the possibility that existing stations may decide to build their own pipelines from the beach which by-pass Transco’s system, resulting in a loss of revenue and low system utilisation. However for the purposes of these forecasts, it has been assumed that existing stations will continue to take gas from Transco’s system.

A4.2.4 The Interconnectors

Gas exports to Northern and Southern Ireland are expected to grow significantly over the forecast period as industrial and power station loads switch to gas and Ireland’s indigenous supply from the Kinsale Head gas field continues to deplete. The potential for growth in Southern Ireland is significant with gas’ share of primary energy consumption in 1996 being only 20% compared to the UK’s 36%. There are however, uncertainties regarding future exports to Ireland through possible development of new Irish supplies, notably the

Corrib field. Such developments are possible from as early as 2002/3 and would displace exports from Great Britain.

The European Interconnector continues to generate appreciable supply/demand uncertainties. Latest annual demand forecasts assume exports to the continent throughout the 10 year planning period and a by-pass of the NTS from October 2000 with commencement of gas through the SEAL pipeline. Initial by-pass is assumed at 53% of annual volumes increasing to 70%. As Transco has committed to providing peak capacity for the Interconnector consequent to the ARCA process, this by-pass is not assumed to occur at peak conditions.

In spite of this, Transco forecasts that it will still need to incur the same capital costs to reinforce the system, to bring gas south from St. Fergus to replace Bacton supplies which would be diverted directly into the Interconnector.

A4.2.5 Mild Weather Correction

Since 1987 the weather has been warmer than normal resulting in an average loss of 25 TWh per annum against demand at seasonal normal conditions (seasonal normal weather is currently based on the average of the last 65 years). Consequently, Transco has incorporated a Mild Weather Correction within its annual demand forecasts that takes account of the current series of warm weather and is equivalent to increasing average temperatures by 0.2 degrees Celsius. The net effect of this correction is to reduce LDZ demand by 2% p.a. (approximately 14 TWh). This correction is supported by independent expert analysis of the likely effect of global warming and during the 1997 Price Control Review Ofgem concluded that it would be prudent to include such a correction.

With regard to peak demand conditions, independent experts find themselves unable to conclude the extent to which extremes of temperatures will be affected by global warming. The cold spell over the 1996 New Year period, particularly in Scotland, when weather conditions were considerably worse than 1 in 20, serves as a reminder that peaks are just as likely to occur as in the past. Consequently, Transco considers the prudent approach is to make no adjustment to the cold weather statistics associated with peak demands.

A4.2.6 Peak Demand

Peak demand is forecast to increase by 970 GWh/d over the five year period (from 1998/9 to 2003/4). The majority of this growth is attributable to power stations and the European Interconnector. The following table shows the peak demand forecasts.

Table A4.2.6 Forecast 1 in 20 Peak Day Firm Demand by LDZ (GWh per day)

	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2007/8
Scotland (SC)	328	339	350	357	365	373	396
Northern (NO)	253	259	264	269	274	278	289
North Western (NW)	530	541	552	558	565	572	589
North East (NE)	239	242	246	249	253	256	265
East Midlands (EM)	428	436	443	450	457	464	481
West Midlands (WM)	441	447	453	456	461	466	479
Wales North (WN)	50	53	61	63	65	67	72
Wales South (WS)	173	188	196	198	202	205	213
Eastern (EA)	344	352	363	370	377	385	407
North Thames (NT)	487	493	498	501	505	510	520
South Eastern (SE)	483	489	517	522	527	532	546
Southern (SO)	356	362	368	372	377	383	397
South Western (SW)	274	280	285	289	294	299	314
LDZ Total	**4392**	**4487**	**4601**	**4659**	**4727**	**4794**	**4975**
NTS Power Gen	495	655	691	730	776	844	902
NTS Industrial	90	111	134	145	145	145	145
Exports	402	448	471	521	536	548	596
Shrinkage	41	46	49	52	55	60	73
NTS Total	**1029**	**1261**	**1345**	**1437**	**1512**	**1597**	**1717**
System Throughput	**5421**	**5748**	**5947**	**6097**	**6240**	**6391**	**6692**

Note:

These forecasts are on a supply year basis, that is a year running from October to September.

A4.3 Forecast Supply

The preferred source of supply information continues to be from producers and shippers responding to the Base Plan questionnaire. This data is supplemented with information from commercially available sources and from shippers, producers and terminal operators during negotiations to deliver new supplies into the Transco network.

Supply forecasts for the later part of the ten year planning period are extremely difficult to develop as there is a high level of uncertainty concerning new field developments, particularly associated with timing, location, landing point and gas quality. This is reflected in the information received, where longer term demand appears to exceed supply availability. With a depressed oil price (now in recovery) the perceived supply shortfall has been exacerbated well beyond previous levels as many potential developments have been deferred, postponed or scaled back. Where a supply shortfall exists, a supply/demand match is still achieved by assuming that the market will respond with longer term supply developments. These could be imports through the Interconnector or from Norway or further UKCS developments.

Supplies from existing and planned onshore fields have not been included on an individual basis as their contribution to overall supplies is minimal. All fields have assumed production profiles and are classified into one of four supply categories:

- Production: fields in production
- Development: fields where producers have committed to develop and which have been approved for development by the DTI
- Appraisal: fields that producers are believed to be intending to develop within Transco's ten year planning period
- Additional supplies: assumed developments previously towards the end of the ten year planning period to ensure an annual supply/demand match, but now required in the medium term

In generating the supply forecast, Transco has included all Production and Development fields with their production profiles as provided by producers or commercial sources. Appraisal fields have also been included on this basis. Previously the production profiles of Appraisal fields were subject to a review to consider any uncertainty surrounding their development, however with a possible shortfall of supplies this approach has not been needed. Additional supplies have only been assumed when necessary to achieve a supply/demand match, though due to the reduced supply availability this is much earlier than previously required.

The supply forecasts presented here match the demand case discussed in section A4.2.

A4.3.1 Terminal Developments

Bacton flowrates are expected to increase significantly in 2000/1 with commencement of supplies (Elgin, Franklin and Shearwater fields) through the SEAL pipeline. Some of these supplies are assumed to by-pass Transco's network.

Easington flowrates are expected to increase in 1999/0 with commencement of deliveries from the Easington Catchment Area (ECA) from initially the Mercury and Neptune fields.

St. Fergus flowrates are expected to increase marginally through to 2000/1 or even 2001/2 and then increase significantly from October 2002 with commencement of new Norwegian imports and new supplies via the Miller pipeline.

Teesside flowrates should increase in 1999/0 to previous forecast levels with full deliveries from ETAP. A longer term increase in Teesside supplies is now assumed due to inclusion of increased additional supplies.

Theddlethorpe flowrates are expected to increase significantly in 1999/0 with full deliveries from Viking Satellites (Phoenix) and new deliveries from Ketch, Vampire and Europa.

A4.3.2 UK-Continent Interconnector

The demand forecasts include exports via the NTS to the UK-Continent Interconnector but exclude Interconnector by-pass volumes. These are now expected to coincide with commencement of deliveries through the SEAL pipeline to Bacton from 2000. In order to match supplies to NTS demand forecasts the reported annual supplies to Bacton have been reduced (unless stated) to reflect Interconnector by-pass volumes, as no Interconnector by-pass is assumed at peak for network planning purposes, full Bacton deliveries are reported at peak.

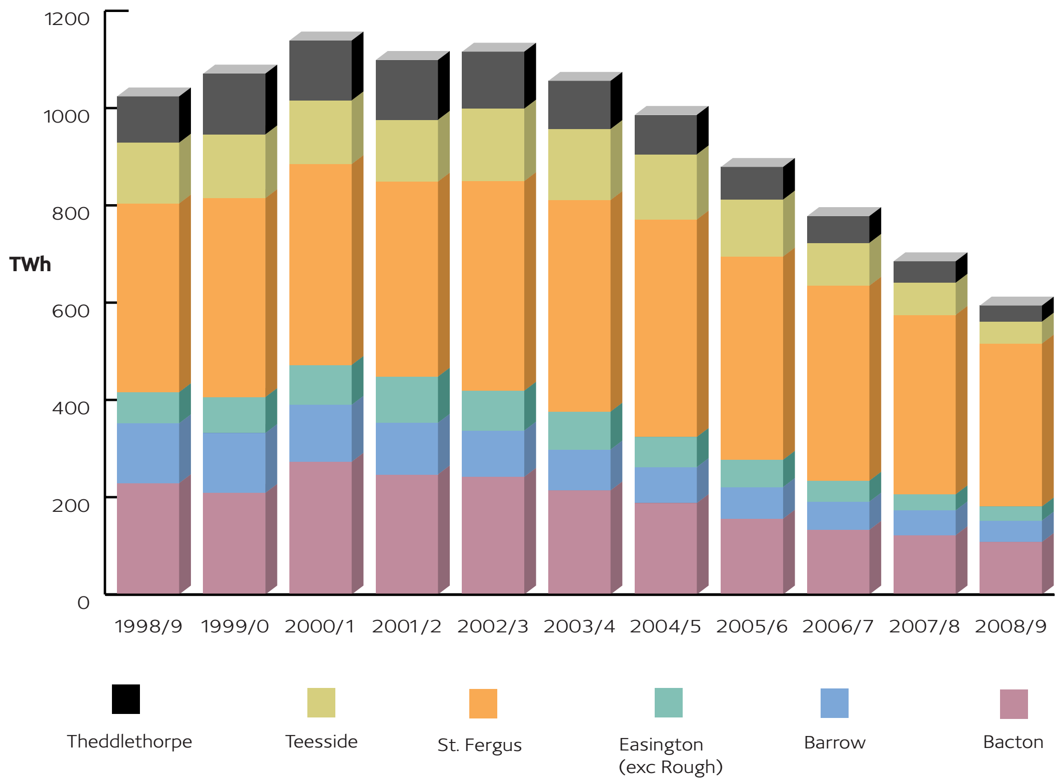
Any change to the demand forecasts for the Interconnector affects the sourcing of gas for the UK. Though this impacts on Transco's network operations and planning, it is largely outside Transco's sphere of influence and is determined by the Interconnector shippers.

A4.3.3 Annual Supplies

The annual supply forecasts presented here update the 1999 Base Plan Assumptions and are based on information provided by producers and shippers during the annual consultation process. The first graph shows the annual supply information received by Transco compared to forecast demand. The supply data includes all supplies destined for Bacton (i.e. includes potential Interconnector by-pass). The second graph shows Transco's interpretation of supply matched to annual demand.

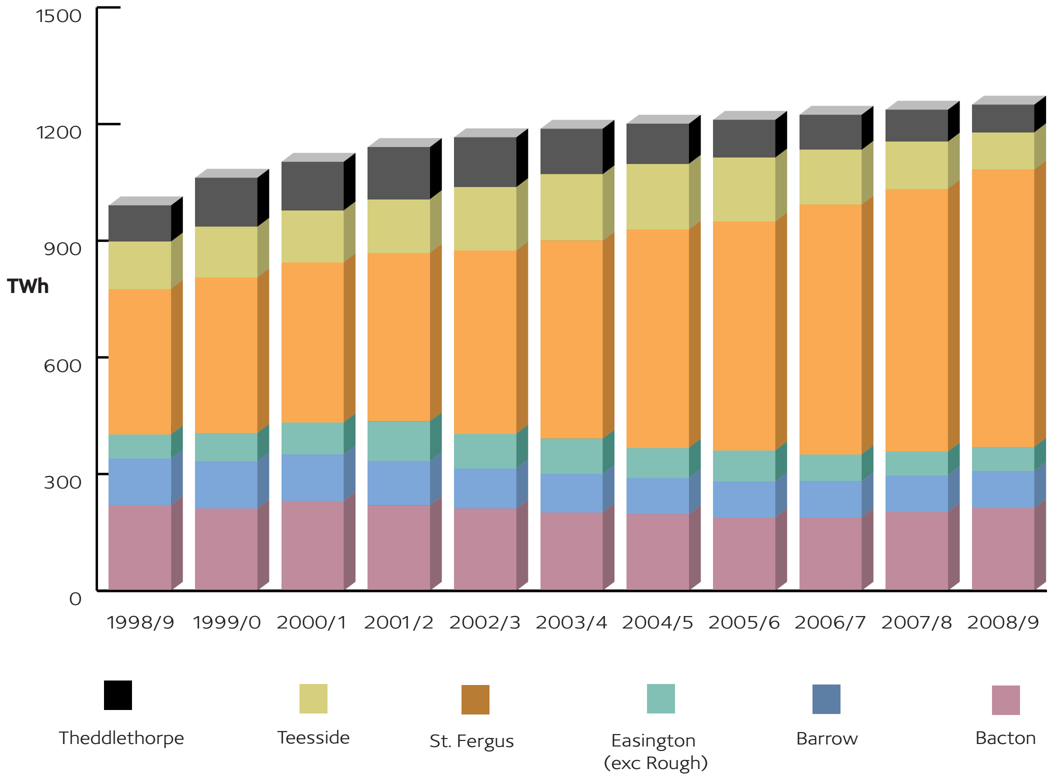
Note: All supply forecasts are presented on a supply year basis, that is a year running from October to September

Figure A4.3.3a Annual Beach Supplies by Terminal - Information Received (TWh)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Bacton	229	209	273	247	242	214	188	156	133	122	108
Barrow	123	123	117	106	95	84	74	65	58	51	44
Easington (exc Rough)	64	74	82	95	82	78	62	56	43	33	29
St. Fergus	388	409	413	401	431	435	447	418	401	369	335
Teesside	125	131	131	127	149	146	134	117	88	66	45
Theddlethorpe	95	125	123	123	117	99	81	67	55	44	33
Total	**1025**	**1071**	**1139**	**1098**	**1115**	**1055**	**986**	**879**	**779**	**685**	**595**

Figure A4.3.3b Annual Beach Supplies by Terminal - Transco Forecast (TWh)

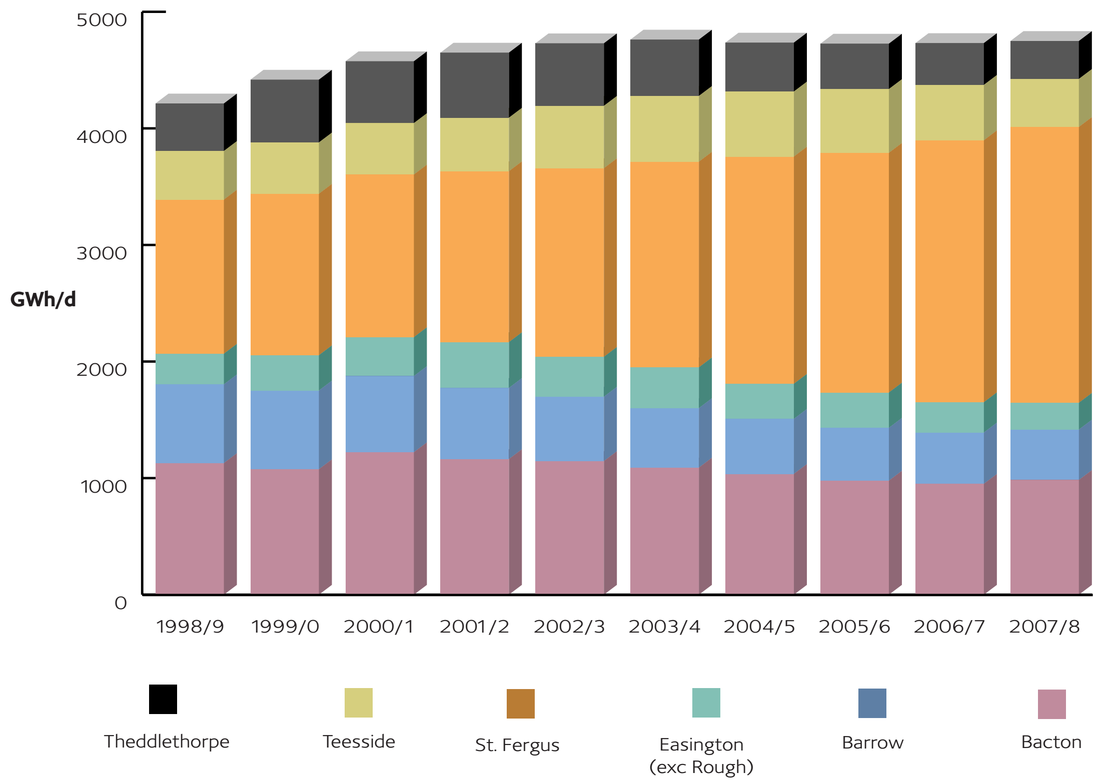


	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8	2008/9
Bacton	221	212	231	220	211	202	197	189	189	203	213
Barrow	119	120	119	114	104	98	93	92	93	94	95
Easington (exc Rough)	62	74	83	102	89	91	78	80	69	61	62
St. Fergus	375	400	412	433	471	509	561	589	642	676	713
Teesside	121	130	133	138	163	171	169	164	141	121	96
Theddlethorpe	93	126	125	134	128	117	103	97	90	82	71
Total	**991**	**1062**	**1102**	**1140**	**1167**	**1189**	**1201**	**1211**	**1224**	**1238**	**1251**

A4.3.4 Maximum Beach Supplies

The peak supply forecasts presented here also update the 1999 Base Plan Assumptions based on information received from producers and shippers. The major change from the Base Plan is a reduction of beach gas availability in the short to medium term, as low oil and gas prices combined with company mergers result in field developments being deferred or even postponed. Through to the medium term, lower peak flows are now expected at all terminals with the exception of Theddlethorpe. The longer term position is dominated by St Fergus but this is highly influenced by assumed additional supplies.

Figure A4.3.4 Maximum Beach Supplies by Terminal - Transco Forecast (Gwh per day)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
Bacton	1130	1077	1223	1164	1147	1091	1037	979	952	985
Barrow	675	675	653	610	552	510	472	453	440	432
Easington (exc Rough)	263	303	334	393	342	350	301	303	260	230
St. Fergus	1322	1385	1395	1466	1618	1764	1949	2056	2247	2366
Teesside	417	440	441	459	535	564	558	547	475	412
Theddlethorpe	407	538	530	558	536	483	419	389	358	325
Total	**4214**	**4417**	**4575**	**4650**	**4729**	**4762**	**4736**	**4726**	**4732**	**4750**

A4.4 Supply/Demand Match

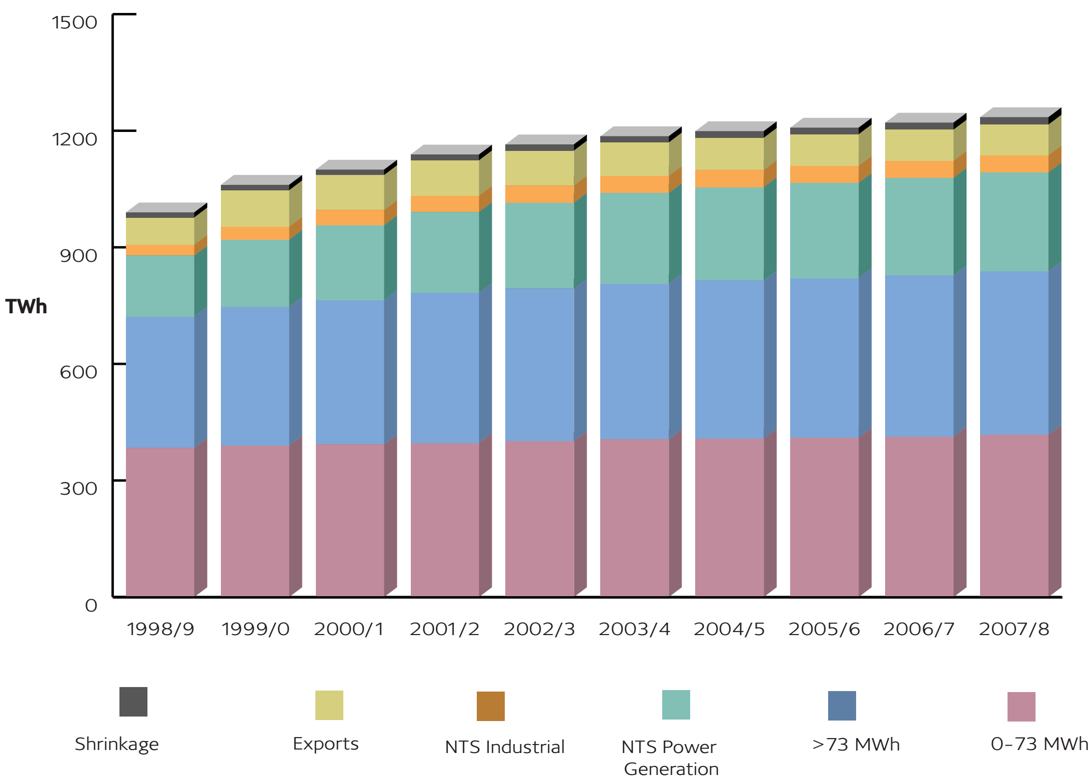
Transco produces a supply/demand match purely for capacity planning purposes, it does not offer any guarantees that gas will be available and Transco has no obligations for security of supply.

Transco matches supplies to demand on an annual basis to create an exact match. Where a supply shortfall exists additional supplies are assumed to achieve a match. Previously additional supplies were only required towards the end of the ten year planning period but due to deferrals or even postponements of new developments and a continued increase in demand forecasts a potential shortfall of supplies has now materialised post 2000/1. When required, additional supplies are sourced from all terminals on a proportionate basis. When additional supplies are necessary no aggregated annual supply surplus has been assumed, previously this was set at 5% above the annual demand.

The match presented here uses the demands presented in Appendix 4.2 and the supplies from Appendix 4.3. It forms the basis of the system development plans shown in Appendix 6.

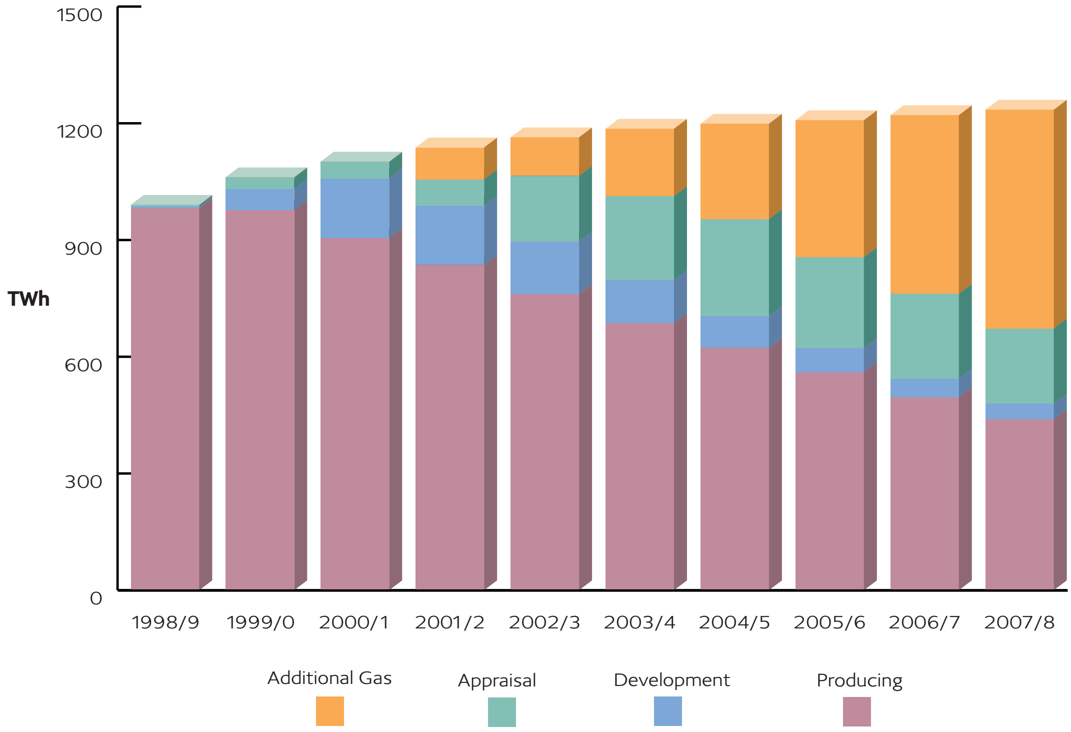
Note: The supply/demand match is presented on a supply year basis.

Figure A4.4a Summary of Annual Average Demands (TWh)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
0-73 MWh	384	390	393	397	401	406	408	410	413	418
>73 MWh	338	357	371	386	393	401	407	411	415	421
NTS Power Gen.	157	173	193	208	221	233	240	245	251	254
NTS Industrial	28	33	39	42	44	44	44	44	44	44
Exports	70	94	90	91	90	86	83	81	80	79
Shrinkage	13	14	14	15	16	16	17	17	18	19
Total	**989**	**1061**	**1101**	**1138**	**1164**	**1186**	**1198**	**1209**	**1221**	**1235**

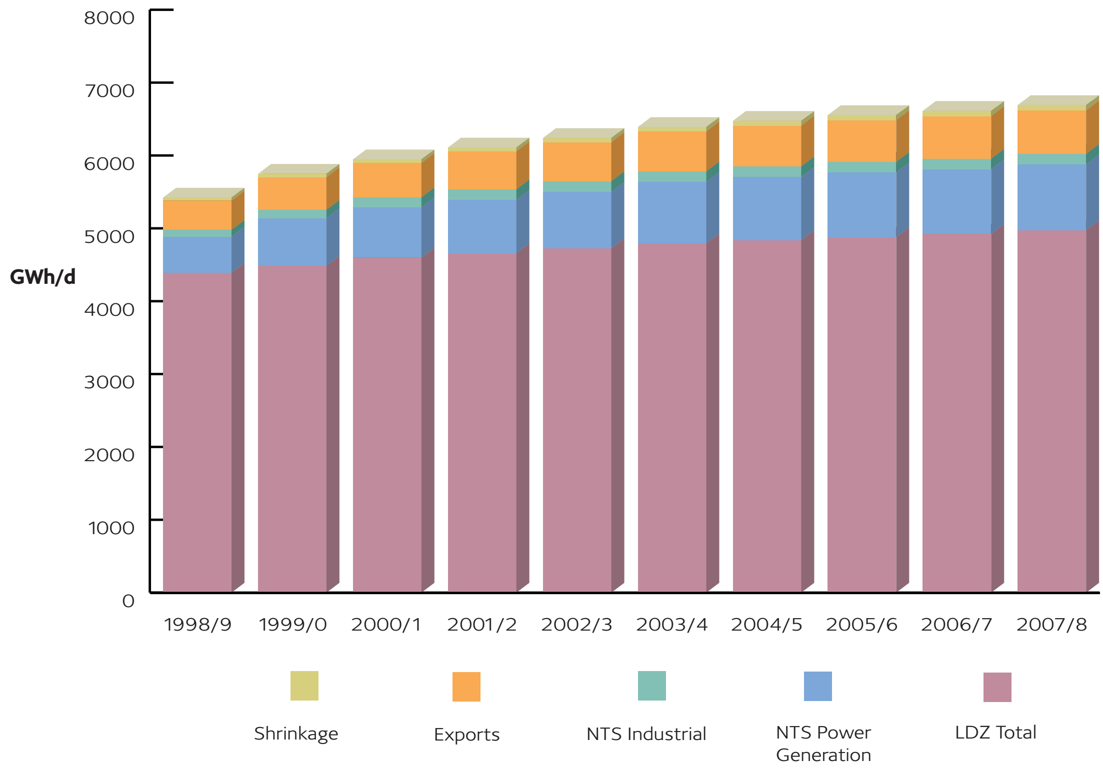
Figure A4.4b Summary of Annual Average Supplies (TWh)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
Producing	982	977	905	836	761	687	623	561	496	440
Development	4	54	153	153	135	110	82	62	48	39
Appraisal	4	30	43	67	169	216	249	233	218	194
Additional Gas	0	0	0	82	99	173	245	352	459	562
Total	**989**	**1061**	**1101**	**1138**	**1164**	**1186**	**1198**	**1209**	**1221**	**1235**

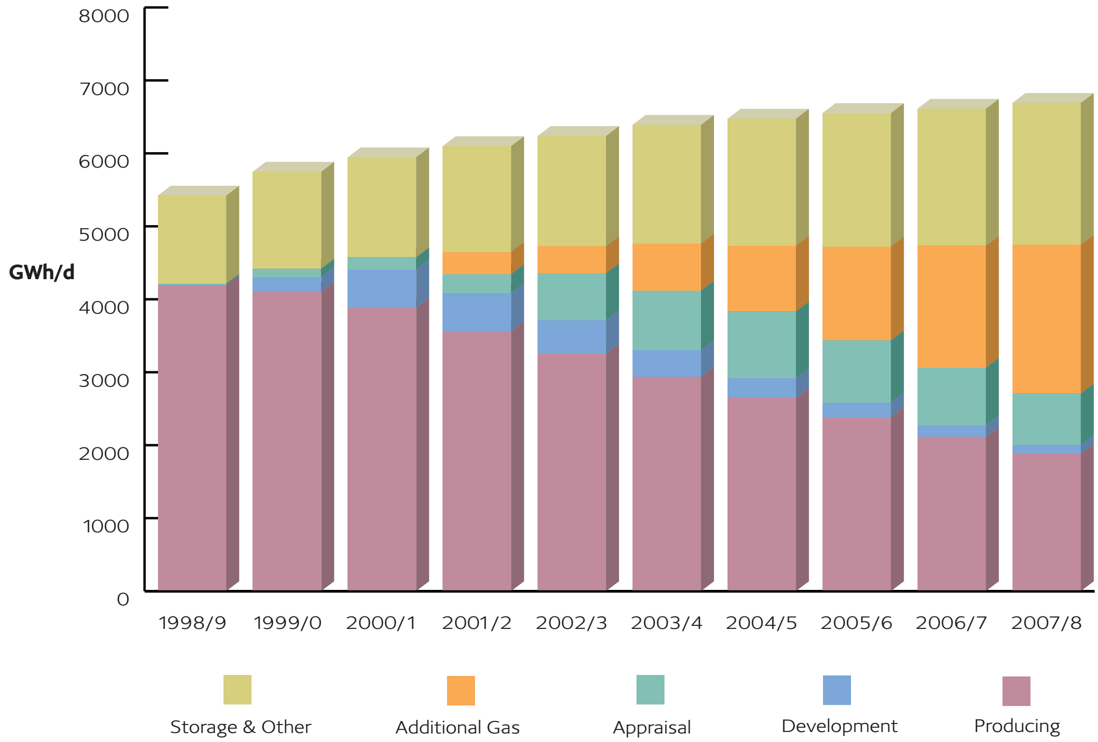
For peak demand conditions, Transco has assumed that all terminals supply at their maximum beach deliverability, with any shortfall made up through storage, interruption or other supplies. For planning purposes it is assumed (with the part exception of Rough) that interruption will be used before gas is taken out of storage. At peak-day demand full interruption is assumed.

Figure A4.4c Summary of Peak Demands (Gwh per Day)



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
LDZ Total	4392	4487	4601	4660	4728	4794	4840	4880	4924	4975
NTS Power Gen.	496	655	691	731	776	844	866	888	888	903
NTS Industrial	91	112	134	145	145	145	145	145	145	145
Exports	402	449	472	521	536	548	560	572	584	596
Shrinkage	41	46	49	52	55	60	64	69	71	73
Total	**5422**	**5749**	**5947**	**6097**	**6240**	**6391**	**6475**	**6554**	**6612**	**6692**

Figure A4.4d Summary of Peak Supplies



	1998/9	1999/0	2000/1	2001/2	2002/3	2003/4	2004/5	2005/6	2006/7	2007/8
Producing	4190	4103	3884	3564	3257	2937	2652	2387	2118	1885
Development	12	204	524	519	458	366	268	200	155	121
Appraisal	13	112	169	263	645	817	915	851	790	705
Additional Gas	0	0	0	306	369	644	902	1288	1670	2039
Storage & Other	1207	1330	1370	1448	1510	1628	1739	1827	1879	1942
Total	**5422**	**5749**	**5947**	**6097**	**6240**	**6391**	**6475**	**6554**	**6612**	**6692**

A4.5 Calorific Values

Supply and demand information in this document is expressed in energy terms (TWh hours or GWh). Information expressed in these terms is important for balancing inputs and outputs from the system, as provided for in the Network Code.

However, for system design purposes, it is necessary for Transco to express gas flows in volume terms, such as million cubic metres per day (mcm/d). Calorific values are used to convert from energy to volume units, and vice versa. The following table shows forecasts of average calorific values at the major entry points for the next five years.

Table A4.5 Forecasts of Average Terminal Calorific Values (MJ/m3)

	1999/0	2000/1	2001/2	2002/3	2003/4
Bacton	38.41	38.75	35.76	38.76	38.77
Barrow	37.61	37.62	37.62	37.62	37.62
Easington	38.39	38.35	38.38	38.38	38.38
St Fergus	40.66	40.71	40.74	40.83	41.02
Teesside	40.33	40.34	40.25	40.23	40.02
Theddlethorpe	38.71	38.77	37.96	37.84	37.78
Total	**39.33**	**39.40**	**39.31**	**39.42**	**39.53**

Appendix 5

Comments on the 1999 Base Plan Assumptions

A5.1 Introduction

Transco's Base Plan Assumptions contains forecasts of supply and demand which are then updated for inclusion in this Ten Year Statement. The Base Plan Assumptions are sent to all shippers and producers, a number of major energy consumers and relevant government departments, who are asked to comment and provide additional information.

Information received from respondents to the 1999 Base Plan Assumptions consultation document, which was published in December 1998, has seen, with one exception, a continuation of the high level of supply side data received by Transco. For the third consecutive year, Transco successfully persuaded the majority of producers to provide high quality supply information and the positive response reflects a high degree of trust and confidence in the process.

In contrast, many shippers have again not provided information in the level of detail that Transco would have expected to receive, and, especially, little or no information on demand. To improve this position Transco extended its policy of meeting to discuss the Base Plan to include a number of the major shippers, particularly those with power generation interests. In these cases Transco was able to obtain more detailed information concerning large loads.

During 1999, Transco met with 21 of the major producers and shippers and discussed the assumptions at those meetings; the feedback from these meetings has been included here for completeness.

A5.2 Demand

The base case demand assumptions were broadly considered realistic, although most participants felt unable to comment on the levels of growth in the traditional markets. The levels of power generation and the impact of the 'Stricter Consents Policy' for gas-fired power stations and exports to Ireland and Europe were commented on. A number of participants believed that the ‘Stricter Consents Policy’ for gas-fired power stations would be in place for between 2 to 3 years, and that it would lead to greater Combined Heat and Power penetration. Some participants suggested that the volumes of gas for export to Europe would be uncertain as they believed that liberalisation would be a prolonged process with little scope for gas trading in mainland Europe.

A limited amount of demand data has been provided, with very little detail of loads within the LDZs, mainly because of the respondents’ uncertainties in their analysis of customers and markets. Information about individual gas fired power generation projects was provided in some detail by a number of participants, and concerned speculative loads as well as those which were definitely going ahead. The majority of these stations had already been considered for the Base Plan forecasts. However the forecasts presented in the main text include two additional stations. One speculative station has been removed.

A5.3 Supply

As stated above, the level of response on supplies was of a similar high level as that provided the previous year during the consultation on the 1998 Base Plan Assumptions and almost all the responses from producers were at a field specific level enabling Transco to avoid duplication of supplies.

Many respondents commented upon capacity constraints at northern terminals. Transco cannot stress enough the importance of producers providing information on new developments and gas imports, as soon as possible, to allow sufficient time for planning of reinforcement.

Several respondents suggested that Advanced Reservation of Capacity Agreements (ARCA’s) for entry would be desirable for producers and shippers and would prevent capacity constraints occurring in the future.

Several producers commented upon the ongoing Review of Gas Trading Arrangements and the effect it may have on future reinforcement/investment. It should be noted that Transco’s obligation is to meet 1 in 20 year demand conditions and that this may not always be consistent with investment for entry. Transco’s supply assumptions and the use of a “rollover” methodology, which takes into account the proportion of gas in a field, were generally accepted. Updated information has again been provided about likely dates and volumes of the new Norwegian imports. This information has been used in the supply forecasts for the 1999 Ten Year Statement.

Several suggestions were made on how Transco could improve the forecasting process in the future. One producer suggested that Transco should look at bench marking the forecasts against other commercial sources. This is currently under review by Transco to establish if suitable sources are available.

Another suggestion was to include several of the main players in the European energy market into Transco’s Base Plan consultation process. Currently Transco involves Base Plan consultation with parties that have import / export interests to / from the UK.

Appendix 6

System Development

A6.1 Investment Forecast

Transco maintains and develops the capacity of its pipeline system in order to comply with obligations imposed on it as a public gas transporter, under the Gas Act and in order to be able to respond to customer requirements.

There are significant issues and factors that will impact the overall level of gross investment over the next five years to 2003. These include:

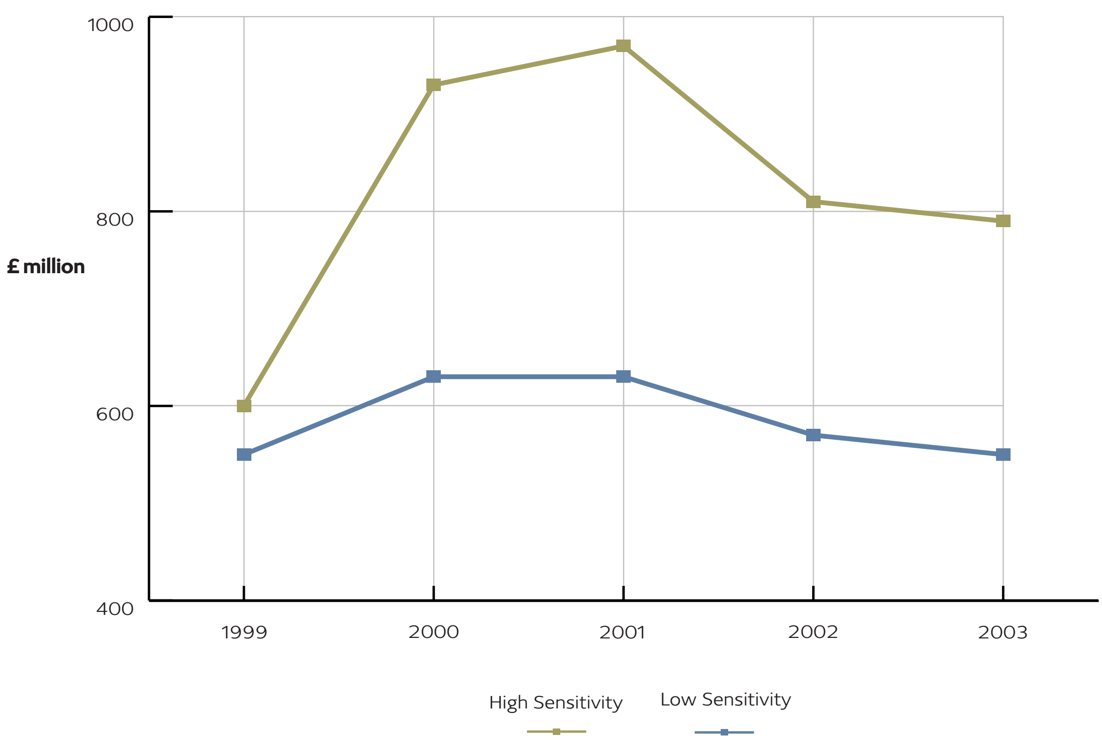
- the extension to the current power station 'Stricter Consents Policy' for gas-fired power stations which, as well as impacting on long term growth of gas, could also lead to increased investment levels in the short term in order to facilitate switches from interruptible to firm load status by existing power stations and CHP growth. However, any reinforcement for specific projects would be subject to an economic test
- NTS expenditure could materially increase beyond expectation in response to additional gas supply developments at St. Fergus or possibly Teesside, however this would be subject to Transco ensuring it could meet its Gas Act obligation to develop the network in an efficient and economic manner. There are a number of sources of additional supplies including: new Norwegian imports and gas through the Miller pipeline or possibly expanded Central Area Transmission System (CATS). Alternatively, lower expenditure could result from reductions in the need for NTS system resilience, the possibility of power stations in southern England selling capacity to the market, reduced Interconnector exports at peak, or even Interconnector imports
- medium term impact of the move to shallow reinforcement policy resulting in higher levels of new connections and switching from interruptible to firm

- the level of connections provided by competing PGTs entering the market for new housing
- meter activity, which could be significantly impacted by the number of domestic meters requiring replacement and the volume of electronic pre-payment meters required by shippers
- following completion of the tripartite review between Ofgem, HSE and Transco on future safety targets and replacement levels there could be changes in replacement expenditure
- the level of future productivity improvements and the costs of contractors.

These sensitivities have been grouped together to create a range for investment over the next five years (See figure A6.1a)

Transco uses a series of likelihood factors applied to possible events to reduce the range of investment. This recognises that it is highly unlikely that all possible events will happen simultaneously and represents a pragmatic working investment range. However there is a risk that any major event, could result in investment outside of this range.

Figure A6.1a 1999 - 2003 Gross Investment & Net Replacement



£m (1999 Prices)	1998	1999	2000	2001	2002	2003	Total 1999 - 2003
Low Sensitivity	738	550	630	630	570	550	2,930
High Sensitivity	738	600	930	970	810	790	4,100

Transco forecast that this level of investment will be needed to meet customer requirements whilst satisfying its statutory and contractual obligations.

Significant items of expenditure within this plan include:

- reinforcement to the NTS associated with the additional gas supply at St. Fergus and demand from the European Interconnector
- reinforcement associated with new power station loads
- replacement of mains and services for system safety; and installation and replacement of meters

NTS investment increases in the short term to meet LDZ growth, growth at the Interconnectors to Europe and Ireland, and new power station requirements (those stations not affected by the Review of Energy Sources for Power Generation).

LTS expenditure is necessary to support load growth whilst maintaining system security within the LDZs. Also, as demand rises, the availability of diurnal storage as line-pack within the LDZ decreases and expenditure is needed to ensure that there is sufficient capacity to satisfy the demands on the system.

Distribution investment is required for system reinforcement to maintain system security, for extensions to the system and for new gas consumer connections. Distribution expenditure reflects the impact of competition in connections and the forecast reduction in laying mains and services to existing housing following the reduction in “infill projects” to extend the gas supply area.

There is an ongoing programme to replace a specific category of meters, significant numbers of which have been found to be reading outside of permitted tolerances. These meters are being replaced at a rate of 500,000 per year. The plan also reflects the sensitivity associated with Shippers demand for Electronic Pre-Payment Meters. Transco’s meter plan reflects the impact of competition in connections in line with the distribution investment assumptions.

Other major expenditure includes investment in computer systems, vehicles and the planned replacement of Transco’s Private Mobile Radio system.

Mains replacement between 1999 and 2003 is generally safety-related with an amount of condition based replacement and some enforced replacement due to third party activity. Tripartite discussions between Ofgem, HSE and Transco have only recently been concluded. Transco are currently evaluating the impact of the outcome on the future replacement policy of Transco. Contributions are received against replacement expenditure in respect of rechargeable work and capital expenditure in accordance with Transco’s connection policy. For accounting purposes, capital contributions are held on the balance sheet as deferred income and released annually over the life of the related asset.

A6.1.1 Investment Cost Efficiency

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 are used to produce financial plans, budgets and appraisals in a consistent and easy to understand manner to ensure that maximum value is obtained. For non-mandatory projects the key investment focus in the majority of cases is to undertake only those projects which carry a positive NPV. 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.

A6.2 NTS and LTS Capacity Planning

Transco uses a computer software package, called FALCON, to model the daily dynamics of the system. FALCON enables the anticipation of network capacity constraints and design suitable reinforcements to ensure the appropriate level of system security is maintained. Copies of the FALCON package have been bought by outside agencies to facilitate an understanding of the NTS network and our investment plans.

Having identified potential constraints on the system, Transco analysts evaluate the options that are available to remove the constraint. Transco evaluates options for adding capacity to the network that represent an economic and efficient solution, whilst maintaining system security. The options available to Transco to increase capacity include:

- uprating pipeline operating pressures or building new pipelines
- 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 criteria.

As well as planning to ensure that the pipelines are designed to the correct size to meet peak demand, 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. Of the diurnal storage available in the LDZ, 43% is contained within gas holders with the rest provided by LTS linepack, high pressure bullet installations and salt cavities. The remaining diurnal storage requirement is sourced from the NTS.

A6.3 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 Districts. The 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) package 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.

A6.4 NTS Development Plan

This section describes the 1999 National Transmission System (NTS) capacity development plan. The plan formed the basis of the Long Run Marginal Cost (LRMC) work that drives NTS prices and represents the most likely scenario based on current information. However, it is heavily dependent on a number of factors, including:

- Forecasts of peak demand
- Pattern of beach supplies and the beach swing of gas delivered to Transco's system
- Relative prices of competing fuels
- The economy
- Weather patterns
- Government fiscal policy

- The regulatory framework
- The European Interconnector

Therefore, apart from committed capital expenditure, the figures shown should be regarded as indicative only, and do not imply a commitment by Transco to any specific projects or to any level of capital expenditure.

It should be noted that, in view of the increasing long lead-times (eg: increasing environmental legislation, obtaining easements through public consultation, increasing difficulty in obtaining planning permission for compressors, and ordering of specialist materials), it is essential that Transco is given a minimum of between two and three years' notice of any such requirements.

A6.4.1 NTS Investment Drivers

The primary investment drivers for the NTS are:

- increased peak entry capacity for beach supplies
- increased peak exit capacity for generic growth, interconnectors and large specific loads
- ongoing serviceability of the network to ensure supply security and meet legislative requirements
- Projects to deliver additional flexibility and security

Transco continues to encourage producers to beach their gas at terminals other than St Fergus by signalling that it intends to increase entry charges at St Fergus in line with the higher costs imposed on Transco by St. Fergus gas. Transco's aim has been to provide more cost reflective prices, in line with its Licence obligations.

Transco has included plans for the infrastructure that will increase flexibility and security for the network. Such investment may be required if customers wish to insure against risk associated with shortfalls of gas at the beach or increase transportation etc.

Serviceability includes environmental considerations. Transco is proposing a programme, to reduce Carbon Monoxide and Nitrogen Oxide emissions from its compressor stations. The replacement and modification of some compressor station plant and equipment is required by new guidelines issued by the Environment Protection Agency.

A6.4.2 Committed Projects

The following major projects are necessary to meet short term forecast peak flows for the supply years ending 1999, 2000 and 2001. They are currently approved and under construction.

Table A6.4.2 Committed Projects

The following projects are proposed to meet short term forecast peak flows

1999 Projects:

A. Aylesbury Compressor Station (new larger units)
B. Huntingdon Compressor Station (re-wheel & aftercooler)
C. Aylesbury to Chalgrove (25 km x 900 mm)
D. Churchover to Newbold Pacey (33 km x 900 mm)
+ 1 compressor station re-wheel

2000 Projects:

E. Carnforth to Nether Kellet (2 km x 900 mm)
F. Bridge Farm to Birch Heath (20 km x 900 mm)
G. Shorne to Farningham (16 km x 750 mm)
+ 2 compressor station re-wheels

2001 Projects:

H. Aberdeen Compressor Station
I. Alrewas Compressor Station
J. Nether Kellett Compressor Station
K. Uprating of 1150 km of NTS pipelines
L. Mawdesley to Warrington (40 km x 1050 mm)
M. Newbold Pacey to Honeybourne (26 km x 900 mm)
N. Wormington to Tirley (30 km x 900 mm)
O. Peterstow to Gilwern (42 km x 600 mm)
P. St. Fergus to Aberdeen (70 km x 1200 mm)
Q. Huntingdon to Willington (24 km x 900 mm)
+ 4 compressor station re-wheels

The above projects are shown in detailed maps, one for each LDZ, at the end of this Appendix.

A6.4.3 Planned Projects

The following major projects represent Transco's current view of the reinforcement needed to meet longer term forecast peak flows. As the forecasts are refined in future years, the planned projects may change to reflect the latest information.

Table A6.4.3 Planned Projects (2002 to 2007) based on forecast demand and supply match as at August 1998

nb. Lengths of pipeline are approximate

2002

110 km of pipeline

2003

27 km of pipeline

work on one compressor station

2004

100 km of pipeline

uprating of 100 km of pipeline

work on one compressor station

2005

179 km of pipeline

work on two compressor stations

2006

110 km of pipeline

work on three compressor stations

2007

20 km of pipeline

work on one compressor station

A6.4.4 Project Management

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

- Post project and post investment review
- Deciding how the project should be carried out, and by whom.
- 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

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

This reduces uncertainty, impacting the supply and demand planning assumptions, such as the Government Stricter Consent Policy or offshore development requirements at St. Fergus.

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 capital projects is designed to ensure that they are delivered on time and to at least the same cost and quality standards as other world class companies. The project management process in particular makes use of professional consultants and specialist contractors.

A6.5 LTS Development Plan

Transco's NTS and LTS must have a security standard which will be able to meet the peak aggregate firm daily demand for the conveyance of gas by the system which (based on historical weather data for the previous 70 years) is likely to be exceeded (whether on 1 or more days) only in 1 year out of every 20 years.

A6.5.1 LTS Investment Drivers

The main drivers for these projects are as follows:

- LDZ demand growth
- Diurnal storage requirements

There is a requirement for additional transmission capacity for growth in LDZs, including specific loads connected directly to the LTS.

There is also a need for additional diurnal storage estimated at 5 mcm over the period of the plan. This is due to the increase in requirement to meet peak demand and reduction of diurnal storage availability as a result of the associated increased flows.

A6.5.2 Currently Planned LTS Projects (1999 - 2003)

Unlike the NTS, LTS Projects tend to be numerous and of lower value. The major projects include:

1999 Projects

- Brisley to Bushy Common

2000 + Projects

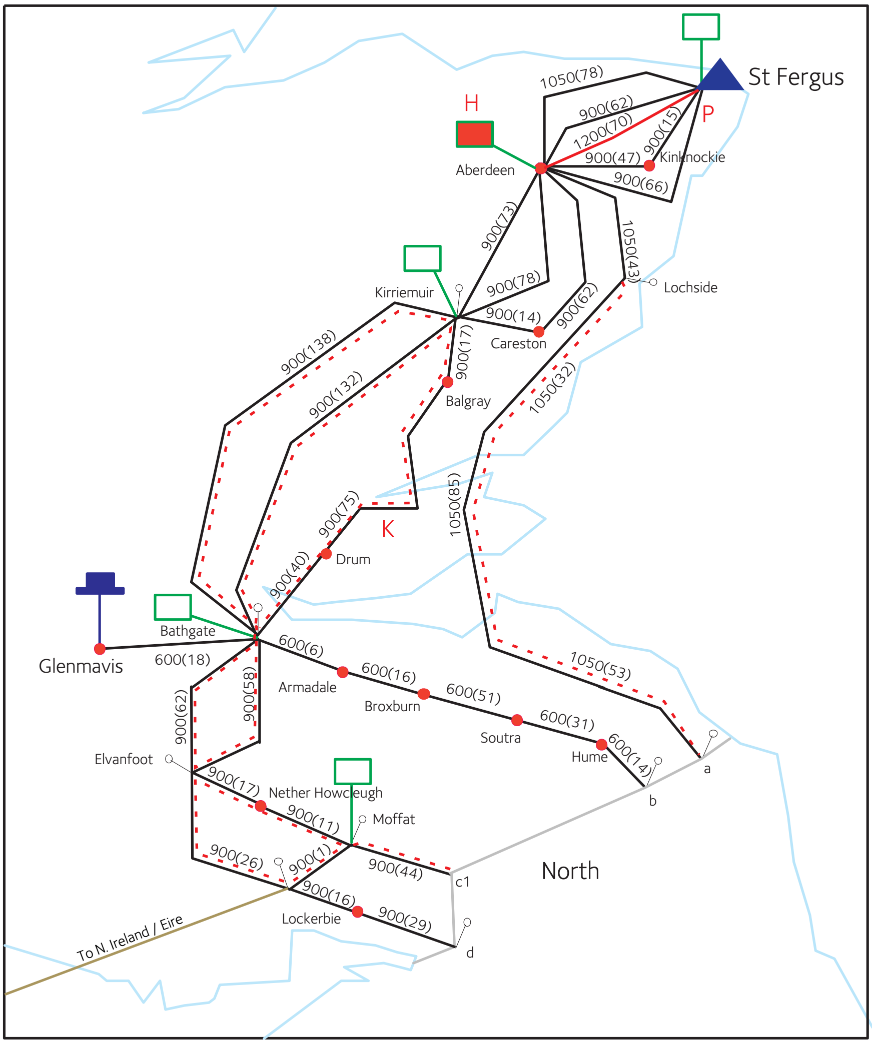
- Caersws to Machynlleth phase 2
- Drointon to Sutton on the Hill
- East Cleveland Reinforcement
- Shoreham - Betchworth to Rowhook
- Northern Development Area
- Samlesbury to Helmshore
- Maudlin to Indian Queens
- Aberdeen system reinforcement
- Stratford to Birmingham
- Pontyates to Bancyfelin

The remaining projects are smaller and typically cost less than £2 million.

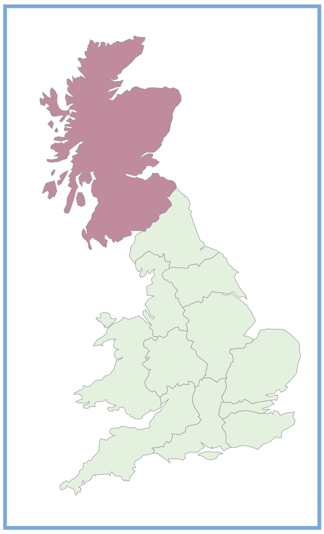
The following maps show the committed NTS projects, described in A6.4.2, by LDZ.

Schematics of the above 7 barg sections of the LTS are also included on separate maps, one per LDZ, however it should be noted that LDZ transmission systems can have several pressure tiers, the remainder of which are not shown. However, the diagrams show the above 7 barg pipe network to give an indication of the approximate location within the LDZ.

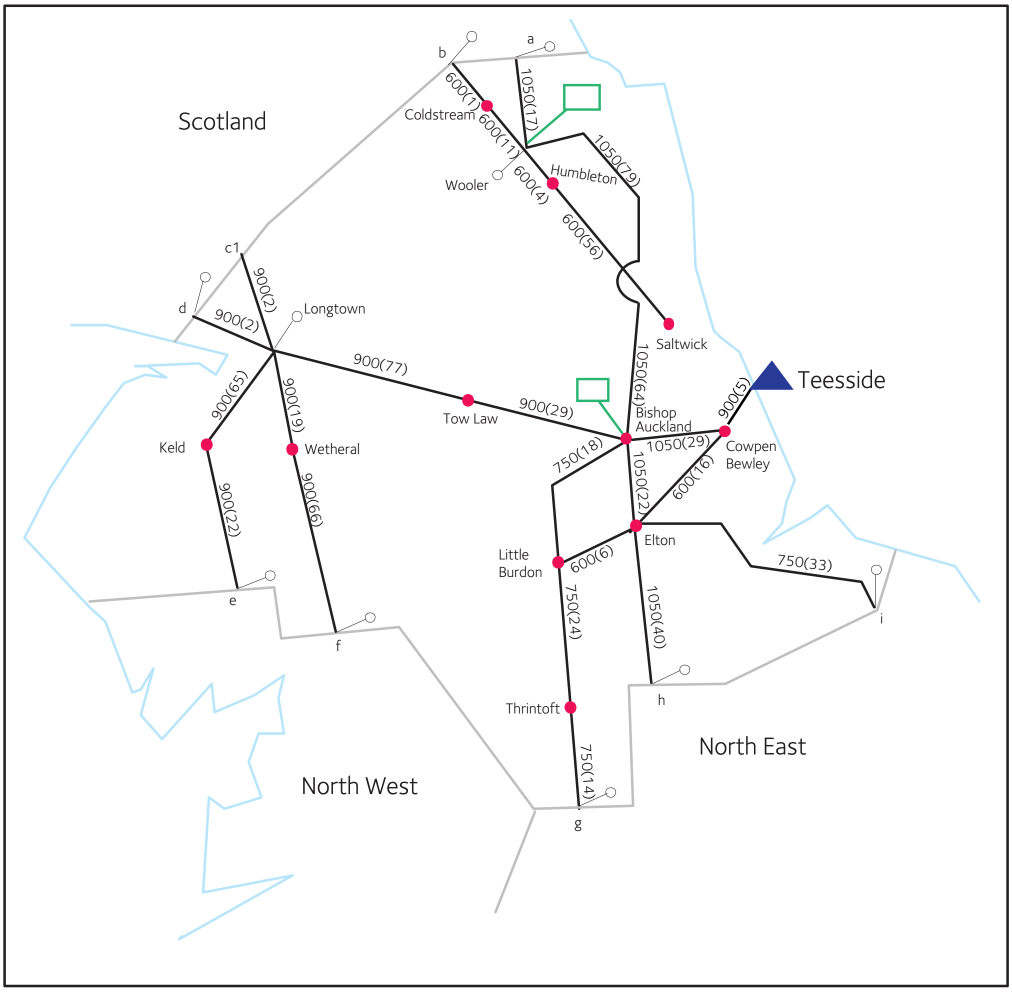
Scotland - NTS



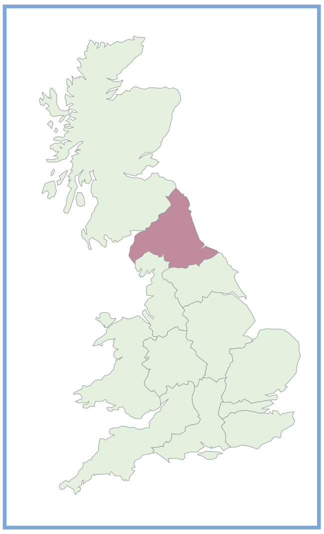
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



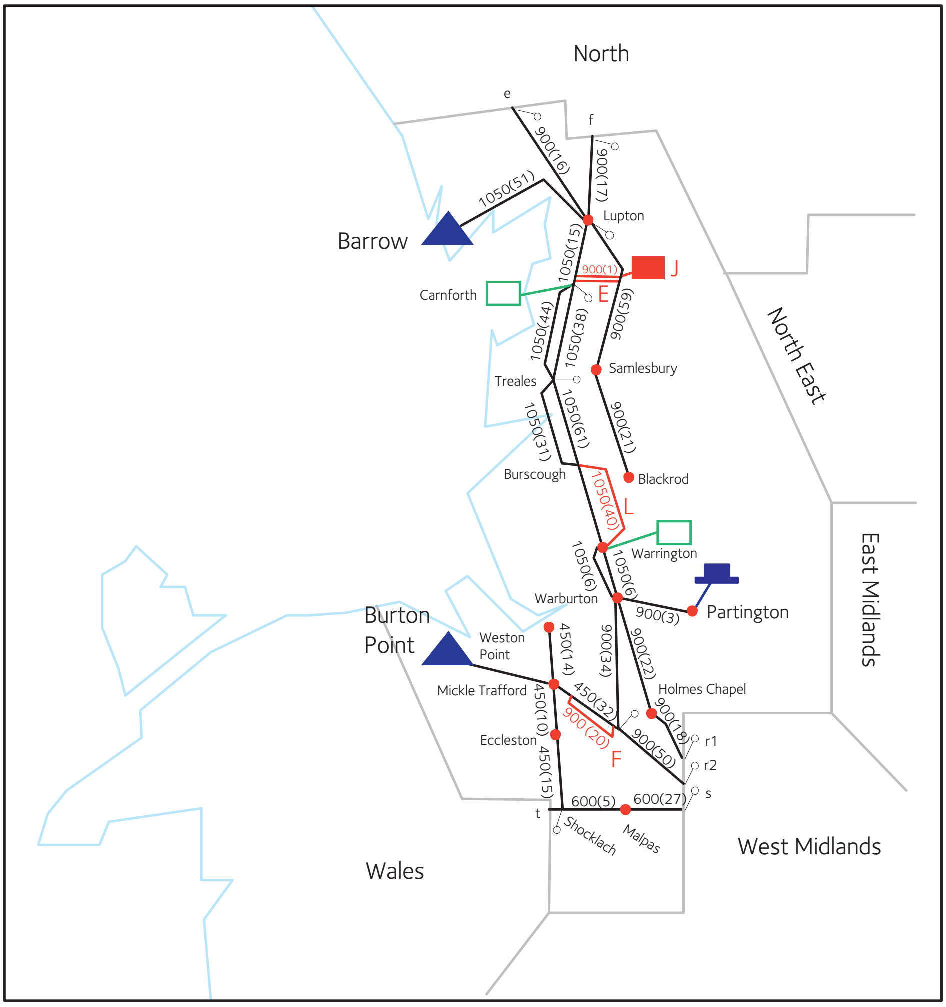
Northern - NTS



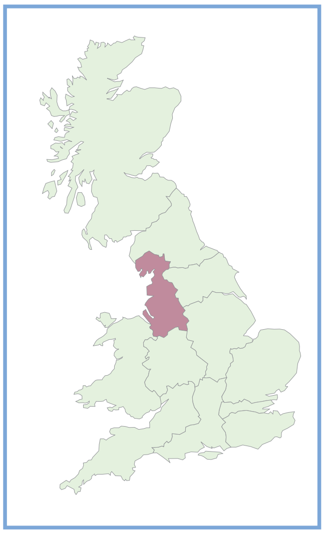
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



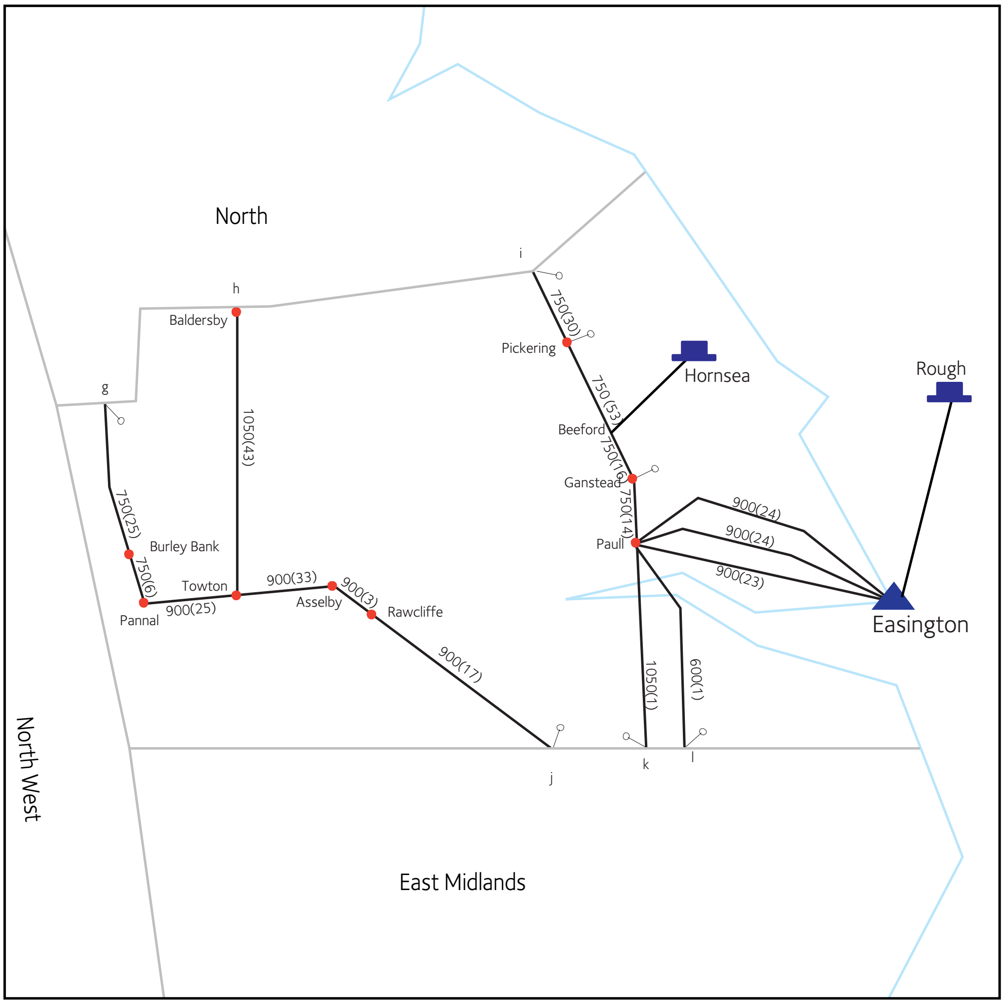
North West - NTS



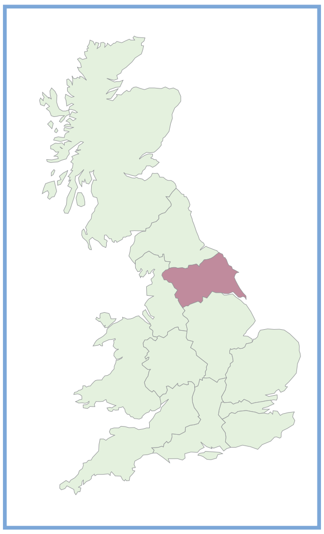
- Terminal
- LDZ boundary
- Existing pipeline (with distance marker) 900(17)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



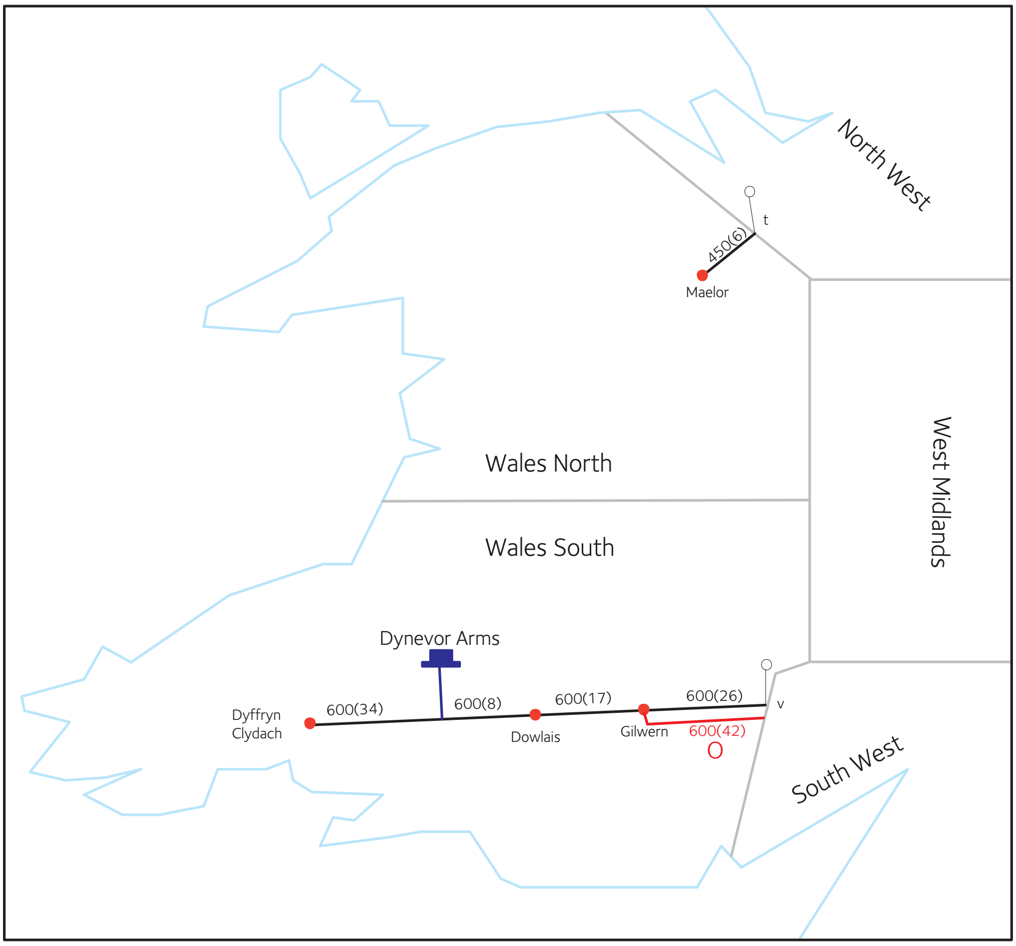
North East - NTS



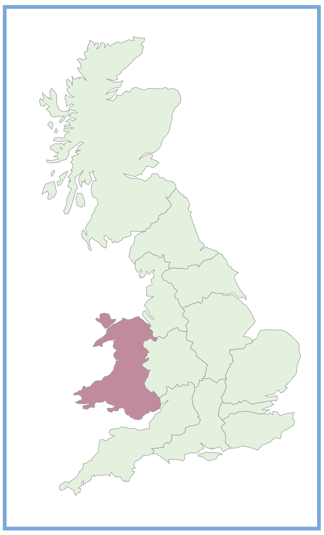
Terminal
LDZ boundary
900(17) Existing pipeline (with distance marker)
900 Pipeline diameter (mm)
(17) Length (km)
a Denotes a crossing point between LDZs
Proposed pipeline
Offtake
Storage facility
Existing compressor
New compressor or compressor modifications



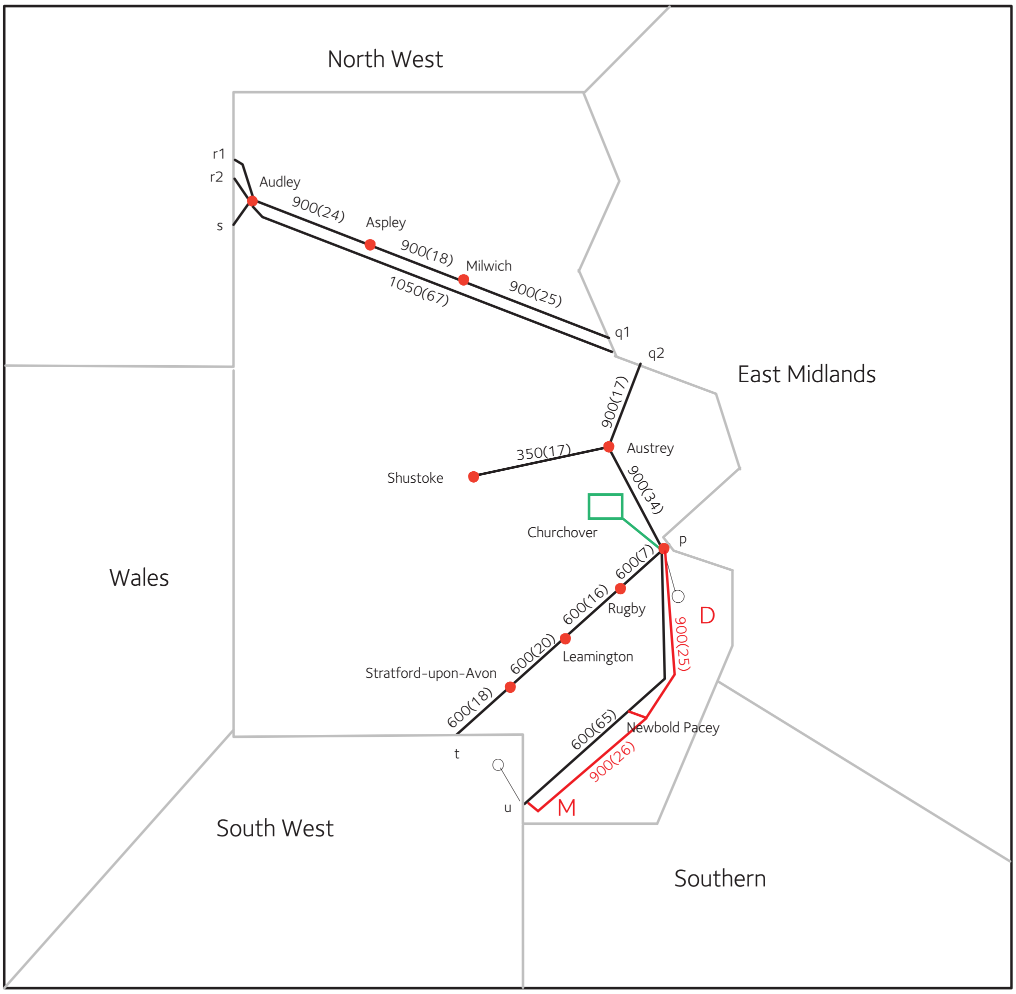
Wales - NTS

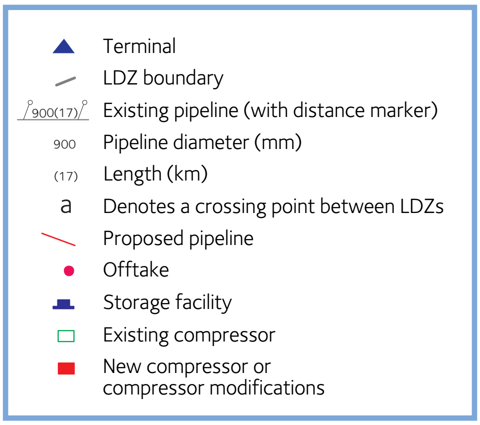


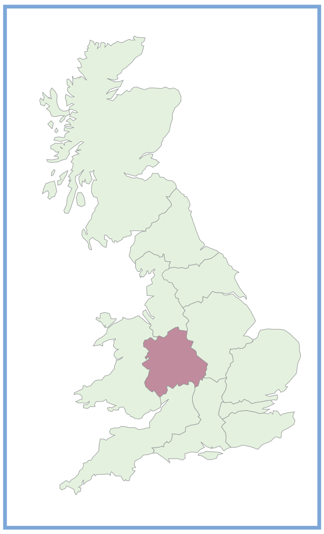
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



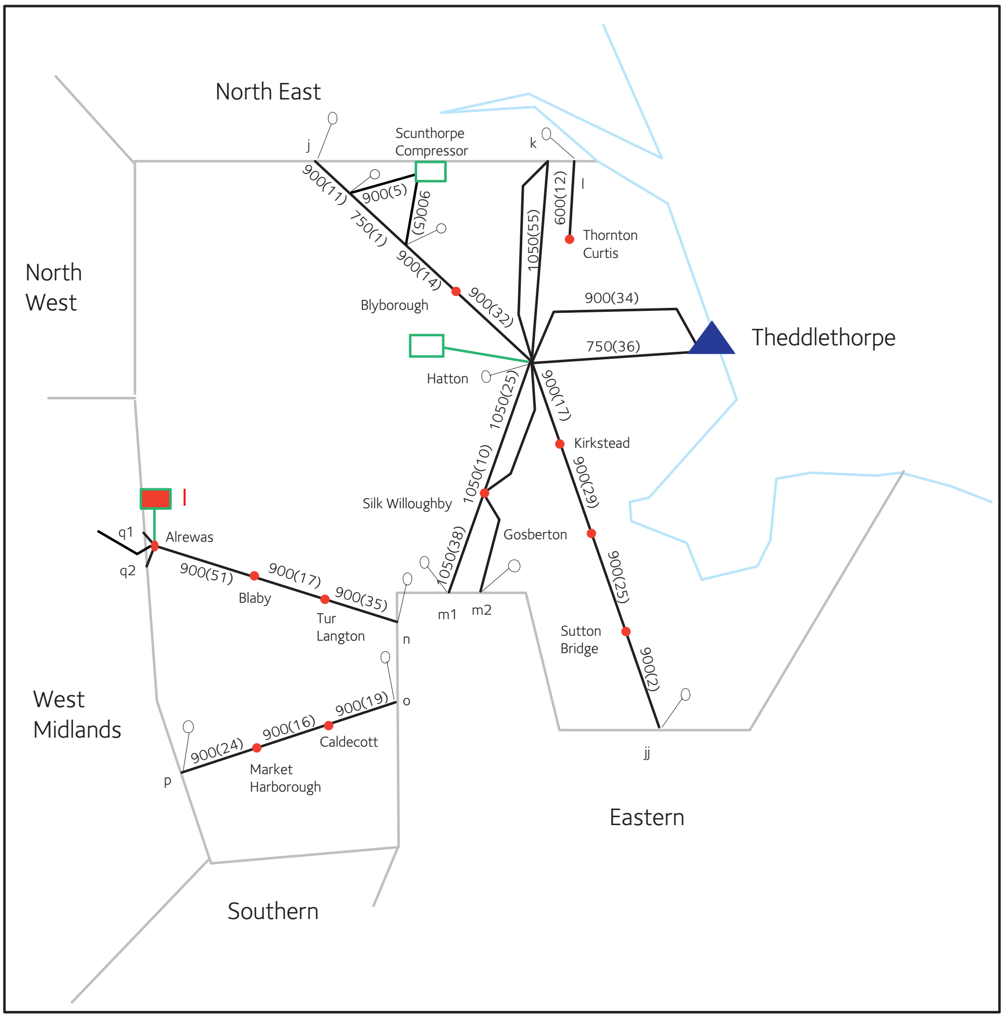
West Midlands - NTS

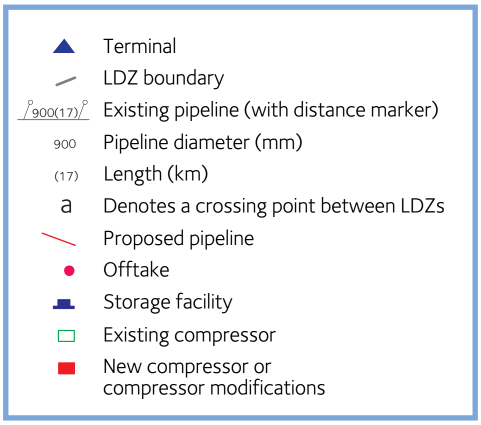


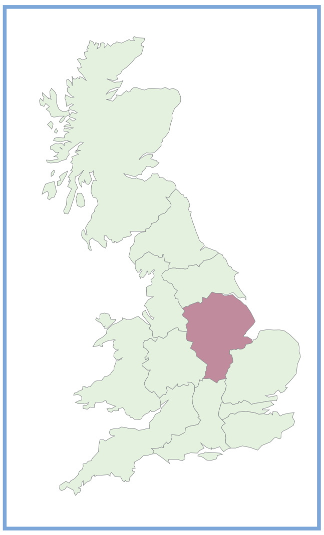




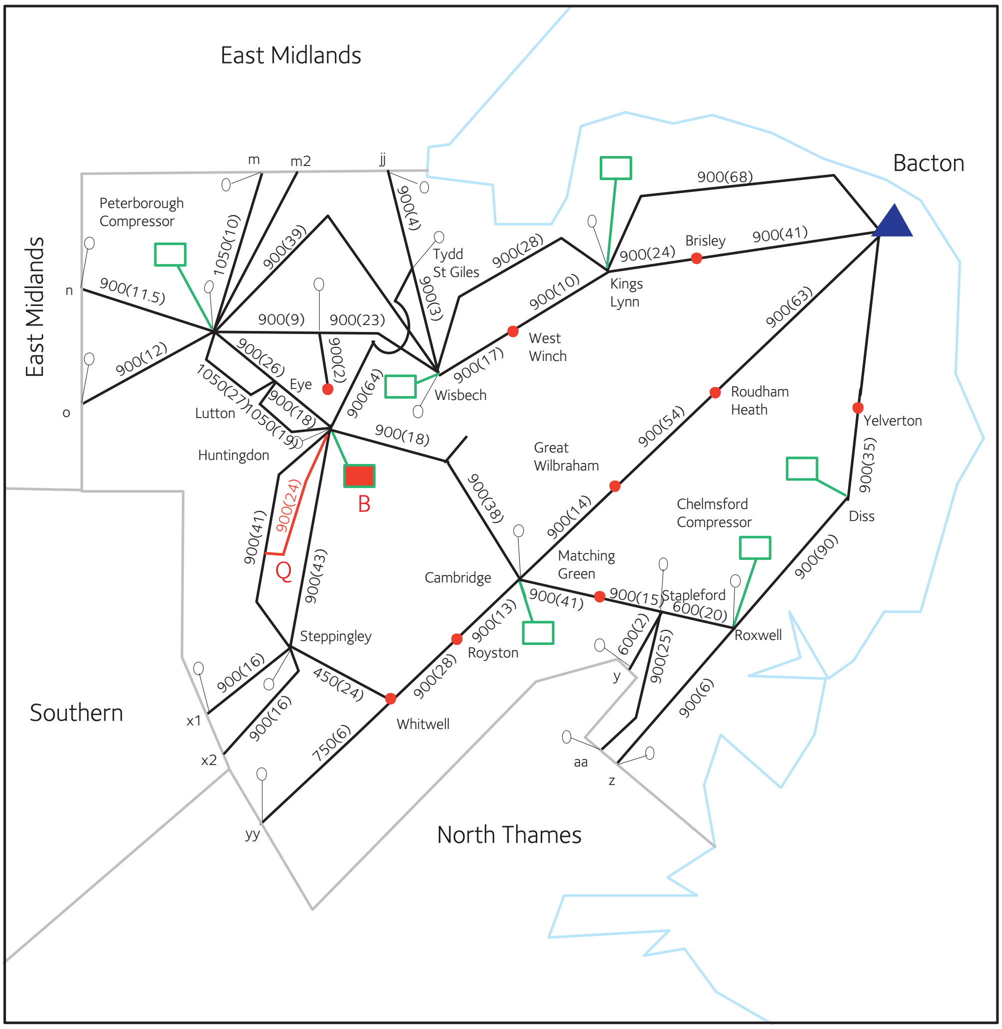
East Midlands - NTS



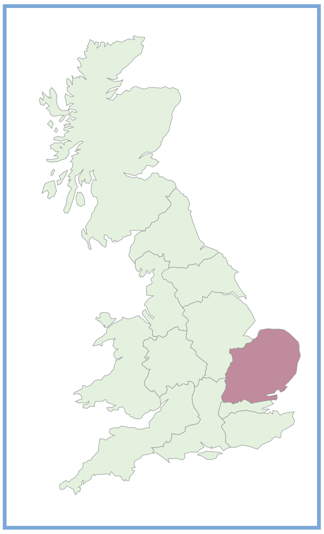




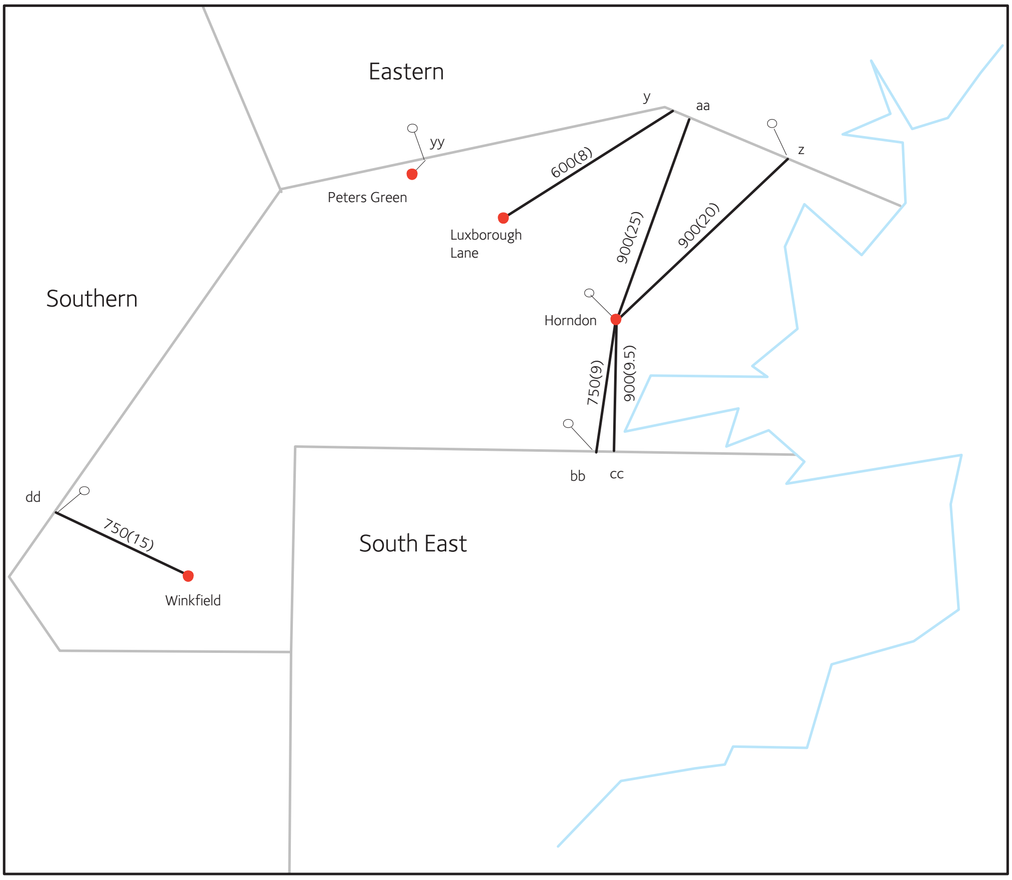
Eastern - NTS

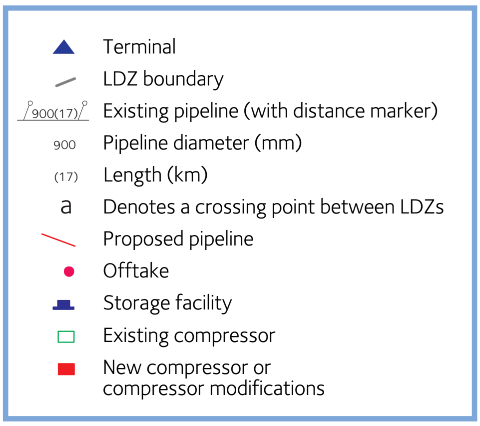


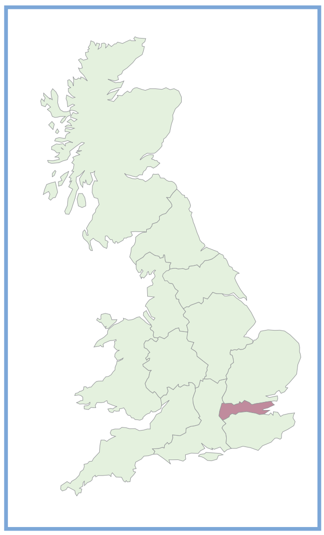
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



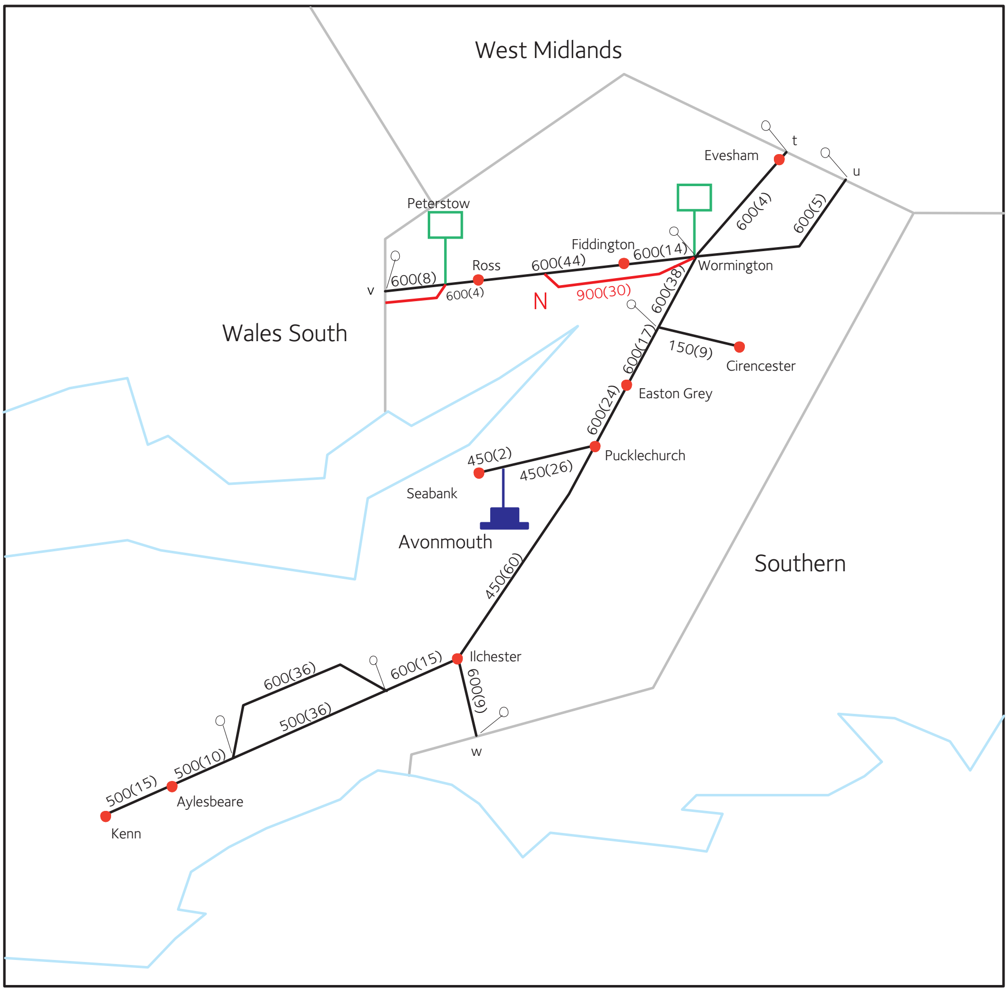
North Thames - NTS



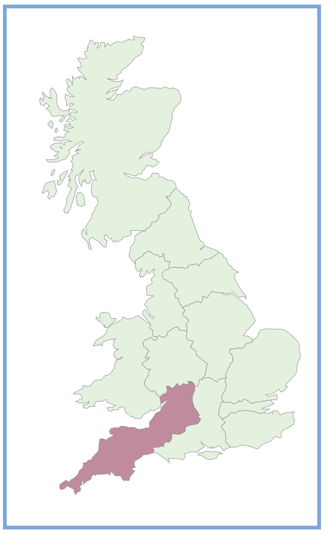




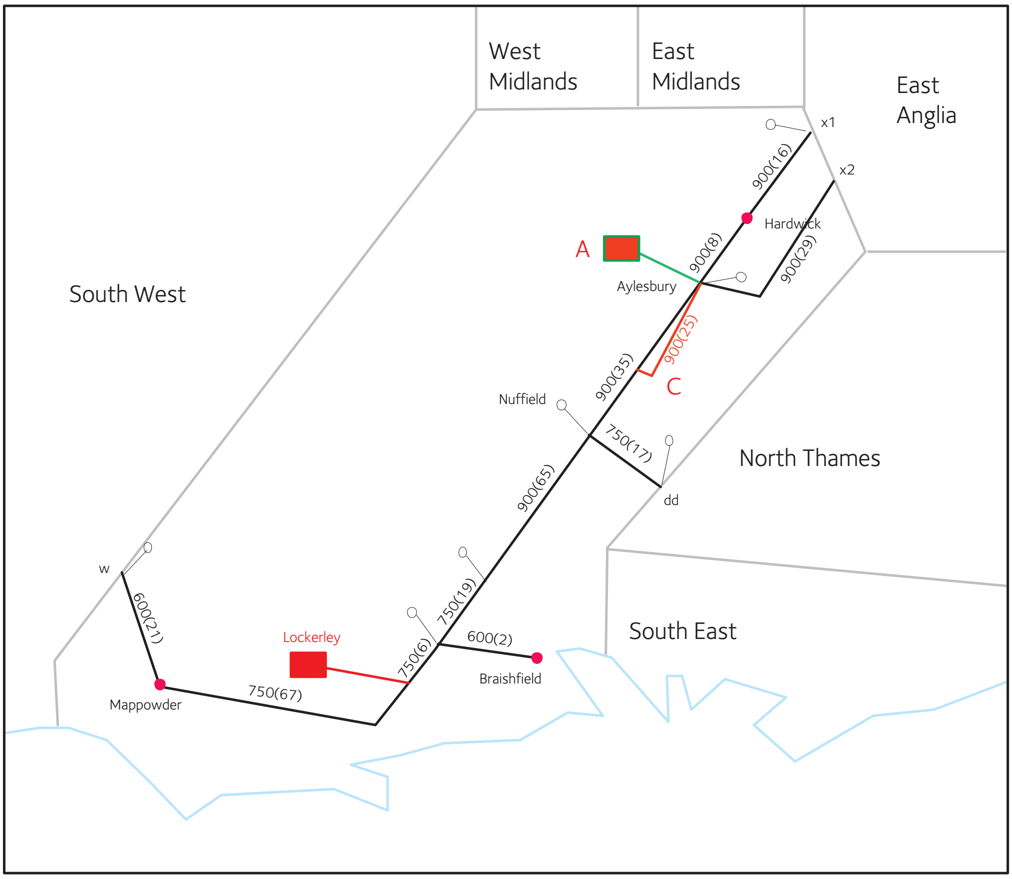
South Western - NTS

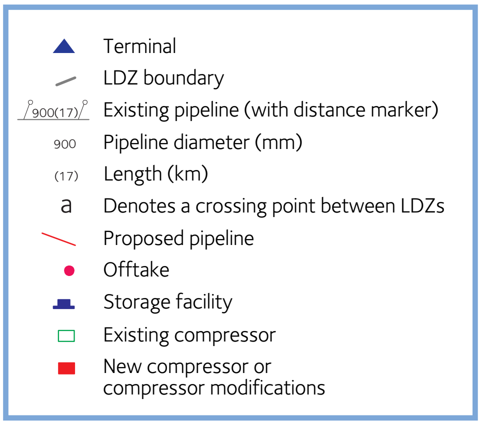


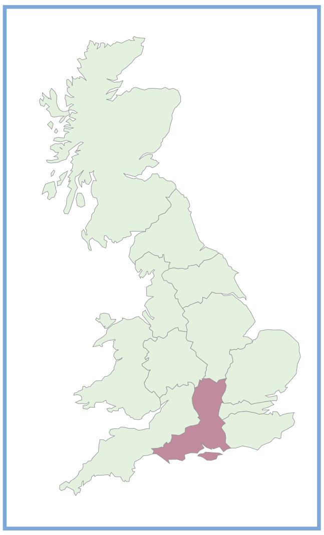
- Terminal
- LDZ boundary
- 900(17) Existing pipeline (with distance marker)
- 900 Pipeline diameter (mm)
- (17) Length (km)
- a Denotes a crossing point between LDZs
- Proposed pipeline
- Offtake
- Storage facility
- Existing compressor
- New compressor or compressor modifications



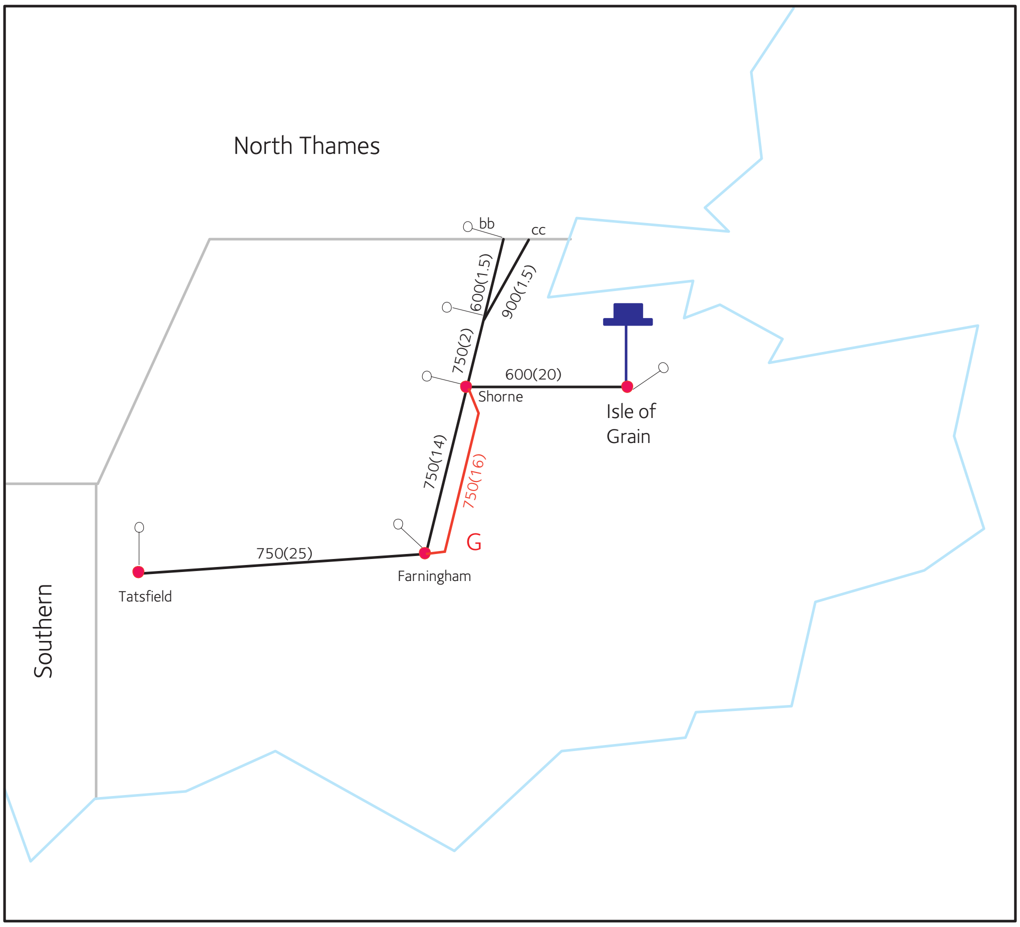
Southern - NTS

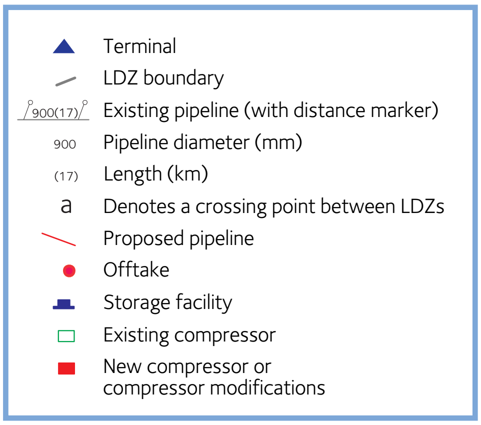


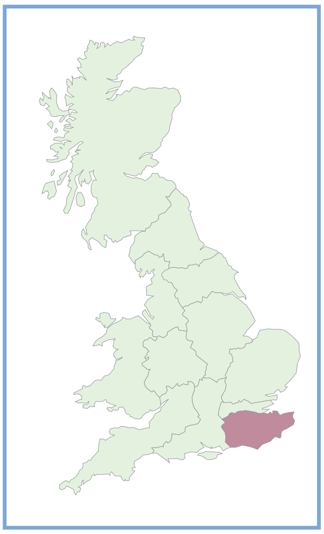




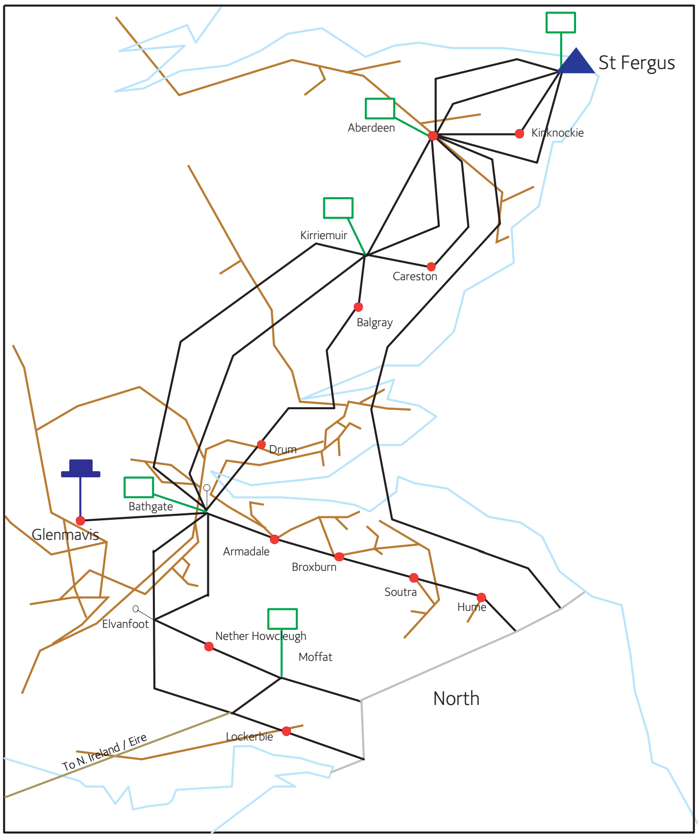
South Eastern - NTS



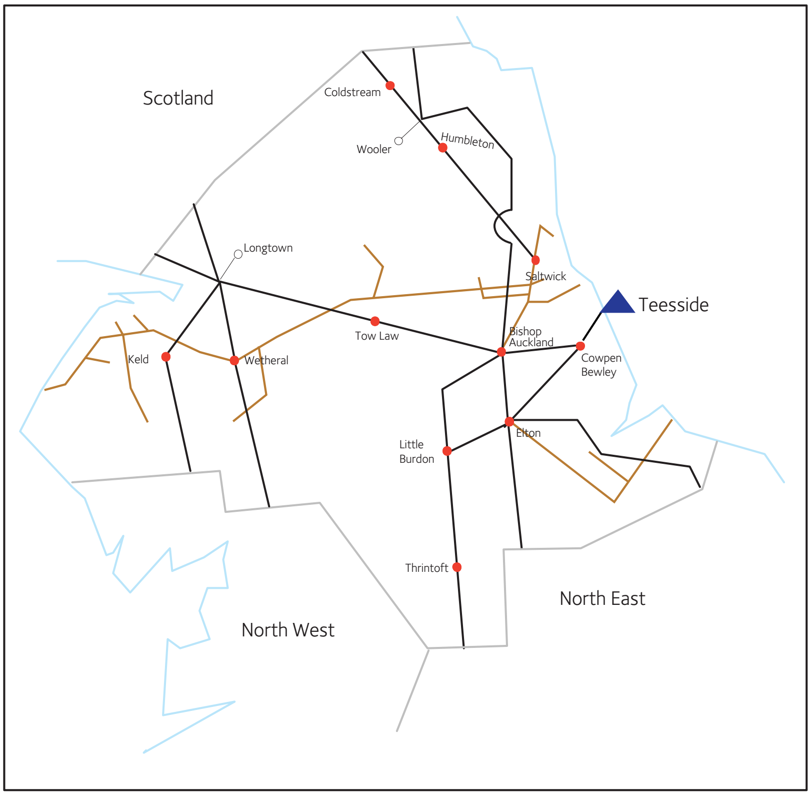




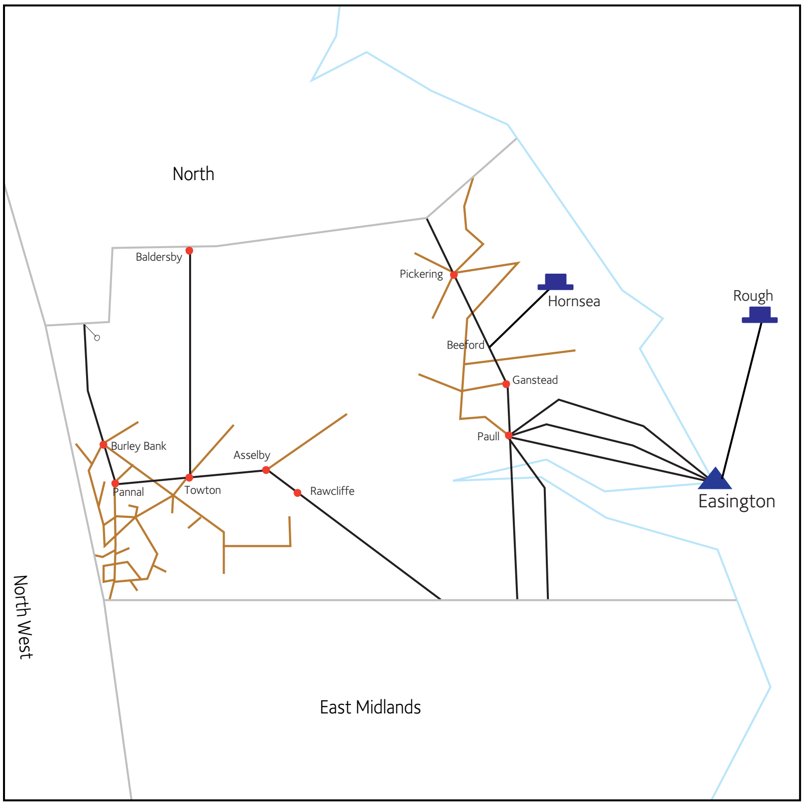
Scotland LTS



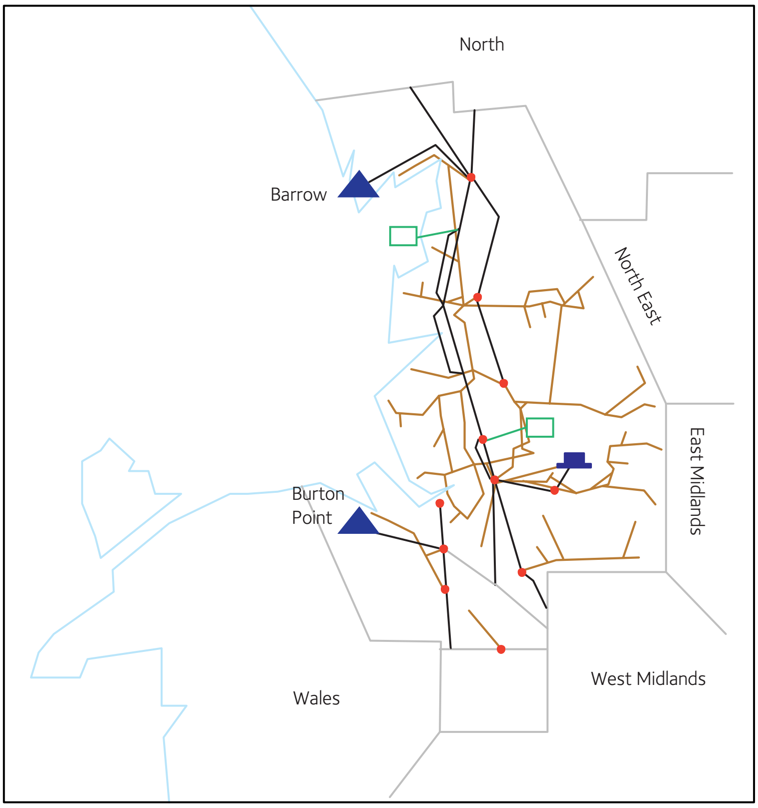
Northern LTS



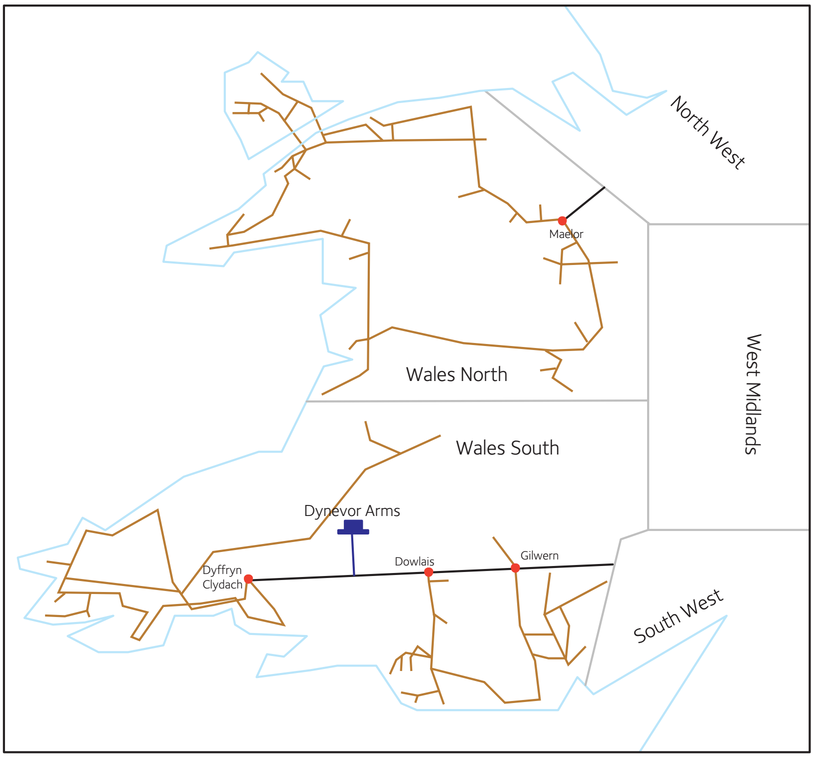
North East LTS



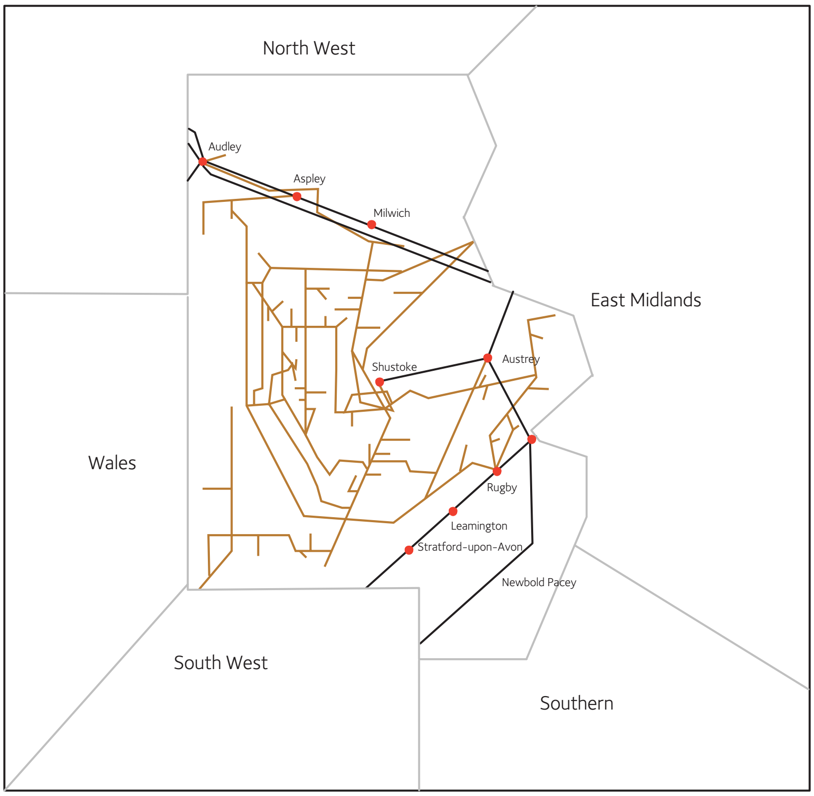
North West LTS



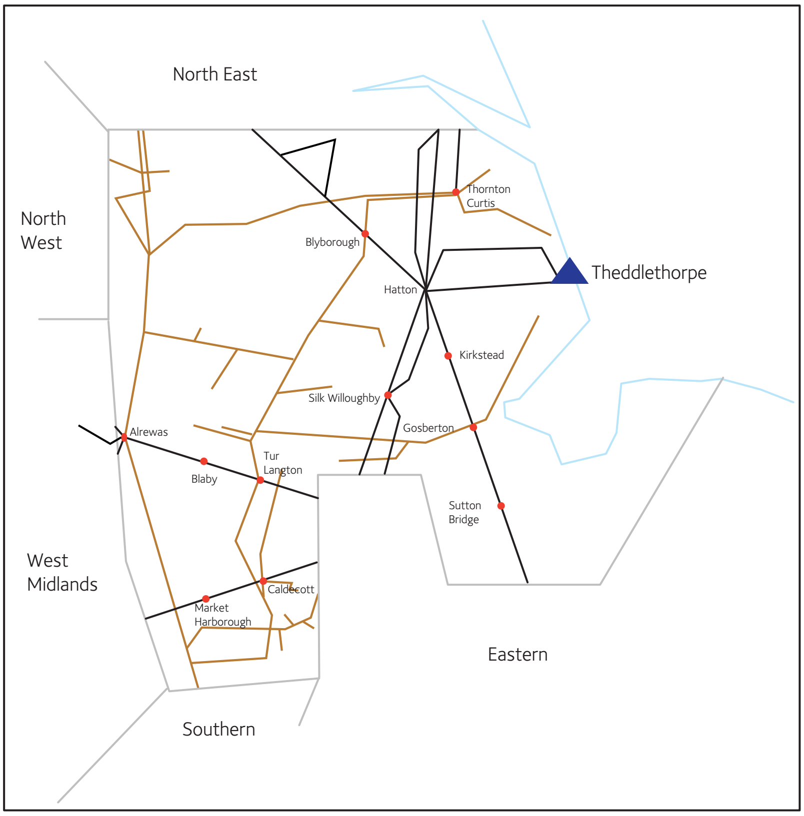
Wales LTS



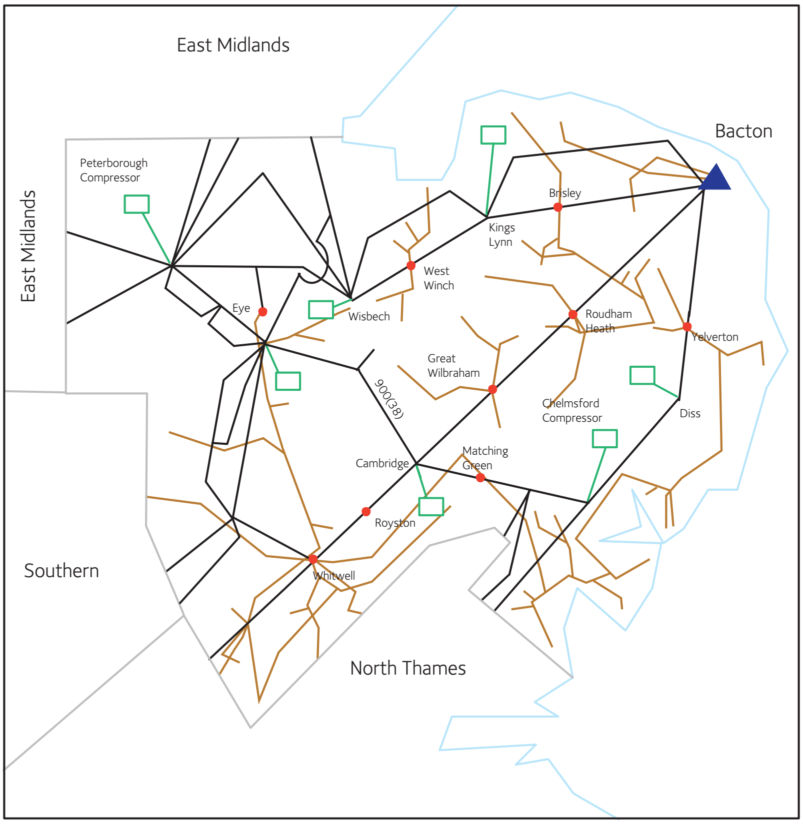
West Midlands LTS



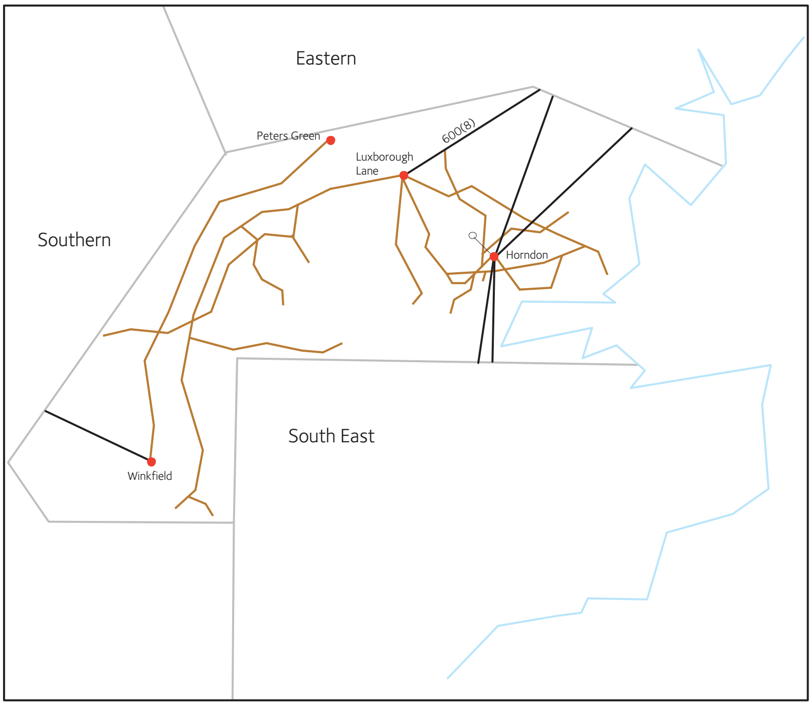
East Midlands LTS



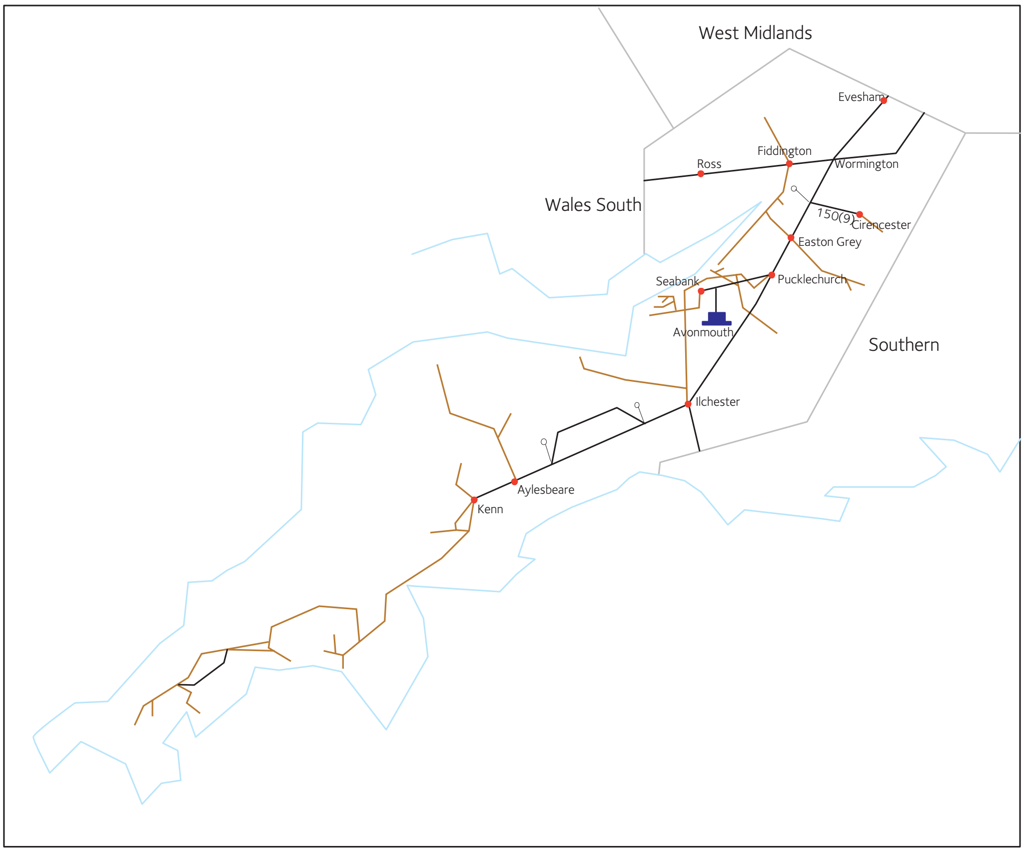
Eastern LTS



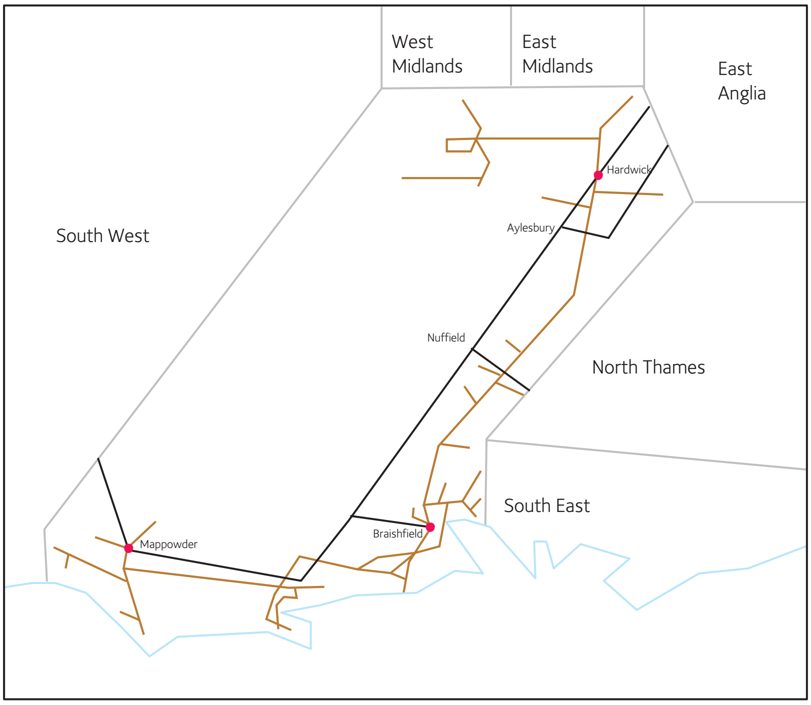
North Thames LTS



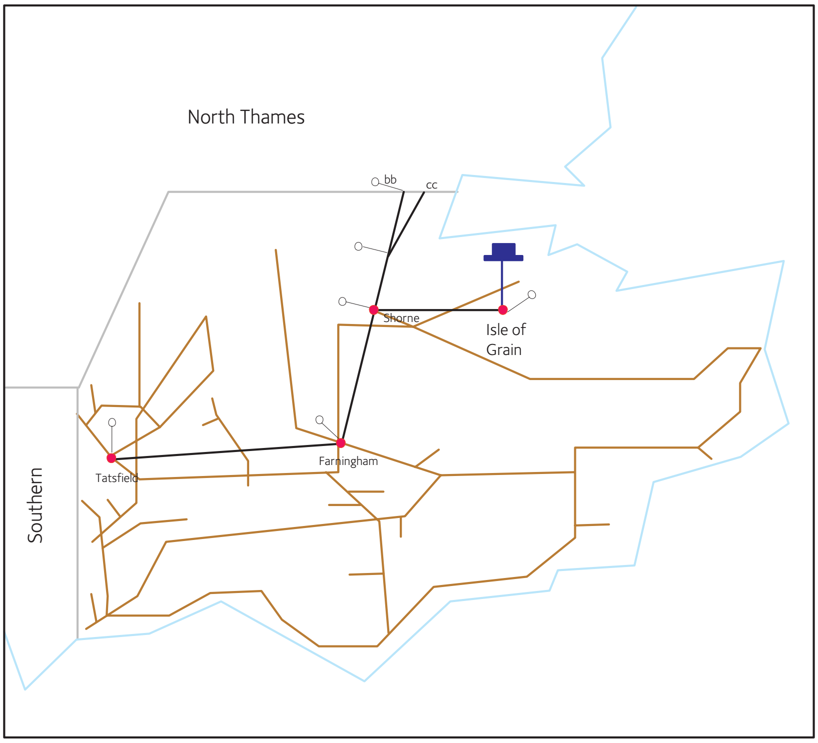
South Western LTS



Southern LTS



South Eastern LTS



Appendix 7

The Interconnectors

On 1 October 1998, the Interconnector to continental Europe began to flow gas. This made the first high pressure gas grid connection between continental Europe, Great Britain, Ireland and Northern Ireland.

The connection to Ireland and Northern Ireland is, at the moment, unidirectional with export flows from the NTS only. The Interconnector to continental Europe is bi-directional and flow has already occurred in both directions since operations commenced on 1 October 1998.

This Appendix looks at the contractual issues surrounding the operation of the Interconnectors.

A7.1 The UK - Continent Interconnector

On 1 October 1998, the 240km Interconnector from Bacton in Norfolk to Zeebrugge in Belgium began to flow gas in accordance with the nominations made by its shippers. The Interconnector is designed, at the moment, to flow a maximum of 58 mcm/d (628 GWh/d) in forward direction and 25 mcm/d (271 GWh/d) in reverse. Interconnector (UK) is confident that they can flow at these rates although so far the pipeline has not been subjected to a full flow test in either direction.

A7.1.1 Connection to Transco System

Transco's facility at Bacton provides for the following:

- An export and import capability
- Gas can be made available for Interconnector (UK) to offtake from Bacton or other terminals via King's Lynn, subject to operational requirements
- King's Lynn compressor station has been reconfigured to allow flows to and from Bacton

Other pipelines, not owned by Transco, will be able to connect directly to the Interconnector terminal at Bacton e.g. the SEAL pipeline will be connected later this year for commissioning in the year 2000.

The following diagram shows the configuration of the Interconnector terminal and Transco's system.

Figure A7.1.1a Interconnector Configuration

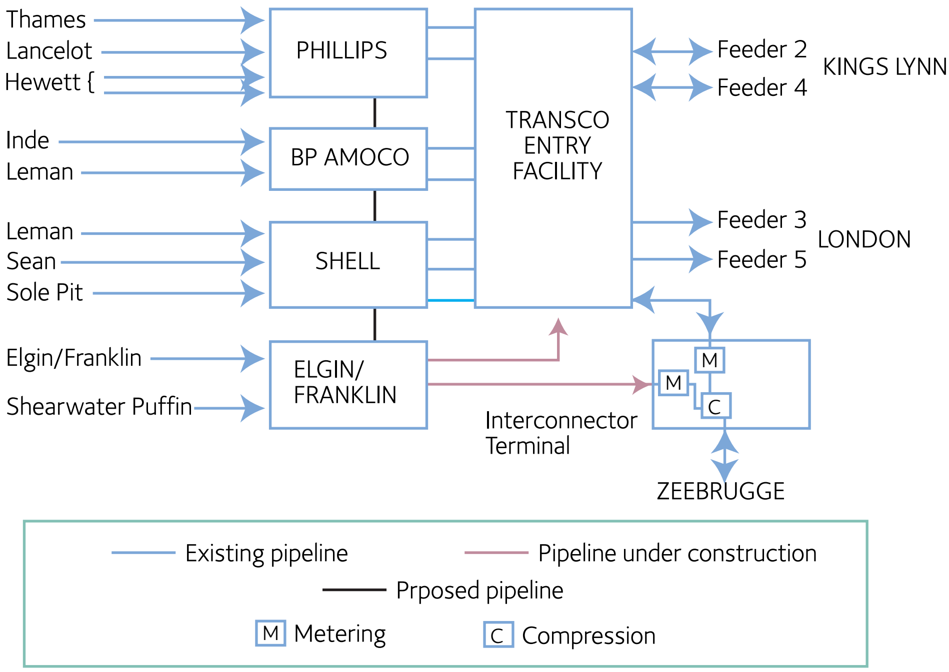
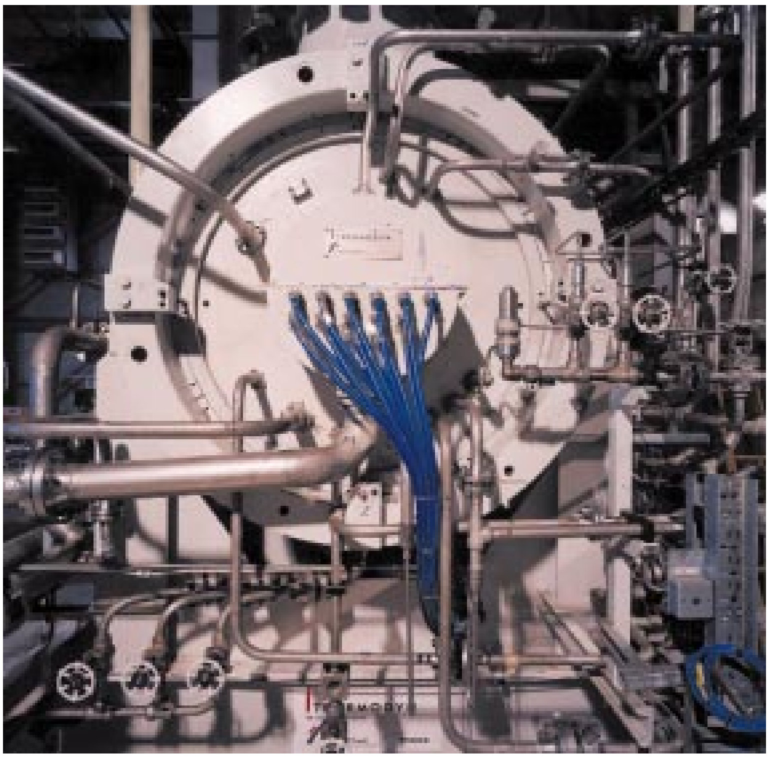


Figure A7.1.1b Photograph of one of the compressors within Interconnector UK's Bacton installation



A7.2 The GB - Ireland Interconnector

The Interconnector to Ireland has been flowing gas since 1993 and is connected to the NTS at Moffat in Scotland. The pipeline is owned and operated by Bord Gais Eireann (BGE) and is being used to supply the growing gas market in Ireland. The indigenous Irish supplies at Kinsale Head are in decline and this combined with growth in Irish markets, is contributing to the high annual increase in flows being forecast at Moffat.

In 1996 an offtake at Twynholm was commissioned which supplies gas to Northern Ireland through the Scotland to Northern Ireland Pipeline (SNIP). The pipeline is owned and operated by Premier Transco Limited and last year a high pressure connection to Stranraer in south west Scotland was completed. This connection allowed Stranraer to be integrated into the pipeline system and allowed the LNG plant, which previously supplied consumers in Stranraer, to be decommissioned. This is the first location in Great Britain where domestic consumers are supplied from a local Transco distribution system supplied via another transporter’s pipelines.

A7.2.1 Connection to the NTS

The GB - Ireland Interconnector has a current ultimate capacity of 26 mcm/d (approximately 289 GWh/d). The offtake at Moffat, which supplies the pipeline owned by Bord Gais has been uprated to match the current ultimate downstream capacity. Reinforcement to deliver gas to Moffat is at a lower level and firm capacity will be available as detailed in Table A7.3b below (subject to obtaining vouchers from Downstream Capacity Holders).

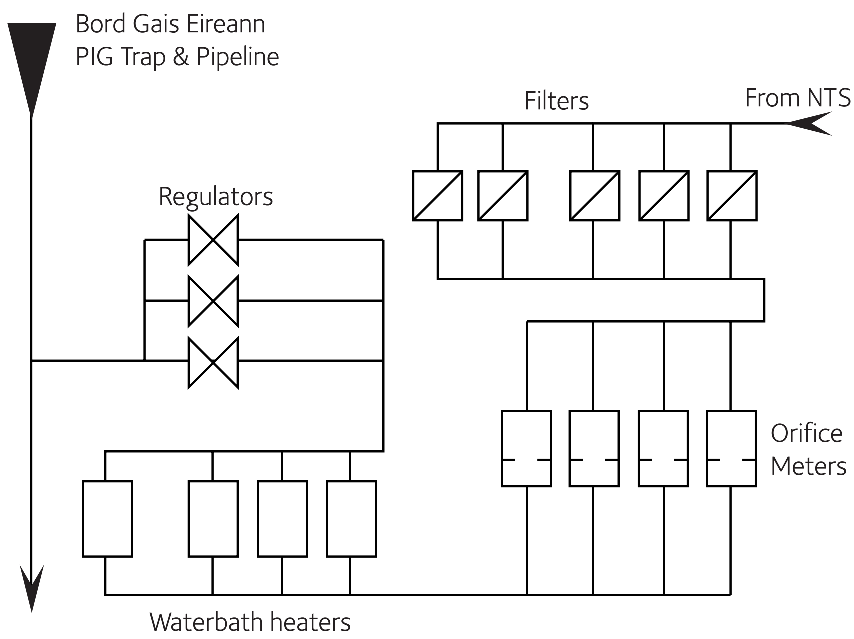
At the moment, firm capacity in Bord Gais’s system is limited to 13 mcm/d (144 GWh/d) and Bord Gais have issued vouchers up to this level.

They have indicated that they will not issue any more vouchers until their compressor at Beattock is completed (planned for October 2000).

The installation of Beattock Compressor Station will increase the capacity of Bord Gais’s system from 13 mcm/d (144 GWh/d) to 17 mcm/d (189 GWh/d). Bord Gais have further reinforcement planned which will increase their capacity to 26 mcm/d (289 GWh/d).

The following diagram shows the offtake facilities at Moffat AGI.

Figure A7.2.1 Schematic Of Moffat Above Ground Installation



A7.3 Interconnector Flows

Transco has established a number of possible flow scenarios for Interconnectors and their impact on NTS throughput. These have been developed in conjunction with external consultants and represent Transco's latest view.

The tables below illustrate the relative importance of the Interconnectors with regard to both projected NTS flows and NTS peak.

Table A7.3a Interconnector Annual Flows in relation to Total UK Demand (TWh)

	1998	1999	2000	2001	2002	2003
Total NTS Flows	918	1,022	1,066	1,107	1,144	1,168
of which Total Interconnector Flows	34	90	87	85	88	86
Interconnector Flows as a percentage of NTS Flows	4%	9%	8%	8%	8%	7%

Note:

Transco's central case assumes that with commencement of gas from SEAL in October 2000 half of the annual demand for the Interconnector will by-pass the NTS. Transco assumes that by-pass will eventually represent some 70% of annual continental Interconnector demand.

Table A7.3b Interconnector Flows in Relation to Total UK Peak Demand (GWh/d)

	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Total NTS Flows	5,421	5,748	5,947	6,097	6,240	6,391
of which Moffat	162	185	208	257	272	284
of which Bacton	240	264	264	264	264	264
Interconnector Flows as a percentage of NTS Flows	7%	8%	8%	9%	9%	9%

A7.4 Contractual Arrangements

All contractual arrangements at Bacton and Moffat are in place and have been operating since October 1998, these are:-

A7.4.1 Entry/Exit Agreements

These agreements define the physical and operational aspects to enable the downstream operator to supply to and/or offtake gas from the NTS.

Entry Agreements define such issues as the physical transfer point, metering, gas quality, local operating procedures, confidentiality, maintenance and emergencies.

Exit agreements define such issues as notice periods, ramp rates, transfer point, metering, enhanced pressures, operating procedures, confidentiality, maintenance and emergencies.

At Bacton, the Interconnection Agreement includes the provision to enable gas to enter the NTS so the Interconnection Agreement is a combined Network Entry Agreement (NEA) and a Network Exit Agreement (NExA). A Gas Quality Specification for exit and entry is also included.

The Connected Systems Agreement at Moffat is equivalent to a Network Exit Agreement (NExA).

The Connected System Operator (CSO) would usually sign these Agreements.

A7.4.2 CSEP Ancillary Agreement

A Connected Systems Exit Point (CSEP) Ancillary Agreement is an additional agreement to Network Code which defines the arrangements that NTS shippers must be aware of, including the provisions of the Interconnection Agreement (at Bacton) and/or the Connected Systems Agreement (at Moffat).

These agreements include sections on nominations, default allocation, firm and interruptible, rates and quantities of offtake, Offtake Profile Notices and capacity rules. The CSEP Ancillary Agreement (AA) also recognises that NTS shippers may wish to appoint an Agent to ensure that matching of nominations occurs upstream and downstream of the offtake point and that allocation is undertaken in accordance with rules agreed by NTS shippers at that Offtake point.

A7.4.3 Agency Agreements

On 1 October 1998, I(UK) was appointed as the Bacton Agent and on 21 October 1998, Bord Gais was appointed as the Moffat Agent. These Agents deal with nominations before the gas day, renominations within the gas day and allocation after the day. The Agents are responsible for matching nominations and renominations on both sides of the flange at the Offtake point and ensuring that the allocation is carried out to rules agreed by shippers at the Offtake point.

Transco believes that the Agents have been operating well at Bacton and Moffat and Transco supports the continued role of the agents at the Interconnectors.

Appendix 8

Entry Capacity

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

The interdependent nature of the NTS is such that the profile of supply and demand affects the maximum amount of gas that can be accepted at a 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 experienced patterns of supply and demand. Other than during cold weather periods, 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. Please note that all profiles exclude the impact of maintenance.

A8.1 System Entry Point Maximum Physical Capacity

Section I 3.7 of the Network Code deals with situations where an onshore problem affects Transco's ability to accept deliveries at a system entry point. The Code contains a formula to calculate the amount Transco pays to relevant users in such circumstances. The following table shows the maximum rate of delivery for the purposes of applying the formula.

The terminal capacities quoted relate to the maximum physical capacity and these may exceed expected delivery in 1999/2000. System entry point capacities have been derived by proportioning the maximum physical capacity in 1999/2000.

Table A8.1 System Entry Point Maximum Physical Capacities 1999/2000 (mcm per day)

Terminal	System Entry Point	Capacity
Bacton	Bacton-Phillips	29.8
	Bacton-Amoco	27.3
	Bacton-Shell	47.9
	Total Bacton	**105.0**
Barrow	**Barrow-HRL**	**65.0**
Easington	Easington-BP West Sole	7.8
	Easington-BP Dimlington	21.9
	Easington-BG Amethyst	6.1
	Easington-BG Rough	54.3
	Total Easington	**90.0**
St Fergus	St Fergus-Mobil	48.5
	St Fergus-Total Oil Marine	40.7
	St Fergus-Shell	33.9
	Total St Fergus	**123.0**
Teesside	Teesside-Enron	12.6
	Teesside-Amoco	36.4
	Total Teesside	**49.0**
Theddlethorpe	**Theddlethorpe-Conoco**	**66.0**

The system entry point maximum physical capacities 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.

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

A8.2 Aggregate Beach Supplies

The following graph and table shows the variation of demand through the year under seasonal normal weather conditions, with expected profiles of beach supplies used to meet demand. Transco has generated these profiles based on experience of supply nominations over the last 3 years. The demand data is derived from the 1999 Base Plan Assumptions and is presented in the form of monthly demands over a year. 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 and the level of supplies at other terminals. However this is variable and so only profiles under seasonal normal conditions have been given.

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

The profiles are currently under review within the RGTA negotiations and pending the outcome may be subject to change.

Figure A8.2 Beach Supply Profile 1999/2000

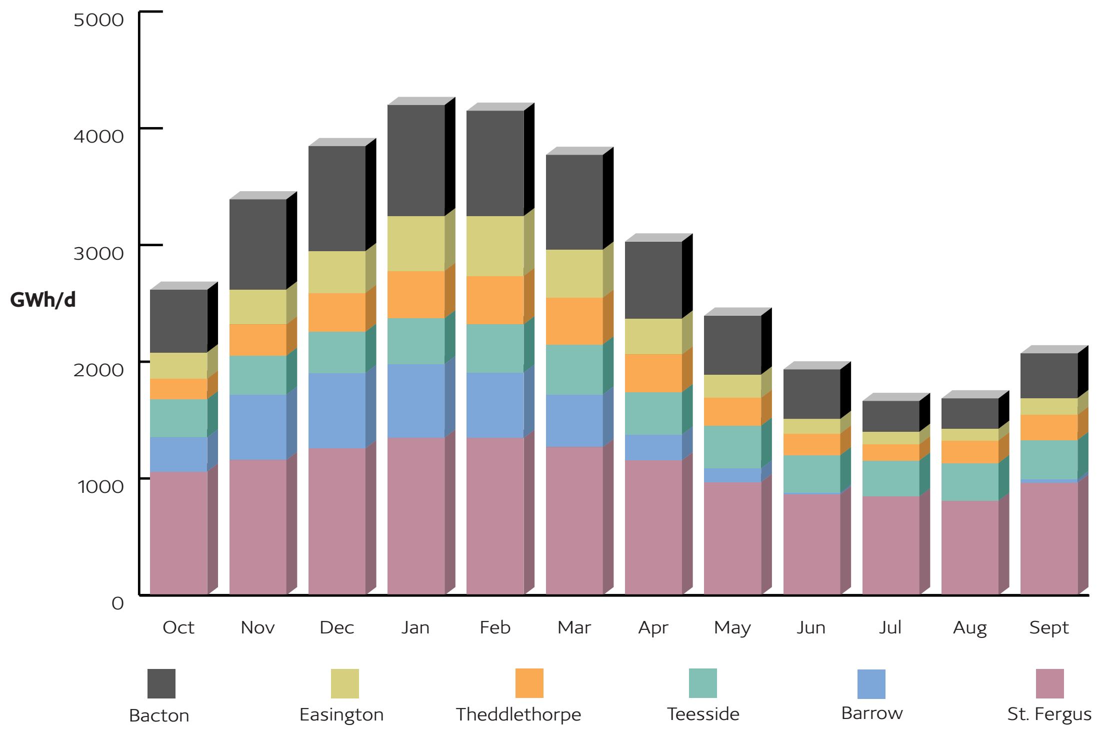


Table A8.2 Beach Supply Profile 1999/2000 (GWh/d)

	St Fergus	Barrow	Teesside	Thedd'thp	Easington	Bacton	99/00 SND
October	1,013	303	336	195	242	529	2,617
November	1,130	560	346	282	312	762	3,391
December	1,249	645	357	338	363	895	3,848
January	1,351	632	383	397	462	972	4,198
February	1,348	559	399	399	508	936	4,150
March	1,300	436	414	379	392	850	3,772
April	1,158	220	364	323	306	661	3,031
May	974	116	365	237	198	506	2,396
June	802	50	321	201	148	412	1,934
July	771	3	310	167	139	273	1,664
August	755	10	322	207	125	267	1,686
September	920	52	337	225	158	380	2,071

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

A8.3 Effective Beach Terminal Entry Capacities

The following graphs show the entry capacity associated with the six beach terminals under seasonal normal conditions. The profiles are taken from Table A8.2

Figure A8.3a St Fergus Seasonal Normal Supply Profile 1999/2000

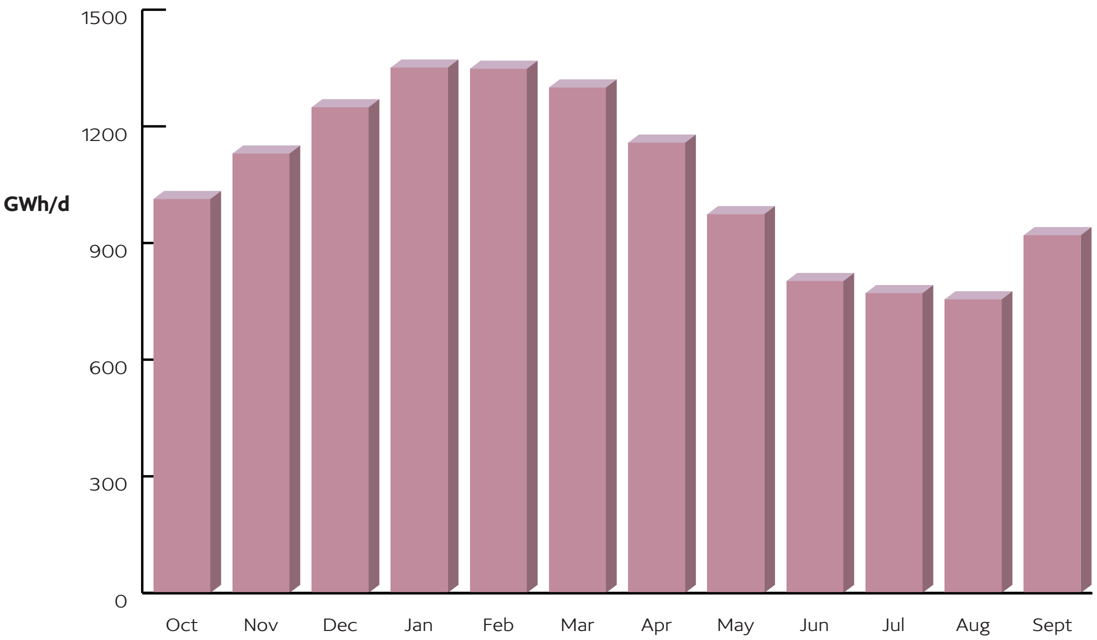


Figure A8.3b Teesside Seasonal Normal Supply Profile 1999/2000

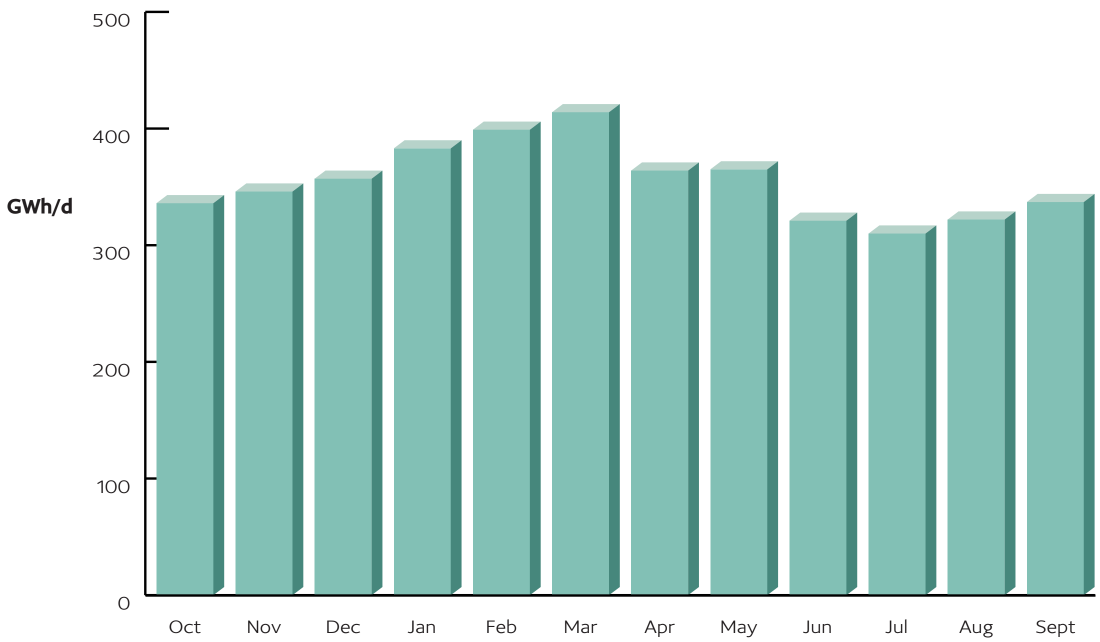


Figure A8.3c Bacton Seasonal Normal Supply Profile 1999/2000

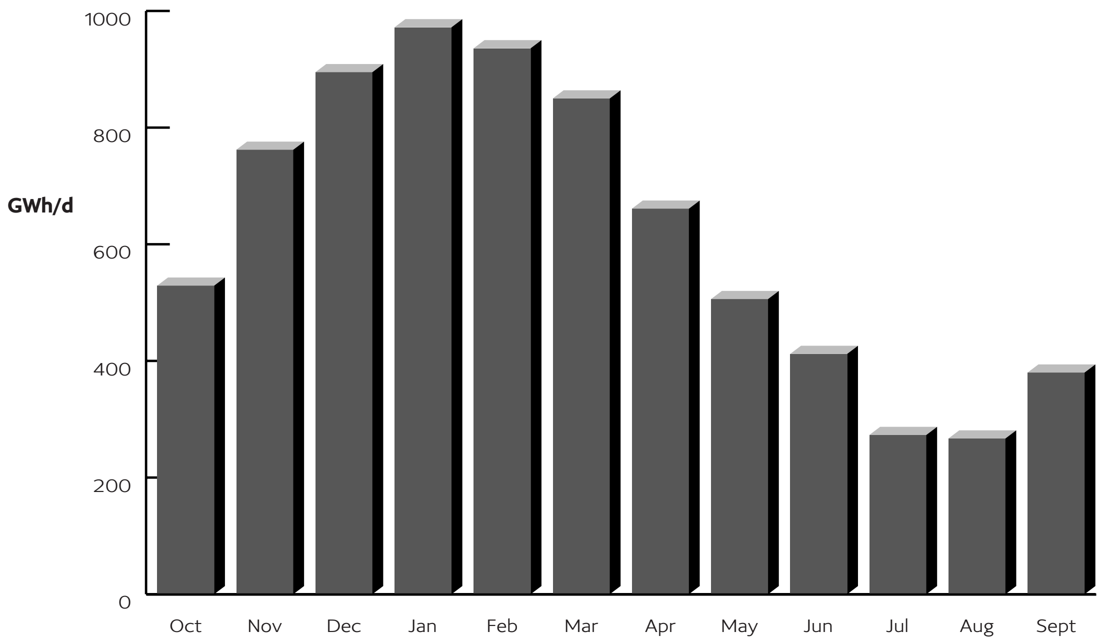


Figure A8.3d Barrow Seasonal Normal Supply Profile 1999/2000

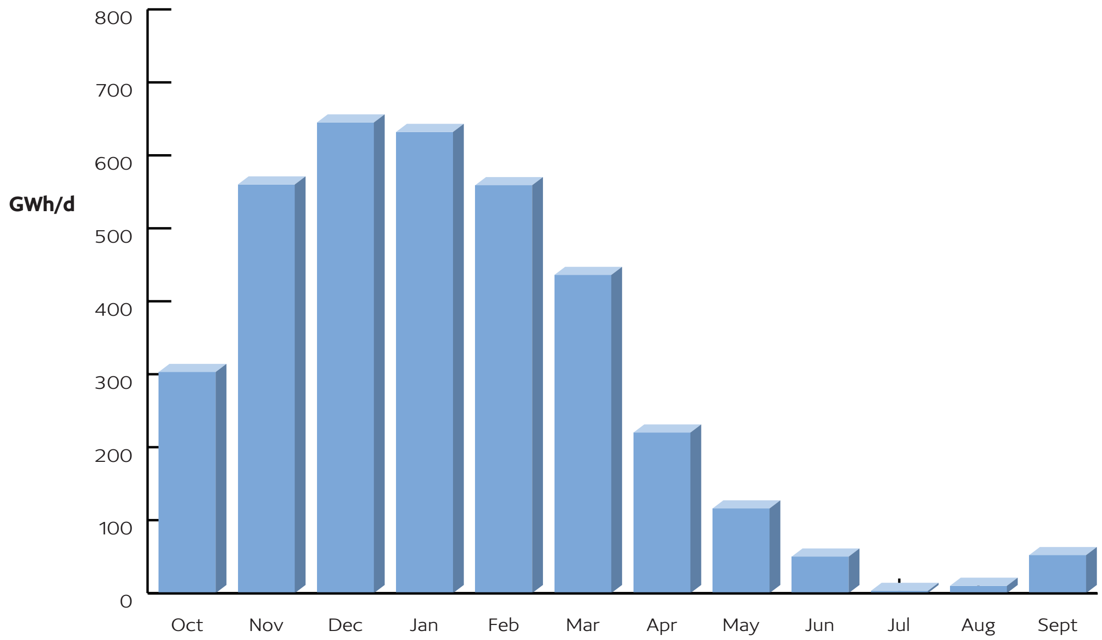


Figure A8.3e Easington Seasonal Normal Supply Profile 1999/2000

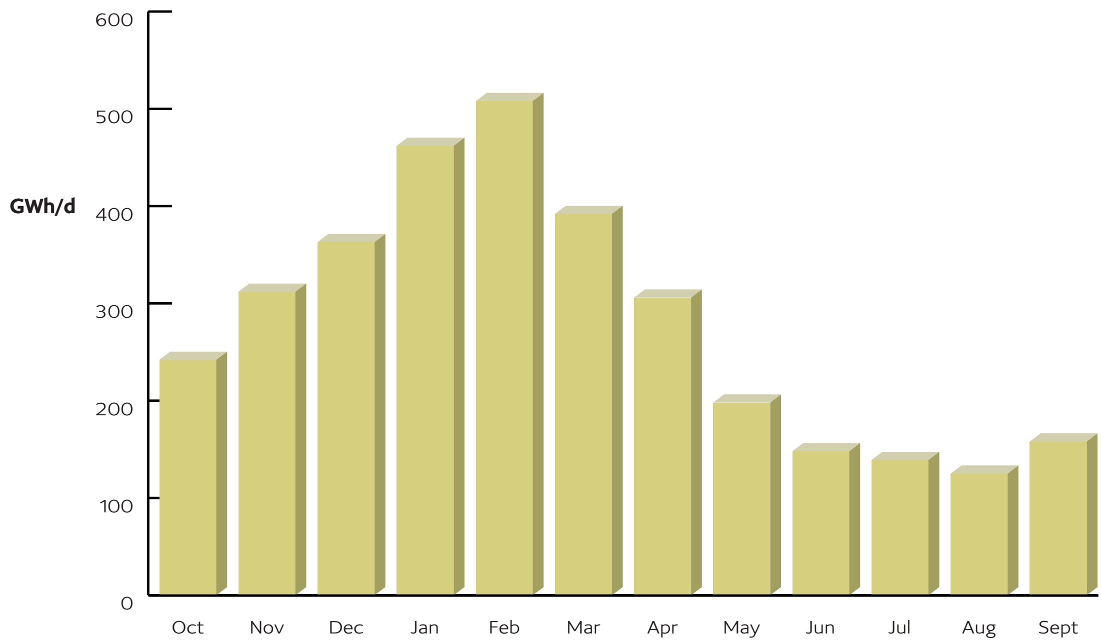
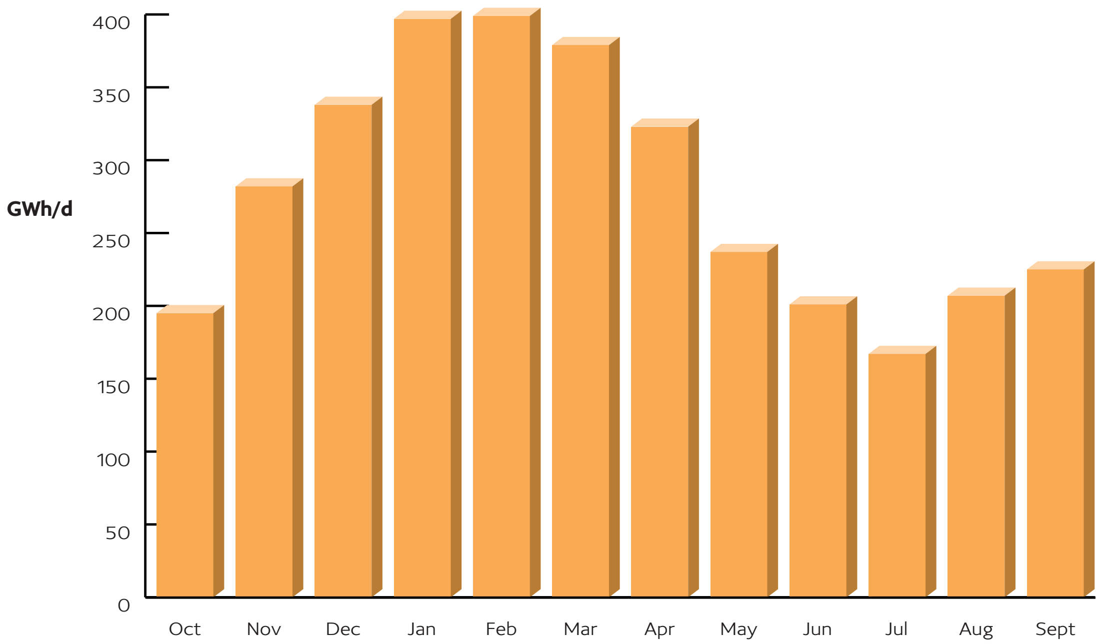


Figure A8.3f Theddlethorpe Seasonal Normal Supply Profile 1999/2000



Appendix 9

Connection to Transco's System

A9.1 Introduction

This chapter sets out 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 Public Gas Transporters (PGTs) 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 PGT
- any other non-Transco pipeline transporting gas to premises consuming more than 75,000 therms 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. Consequently the arrangements, in terms of engineering requirements and charging policy, are being reviewed. Further details can be found in Transco's Connection Charging Statement.

A9.2 System Entry Connections

Transco's policy is that the full capital costs of any connection, including project management costs and any costs associated with the existing or new Transco 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 metering and quality monitoring if these are required to be provided by Transco. Transco will not receive a return on these assets and in some circumstances may pay additional operating costs.

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 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 which 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 existing NTS. 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 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.

A9.2.1 Network Entry Quality Specification

In negotiating the Network Entry Agreement and setting the entry quality specification for a new delivery facility and/or System Entry Point, Transco will agree that gas meeting the following specification and complying with the Transco system's statutory requirements will be accepted:

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 Dewpoint
    - Not more than -10°C at any pressure up to 75 bar g
7. Wobbe Number (real gross dry)
    - Within 48.14 to 51.41 MJ/m3 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/m3, in compliance with the Wobbe Number, ICF and SI limits described above, subject to a 1MJ/m3 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 or liquid material which 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) which 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 which 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

14. 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 75 bar g.

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).

A9.3 System Exit Connections

A9.3.1 New connections or increased supplies

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 specific categories of load and 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. Full details of these requirements and all other information on how to obtain a connection can be found in the Transco publications "Connection Guidelines 1997" and "Connection Charging Statement" both of which can be obtained from Transco Public Relations (see Appendix 10).

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. As stated in A6.4, 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 year's notice.

Anyone can contact Transco for a connection, whether a shipper, operator, developer or end-user, but gas can only be offtaken when the supply point so created has been confirmed by a Network Code Registered User. To obtain a quotation for a new connection or increased load, the customer should contact the local Transco LDZ Office. A list of contacts is available from the Connection Policy Team (see Appendix 11).

A9.3.2 Self lay pipes or systems

Where a party wishes to lay their own service pipe, to premises expected to consume 75,000 therms (2,196 MWh) 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

Where the connection is for a pipe laid to premises expected to consume more than 75,000 therms (2,196 MWh) 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 75,000 therms (2,196 MWh) 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.

If you are considering laying a pipe that will either vest in Transco or which you want Transco to take ownership of, you should contact your local Transco Asset office at the address given in Appendix 11 before carrying out any design work.

A9.4 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.

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 the reinforcement to be constructed. In the case of high pressure pipelines this can take between two and three years. Requests for firm supplies in a shorter time scale may not be reasonable.

Appendix 10

Transco Publications

To access via the internet:

www.transco-bgplc.com/tr_publications/home.htm

The following publications can be obtained from Pricing.

Tel. 0121 623 2142

- Gas Transportation Charges from 1 October 1999 - /bluebook/home.htm
- Pricing Consultation documents
- Transcost - the guide - /transcost/home.htm

The following publications can be obtained from Transco Market Forecasting

Tel. 0121 711 9124

- 1999 Base Plan Assumptions
- Ten Year Statement - /tys99/home.htm

The following publications can be obtained from Transco Market Analysis & Development

Tel. 0800 328 2626 or 0121 623 2318

- Natural Gas for Furnace Applications
- Think About Gas (domestic)
- Affordable Warmth - An Overview (domestic)
- Gas for the Chemical Industry - Gas Using Guide
- Gas for the Chemical Industry - An Overview
- Gas for Catalytic Heating
- It's Time to Optimise Your Process - Hydrogen Flouride
- Gas for the Aluminium Industry - An Overview
- Gas for the Paper Industry - An Overview

- Gas Cooling - Gas Using Guide
- Gas Cooling - Wallet with Case Studies
- The Benefits of Gas - A Natural Resource
- Natural Gas Vehicles - A Clean Alternative

The following publications can be obtained from Transco Public Relations.
Tel. 0121 623 2161

- From Beach to Meter
- Interruption - A Guide for Users of the Transco Gas Transportation System
- Network Code - The Summary - /netcode/home.htm
- Transco Activity Based Costing Review of 1998
- A Guide to Setting up as a Gas Shipper
- Connection Guidelines - /connections/home.htm
- Connection Charging Statement - /con99/concharge99.pdf
- Winter Operations Review 1998 - /wox99/home.htm
- Standards of Service - /pdfs/sos97a4.pdf
- Managing Director's Review of 1998

Appendix 11

Transco Contacts List

At 31 Homer Road, Solihull, West Midlands, B91 3LT (Tel. 0121 626 4431)

Transco Management Group

Managing Director, Phil Nolan

Chief Operating Officer, Nick Woollacott

Corporate Affairs Director, Chris Le Fevre

Finance Director, Rob Verrion

Strategy and Business Development Director, Stephen Ainger

Regulation Director, Chris Bolt

Managing Director's Office

Head of Legal, Patrick Somers

Head Of Human Resources, Steve Edgeworth

Director, Corporate Projects, Stuart Anderson

Director of LTO, Robin Marshall

Director, Reform of Gas Trading Arrangements, Brian Withington

Other Useful Contacts

Head of Asset Management, Tony Wray

Head of Operations, Les Dawson

Account Managers, Peter Willis, Ian Phipps

Head of Engineering Policy, David Ingham

Investment Manager, Neil Shaw

Connection Policy Team, Alison Gregory

(contact Lee Ward 0121 623 2583)

Planning Manager NTS, Peter Cook

Network Code and Pricing, Tim Davis

General Manager, Support Services, Colin Shoesmith

Business Planning Manager , Keith Abraham

At 465 Stratford Road, Shirley, Solihull, West Midlands, B90 4AA (Tel. 0121 745 9888)

Meter Reading, Guy Hawes

At 51 Homer Road, Solihull, West Midlands, B91 3QJ (Tel. 0121 712 4444)

Shipper Services, Steve Phillips

At Hinckley Operational Centre, Brick Kiln Street, Hinckley, Leics., LE10 0NA
(Tel. 01455 251111)

System Operation, Richard Adcock

National Transmission, Jeremy Bending

At Wharf Lane, Solihull, West Midlands, B91 2JW (Tel. 0121 705 7581)

Information Services, John Lockett

At Chadwick House, Solihull, West Midlands, B91 2FN (Tel. 0121 711 9894)

Customer Portfolio Management, Kim Salmon

Transco has recently restructured and now operates as a number of Asset and Operations businesses based upon 12 administrative LDZs; contact names and addresses are given below. Note that these administrative LDZs are not the same as the 13 Network Code LDZs: (which divide Wales into 2 LDZs i.e, Wales North and Wales South)

Asset Management

Asset Business Manager East (East Midlands, East Anglia, Yorkshire),

David Smith

Padholme Road, Peterborough, PE1 5XR

Asset Business Manager West (West Midlands, Wales, South Western),

Richard Robinson

Ferry Road, Cardiff, CF11 0XR

Asset Business Manager North (Scotland, Northern, North Western),

Ruth Thompson

Crow Hall Road, Cramlington, Northumberland, NE23 9LY

Asset Business Manager South (Southern, North London, South East),

David Norley

2, Leesons Hill, Orpington, Kent, BR5 2TN

Operations Management

General Manager, Operations East (East Midlands, East Anglia, Yorkshire),
Alf Lees
Lime Tree Place, Mansfield, NG18 2HZ

General Manager, Operations West (West Midlands, Wales, South Western),
John Wych
Isca House, Haven Road, Exeter, EX2 8DS

General Manager, Operations North (Scotland, Northern, North Western),
Derek Jones
24, Heworth Green, York, YO3 7UG

General Manager, Operations South (Southern, North London, South East),
Mike Fereday
Uxbridge Road, Slough, Berkshire, SL2 5NA

General Manager, Connections,
Jim Attwood
5 Abingdon Road, Didcot, Oxfordshire, OX11 9BL

Appendix 12

Glossary

Advanced Reservation of Capacity Agreement (ARCA)

An agreement between BG and shippers for future NTS pipeline capacity for large sites. Allows shippers to reserve capacity in advance of first gas flows

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 our supply and demand forecasts for the next ten years

Calorific Value (CV)

The ratio of energy to volume measured in Megajoules per cubic meter (MJ/m3) which for a gas is measured and expressed under standard conditions of temperature and pressure

Composite Weather Variable (CWV)

A single 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 the 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 highest efficiency means of generating electricity

Compressor Station

An installation that uses gas turbine driven gas compressors powered jet engines to boost pressures in the pipeline system. Used 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 106 cubic metres, one billion cubic metres (bcm) equals 109 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 data logger) that enables meter readings to be taken on a daily basis. Further classified as SDMC, DMA, DMC or VLDMC according to annual consumption

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

Electronic Token Meter (ETM)

A prepayment meter which uses “smart card” technology to enable a gas supplier to recover gas charges and any outstanding debt as gas is consumed

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 forecasted supply and demand change over time

Flexibility Mechanism

A way for shippers to bid to buy gas from, or sell gas to, Transco for system balancing purposes

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 to Ballylumford and Dublin. The European interconnector transports gas to or from Zeebrugge

Interruptible Service

A service that offers lower transportation charges but where, at times of high demand, Transco can shut off the 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 103 kWh, one Gigawatt hour (GWh) equals 106 kWh, and one Terawatt hour (TWh) equals 109 kWh

Linepack

The volume of gas within the National or Local Transmission System at any time

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

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

Mid Merit

Centrally dispatched power station that is within the central range of the electricity pool merit order and consequently is not base load

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 main 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

Odorisation

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

Office of Gas and Electricity Markets (Ofgem)

A Government department responsible for regulating the UK's gas and electricity markets

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

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

Public Gas Transporter (PGT)

Transco is licensed by the DDGS to transport gas to consumers, along with other PGTs of which Transco is the largest

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 65 such historical years of data)

Shipper or Network Code Registered User

A company with a Shipper Licence is able to buy gas from a producer, sell it to a supplier and employ a PGT 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

Supply Year

A Supply Year is defined as the period between 1 October and 30 September

System Average Price (SAP)

The weighted average price of accepted flexibility mechanism bids on a day

System Marginal Price (SMP)

The highest flexibility mechanism system buy bid accepted on a day (SMP buy), or the lowest accepted system sell bid (SMP sell)

Therm

The 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

Unbundled Service

An optional service, offered and priced separately from Transco's core transportation services. For example meter reading

Certain Forward Looking Statements

This "Transportation Ten Year Statement 1999" includes "forward looking information" within the meaning of Section 27A of the US Securities Act of 1933, as amended, and Section 21E of the US Securities Exchange Act of 1994, as amended, with respect to (i) Transco's volume forecasts, (ii) system reinforcement projects and (iii) investment plans. By their nature, forward-looking statements involve risk and uncertainty because they relate to events and depend on circumstances that will occur in the future. There are a number of factors that could cause actual results and developments to differ materially from those expressed or implied by such forward-looking statements. These factors include, but are not limited to, those in this document.

Ten Year Statement Feedback

We would welcome your feedback on the Ten Year Statement to help us improve the style and content and to make it more interesting and relevant to you, the reader.

Please answer the following questions (on both sides of the form) and return it to the address overleaf. Thanks for your time.

Your Organisation

Transco ☐

Other ☐ Please specify ☐

	Not Very					Very
1. How relevant was the material?	☐	☐	☐	☐	☐	☐
2. How interesting was the document?	☐	☐	☐	☐	☐	☐
3. How easy to understand was the document?	☐	☐	☐	☐	☐	☐
4. How useful were the headings and titles?	☐	☐	☐	☐	☐	☐
5. How useful were the diagrams?	☐	☐	☐	☐	☐	☐
6. How appropriate was the level of detail?	☐	☐	☐	☐	☐	☐
7. How logical was the layout?	☐	☐	☐	☐	☐	☐
8. How clear was the language?	☐	☐	☐	☐	☐	☐
9. Overall, how useful was the document?	☐	☐	☐	☐	☐	☐

10. What did you like best?

11. What did you like least?

Please turn over...

12 What specific improvements would you make?

13. Any other comments?

Thanks for your feedback. We might want to contact you to clarify specific points so, if you don't mind us calling you, please print your name and number below.

Name:	**Telephone:**

Now please return the form to the following address:

Business Planning
Transco
Chadwick House
Blenheim Court
Solihull
West Midlands
B91 2AA

Fax 0121 711 9958