Wholesale Gas Prices in October and November 2003

Interim report

28 May 2004 118/04

Summary

Gas prices last winter

There was a significant rise in the spot wholesale price of gas in Great Britain last October. Prices increased by over 18p/therm and remained high, by historical standards, throughout October and November.

The Office of Gas and Electricity Markets (Ofgem) received a number of complaints, both from companies in the market and from customers. They complained that the rise in prices did not appear to reflect changes in either gas supply or demand. Customers and consumer groups complained that the effect of the price rises on gas customers was material – some domestic gas suppliers cited the increase in wholesale prices when raising retail prices to domestic customers. Many large industrial and commercial customers also felt the impact as the prices in their gas supply contracts are often linked to movements in spot prices.

Increases in wholesale gas prices, even significant ones, do not necessarily mean that companies have been involved in any misconduct, such as the manipulation of market prices. Over short periods, rising prices can often be easily explained and understood by changes in underlying market conditions – for example where gas demand suddenly increases during unexpectedly cold weather or where mechanical faults lead to an unexpected reduction in gas supplies available from the North Sea or the Continent. Over longer periods, rising prices can signal the need for new investment in gas production and storage and can help to make sure that this investment is made so that customers continue to enjoy secure gas supplies at competitive prices.

Based on the information available at that time, Ofgem's preliminary assessment suggested that there was no obvious explanation, in terms of movements in demand and supply, for the significant price rises. Given the impact on customers, Ofgem's primary duty to protect customers' interests and the lack of an obvious explanation, Ofgem decided to launch a probe to establish, as far as possible, the cause of the price rises. On 14 November 2003, Ofgem wrote an open letter, published on our website, to all interested parties seeking their views on the potential causes of the price rises.

The gas market in Great Britain has different regulatory and commercial arrangements onshore and offshore. There are a number of bodies with regulatory powers in the gas market. The Department of Trade and Industry (DTI) has some sectoral regulatory

powers offshore and is, for example, responsible for licensing offshore production. Ofgem has sectoral regulatory powers for the onshore gas market. Ofgem and the Office of Fair Trading (OFT) both have powers under UK and EU competition law to tackle anti-competitive behaviour and conduct. Gas is also traded onshore like other commodities, such as oil, and the Financial Services Authority (FSA) is responsible for regulating certain traded gas markets.

The different commercial and regulatory arrangements in place have had some impact on the conduct of Ofgem's gas probe. Ofgem does not, for example, have access on a routine basis to the level of available gas supply from the UK gas producers. This contrasts with the situation in electricity where information from generators is available to Ofgem and the market as a matter of routine. The DTI, Transco[1] and the UKOOA[2] have recently concluded a voluntary set of arrangements that aim to improve the flow of information about offshore supplies to the gas market.

Ofgem's probe has, to date, focussed on seven potential explanations for the rise in gas prices that were highlighted by responses to Ofgem's letter. Some of these potential explanations pointed to potential manipulation by companies and others pointed to genuine and legitimate reasons for the rise in gas prices.

This document sets out an update of the findings of Ofgem's probe to date. Ofgem's analysis to date has enabled us to now focus on two possible causes:

- why were supplies from UK gas producers lower than expected through five of the fourteen sub-terminals where gas is brought onshore? and
- why did the gas interconnector between the UK and Belgium continue to export gas for some time after the price rises even though GB gas prices were much higher than reported prices on the continent?

Ofgem has therefore written informally to a number of gas producers, terminal operators and companies who ship gas through the interconnector. Ofgem has asked them to provide us with more information to help Ofgem understand better the causes of the wholesale gas price rises. Ofgem hopes, given the significance and importance of this matter to customers, that companies will co-operate with Ofgem's request for further information. This information will help Ofgem to establish whether there is any

---

[1] Transco is the main gas transporter onshore and is also responsible for the operation of the high pressure national gas transportation network.

evidence of manipulation or whether there are legitimate reasons for the reduced gas supplies such as unplanned outages at certain offshore facilities. Ofgem is asking companies to respond by 25 June.

Ofgem would welcome views on this interim report. The next steps in Ofgem's probe will clearly depend on the nature of any information received. Ofgem hopes to be in a position to publish a further update as soon as possible once this information has been received and analysed.

Gas prices this winter

Forward gas prices for this winter have also increased significantly since last year. Since 2 January 2004 forward gas prices have risen by 26 per cent from 29p/therm to 36.75p/therm. A number of companies and customers have expressed concerns about whether companies are manipulating the gas market to push prices up this winter.

National Grid Transco (NGT) has recently published its assessment[3] of the supply and demand balance in gas for this winter. This has highlighted that production of gas from the UK Continental Shelf, where many of the large fields are now quite mature, is declining faster than they previously anticipated. As UK production declines, it will be replaced by more imported gas and, potentially, some customer response during periods of peak demand winter demand. This may be more expensive than current supplies. They have also explained that there is some evidence of declining reliability from older fields. This may explain some, or all of the increase in prices. NGT has, however, confirmed that in all credible scenarios this winter, security of supply will be maintained.

Given the level of concern expressed and the significant increase in prices, Ofgem is also inviting views from: companies, customers and other interested parties on the potential causes of these price rises. Ofgem intends to publish an update on this winter's prices once the responses, which are due by 25 June, have been analysed.

---

[2] The UK Offshore Operators Association is the trade body that represents the offshore gas industry.
[3] NGT, Preliminary Winter Outlook Report, 17 May 2004.

Table of contents

1. Introduction

Purpose of this document

1.1. The purpose of this interim report is to provide an update to market participants and customers on Ofgem's probe into the causes of high wholesale gas prices last winter.

1.2. This document sets out Ofgem's analysis of a number of possible causes for the high wholesale spot gas prices. The document presents Ofgem's key findings, sets out our initial conclusions and the reasons why Ofgem has closed it down, at this stage, enquiries into five of the possible causes. The document also outlines Ofgem's proposed next steps. Finally, this document invites views from industry participants and other interested parties both on Ofgem's analysis and conclusions on the high wholesale spot gas prices that prevailed last winter and the recent, significant rises in wholesale gas prices for the coming winter.

Background

1.3. During the second half of October 2003, there was a significant increase in National Balancing Point (NBP)[4] Day-ahead gas prices, which reached a peak of 34p/therm on 28 October 2003. This is 80 per cent higher than the average price for the October product quoted in September 2003. Prices remained high during November 2003, rising to a peak of 32p/therm.

1.4. In response to concerns expressed by customers and industry participants, Ofgem conducted some preliminary analysis into the high gas prices.

1.5. This analysis showed that:

- Spot prices for days in October 2003 were, on average, 5.2p/therm higher than those anticipated by the market in the months prior to delivery;

[4] The NBP is a notional point on Transco's national gas transmission system where gas trades are deemed to take place.

- October/November 2003 prices were, on average 9p/therm higher than those observed during the same period in 2002;

- The level of gas demand did not offer an obvious explanation for the sudden, significant increase in wholesale spot gas prices.

1.6. Ofgem concluded that, on the basis of the available information, it was not clear that market fundamentals alone could explain the recent moves in wholesale gas prices. Ofgem therefore wrote an open letter to the industry and other interested parties on 14 November 2003[5], inviting views on the possible reasons for the movements in gas prices.

Onshore/offshore arrangements[6]

1.7. The GB gas market has different regulatory and commercial arrangements onshore and offshore. The key offshore players are the gas producers (who operate the gas fields), undersea pipeline owners/operators and sub-terminal operators. There are six main terminals at which gas is landed in the UK (these are made up of fourteen sub-terminals) and enters Transco's National Transmission System (NTS) – the network of high pressure pipelines that transport gas around the country. Gas from the Belgian interconnector is landed at the Bacton terminal. Currently there a number of proposals to add further terminals for example at Milford Haven in Wales to land new sources of imported gas as UK production declines..

1.8. The major onshore players include gas transporters, of which Transco is the largest, shippers who arrange for the conveyance of gas across the transmission system by buying gas from producers and selling it to suppliers and suppliers who sell gas directly to end consumers. A multilateral contract, known as the network code, sets out the terms for access to, and use of, Transco's NTS. Shippers must sign up to this code before they are able to trade or transport gas across the network.

[5] This letter is available from our website, www.ofgem.gov.uk.
[6] For further information on the onshore/offshore regime refer to Appendix 1.

1.9. The network code sets out, amongst other things, the rules for booking capacity on the NTS and the rules for shippers to make sure that they balance their inputs to and offtakes from the NTS each day.

Regulatory framework

1.10. There are a number of regulatory bodies who have responsibility for the regulation and monitoring of the gas market. These include, Ofgem, Department of Trade and Industry (DTI), Financial Services Authority (FSA), Office of Fair Trading (OFT), the Competition Commission (CC) and the European Commission (EC).

1.11. The DTI has some sectoral regulatory responsibilities for the offshore sector is as they have responsibility for offshore licensing and production regulation under the Petroleum Act 1998.

1.12. The Utilities Act 2000 provided for the creation of the Gas and Electricity Markets Authority (the Authority) which is charged with the regulation of the onshore gas regime. The Gas Act 1986, as amended by the Utilities Act 2000, provides for the regulation of the onshore gas regime in Great Britain and for the separate licensing of gas transporters, gas shippers and gas suppliers. Section 4AA of the Gas Act 1986 also sets out the principal objectives and duties of the Authority in respect of gas.

1.13. Under the Utilities Act 2000 the Authority has the power to impose financial penalties on companies found to be breaching, or to have been in breach of, licences issued to them under the Gas Act 1986 or under the Electricity Act 1989.

1.14. The FSA has statutory powers under the Financial Services and Markets Act 2000. The Financial Services and Markets Act 2000 deals, amongst other things, with market abuse that extends to certain traded gas markets and exchanges. The penalties for market abuse range from fines to censure.

1.15. Ofgem has concurrent powers with the OFT under the Competition Act 1998 and under the Enterprise Act 2002. Under the Competition Act, companies can be fined for abusing a dominant position or entering into anti-competitive agreement. Under the Enterprise Act, the Authority has concurrent powers with

the OFT to make market investigation references to the CC where it has reasonable grounds for suspecting that any feature, or combination of features, of a market in the UK prevents, restricts or distorts competition.

Gas prices winter 2003/04 - probe and interim conclusions

1.16. In response to the open letter sent on 14 November 2003, Ofgem received thirty two responses which outlined a range of possible reasons for the high gas prices.

1.17. Ofgem grouped these responses into seven main issues that it considered warranted further analysis. The seven possible price drivers, identified by Ofgem in the light of these responses, are:

1. **Changes to the composition of supply** – this relates to concerns regarding low beach supplies, the use of storage and the behaviour of the gas interconnector, which remained in export mode for much of October 2003.

2. **Higher levels of demand** – whether higher wholesale gas prices were due to higher-than-expected demand

3. **Alleged manipulation of linepack[7] within-day** – whether shippers/producers were profiling gas supplies to create an impression that the market was short of gas?

4. **Price movements in linked commodity markets** – whether higher prices in related markets such as oil, electricity, coal or gas oil contributed to the rise in gas prices?

5. **Alleged manipulation of market prices** – whether market participants were posting 'false' bids on the electronic trading platforms and submitted false information on trades in an attempt to manipulate key gas price indexes;

6. **Decrease in market liquidity** – whether the withdrawal of a number of major market players meant that a few players are able to influence prices?

[7] Linepack is the volume of gas stored in the pipeline system.

7. **Market sentiment** – whether wholesale gas prices were being driven by market sentiment rather than market fundamentals?

1.18. Chapter 4 outlines Ofgem's detailed analysis of the seven possible price drivers identified, to determine whether they could explain, as far as is possible, the significant increases in wholesale gas spot gas prices. Ofgem has, in the light of this analysis, been able to close down enquiries into most of these drivers at this stage. Ofgem will now focus enquiries on two areas – why were gas supplies from the UK Continental Shelf lower than expected and why did the interconnector not begin to import gas sooner when GB wholesale gas prices moved above reported continental prices.

1.19. Ofgem intends to undertake further analysis on these two areas. Ofgem has written informally to a number of specific gas producers, sub-terminal operators and interconnector shippers asking for further information to assist Ofgem in establishing the causes behind the high wholesale gas prices.

Gas prices this winter

1.20. Forward prices for this winter have risen significantly since winter 2003/04. Winter 2004/05 prices are trading at a premium of 16p/therm to winter 2002/03 and at a premium of 11p/therm to the start of the gas year in October 2003.

1.21. Ofgem recognises that there are a number of potential demand and supply side explanations for the price increases observed. Ofgem also recognises, however, the significant concerns expressed by companies in the industry and customers about the possibility that prices are being manipulated. Ofgem is, therefore, inviting views from the industry, customers and other interested parties on the potential causes of these significant increases in wholesale gas prices for the coming winter.

Summary of document

1.22. Chapter 2 provides some background information to the probe, providing analysis of October and November 2003 demand and prices. Chapter 3 sets out the allegations and suggested price drivers. Chapter 4 contains Ofgem's analysis of each of the suggested prices drivers and outlines Ofgem's views on whether

these drivers appear to be significant in explaining the price rises. Chapter 5, contains a brief discussion of the recent rise in forward gas prices for this coming winter (winter 2004/5). Finally, chapter 6 outlines Ofgem conclusions and next steps.

1.23. Appendix 1 provides more detailed information the different commercial arrangements that operate onshore and offshore in the gas market. Appendix 2 provides greater detail on the regulatory framework for the gas market that is relevant to the probe. Appendix 3 sets out the information that Ofgem is informally requesting from gas producers and sub-terminal operators. Appendix 4 sets out the information that Ofgem is informally requesting from Interconnector UK (IUK) shippers.

Views invited

1.24. Ofgem would welcome views from market participants, customers and other interested parties on the both our analysis of the causes of the high wholesale gas prices observed during October and November 2003 and the causes of the more recent rise in forward prices for wholesale gas for the coming winter.

1.25. All responses will normally be published on Ofgem's website and held in the Research and Information Centre. However, if respondents do not wish their response to be made public then they should clearly mark their response as confidential. Ofgem prefers to receive responses in an electronic form so they can be placed easily on the Ofgem website. Responses should be submitted by 25 June 2004 either electronically to becky.neale@ofgem.gov.uk or post, addressed to:

Kyran Hanks
Director, Wholesale Markets,
Office of Gas and Electricity Markets
9 Millbank
London
SW1P 3GE

Way forward

1.26. As a result of our analysis into the possible drivers of gas prices during October and November 2003, Ofgem has decided not to pursue most of the proposed drivers, at this stage. However, Ofgem has significant further questions relating to two areas. Ofgem has issued informal information requests today to a number of producers, sub-terminal operators and IUK shippers. Ofgem is asking for additional information relating to beach deliveries and the delay in the interconnector switching to moving significant volumes of gas from the Continent when GB wholesale gas prices moved above reported continental wholesale gas prices. Ofgem will use this information to assist further analysis into the causes of the high wholesale gas prices last winter.

1.27. The next steps in Ofgem's probe will clearly depend on the nature of any information received. Ofgem hopes to be in a position to publish a further update as soon as possible once this information has been received and analysed.

1.28. With respect to gas prices for this winter (2004/05), Ofgem is continuing to monitor prices as part of its ongoing market monitoring activities. Ofgem has invited views on whether the recent price movements appear to be consistent with underlying market conditions and what parties consider are the key drivers in forward prices for this winter.

1.29. Ofgem intends to publish an update on this winter's prices once the responses, which are due by 25 June, have been analysed.

2. Background

2.1. This chapter provides: a more detailed explanation of rise in wholesale spot gas prices last winter that led to Ofgem's decision to publish an open letter to industry and launch our probe[8].

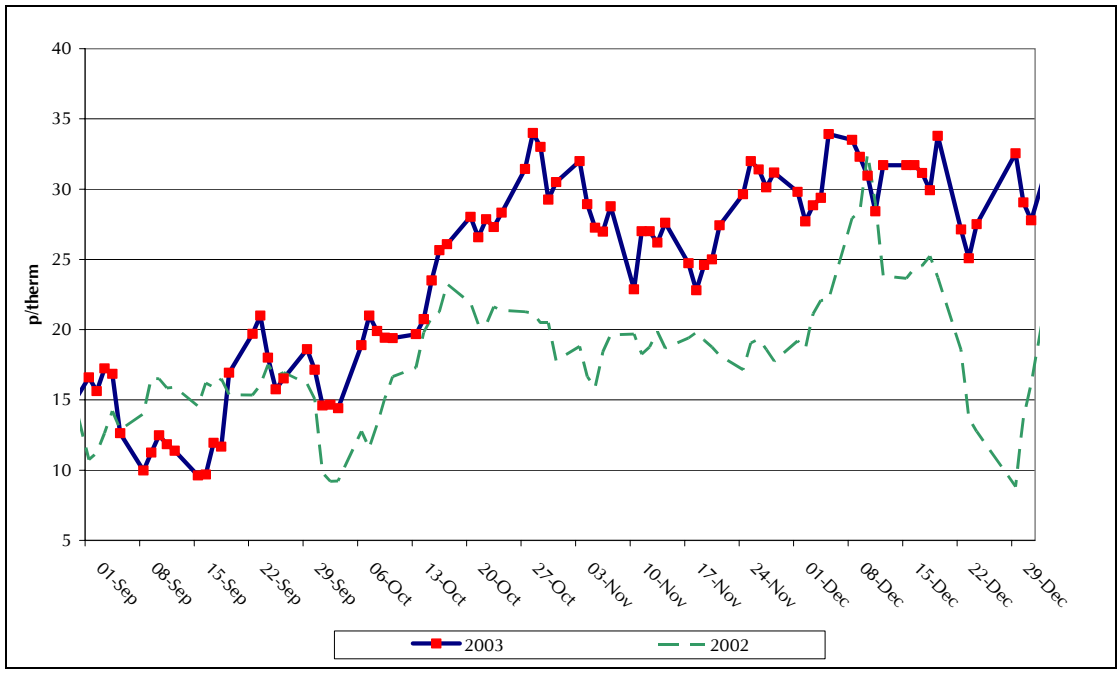
2.2. More detailed analysis of the potential reasons behind these increases is presented in later chapters.

Increases in wholesale spot gas prices

2.3. During the second half of October 2003, there was a significant increase in NBP day-ahead gas prices, which reached a peak of 34p/therm on 28 October 2003. Prices then declined over the following three weeks, before increasing again after 19 November 2003, and peaking at 32p/therm at the end of November.

2.4. Figure 2.1 shows the development of NBP Day-ahead prices during this period and compares it to the prices prevailing during the same period in the previous year.

Figure 2.1: NBP Day-ahead gas prices, September to December 2002 and 2003

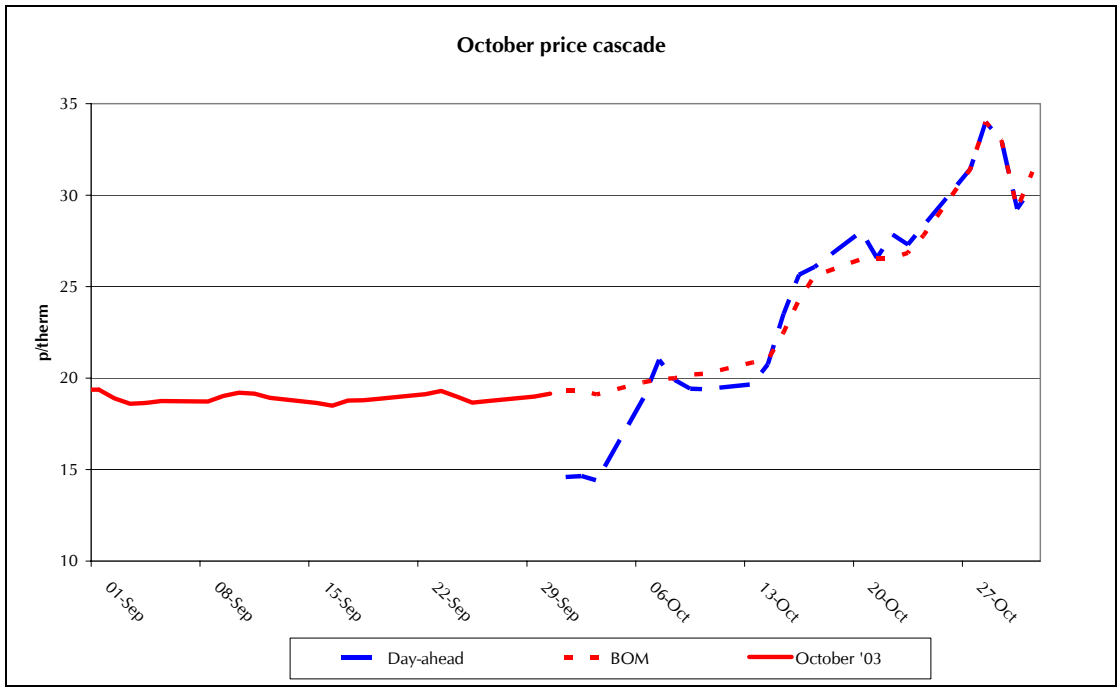


Source: Heren Energy Ltd

[8] "Open Letter on Gas Prices", *Ofgem, 14 November 2003.*

2.5. Figure 2.2 sets this rise in spot prices in context by showing the evolution of the forward price for October delivery together with day-ahead prices for gas during October 2003. This shows that spot prices for the individual days of October 2003 were, on average, 5.2p/therm higher than those anticipated by the market in the months prior to delivery.

Figure 2.2: Development of October 2003 NBP prices, during 2003



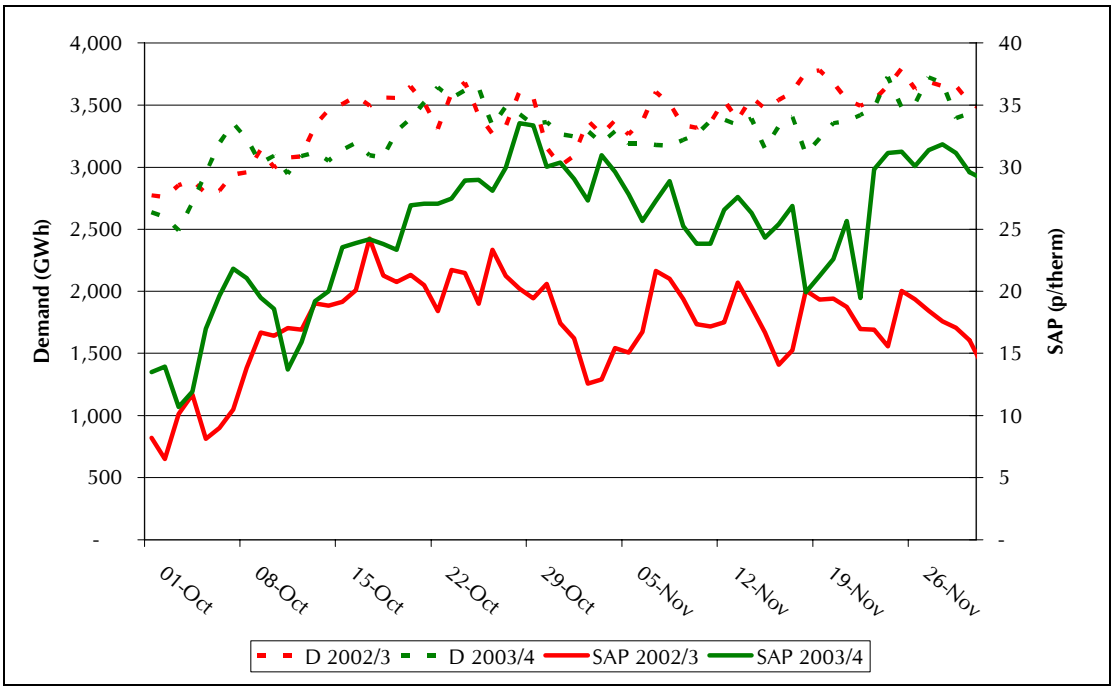
Source: Heren Energy Ltd

Relationship between gas demand and price

2.6. In the open letter to industry, Ofgem highlighted that it did not appear that changes in demand could readily explain the increase in the level of prices that occurred in October 2003. In particular, it was noted that whilst temperatures in the latter half of October 2003 were below seasonal normal temperatures, system demand levels were not significantly different to those of October 2002, when prices peaked at 22p/therm. In addition, there appeared to have been no additional variations to expected large user demand other than those which had been announced to the market well in advance of the recent price movements.

2.7. Figure 2.3, below, compares both the System Average Price[9] (SAP) and total gas demand[10] for the period 1 October 2003 to 30 November 2003, with the same period of the previous year. This analysis shows that prices were significantly higher in October and November 2003 than during the same period in the previous year, without any significant increase in the level of gas demand.

Figure 2.3: Comparison between SAP and demand, 1 October to 30 November 2002 and 1 October to 30 November 2003

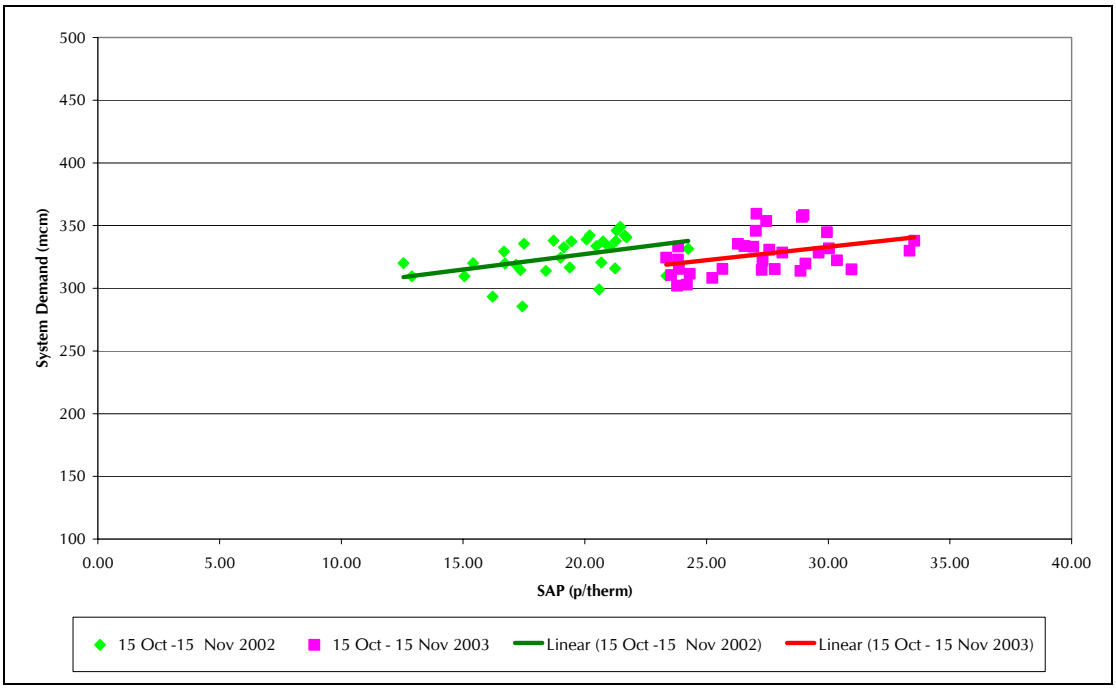


Source: National Grid Transco

2.8. Figures 2.4 and 2.5 consider the relationship between demand and price in more detail. Figure 2.4 highlights that there appears to have been a change in the relationship between price and demand year-on-year, as the 'line of best-fit' (a statistical means of assessing the relationship between demand and price based on observed data) appears to have shifted significantly to the right. Amongst other possible explanations, this change could be explained by factors reducing the availability of gas supplies.

[9] SAP is the volume-weighted average price of all non-physical or locational transactions on the On-the-day Commodity Market. It is used as a basis for cashout prices within the gas industry.
[10] Demand in this context is System Demand, which is the sum of all loads on Transco's National Transmission System ('NTS').

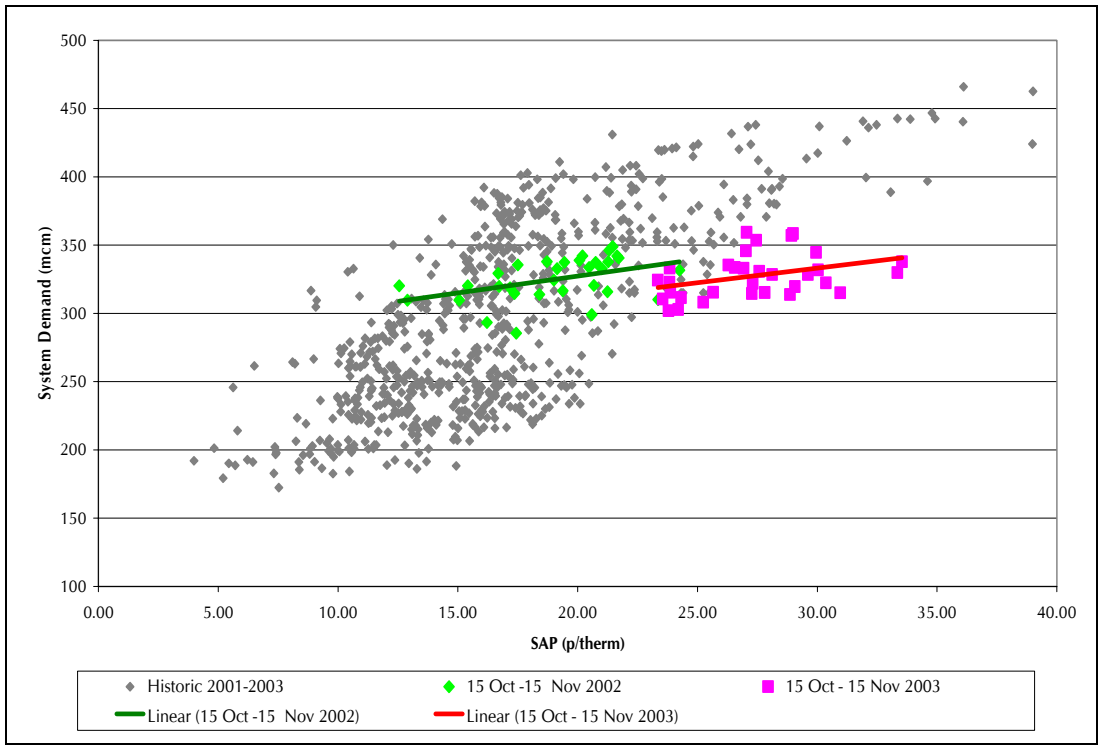
Figure 2.4: Comparison of SAP and demand between 15 October and 15 November 2003 with corresponding figures for 2002



Source: National Grid Transco

2.9. Figure 2.5 widens this analysis to include price and demand information from October 2001 to 15 November 2003. This suggests that there was a fundamental change in the relationship between the level of demand and prices, when compared to previous periods.

Figure 2.5: Comparison of SAP and demand, historic data since October 2001 versus 15 October to 15 November 2002 and 15 October to 15 November 2003



Source: National Grid Transco

2.10. This analysis shows that gas prices during the period had increased significantly year on year but that this movement could not be readily explained by movements in the level of gas demand.

Supply side factors

2.11. On the supply side, a number of offshore outages were reported in the press. However, based upon the information available to Ofgem at that time, it did not appear that the level of outages was significantly higher than historic levels. Ofgem could not, therefore, readily explain the price movements with reference to known changes in supply availability.

3. Possible explanations for gas prices last winter

3.1. This chapter presents a description of the seven potential price drivers. Chapter 4 considers each of these price drivers in more detail. The seven price drivers were established from Ofgem's regular market surveillance activities and the responses to the open letter of 14 November 2003. The non confidential responses to this letter are available on the Ofgem website.

Potential price drivers

3.2. Ofgem grouped the potential price drivers into seven main categories, which are set out below.

Changes to the composition of gas supply

3.3. This potential price driver has three elements:

(i) **Lower beach supplies**: Lower gas supplies either because of attempts to withhold gas from the market to manipulate prices or because of a combination of operational problems with offshore fields, and the longer-term effects of the depletion of UK Continental Shelf ('UKCS') fields.

(ii) **The Bacton-Zeebrugge interconnector**: The interconnector continued to export gas for much of this period and did not begin to import gas for some time, despite GB wholesale gas prices being significantly higher than reported continental wholesale gas prices.

(iii) **Use of storage**: The use of storage gas in October 2003 effectively pushed the price of NBP Day-ahead gas above the price of gas for the coming winter (i.e. December 2003, January 2004 and February 2004).

Higher levels of demand

3.4. Gas prices may have increased because of higher than expected demand and the sudden onset of colder weather in mid October.

Alleged manipulation of Linepack,[11] within-day

3.5. Profiling of gas supplies within-day or the submission of misleading Daily Flow Notifications (DFNs[12]), to create the impression that the market was short of gas.

Price movements in linked commodity markets

3.6. Gas prices may have risen because of higher prices in related markets, such as oil, coal, power (electricity) or gas oil.

Alleged manipulation of market prices

3.7. This potential price driver includes the following:

(i) **Wash trades[13]**: Market participants may be using wash trades to increase market prices.

(ii) **False bids**: Market participants may be posting large 'fill or kill' bids.[14] Whilst it is not uncommon for a participant to place a large bid or offer on the electronic platforms, it was suggested that it is unusual for the trader to stipulate that the bid or offer cannot be broken down into smaller packages. As a result, the price of the large trade is left on the trading screen and may influence the pricing decisions of others.

(iii) **False information submitted to providers of benchmark prices**: Market participants may be submitting false information on trades to providers of benchmark prices and gas price indices against which

[11] Linepack is gas that Transco holds in store in the pipeline system.
[12] DFNs are explained in Appendix 1.
[13] These are trades in which a company simultaneously buys and sells a commodity to the same counterparty. These profitless trades, also referred to as Round-trip or Swap trades, are sometimes used by counterparties to inflate traded volumes.
[14] Trades that must be accepted in their entirety and are so large in size they are beyond the trading allowances of many players.

many supply contracts are settled, in order to manipulate these benchmarks or indices.

Decrease in market liquidity

3.8. As a result of reduced liquidity, it is now easier for a few market participants to drive prices upwards.

Market sentiment

3.9. The price rises may not reflect changes in underlying market conditions but more subjective measures known as 'market sentiment' linked to a number of possible factors, including:

(i) National Grid Transco's (NGT) winter operations report (published on 14 October 2003)[15] which was interpreted by some participants as stating the supply/demand balance would be tight if there was a high demand day during the winter.

(ii) The occurrence of interruptions to gas supplies during June 2003.

(iii) The occurrence of power cuts in the UK and US during 2003.

(iv) The circulation of rumours, potentially true but unsubstantiated, about the reliability of supplies from offshore fields.

(v) A lack of information on supplies from offshore fields preventing, participants making informed trading decisions – and the resultant uncertainty added a risk premium to gas prices.

[15] NGT Winter Operations Report 2003-04, published by Ofgem, October 2003.

4. Ofgem's analysis of potential price drivers

4.1. This chapter sets out Ofgem's analysis of the seven potential price drivers that could explain the high gas prices last winter. The chapter also sets out Ofgem's views, in the light of this analysis, on whether each of the seven price drivers provides an explanation for the high gas prices last winter.

1. The composition of gas supply

4.2. There are three main sources of physical supply to the GB market:

a) onshore and offshore fields, via onshore and beach terminals;

b) the Bacton-Zeebrugge interconnector; and

c) storage facilities.

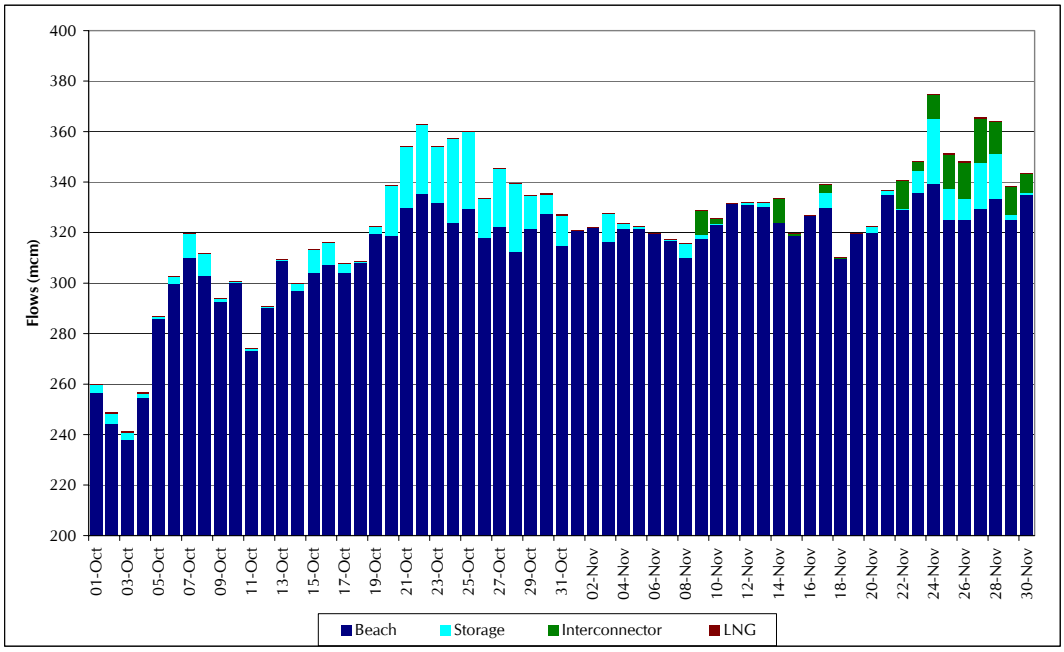
4.3. Ofgem has analysed the information available on each of these sources in order to assess the allegations and suggested price drivers set out in chapter 3.

4.4. Figures 4.1 and 4.2 compare the composition of gas supply in October and November 2003 with the same period in the previous year. This analysis shows that:

- Greater volumes of storage gas were used in October 2003 than October 2002, although demand was at similar levels in both months.
- Storage was used for twelve consecutive days in October 2003, whereas in October 2002 storage was used less frequently and delivered lower volumes.

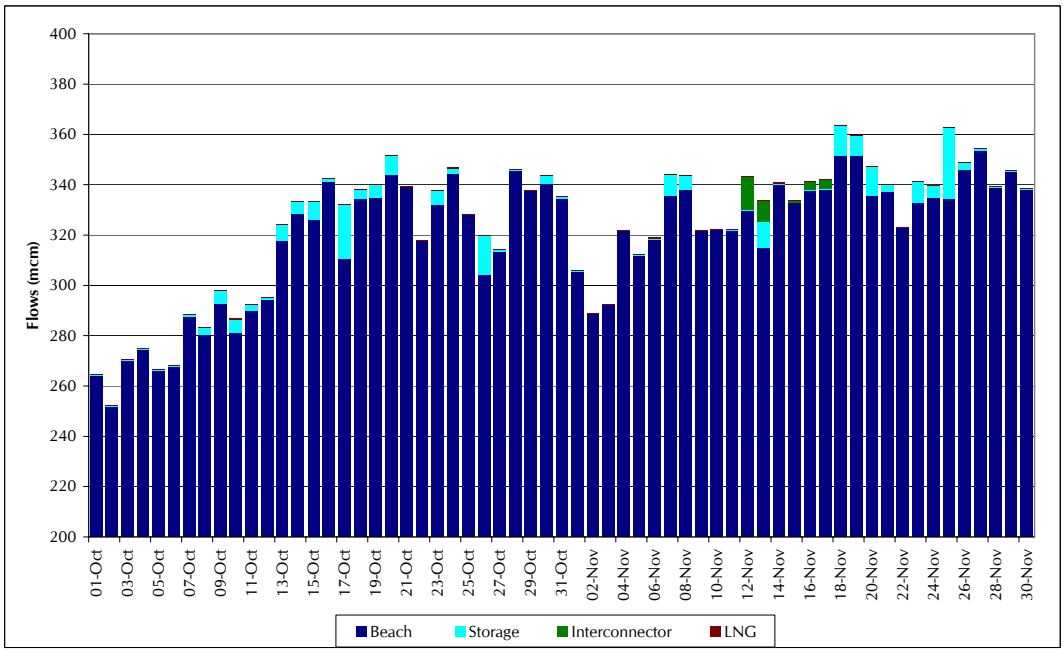
4.5. Historically, supplies from offshore fields and imports via the Bacton-Zeebrugge interconnector have been used to meet the overall level of demand in October. At this point in the year, storage is typically used as a flexibility tool to meet unexpected, short-term changes in demand or supply availability. As such, storage is typically used to meet demand until beach supplies and/or the interconnector can respond.

Figure 4.1: Sources of supply during October and November 2003[16]



Source: National Grid Transco

Figure 4.2: Sources of supply during October and November 2002



Source: National Grid Transco

4.6. The three main sources of supply are discussed in more detail below.

[16] Ofgem has assumed that 1 mcm is equal to 10.54 GWh.

1a - Beach supplies

4.7. For the gas year 2003/04, and at a terminal rather than sub-terminal level, NGT's forecast of the maximum daily flow of gas available from offshore sources was approximately 401mcm.

4.8. As NGT reported in its recent Winter Outlook Report[17], the potential maximum daily flow rate during winter 2003/04 was 371mcm, which is 30mcm less than its original estimate. In its report, NGT gave several reasons for this difference, including greater than expected UKCS decline, late commissioning of new fields and unplanned long-term outages.

4.9. Ofgem has analysed the maximum daily flows of gas at a sub-terminal level thus far in gas year 2003/04 and has found that the sum of maximum daily flows of individual sub-terminals was 394mcm.[18] It should be noted that the day of maximum flow varied between sub-terminals, and hence this figure represents an assessment of the *potential* maximum flow for winter 2003/04 rather than the *actual* maximum flow.

4.10. Responses to Ofgem's open letter suggested, but did not demonstrate conclusively, that beach supplies during this period were lower as a result both of problems with offshore fields (unplanned maintenance and outages for example) and of the depletion of UKCS fields.

4.11. To assess this driver, Ofgem has analysed flows by sub-terminal during the period. Ofgem's analysis aimed to identify whether:

- beach supplies were lower when compared with the same period in 2002; and
- beach supplies were lower at particular sub-terminals than levels of supply achieved over the winter as a whole.

[17] NGT Preliminary Winter Outlook Report 2004/05, Ofgem, May 2004.
[18] Calculated by summing the maximum daily flow observed during winter 2003/04 at each sub-terminal.

Comparison with 2002

4.12. Figures 4.3(a) and 4.3(b) sets out a summary of Ofgem's analysis by providing a year-on-year comparison of flows from offshore fields at the main beach sub-terminals. These figures show that, in at least one of the two months in question, there was a significant reduction in peak flows at three of the Bacton sub-terminals, at the St Fergus–Shell sub-terminal and at the Teesside–BP Amoco sub-terminal. It should be noted that the companies operating these sub-terminals do not necessarily own or control the total volume of gas delivered through their facilities. The volume of gas delivered to the NTS through these sub-terminals is usually determined by gas producers and shippers, albeit subject to the technical constraints of the sub-terminal facilities.

Figure 4.3(a): Changes in sub-terminal flows, October 2003 versus October 2002

Sub-terminal	Oct '03			Oct '02			% change, Oct '02 to Oct '03		
	Min	Max	Average	Min	Max	Average	Min	Max	Average
Bacton - Perenco	6.6	12.1	10.0	8.3	15.5	12.4	-20%	-22%	-19%
Bacton - Tullow	6.9	8.3	7.8	5.9	11.9	10.0	16%	-30%	-23%
Bacton - Shell	9.7	29.0	22.6	10.8	29.3	23.2	-10%	-1%	-3%
Bacton - SEAL	16.9	29.3	24.8	18.6	31.5	26.8	-9%	-7%	-7%
Barrow	10.9	44.8	35.8	7.5	42.5	24.6	46%	5%	46%
Easington - Amethyst	0.0	3.9	2.3	0.0	3.8	1.6	0%	1%	48%
Easington - BP Amoco	2.5	3.7	3.2	3.1	4.5	4.1	-19%	-17%	-22%
Easington - Dimlington	1.7	17.6	12.1	7.7	10.8	9.3	-77%	63%	30%
St Fergus - ExxonMobil	36.0	51.6	47.8	40.8	51.9	48.0	-12%	-1%	0%
St Fergus - Shell	11.1	14.8	13.5	28.1	32.5	31.0	-60%	-55%	-56%
St Fergus - Total Oil Marine	47.5	65.2	57.1	39.8	62.4	53.3	19%	4%	7%
Teesside - BP Amoco	15.7	28.2	25.2	27.1	37.5	33.5	-42%	-25%	-25%
Teesside - Enron	5.6	13.3	10.7	0.0	9.5	3.9	0%	41%	176%
Theddlethorpe - ConocoPhillips	16.9	29.7	26.5	17.7	28.8	25.3	-4%	3%	4%
Total (mcm) or Average (%)	**188.0**	**351.5**	**299.3**	**215.3**	**372.5**	**306.9**	**-13%**	**-6%**	**-2%**

Source: National Grid Transco

Figure 4.3(b): Changes in sub-terminal flows, November 2003 versus November 2002

Sub-terminal	Nov '03			Nov '02			% change, Nov '02 to Nov '03		
	Min	Max	Average	Min	Max	Average	Min	Max	Average
Bacton - Perenco	9.3	12.5	11.5	13.1	16.7	14.5	-29%	-25%	-21%
Bacton - Tullow	5.8	8.1	7.4	8.6	11.8	10.7	-32%	-32%	-31%
Bacton - Shell	18.8	36.1	26.8	22.1	51.3	32.0	-15%	-30%	-16%
Bacton - SEAL	13.8	29.3	24.6	13.5	28.8	23.7	2%	2%	4%
Barrow	30.2	42.4	38.7	16.0	46.3	31.3	89%	-8%	24%
Easington - Amethyst	1.9	3.9	3.4	0.0	3.2	1.5	0%	23%	120%
Easington - BP Amoco	1.4	4.0	3.3	3.8	4.4	4.2	-63%	-8%	-22%
Easington - Dimlington	1.0	14.7	11.5	6.7	12.5	10.6	-85%	17%	9%
St Fergus - ExxonMobil	48.3	52.1	50.4	35.4	52.1	45.8	36%	0%	10%
St Fergus - Shell	8.9	20.4	14.9	28.0	35.8	32.9	-68%	-43%	-55%
St Fergus - Total Oil Marine	58.2	68.6	65.2	42.6	61.5	57.0	37%	12%	14%
Teesside - BP Amoco	25.4	29.8	27.5	24.4	31.4	28.6	4%	-5%	-4%
Teesside - Enron	3.1	10.8	8.5	8.8	11.3	10.2	-65%	-5%	-16%
Theddlethorpe - ConocoPhillips	23.2	30.1	26.7	16.8	28.7	23.8	38%	5%	12%
Total (mcm) or Average (%)	**249.2**	**362.8**	**320.5**	**239.7**	**395.9**	**326.8**	**4%**	**-8%**	**-2%**

Source: National Grid Transco

4.13. Beach supplies in October 2003 were down 237mcm, or 2.5 per cent, year-on-year, whilst beach supplies in November 2003 were down 188mcm, or 1.9 per cent, year-on-year.

4.14. Analysis of the minimum daily delivery at each sub-terminal[19] shows that, for both of the months in question, the lowest level of deliveries in 2003 was significantly less than the lowest level of delivery in 2002. As figure 4.3(a) shows, when flows through all sub-terminals are considered, there was an average 13 per cent year-on-year reduction in the minimum flow in October 2003. In addition, when individual sub-terminals are considered, both figure 4.3(a) and figure 4.3(b) show that at a significant number of sub-terminals the minimum daily delivery was more than 10 per cent lower in 2003 than in 2002.

4.15. In relation to the maximum daily delivery to each sub-terminal figures 4.3(a) and 4.3(b) show that overall there was a year-on-year reduction in both of the months in question. When individual sub-terminals are considered there were a significant number of sub-terminals where the maximum daily delivery was more than 10 per cent lower in 2003 than in 2002.

Comparison with the peak level of delivery during winter 2003/04

4.16. One potential reason for the observed reduction in beach supplies is the decline in the production capacity of the UKCS. To assess this factor the levels of gas delivered by each sub-terminal have been compared to an estimate of the maximum available gas supply through that sub-terminal. As this information is not readily available to Ofgem, the observed maximum daily flow rate at each sub-terminal over the period 1 October 2003 to 1 March 2004 has been used as a proxy. The results of this analysis are set out in figures 4.4(a) and 4.4(b).

[19] That is, the single day during either October or November when flows through each sub-terminal were at their lowest. This is shown in the 'Min' column of each table in figures 4.3 and 4.4. Conversely, the 'Max' column in these tables shows the highest volume of gas delivered during any one day. The 'Average' column is the mean of daily deliveries in each month.

Figure 4.4(a): Changes in maximum sub-terminal flows, October 2003 versus maximum sub-terminal flows throughout the winter of 2003/04

Sub-terminal	Oct '03			Winter 2003-04	% change, Winter 03/04 to Oct '03		
	Min	Max	Average	Max	Min	Max	Average
Bacton - Perenco	6.6	12.1	10.0	12.5	-47%	-3%	-20%
Bacton - Tullow	6.9	8.3	7.8	8.3	-17%	0%	-6%
Bacton - Shell	9.7	29.0	22.6	45.4	-79%	-36%	-50%
Bacton - SEAL	16.9	29.3	24.8	29.3	-42%	0%	-15%
Barrow	10.9	44.8	35.8	44.8	-76%	0%	-20%
Easington - Amethyst	0.0	3.9	2.3	6.6	-100%	-41%	-65%
Easington - BP Amoco	2.5	3.7	3.2	4.1	-38%	-9%	-21%
Easington - Dimlington	1.7	17.6	12.1	17.6	-90%	0%	-31%
St Fergus - ExxonMobil	36.0	51.6	47.8	52.6	-32%	-2%	-9%
St Fergus - Shell	11.1	14.8	13.5	29.8	-63%	-50%	-55%
St Fergus - Total Oil Marine	47.5	65.2	57.1	68.6	-31%	-5%	-17%
Teesside - BP Amoco	15.7	28.2	25.2	30.1	-48%	-6%	-16%
Teesside - Enron	5.6	13.3	10.7	14.4	-61%	-7%	-26%
Theddlethorpe - ConocoPhillips	16.9	29.7	26.5	30.1	-44%	-1%	-12%
Total (mcm) or Average (%)	**188.0**	**351.5**	**299.3**	**394.1**	**-52%**	**-11%**	**-24%**

Source: National Grid Transco.

Figure 4.4(b): Changes in maximum sub-terminal flows, November 2003 versus maximum sub-terminal flows throughout the winter of 2003/04

Sub-terminal	Nov '03			Winter 2003-04	% change, Winter 03/04 to Nov '03		
	Min	Max	Average	Max	Min	Max	Average
Bacton - Perenco	9.3	12.5	11.5	12.5	-25%	0%	-8%
Bacton - Tullow	5.8	8.1	7.4	8.3	-30%	-3%	-11%
Bacton - Shell	18.8	36.1	26.8	45.4	-59%	-21%	-41%
Bacton - SEAL	13.8	29.3	24.6	29.3	-53%	0%	-16%
Barrow	30.2	42.4	38.7	44.8	-33%	-5%	-14%
Easington - Amethyst	1.9	3.9	3.4	6.6	-71%	-41%	-49%
Easington - BP Amoco	1.4	4.0	3.3	4.1	-66%	-2%	-20%
Easington - Dimlington	1.0	14.7	11.5	17.6	-94%	-16%	-35%
St Fergus - ExxonMobil	48.3	52.1	50.4	52.6	-8%	-1%	-4%
St Fergus - Shell	8.9	20.4	14.9	29.8	-70%	-31%	-50%
St Fergus - Total Oil Marine	58.2	68.6	65.2	68.6	-15%	0%	-5%
Teesside - BP Amoco	25.4	29.8	27.5	30.1	-16%	-1%	-8%
Teesside - Enron	3.1	10.8	8.5	14.4	-78%	-25%	-40%
Theddlethorpe - ConocoPhillips	23.2	30.1	26.7	30.1	-23%	0%	-11%
Total (mcm) or Average (%)	**249.2**	**362.8**	**320.5**	**394.1**	**-37%**	**-8%**	**-19%**

Source: National Grid Transco.

4.17. As figure 4.4(a) shows, peak flows during October 2003 were significantly lower than the maximum rates of delivery observed during the winter as a whole at the Bacton-Shell, Easington-Amethyst and St Fergus-Shell sub-terminals. During November 2003 (figure 4.4(b)peak flows during October 2003 were significantly lower than the maximum rates of delivery observed during the winter as a whole at the Bacton-Shell, Easington-Amethyst, Teesside-Enron and St Fergus-Shell sub-terminals.

Sub-terminal analysis

4.18. The above analysis shows that:

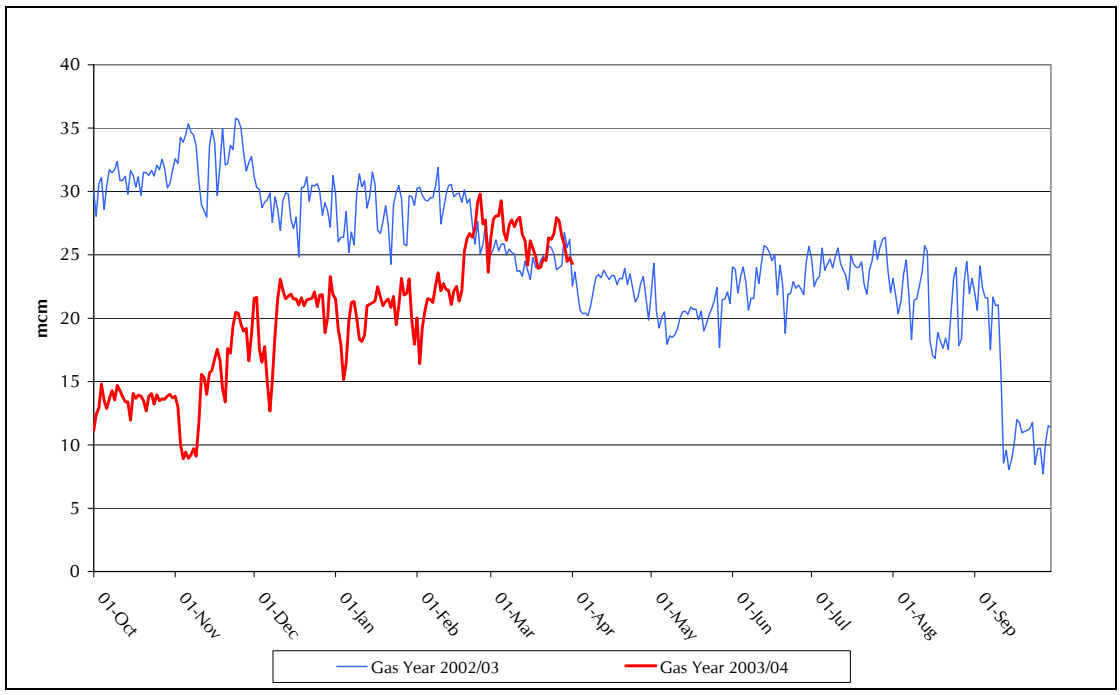
- Beach supplies were lower (in min, max and average terms) in October and November 2003 than in the same months of 2002; and
- At five sub-terminals (Bacton-Tullow, Bacton-Shell, Bacton-Perenco, St Fergus-Shell and Teesside-BP Amoco), flows during October or November 2003 were significantly lower than the same months of 2002 and/or an assessment of maximum deliverability.

4.19. It is therefore necessary to consider deliveries at these sub-terminals in more detail. For each of the five sub-terminals the flows in winter 2003/04 are compared to the flows during winter 2002/03.

St Fergus – Shell sub-terminal

4.20. The most significant reduction in flows was at the Shell sub-terminal at St Fergus. Figure 4.5 shows the daily flow levels through this sub-terminal between October 2002 and March 2004. Flows observed during September and October 2003 were around 20mcm per day lower than those observed during the same months of the previous year. The reduction in flows was reportedly due[20], in part, to an unplanned outage at the Brent complex of fields, which continued throughout October 2003. Whilst flows increased later in the winter of 2003/04, the maximum observed flow was still approximately 6mcm lower than that observed during the winter of 2002/03.

Figure 4.5: St Fergus - Shell sub-terminal flows, October 2002 – March 2004



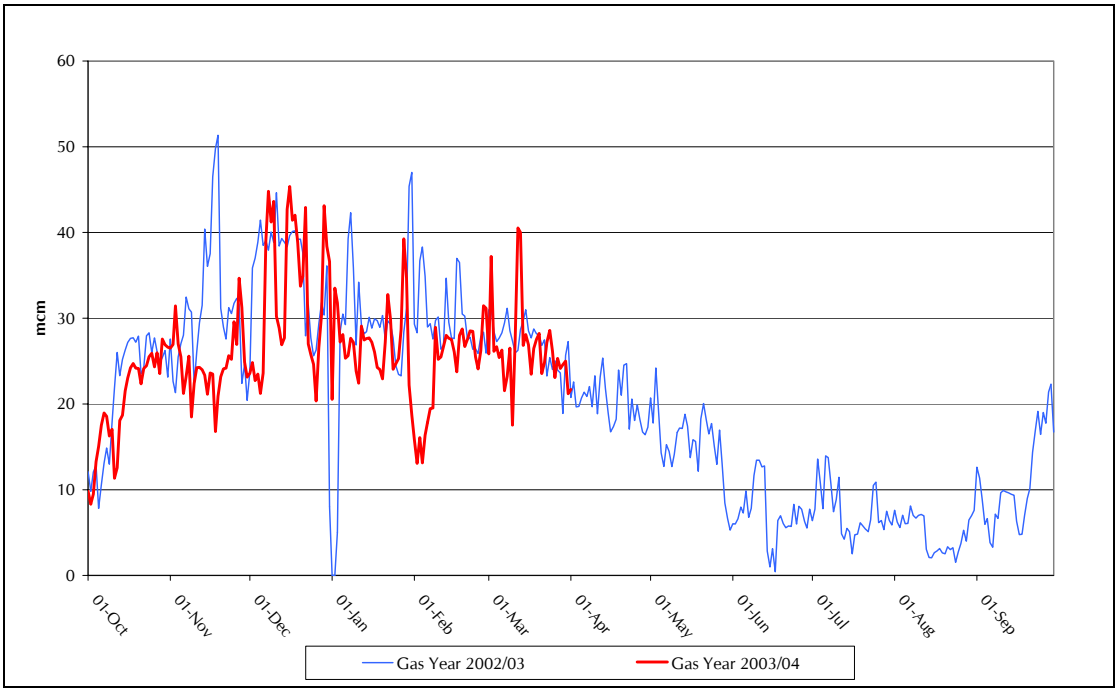
Source: National Grid Transco

Bacton – Shell sub-terminal

4.21. The flows observed at the Bacton-Shell sub-terminal (figure 4.6), during October 2003 were similar to those of October 2002. However, flows through the sub-terminal in November 2003, were significantly lower than those observed during November 2002. Furthermore, significantly higher (8 mcm) flow levels

achieved in December 2003, suggests that the reduction in flow rate in November 2003 was probably due to a temporary problem offshore rather than linked to the decline in the production capacity of the UKCS.

Figure 4.6: Bacton - Shell sub-terminal flows, October 2002 – March 2004



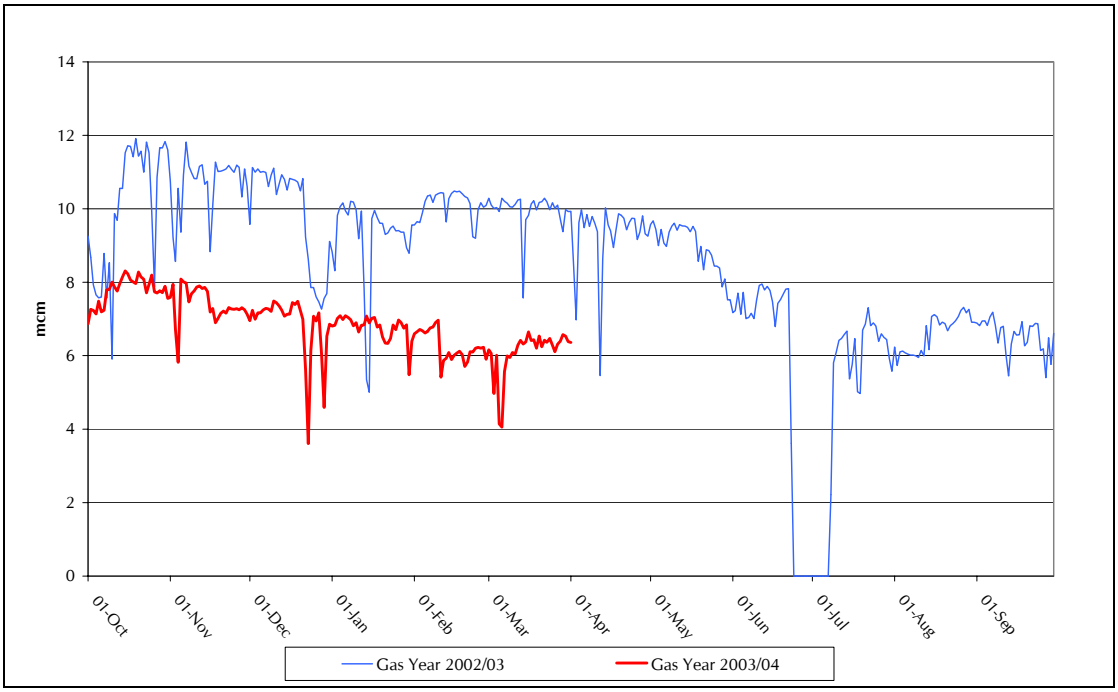
Source: National Grid Transco, data published by permission of the sub-terminal operator

[20] As reported in European Spot Gas Markets 9.177, Heren Energy Ltd, 12 September 2003.

Bacton – Tullow sub-terminal

4.22. Flow rates at the Bacton-Tullow sub-terminal, as illustrated by Figure 4.7, have exhibited a steady decline over the past eighteen months (October 2002 to March 2003) (figure 4.7). In particular, the maximum flows during the last winter (2003/4) were 13mcm, this was 4mcm lower than the maximum observed during the winter of 2002/3. However, it should be noted that the maximum rates achieved this winter were achieved during October and November 2003. This may suggest that the reduction in flows year-on-year may have been attributable to a longer term cause.

Figure 4.7: Bacton - Tullow sub-terminal flows, October 2002 – March 2004

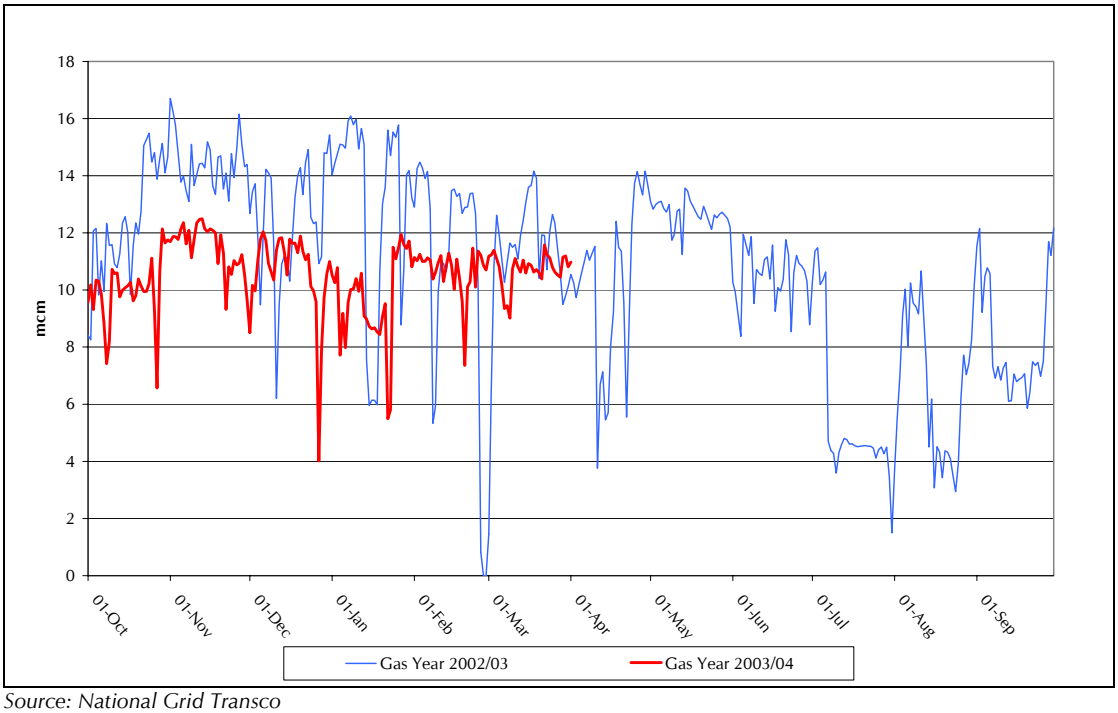


Source: National Grid Transco

Bacton – Perenco sub-terminal

4.23. The daily flows through the Bacton-Perenco sub-terminal are illustrated by figure 4.8. Whilst there was a year-on-year reduction in winter flows at this sub-terminal, it was less marked than that observed at the Bacton-Tullow sub-terminal. Maximum winter 2003/4 flows were just under 13mcm, 4mcm lower than the maximum observed during the winter of 2002/3 (excluding the peak of 20mcm which was only achieved on one occasion in the past eighteen months).

Figure 4.8: Bacton - Perenco sub-terminal flows, October 2002 – March 2004

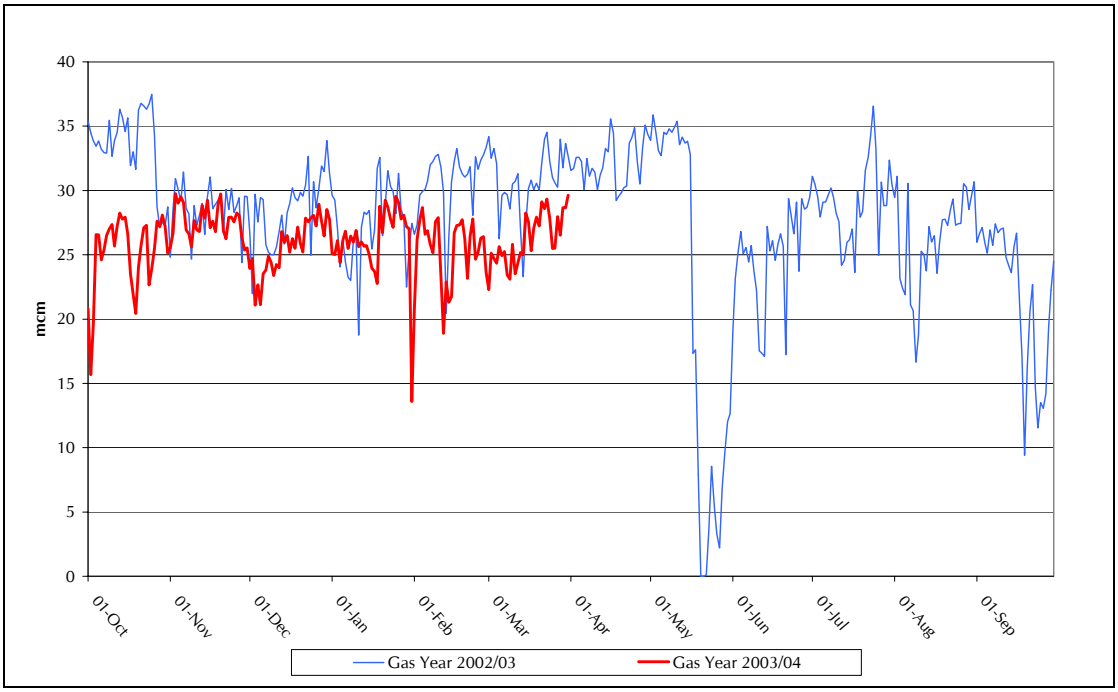


Source: National Grid Transco

Teesside –BP Amoco sub-terminal

4.24. The daily flows through the Teesside-BP Amoco sub-terminal are illustrated by figure 4.9. The flows observed at this sub-terminal during October 2003 were around three quarters of the level achieved in October 2002. However, the flows observed in November and December 2003 were at a similar level to those observed during November and December 2002. This suggests that the reduction in flow rate in October 2003 may have been due to a temporary problem offshore rather than linked to the decline in the productive capacity of the UKCS.

Figure 4.9: Teesside - BP Amoco sub-terminal flows, October 2002 – March 2004



Source: National Grid Transco

Ofgem's view – Beach supplies

4.25. It is clear from Ofgem's analysis that the volume of gas supplied via the six main beach terminals was much lower in October and November 2003 than in October and November 2002, both in terms of the total volume of gas delivered and in terms of the maximum flow rates. The largest reductions were observed at St Fergus–Shell, Bacton-Shell and Teesside-BP Amoco sub-terminals, though significant reductions were also observed at the other two Bacton sub-terminals. Maximum daily deliveries from these five sub-terminals were up to 55 per cent

lower than during the same period last year, and up to 50 per cent lower than the highest rate of flow observed during winter 2003/04. Ofgem considers that this apparent reduction in supply is likely to be a key driver of the higher gas prices during that period.

4.26. Ofgem has not, on the basis of the information currently available to us, been able to establish the cause of this reduction in beach supply. The data could be consistent, with the withholding of gas supplies from the market with the intent of raising prices. The data could, however, also be consistent with other explanations such as unexpected outages in offshore production facilities and/or the effects of planned or unplanned maintenance on available gas supplies.

4.27. **Ofgem has, therefore, informally written to the relevant sub-terminal operators and field operators to request that they assist Ofgem in its enquiries by providing information regarding available gas supplies during the period in question and relating to any operational difficulties and/or planned/unplanned maintenance.**

1b - Interconnector flows

4.28. As noted above, the demand levels in October and November are such that demand is usually met by a combination of beach and interconnector supplies. Consequently, any reduction in beach supplies would, other things being equal, lead to an increase in net imports through the interconnector. This increase in net imports would have exerted significant downward pressure on GB wholesale prices. It is possible that certain interconnector shippers may have prevented the Bacton interconnector from going into import mode[21] when GB prices rose relative to reported Continental wholesale gas prices.

4.29. However, there are operational constraints that limit the speed with which the interconnector can move from export to import mode. Typically, it takes two days[22] to move from export to import mode. The interconnector would, therefore, only be expected to respond to a reasonably persistent expected

[21] This is known as "reverse flow". When the interconnector is exporting, on the other hand, it is said to be in "forward flow".
[22] This includes one transition day. The decision is made based on nominations at the day ahead stage (13:00), the following day is a transition day when gas is either added or subtracted to achieve the required pressure.

differential in prices – a price differential on a single day may be insufficient to justify a switch of direction.

4.30. In order to consider the potential impact of the interconnector on the observed increases in gas prices it is necessary to analyse:

- The pattern of aggregate net flows on the interconnector, and the relationship to the reported GB – Continental European wholesale price differential; and
- The nomination behaviour of interconnector shippers.

4.31. These are discussed, in turn, below.

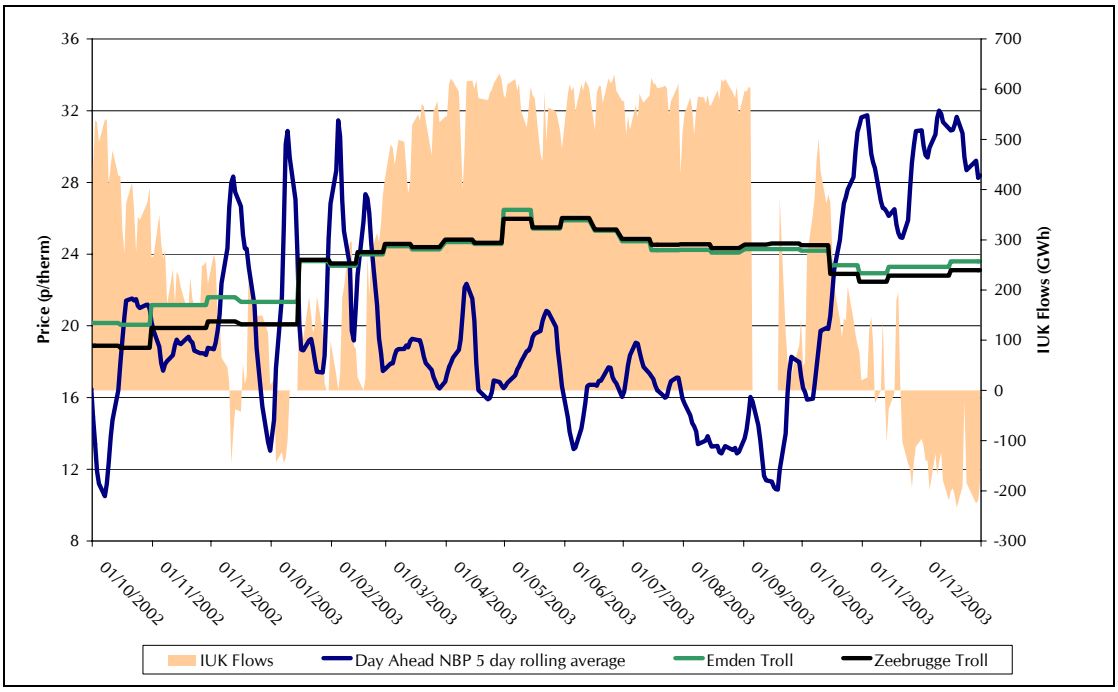
The pattern of net flows

4.32. Between 17 October 2003 and 5 November 2003 the interconnector was nominated to export by a number of shippers at a time when the reported price differential between the GB and Continental European prices suggested that the interconnector should have been importing gas.

4.33. Figure 4.10 below shows the pattern of interconnector flows[23] over the gas year 2002/03 and for the final three months of 2003. NBP Day-ahead prices are shown alongside reported prices from two of the continental hubs that could potentially supply gas to the UK: Emden-Troll and Zeebrugge-Troll (the location of these hubs are shown on figure 4.11).

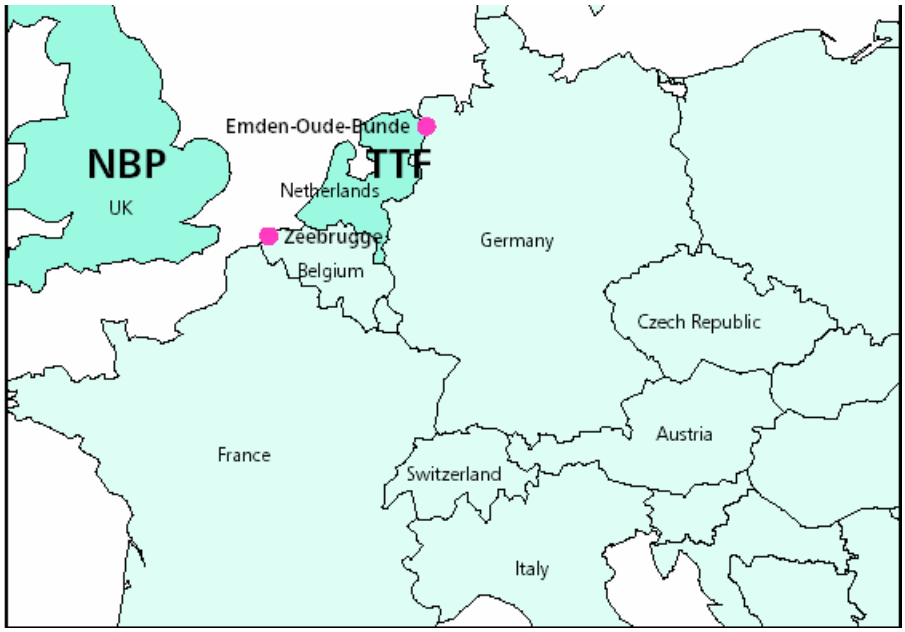
[23] Exports are shown as positive volumes on this and all subsequent interconnector charts; imports are shown as negatives.

Figure 4.10: Historic interconnector flows and market prices



Source: IUK, Heren Energy Ltd

Figure 4.11: Location map showing gas trading hubs in North West Europe

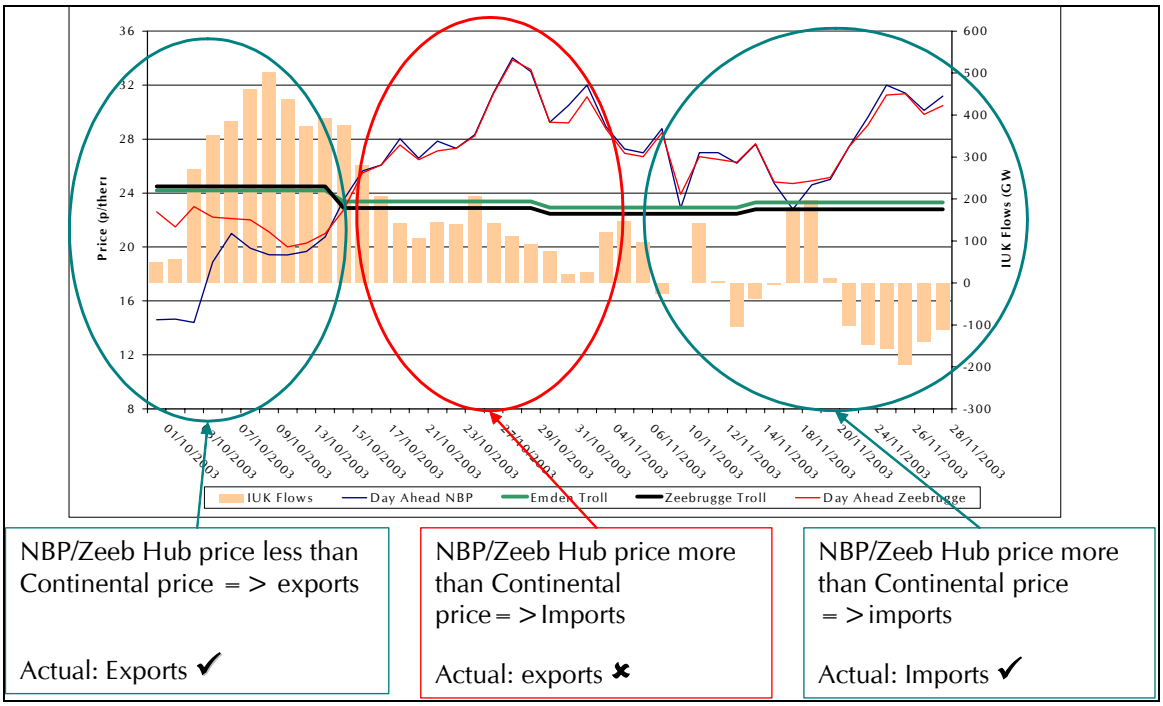


Source: Fluxys

4.34. Figure 4.12 shows the same data for the period of high prices, indicating where the direction of flows was as expected given relative prices, and where it was not. As figure 4.12 shows, there was a significant number of consecutive days during late October 2003 when the interconnector continued to export even

though reported price differentials suggest that the interconnector should have been importing gas. The duration of this reported price differential is significantly longer than the time taken for the interconnector to reverse flow. However, it should be noted that day-ahead prices at the Zeebrugge hub on these days were still relatively close to NBP day-ahead prices.

Figure 4.12: Interconnector flows and market prices – October and November 2003

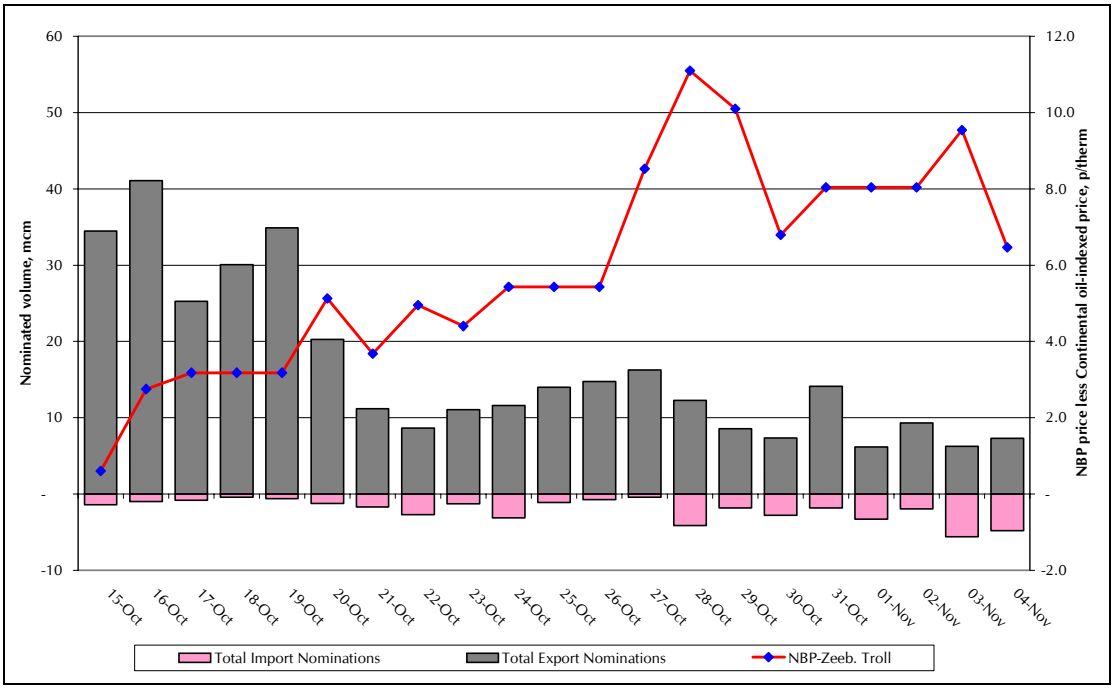


Source: IUK, Heren Energy Ltd

The behaviour of Interconnector Shippers

4.35. During October and November 2003 a number of interconnector shippers were nominating to export gas throughout this period. Others, whilst initially nominating to export gas, nominated to a neutral position after a few days of a positive price differential. The aggregated import and export nominations are shown in Figure 4.13.

Figure 4.13: Interconnector nominations, 15 October 2003 to 4 November 2003

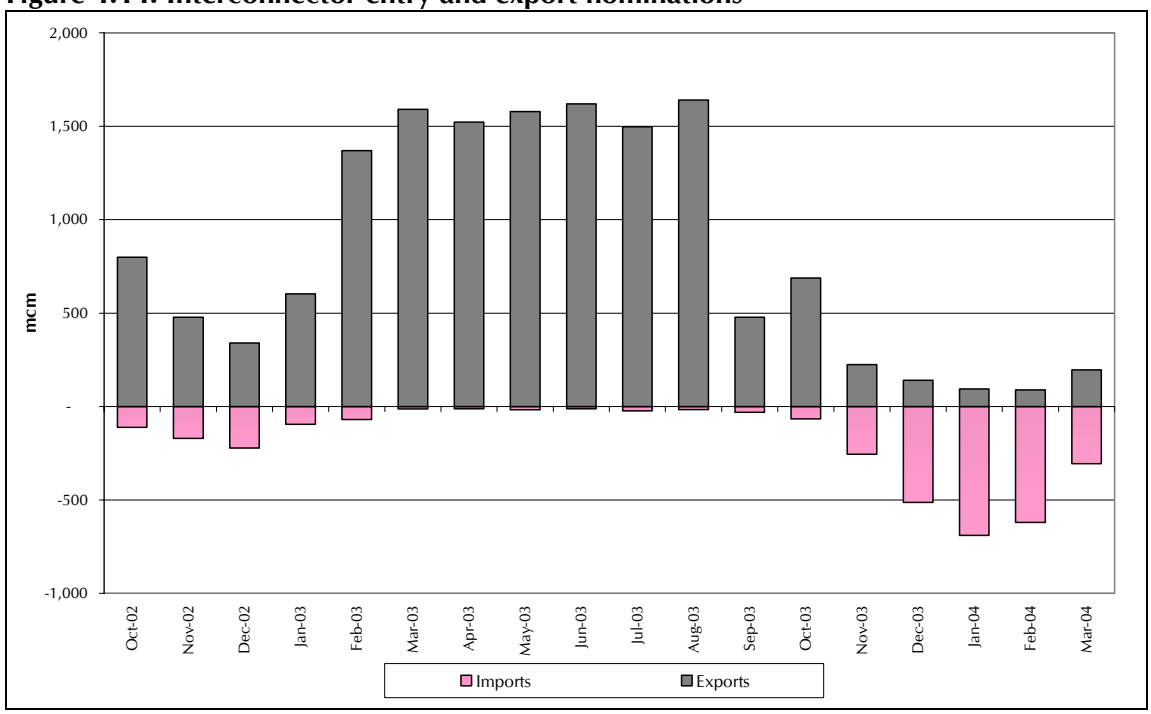


Sources: IUK, Heren Energy Ltd

4.36. The majority of interconnector shippers did not appear to respond to increasing NBP prices by nominating to import more gas. Most interconnector shippers did reduce their export nominations, but they did not nominate to import in significant volumes until after approximately three weeks.

4.37. Figure 4.14, below, provides a comparison of October and November 2003 with the same months of the previous year. This shows that less gas was exported in November 2003 than in November 2002 than would be expected. In October 2003 there was a year-on-year decrease in export nominations, and a decrease in import nominations. Other things being equal, this is not what might be expected given that GB gas prices were higher during October 2003 than in the previous year.

Figure 4.14: Interconnector entry and export nominations



Source: National Grid Transco

Ofgem's view – Interconnector flows

4.38. Ofgem has analysed the pattern of interconnector nominations, and as concluded that no single interconnector shipper in isolation was responsible for keeping the interconnector in export mode during this period. Most of the export nominations made were placed well in advance of the relevant gas days and relatively few were changed after placement. It does not appear to Ofgem that there was a concerted attempt, for example, to increase export nominations following the placement of an import nomination to keep the interconnector in export mode and prevent continental gas being imported into the UK.

4.39. However, Ofgem is concerned that, although exports clearly decreased as GB spot gas prices increased, no net import took place until November 2003. Ofgem's analysis suggests that the pattern of flows across the interconnector during the relevant period where not consistent with reported price differentials. The failure of the interconnector to move to import mode quickly is likely, therefore, to be, at least in part, a reason why the high prices were experienced over a sustained period.

4.40. **Ofgem has therefore informally written to a number of interconnector shippers requesting their assistance by asking them to explain the reasons why**

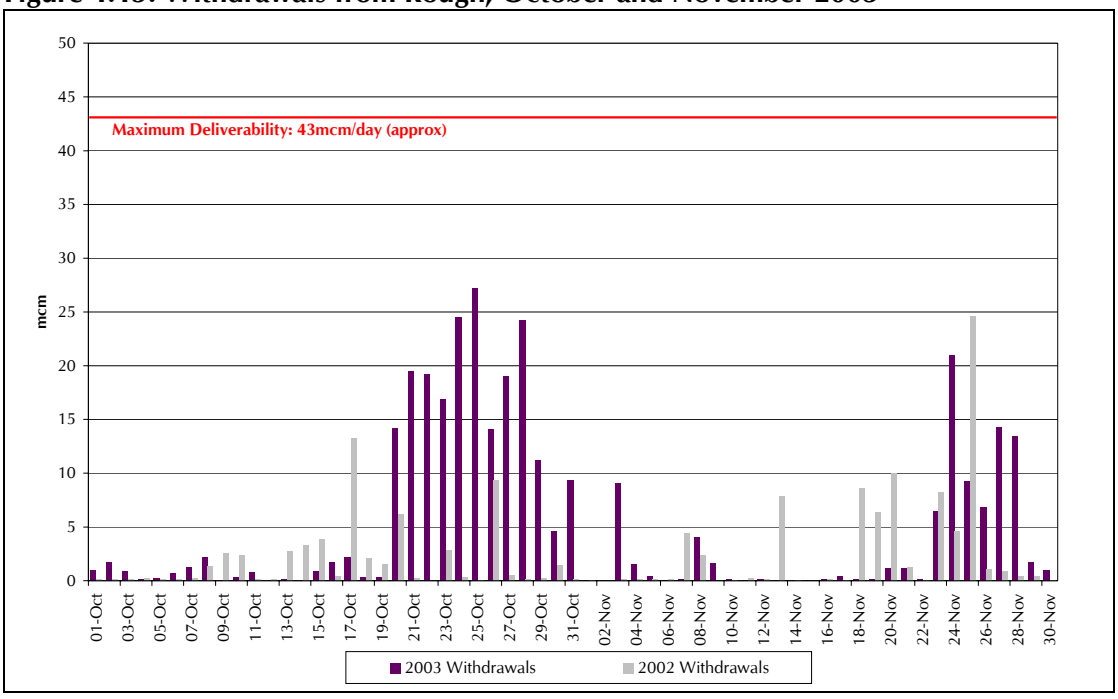
they were not able to or did not choose to reduce their exports and increase their import nominations sooner. Ofgem has, in particular, asked the relevant interconnector shippers to provide information on the prices and availability of gas and transportation capacity in the relevant Continental European gas markets during the period when the interconnector remained in export mode.

1c - Storage

4.41. Figures 4.15 and 4.16 show the withdrawals of storage gas in October and November 2003 at the two main storage sites: Rough and Hornsea.[24]

4.42. Figure 4.15 shows that consistently higher volumes were nominated for withdrawal from Rough in the period between 20 and 31 October. This corresponds to the period between the initial price rise in mid October and the commencement of interconnector imports in early November.

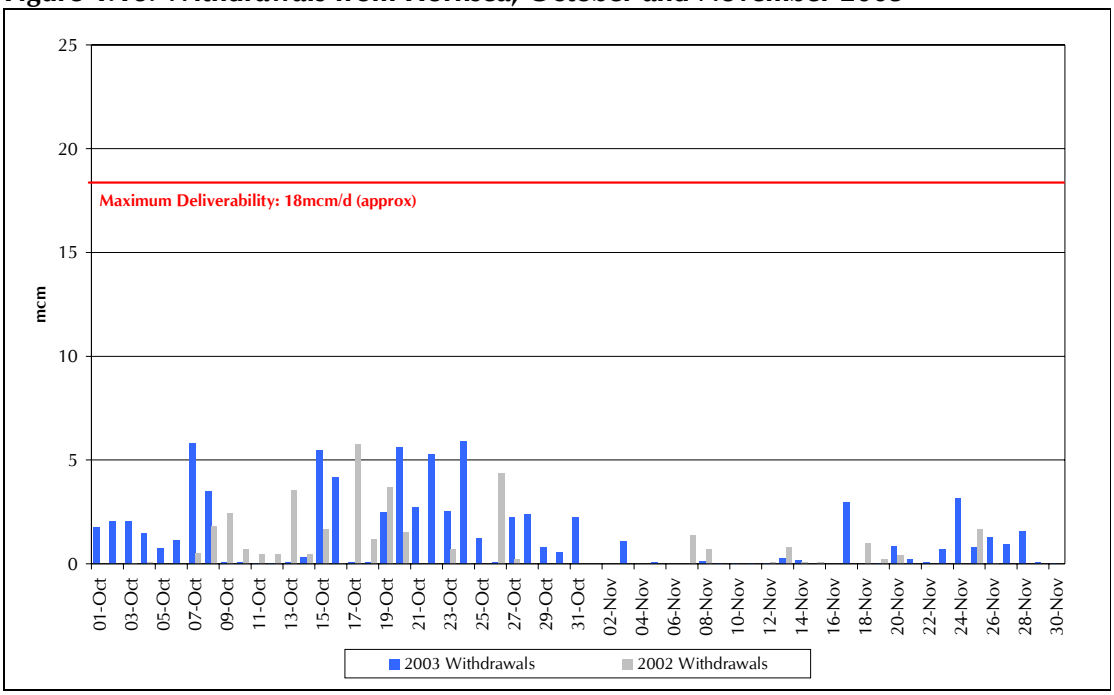
Figure 4.15: Withdrawals from Rough, October and November 2003



Source: National Grid Transco

[24] There are six other operational storage facilities in the UK: Hatfield Moor (586 GWh), Hole House Farm (300 GWh), and four LNG Facilities (1962 GWh total availability in 2004/05).

Figure 4.16: Withdrawals from Hornsea, October and November 2003



Source: National Grid Transco

4.43. At the demand levels observed throughout this period, small withdrawals of gas from storage would generally be made to balance short-term movements in demand. This gas would be used by shippers to balance their inputs and offtakes until such time as deliveries from onshore and offshore fields could be ramped up. If the increase in demand or reduction in beach availability is sustained, there would then normally be an increase in beach supplies, accompanied by a reduction in withdrawals from storage.

4.44. However, during the period in question, withdrawals of gas from storage continued for extended periods. Gas was withdrawn from storage on twelve consecutive days in the second half of October 2003.

4.45. During October 2003, NBP day-ahead prices increased towards the level of the forward winter months and Quarter 1 2004 contracts, which themselves increased in price during the period. These upward price movements are consistent with the analysis presented above, in that beach supply was lower than expected and was therefore at a level that was exceeded by demand in October 2003. During this month, the interconnector continued to export and gas was withdrawn from the Rough and Hornsea storage facilities.

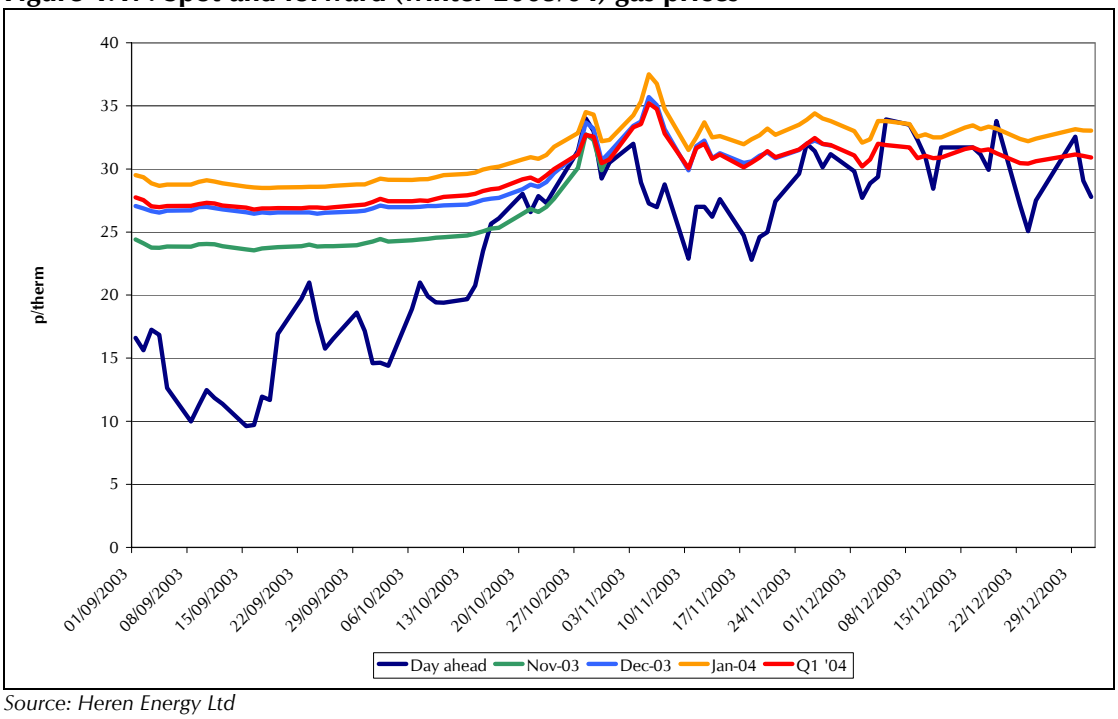
4.46. As would be expected the price at which gas is withdrawn from Rough and Hornsea during October 2003 will be based upon the opportunity cost of that

gas. This is because it might not be economic to replace gas withdrawn in October. Therefore the withdrawal and sale of that gas in October would prevent shippers withdrawing that gas at a time of higher market prices during (for example) December, January or February. Alternatively, in order to deliver gas in a peak period, gas would need to be procured, at the higher winter market prices, and injected.

4.47. Figure 4.17, below, shows that there was a convergence of the prices of NBP day-ahead and Quarter 1 2004 contracts as October 2003 progressed. This would seem to support this explanation of movements and convergence between prices.

4.48. It was also suggested that the use of storage gas in October would have the effect of increasing demand for the Quarter 1 2004 contract (in order to balance positions that would otherwise have been balanced by stocks of storage gas). This increase in demand would have put upward pressure on the price of the Quarter 1 2004 contract, an effect which can also be observed in figure 4.17.

Figure 4.17: Spot and forward (winter 2003/04) gas prices



Source: Heren Energy Ltd

Ofgem's view - Storage

4.49. Ofgem's analysis of system throughput has shown that, despite similar levels of demand in October 2003 as the same period in the preceding year, a larger

volume of storage gas was used. In Ofgem's view, the patterns of storage appear reasonable against a background of lower beach supplies and continuing exports to the Continent. As spot prices were initially above forward prices for some of the winter gas products, it made commercial sense for shippers to withdraw gas from storage given prevailing gas prices and market conditions. The pattern of storage withdrawals would have been a driver of winter gas prices, for the reasons outlined above. But the pattern of withdrawals appears to be a response to, not a cause of, the increase in spot gas prices during October 2003. Ofgem has therefore decided not to pursue this potential price driver any further, at this stage.

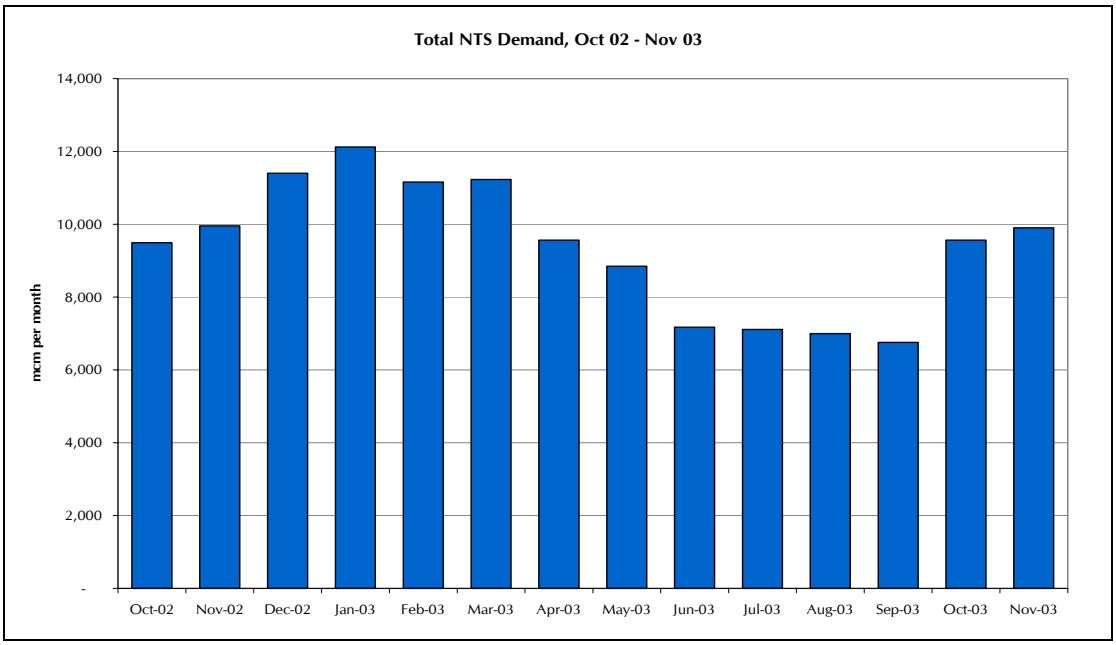
2. Demand during October and November 2003

4.50. It is possible that the level, and composition, of gas demand during the period of high prices was different to previous years and that this could explain some of the price movements. Ofgem has therefore analysed both the level of aggregate demand and its composition.

Overall level of gas demand

4.51. The overall level of GB gas demand, or system demand, in the fourteen months to November 2003 is shown in figure 4.18, below.

Figure 4.18: Aggregate NTS demand, October 2002 – November 2003



Source: National Grid Transco

4.52. Figure 4.18 shows that demand in October 2003 was at a similar level to October 2002, at around 9,500mcm in each month. Similarly, demand in November 2003 was within 1 per cent of demand for November 2002. The overall level of demand was almost unchanged year-on-year both in terms of the average level and the range of demand observed during the months in question (figure 4.19).

Figure 4.19 Demand statistics – October and November 2002 and 2003 (GWh)

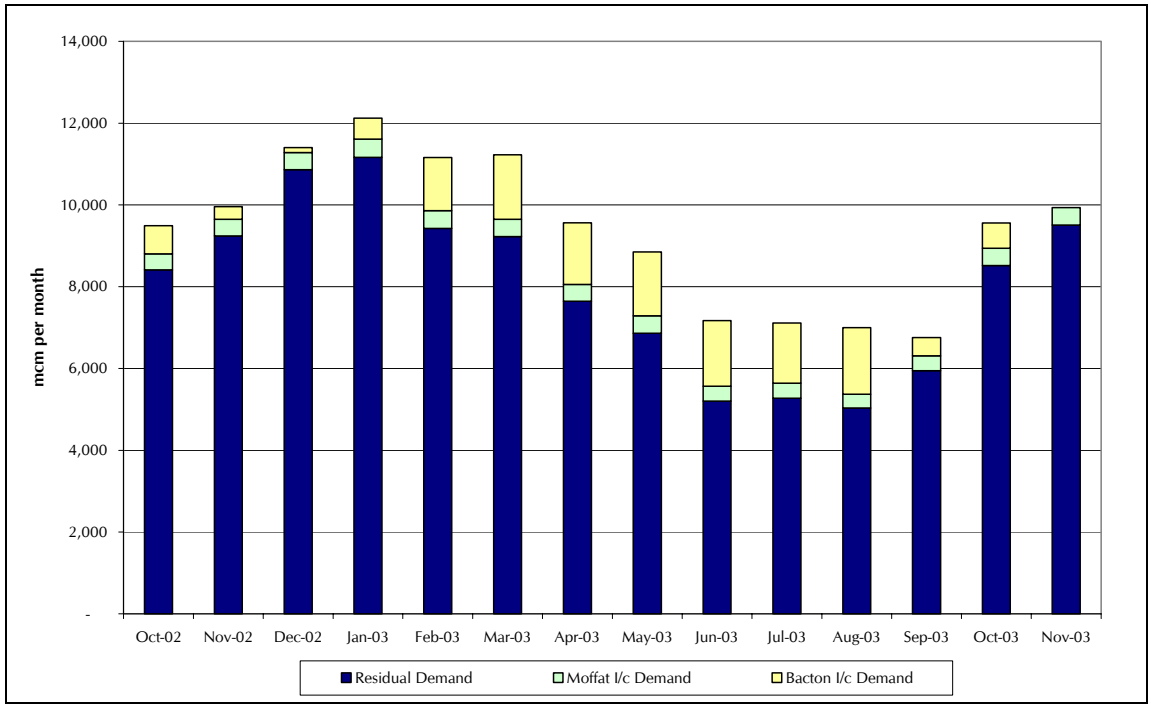
		Demand	
		2002	2003
October	Min	262	236
	Max	349	346
	Average	308	303
	Standard Dev.	29	29
November	Min	293	295
	Max	360	354
	Average	333	318
	Standard Dev.	16	15

Source: National Grid Transco

Composition of aggregate demand

4.53. It has also been suggested that prices were higher because the composition of aggregate demand was different during October 2003 and November 2003 to previous years. To assess this statement, the total NTS demand in figure 4.18 was separated into demand from the two interconnectors and all other, or 'residual', demand (figure 4.20).

Figure 4.20: Interconnector and Residual demand, October 2002 – November 2003



Source: National Grid Transco

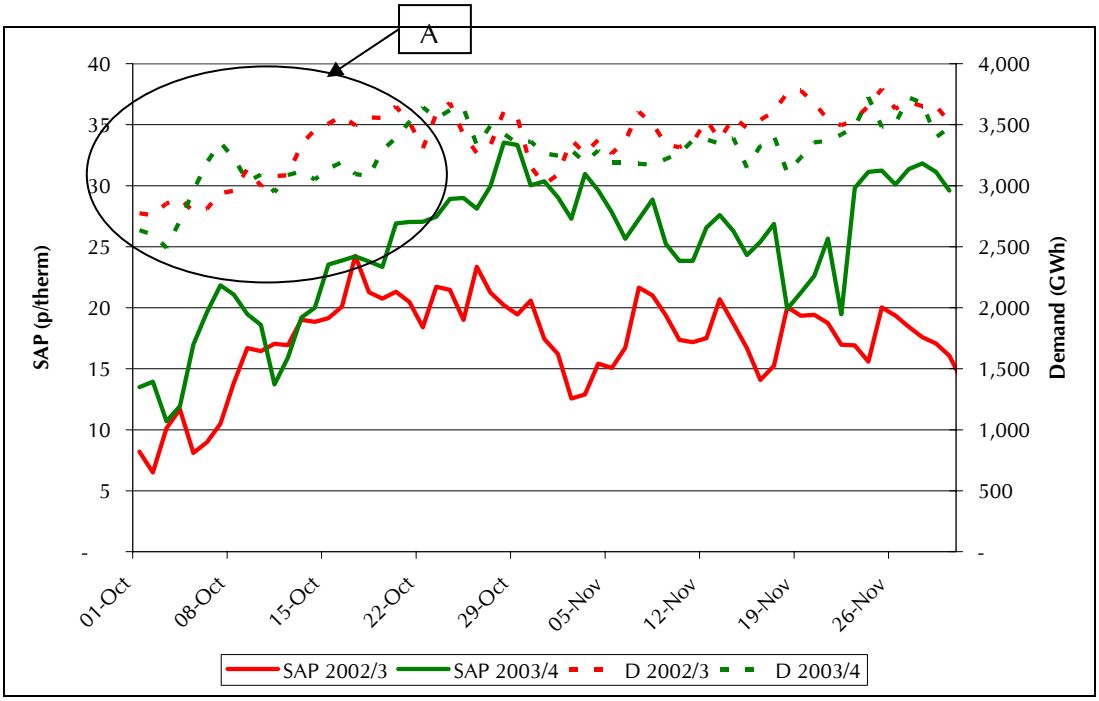
4.54. Figure 4.20 shows that the composition of aggregate demand in October 2003 was very similar to that of October 2002. Demands from the Bacton and Moffat interconnectors were around 600mcm and 400mcm respectively in both months, whilst residual demand was close to 8,500mcm in both months. In respect of November 2003, Figure 4.20 shows that, when compared with November 2002 there was a slight difference in the composition of demand in November 2003, in that there was no demand from the Bacton Interconnector. However, because the level of residual demand was three per cent higher than in November 2002, due to re-injection into storage, the level of aggregate demand was unchanged year-on-year. Power station demand, derived from power output, was little changed year-on-year with power stations taking just 1.79 mcm/day (or 0.5 per cent of total demand) more year-on-year in October 2003, and 3mcm/day (or one per cent of total demand) more in November 2003.

4.55. Figure 4.21, below, compares demand for the period 1 October to 30 November 2003 with the same period of 2002, and shows that whilst the demand levels were not significantly different, demand levels did increase (Label A) over the first two weeks of the month in response to falling temperatures (Figure 4.22). This pattern was similar to that of the previous year, and in both cases this was

accompanied by an increase in System Average Price (SAP). However, the increase in SAP in 2003 was greater than the increase of 2002, suggesting that a factor other than demand had pushed SAP to this higher level.

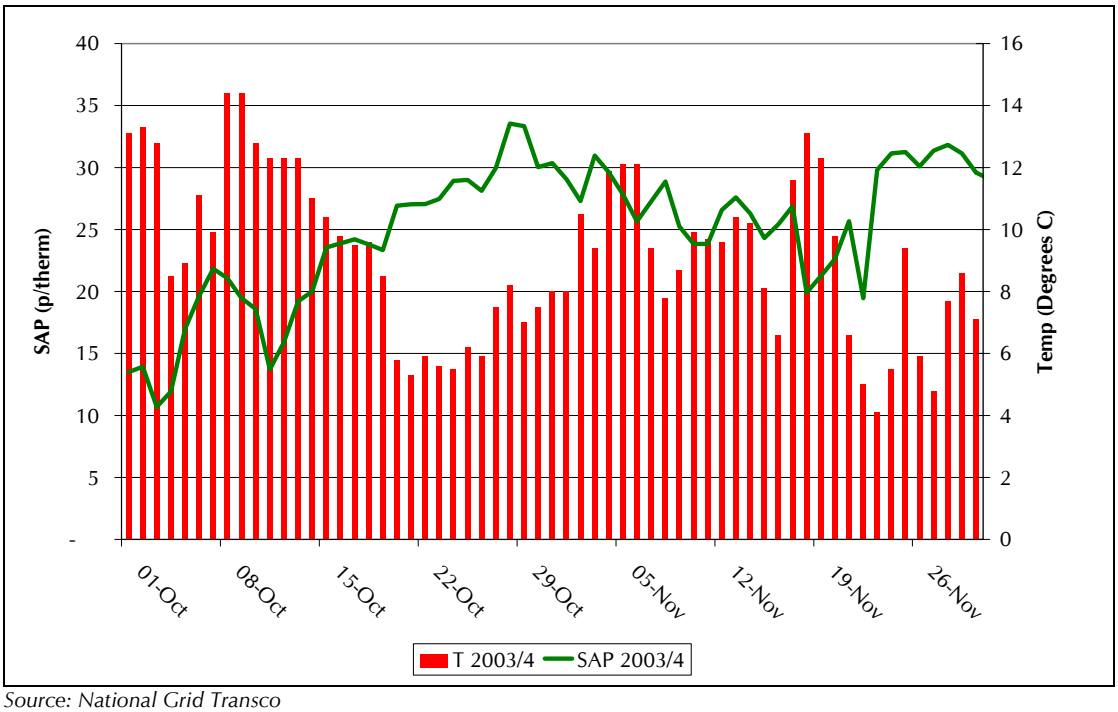
4.56. Figure 4.23 contains descriptive statistics concerning demand, price (SAP) and temperature. The statistics indicate that for temperature, like demand, as outlined above, the average level and the range observed throughout the month were similar year-on-year. In contrast, there were significant differences in the minimum, maximum and average levels of SAP year on year.

Figure 4.21: Comparison between SAP and demand, 1 October to 30 November 2002 and 1 October to 30 November 2003



Source: National Grid Transco

Figure 4.22: Comparison between demand and temperature 1 October to 30 November 2003



Source: National Grid Transco

Figure 4.23 Demand (GWh), price (p/therm) and temperature (degrees Celsius) statistics October and November 2002 and 2003

		Price (SAP)		Demand		Temperature	
		2002	2003	2002	2003	2002	2003
October	Min	0.62	1.01	262	236	0.50	0.50
	Max	2.30	3.18	349	346	1.50	1.37
	Average	1.63	2.16	308	303	0.99	0.90
	Standard Dev.	0.47	0.61	29.01	28.57	0.26	0.27
November	Min	1.19	1.85	293	295	0.56	0.39
	Max	2.05	3.02	360	354	1.27	1.24
	Average	1.66	2.57	333	318	0.85	0.84
	Standard Dev.	0.22	0.33	16.11	15.37	0.17	0.23

Source: National Grid Transco

Ofgem's view

4.57. Ofgem's analysis shows that both the overall level of demand and the make up of this demand does not appear to be materially different in October and November 2003 than during the same period in the previous year.

4.58. There were some variations in the within month pattern of demand. Daily demand increased in the second half of the month in line with falling temperatures, although this is not particularly unusual for a 'shoulder' month going into winter. The increase in demand in the second half of the month coincided with pre-existing lower levels of beach deliverability to tighten the

demand/supply balance further causing the impact of lower supplies. Ofgem considers that the pattern of daily demand was a contributory factor to the timing of the gas prices rise, rather than a reason for the gas price rise in itself.

4.59. Ofgem therefore considers that the level of demand is unlikely to explain the high gas prices during October and November 2003 and has therefore decided not to pursue this potential price driver, at this stage.

3. Alleged linepack manipulation

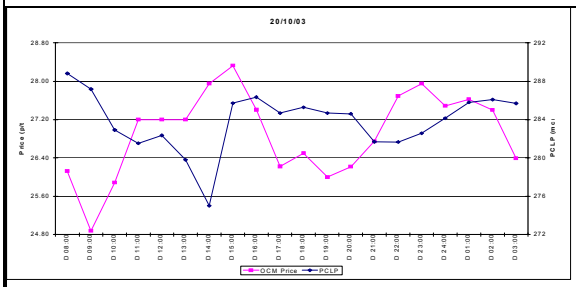
4.60. It is possible that market participants could have been submitting false information to Transco in order to manipulate linepack data and that this could explain, at least in part, why gas prices rose during October and November 2003. By submitting false nominations to either sub-terminal operators or Transco, it is possible to manipulate the Projected Closing Linepack (PCLP) information published by Transco. PCLP is an estimate of the quantity of gas contained in the NTS at the end of the day.

4.61. Historically, the value of PCLP within-day has been volatile; the average spread[25] within-day was 13.3mcm for gas year 2002/03, around 5 per cent of the mean value for PCLP. In October 2003, the average within-day movement was slightly higher than this at 15.2mcm.

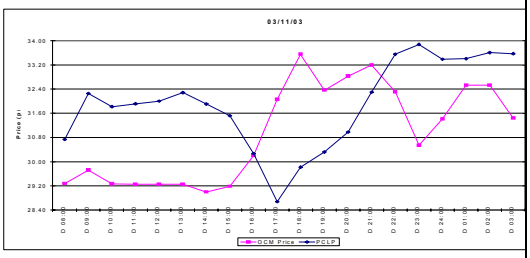
4.62. The level of PCLP is a driver of the price of within-day contracts (as traded over-the-counter and on the various trading platforms), because it acts as an indicator for the supply/demand balance on the gas day, and by extension as a signal as to whether Transco will enter the market to take balancing actions. In addition, respondents said that within-day changes in PCLP might also affect the price of day-ahead contracts, were they to increase uncertainty in the market over the balance of supply and demand in the immediate future. However, for the purposes of this document, Ofgem has confined its analysis to the more direct link between PCLP and within-day prices. As figure 4.24, below, illustrates Ofgem's analysis suggests that changes in PCLP and within-day prices are correlated.

[25] PCLP movement within-day = (highest PCLP within-day - lowest PCLP within-day)

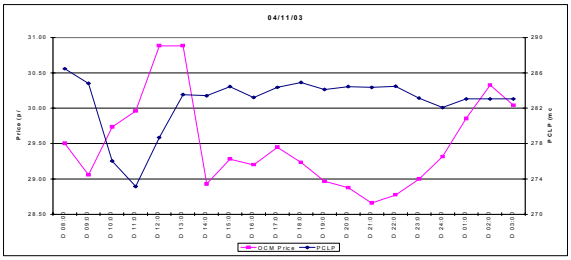
Figure 4.24: Illustration of the impact of changes in PCLP on within-day prices



- On the 20 October, PCLP fell from 287mcm at 09:00 to 275mcm at 14:00. Over the same period, the price increased from 24.88p/th to 28.33p/th. When PCLP recovered to 285mcm at 17:00, the price dropped to 26.22p/th



- On the 3 November, PCLP dropped by 6mcm between 15:00 and 17:00. This caused price to increase from29p/th to 32p/th. PCLP then increased 27mcm over the next few hours and the price fell by 3p/th.



- On the 4 November, PCLP decreased 10mcm between 09:00 and 11:00 causing price to increase by 0.9p/th When PCLP recovered by 10mcm by 14:00, the price dropped by 2p/th

Source: National Grid Transco

4.63. In order to analyse whether linepack is a potential price driver, Ofgem has considered:

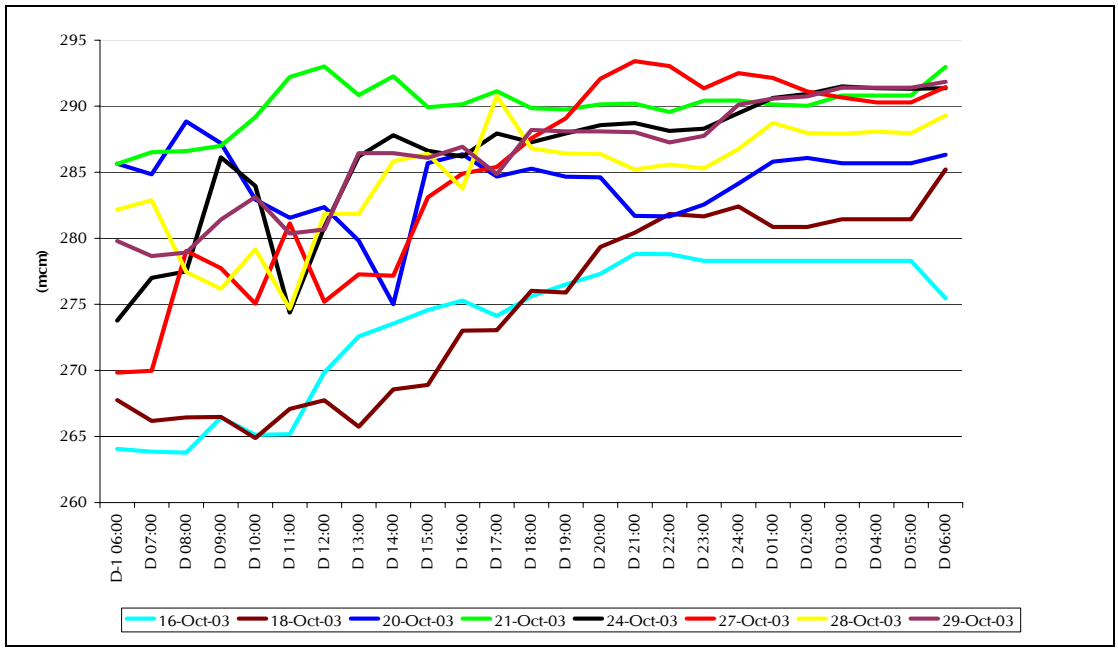
- Movements in projected linepack (PCLP); and
- Movements in Daily Flow Notifications (DFNs).

4.64. These are considered separately below.

Movements in PCLP

4.65. One respondent supplied Ofgem with data that they believe indicates a trend of PCLP figures decreasing in the early hours of the gas day but then recovering before the gas day ended at 06:00hrs. They provided data for eight separate days when they considered this trend to be apparent. This data is shown in figure 4.25, below.

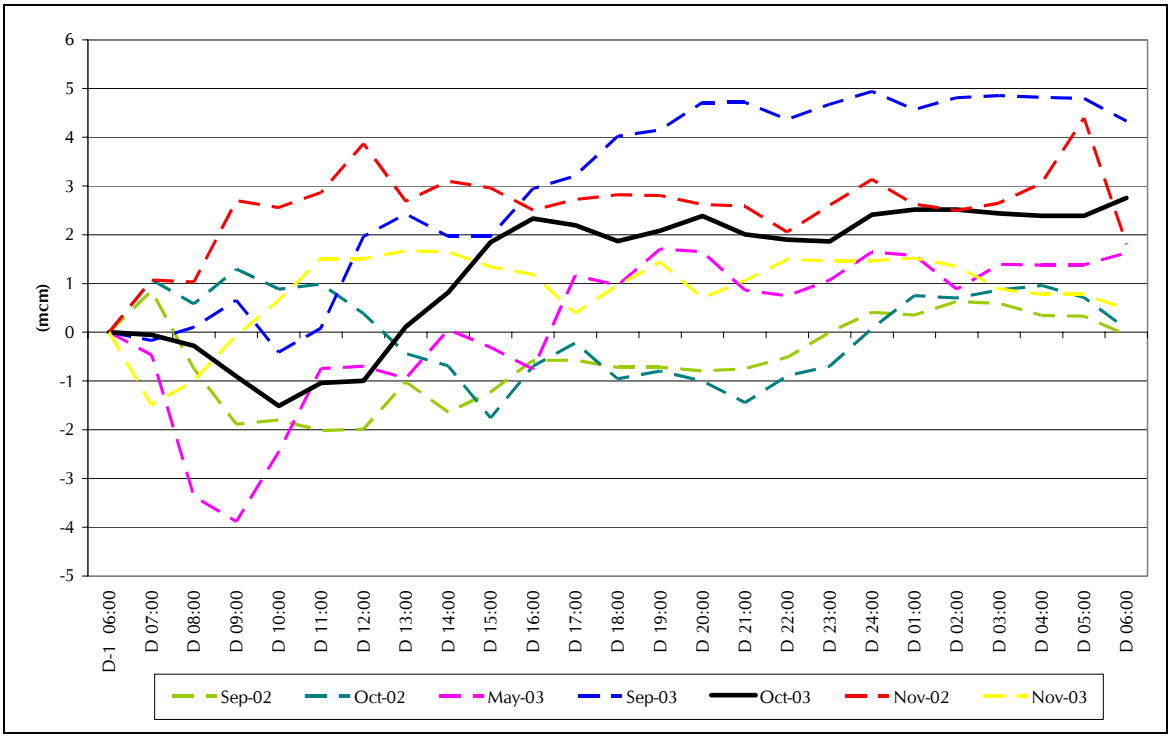
Figure 4.25: Chart of PCLP data submitted to Ofgem by third party



Source: Third Party analysis, reproduced by Ofgem using Transco data.

4.66. To assess whether the within-day trend in PCLP was significant, Ofgem has analysed the cumulative change in PCLP during the day for a number of months (Figure 4.26). There does appear to be a pattern in October 2003 for linepack to decrease in the morning before recovering in the afternoon. However, as Figure 4.26 shows, this pattern is not a new development during October 2003; it can also be observed during other months (for example: September 2002, October 2002 and May 2003).

Figure 4.26: Working days cumulative change in linepack



Source: National Grid Transco

DFN analysis

4.67. In order to assess the wider allegation that PCLP and, as a result, prices were being manipulated, Ofgem has examined the DFNs from the sub-terminals of all six of the main beach terminals. The purpose of this analysis was to identify any days that displayed the following characteristics:

- where there was a sudden reduction in the DFN, only for the DFN to be revised back to the same or similar level within a few hours; and
- where within-day movements the DFNs had an effect on PCLP and consequently prices.

4.68. Overall, during the period in question (between 15 October 2003 and 30 November 2003) there were nineteen days on which there were unusual within day movements in DFNs, including ten days where the movements were particularly pronounced.

4.69. There were occasions where within-day reductions in DFNs at some sub-terminals during a given day were being followed by subsequent (offsetting) increases in DFNs from other sub-terminals later in the same day.

4.70. This pattern of nominations is consistent with a reduction in supply availability at one sub-terminal or its offshore fields leading to an increase in supplies at other sub-terminals, as replacement gas is sourced. However, patterns on ten of the nineteen days cannot be explained in this way, based on the information currently available to Ofgem.

Ofgem's view

4.71. Ofgem's conclusion from the analysis of movements in within-day linepack during the period of high prices is that, whilst linepack did exhibit significant within-day variations on a number of days over the period, these patterns have frequently been observed in the past. Ofgem has therefore concluded at this stage that, whilst this might have been a contributory factor to the price rises, it is unlikely to have been a significant driver behind the prices during the relevant period.

4.72. Ofgem's analysis of linepack and its constituents (end-of-day demand forecast and DFNs of end-of-day supply) highlighted a number of occasions where unusual patterns of DFNs were observed. It is hoped that Ofgem's written information requests to producers will enable Ofgem to establish whether the reason for the unusual patterns of DFN was related to problems offshore

4.73. As the analysis has suggested, this problem of significant variations in DFNs is not new. Ofgem and Transco have highlighted concerns on a number of occasions about the quality of DFN data provided to Transco. Ofgem's analysis suggests that there has been no improvement in the quality of this data. Ofgem will continue to keep this issue under review.

4 - Interactions with other markets

4.74. In general, GB gas prices can be affected by movements in the prices of related commodities. Three sets of linkages are considered below:

a) The impact of oil prices, due to oil-indexed contracts, mainly in continental Europe;

b) The impact of coal prices, through their impact on electricity prices; and

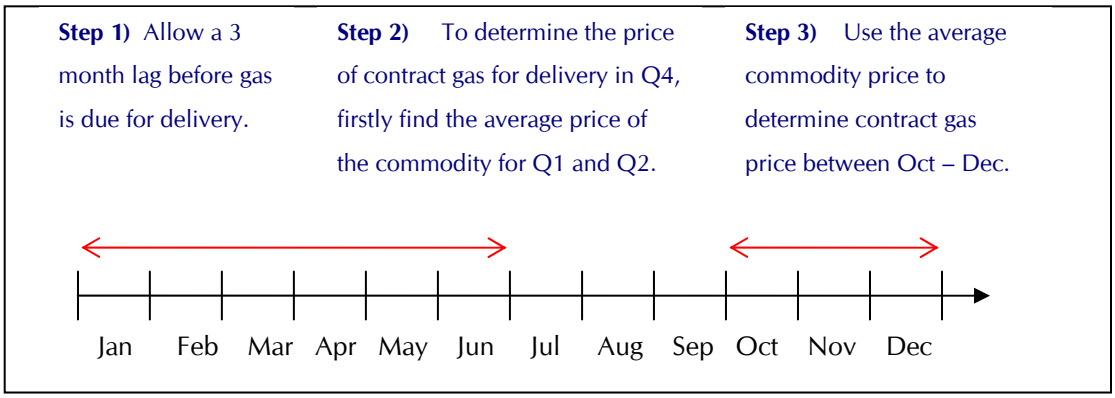
c) The direct impact of electricity prices, due to gas-electricity arbitrage.

Oil prices

4.75. The prices in some long-term gas supply contracts are index-linked to other commodities such as oil, gas oil, coal and power. The details of the contracts are commercially confidential but Ofgem understands that their pricing sometimes incorporates the average price of another commodity during a six month period. These "commodity indexed" contracts are less common in the GB market today – since competition was introduced most contracts struck are indexed to spot gas prices. However, the remaining legacy contracts in GB may still have an influence. In addition, commodity indexed contracts remain common in continental European gas markets where competition is less well-developed. These contracts influence prices in GB because of the GB – Belgium interconnector link.

4.76. The period over which the contract indexation is assessed would normally start nine months before the gas is due for delivery, with prices calculated on a quarterly basis. A worked example is set out in figure 4.27, below.

Figure 4.27: Example of gas contract pricing methodology



4.77. Depending on the nature and number of these contracts in existence both in GB and the continent, the forward prices of gas (between three and twelve months ahead) may be influenced by changes in the value of oil, gas oil, coal and power.

4.78. The analysis presented here is limited to the impact of oil prices on index-linked contract prices, due to the relative prevalence of this type of contract.[26]

4.79. On 14 November 2002, the front month Brent oil contract reached an eight-month low of $22.81/bbl. Over the next few months, however, prices increased by over $11/bbl, reaching a maximum of $34.10/bbl on 7 March 2003.

4.80. Assuming the presence of some oil-indexed contracts in companies' portfolios either in GB or continental Europe, then some correlation between front month Brent oil prices and Quarter 4 2003 gas contracts should have occurred over the first six months of 2003. Figure 4.28, below, shows that over these six months, the six-monthly average price of front month Brent oil increased from $26.56/bbl to $28.30/bbl. If there are significant number of these contracts of this type, gas contract prices for October 2003 would be higher than those of October 2002 because of the year-on year increase in oil prices.

Figure 4.28: Price of Front Month Brent Oil (six month average)

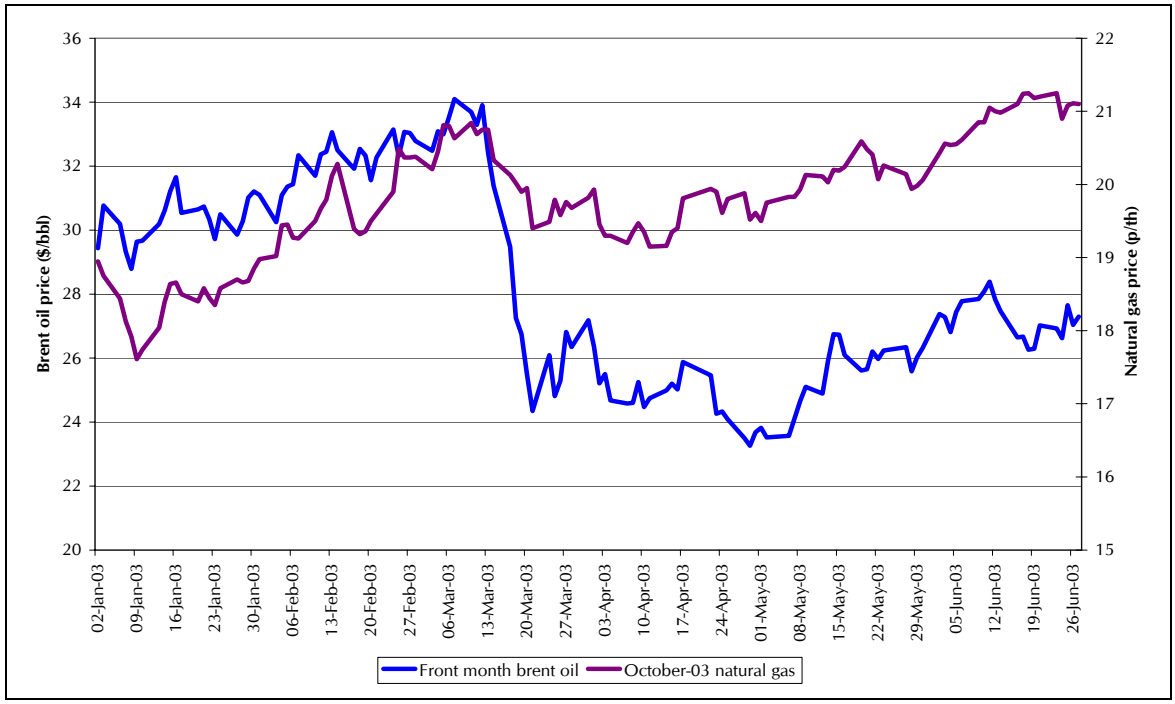
Period	Front Month Brent Oil ($/bbl)
Jan-02 to Jun-02	23.43
Jul-02 to Dec-02	26.56
Jan-03 to Jun-03	28.3
Jul-03 to Dec-03	28.63

Source: IPE

4.81. For the first three months of 2003, the price of the October 2003 gas contract seemed to be driven by the price of oil. This link between oil and gas was also evident in May 2003. However, in April 2003 and June 2003, oil and gas prices did not exhibit this relationship. This effect is shown graphically by figure 4.29.

[26] Gas-oil and oil prices are highly correlated, enabling consideration of the oil price alone.

Figure 4.29: Front month Brent oil prices versus October 2003 gas prices



Sources: IPE, Heren Energy Ltd

4.82. As figure 4.29 shows, there is a relationship between oil prices, over the relevant (index) period, and the forward gas price for October delivery. However, the observed price movements for October gas are so pronounced (see figure 2.2) during October 2003, that movements in the oil price cannot provide a direct explanation. The relationship between oil and gas prices is clearly complex.

Ofgem's view

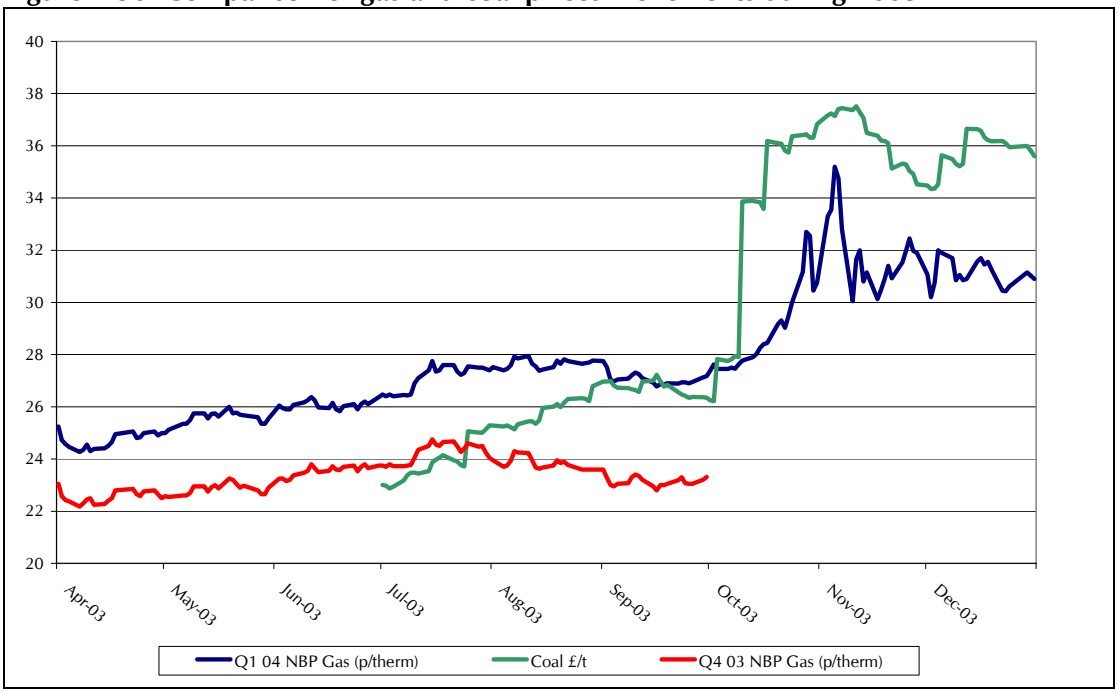
4.83. Ofgem's analysis does suggest some linkage between oil prices and forward gas prices suggesting that oil-indexed contracts are still exerting some influence on GB gas prices. The rises in oil prices seen over the first half of the year would, and indeed were, reflected within the forward prices. However, given Ofgem's understanding of the methodologies used, which is supported by the analysis undertaken, it is unlikely that movements in oil prices were responsible for the rise in spot prices witnessed mid way through October. Ofgem does not, therefore, consider that it is likely that oil prices were at this time a significant driver of the higher gas prices and has therefore decided not to pursue this potential price driver, at this stage.

Interactions between spot coal and spot gas markets

4.84. A large proportion of electricity generation in the UK is from coal-fired and gas-fired power stations. If the price of coal increases relative to the price of gas, companies may choose to decrease generation from their coal-fired plant and to increase generation from their gas-fired plant.

4.85. Figure 4.30 shows that in October 2003, the cost of coal-fired generation increased due to a rise in the spot price of coal on the international market. The main driver for the increase in the price of coal is the strong demand for coal from steel furnaces in China. Moreover, the cost of freight has also increased recently, with reports suggesting that this was due to high demand from China for freight to transport coal and iron ore.

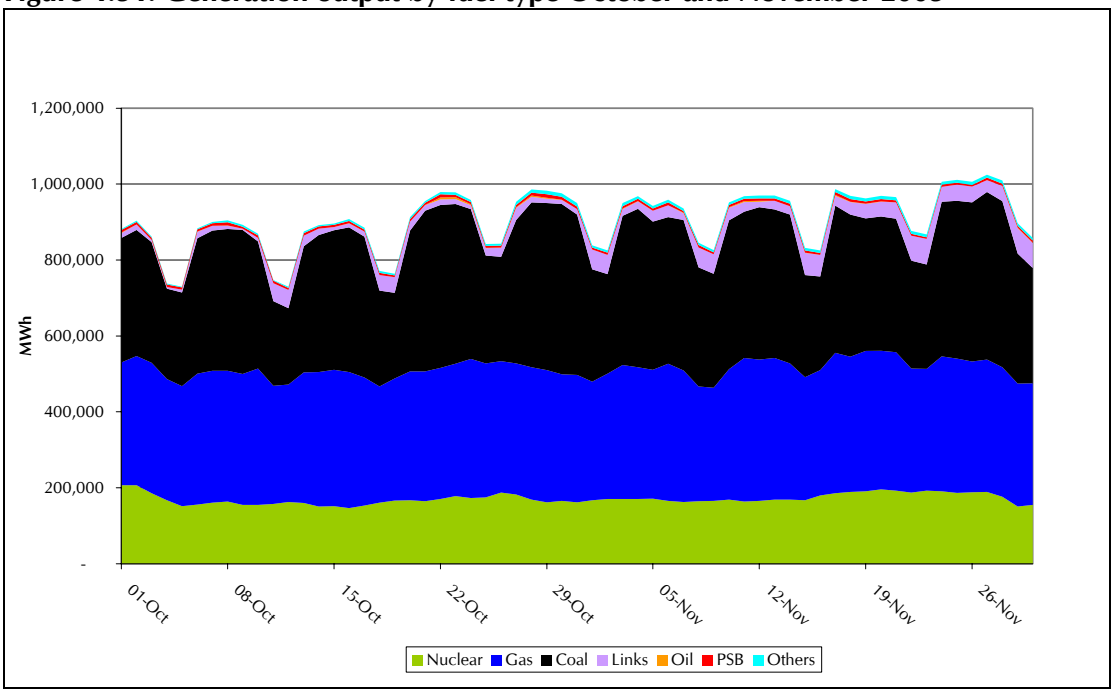
Figure 4.30: Comparison of gas and coal prices movements during 2003



Sources: Heren Energy Ltd, Argus Media Group

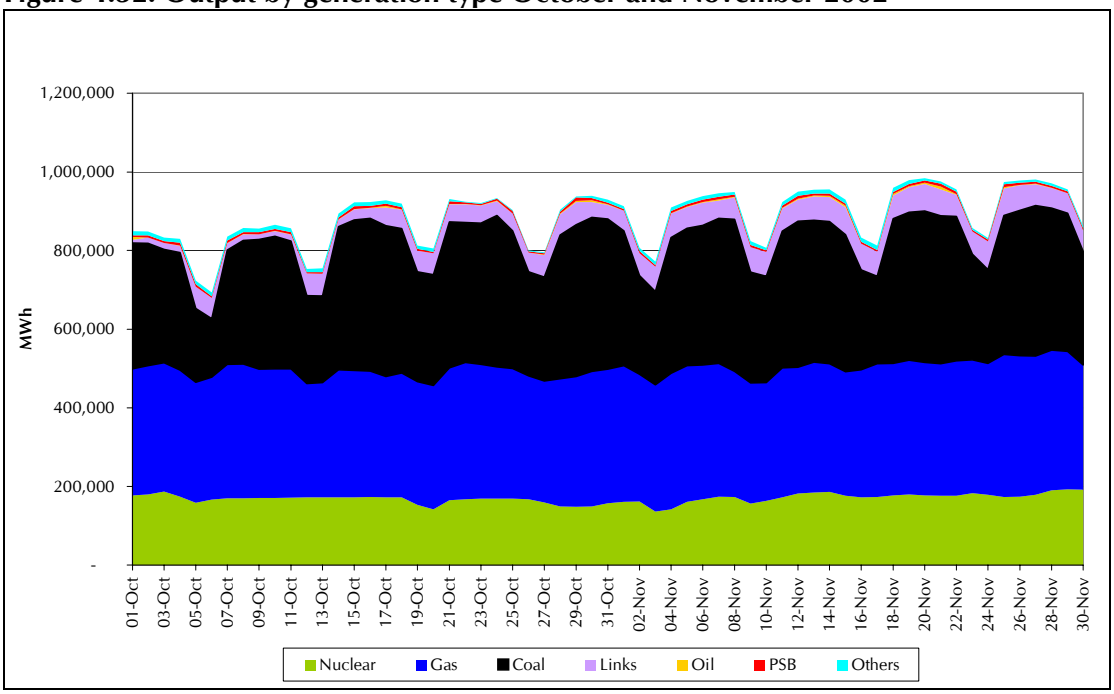
4.86. Figure 4.30 shows that the increase in coal prices (for delivery within 90 days) coincided with the increase in gas prices. However, generation from gas-fired sources did not increase during the period. Indeed, the increase in electricity demand in the second half of October was met by an increase in generation from coal-fired and oil-fired sources. The composition of generation by output during this period is shown by figures 4.31 (for 2003) and 4.32 (for 2002) below.

Figure 4.31: Generation output by fuel type October and November 2003



Source: National Grid Transco

Figure 4.32: Output by generation type October and November 2002



Source: National Grid Transco

Ofgem's view

4.87. The above analysis suggests that there was not a significant switch from coal to gas fired generation in response to increases in coal prices over the period when spot gas prices increased. This is consistent with the earlier analysis on the level of gas demand that did not show a significant change in the composition of gas

demand, year on year. Ofgem's analysis suggests that any correlation between gas and coal prices is likely to be to be coincidental rather than causal. Ofgem does therefore not consider that coal prices during the period were a significant driver behind the rise in spot gas prices and has therefore decided not to pursue this potential price driver, at this stage.

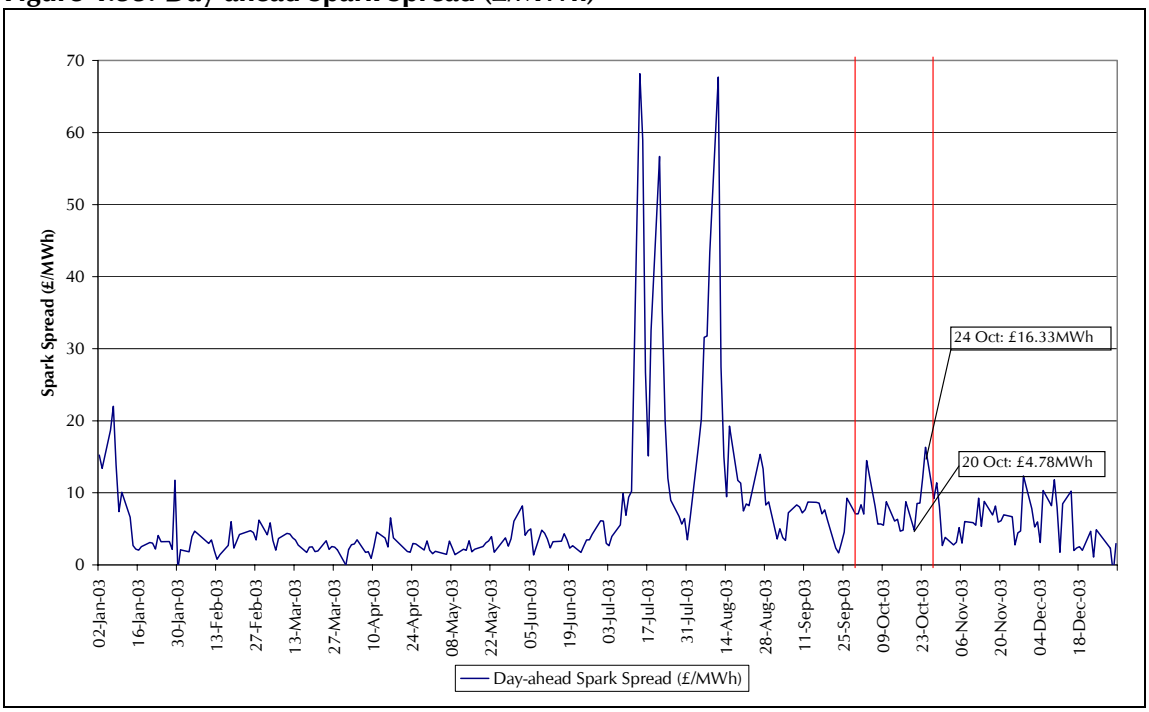
Spot electricity and spot gas prices and the spark spread

4.88. Gas prices are linked to electricity prices as gas is a significant source of fuel for electricity generation (38 per cent of output for the 2003/04 financial year was generated using gas as the input fuel) and power stations make up, on average 20 per cent of annual gas demand. The margin available to gas-fired generators, measured as the difference between electricity and gas prices (adjusted for the thermal efficiency of a combined cycle gas turbine in converting gas to power) is known as the 'spark spread'. When the spark spread widens, gas-fired generation becomes more profitable and so owners of gas-fired power stations will want to generate more electricity from gas-fired plant and, other things being equal, gas demand will rise.

4.89. Figure 4.33, below, shows that in October 2003, the day-ahead spark spread was relatively high. Typically, the day-ahead spark spread ranges between £2/MWh and £10/MWh. However, on 3 October 2003 the spark spread increased to £14.50/MWh and by 24 October 2003 the spark spread had reached £16.33/MWh. This widening of the spread occurred because although gas prices increased, electricity prices increased by a greater amount.

4.90. A combination of narrow plant margin and ongoing maintenance at British Energy's Sizewell B reactor, following an unplanned outage, saw day-ahead electricity prices rise and contribute to a widening of the spark spread.

Figure 4.33: Day-ahead Spark Spread (£/MWh)



Source: Ofgem calculation based upon Heren day ahead price data.

4.91. When the spark spread widened on 3 October 2003, no change in gas prices was observed. The further widening of the spark spread between 22 and 25 October coincided with an increase in gas prices. However, given that the levels of generation from gas-fired sources did not change materially during this period (figure 4.31 and 4.32), this suggests that the wider spark spread enabled gas-fired generators to continue generating at the same level despite rising input fuel costs.

Ofgem's view

4.92. Whilst further contractual information concerning the trading activities of electricity fired generators in both markets would be required to be able to take this analysis further, based upon the output observed by combined cycle gas turbines, Ofgem does not consider it likely that electricity prices were a substantial driver of gas prices at this time. However, it is possible that higher electricity prices (caused by increased coal prices, the marginal generating set over this period) enabled combined cycle gas turbines to pay the higher gas prices and not cease generating as a result of increase in the input fuel cost. Ofgem considers that the rising power prices had the impact of indirectly helping to sustain the high gas prices. Higher power prices raised the opportunity cost (in terms of lost profit) of reducing generation from gas fired

plant This prevented gas fired plant from reducing their generation and selling gas back into the spot market. Ofgem is, therefore, not pursuing this line of enquiry further at this stage.

5 - Alleged manipulation of the traded markets

4.93. Respondents expressed concern that a number of participants were manipulating the price indices on which a number of gas contracts are priced and/or settled. The FSA[27] has taken the lead on the two specific allegations which were made in connection with the increase in gas prices in October and November 2003. These allegations are:

- a number of specified participants were accused of manipulating a window index (weighted average price of trades conducted between 5pm and 5.30pm); and
- a specific participant was accused on putting trades on at such large volumes that they could, in effect, put a floor or ceiling on prices, since participants would be unable to trade through the volume placed.

4.94. This aspect of the probe does not fall within Ofgem's jurisdiction and is being progressed by the FSA.

6. Market liquidity

4.95. It has been suggested that market prices have become easier to manipulate in recent months because the overall level of liquidity has declined. As part of the review of gas prices during October and November 2003, Ofgem has therefore analysed developments in market liquidity by assessing a number of different measures of liquidity in the wholesale market:

- Trade nominations to Transco;
- Within-day trading; and
- Day ahead trading.

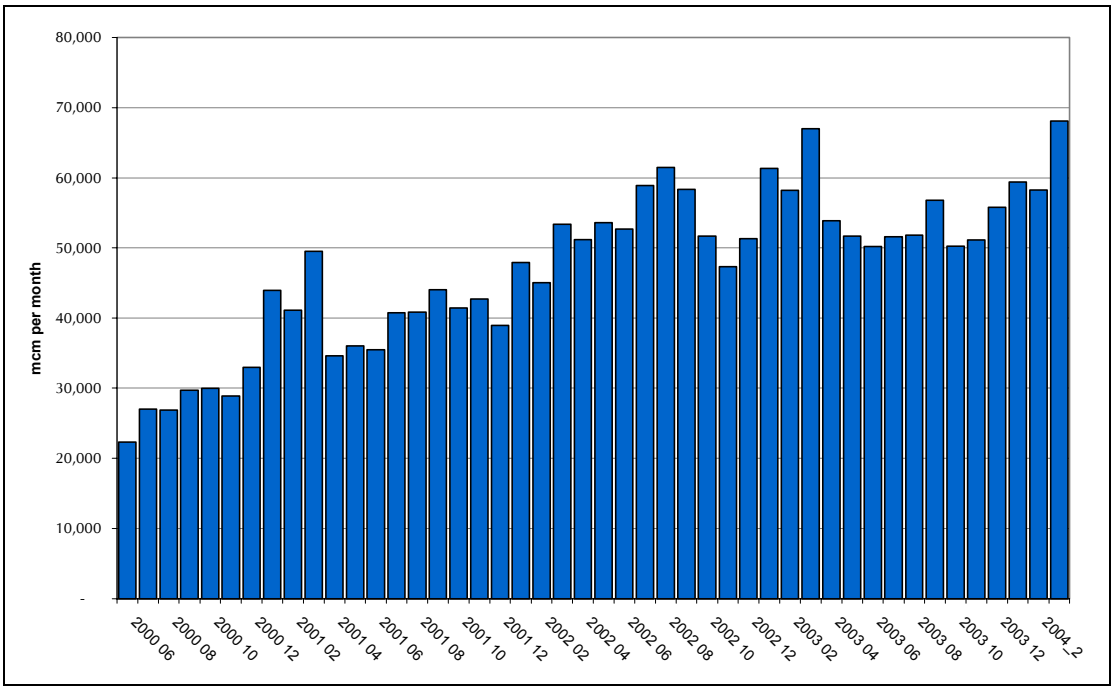
[27] The FSA's duties and powers are set out in Appendix 2.

4.96. These are discussed in turn below.

Trade nominations to NGT

4.97. Gas trades are notified to Transco (by both counterparties to the trade). Transco uses this information, together with NTS entry and NTS exit allocations, to calculate each shipper's imbalance position on every gas day. Figure 4.34, below, shows how this total volume of trades has developed since June 2000. The totals for September, October and November 2003 are labelled individually. The volume of trades can provide a measure of the degree of liquidity in a market.

Figure 4.34: Volume of trades nominated to Transco since June 2000



Source: National Grid Transco

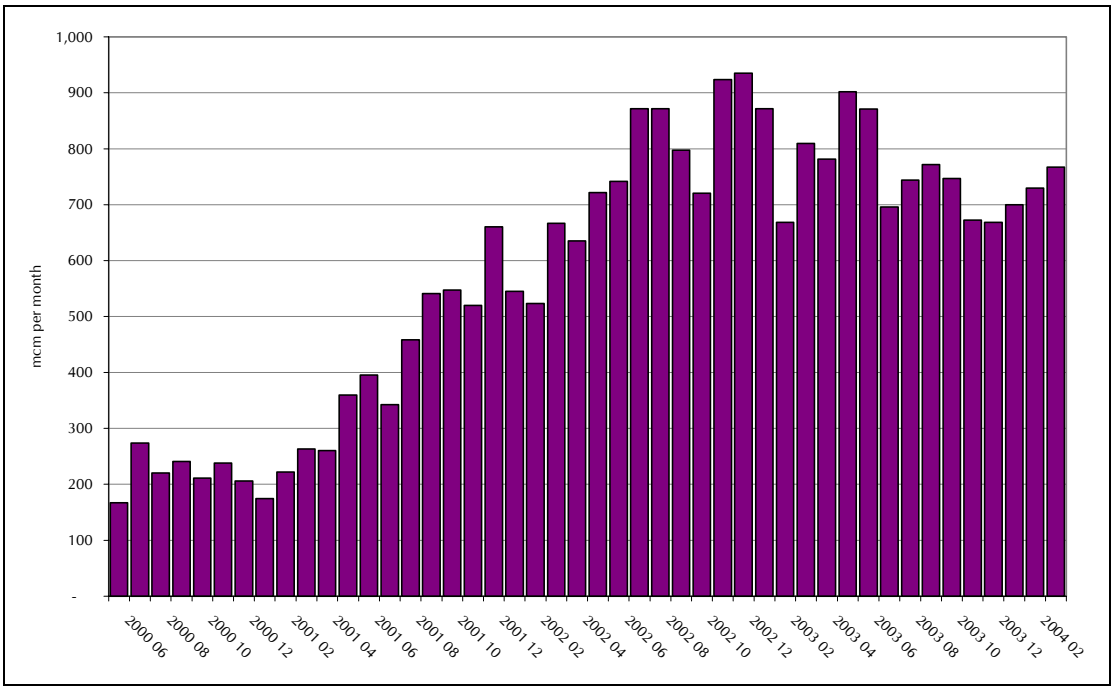
4.98. As figure 4.34 shows, there was a considerable growth in traded volumes between June 2000 and September 2002, after which time the monthly totals have been more volatile. During October and November 2003, however, trade nominations were at a similar level to the other months of 2003; their totals of 50bcm and 51bcm are only slightly less than the average for the gas year 2002/03 of 54bcm.

4.99. It should be noted that these totals include all trades, both forward contracts and trades in spot products.

Within-day trading: activity on the OCM

4.100. Another measure of liquidity is the level of trading on the OCM. This is primarily, though not exclusively, in within-day contracts, with most participants using it to balance their positions on the gas day itself. As with all other trades, OCM deals are nominated to Transco, and therefore the volume shown in figure 4.35, below, is a subset of figure 4.34. Figure 4.35 shows the volumes traded on the OCM since June 2000.

Figure 4.35: Volumes traded on the OCM since June 2000



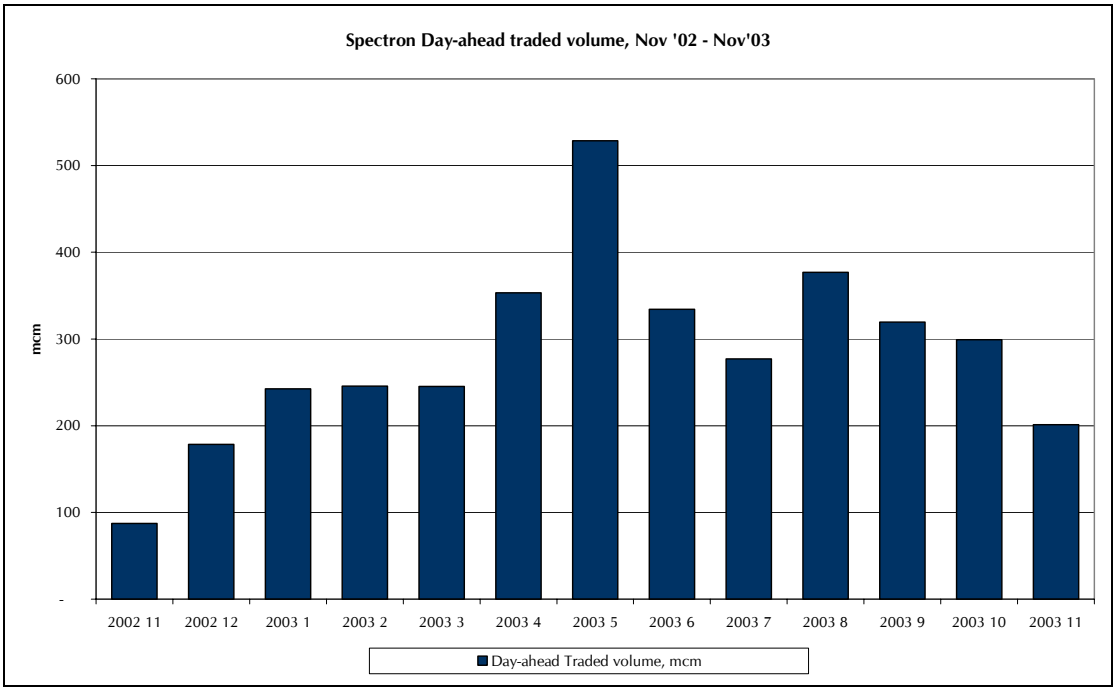
Source: APX

4.101. The development of traded volumes on the OCM is similar to the overall growth in nominations to Transco, in that there was a considerable growth between 2000 and 2002, but some volatility thereafter. The totals for October and November 2003 are 747mcm and 672mcm respectively, or 92 per cent and 83 per cent of the average for gas year 2002/03 suggesting that by this measure there has not been a significant decrease in liquidity.

Day-ahead trading: activity on the Spectron trading platform

4.102. The other measure of liquidity Ofgem analysed was Information on trades completed via the Spectron trading platform[28] is available from November 2002 onwards. Some of these trades are in day-ahead contracts, and it is therefore possible to analyse the development of liquidity in what is reported to be the largest market for day-ahead contracts. Figure 4.36, below, shows that traded volumes in October 2003 (around 300mcm) were above average for the platform, though volumes for November 2003 were below average. Statistics from Spectron show a significant increase in volumes traded for both the October 2003 and Quarter 1 2004 contracts, suggesting that by this measure there has not been a significant decrease in liquidity.

Figure 4.36: Volumes traded on the Spectron trading platform November 2002 to November 2003



Source: Spectron

[28] The Spectron platform is an electronic trading system operated by Spectron, a broker in gas and power, petroleum products and metals.

Ofgem's view

4.103. Ofgem analysis suggests that there was no significant reduction in liquidity during the period of high prices, either in terms of all nominated trades, or trading in within-day and day-ahead contracts. Ofgem therefore considers that it is unlikely that liquidity is a significant price driver. Ofgem is, therefore, not pursuing this line of enquiry further at this stage.

7. Market sentiment

4.104. Respondents to Ofgem's open letter of 14 November 2003 suggested that the perception of greater risks to security of supply was a potential price driver. These concerns are listed below for information. They are, however, by their very nature, subjective and extremely difficult to assess and analyse.

- **Electricity interruptions**: Over the summer months there were a number of interruptions to the electricity supply in the United States and Canada and in the UK. Whilst none of these incidents were caused by a lack of supply, these interruptions may have affected market perceptions.

- **Summer interruptions**: In June 2003, Transco was forced to manage network constraints on the NTS by interrupting supplies to a number of gas consumers under the terms of their interruptible supply contracts. Whilst the situation arose due to a locational, rather than a general shortage of gas, the interruptions during the summer months were unprecedented.

  The interruptions of these contracts in the summer months may have been interpreted by some market participants that interruptions were significantly more likely going forward, in particular that the risk of being interrupted this winter was greater.

- **NGT's Winter Operations Report**. On 14 October 2003, Ofgem published NGT's winter operations report. In this report, NGT made a number of comments about operation of the gas (and electricity) networks, which were repeated in a number of press reports. These may have contributed to the view that there was a significant security of supply problem in relation to winter 2003/04.

- **Articles in the press**. Several articles were published, which repeatedly voiced the concerns of particular market commentators regarding the ability of supply to meet demand during the peak period of winter.

- **Storage withdrawals early in the winter**. These were interpreted by some respondents as giving further credence to Transco's concerns since they viewed the timing of withdrawals from storage as unusual.

- **Colder weather**. Some respondents suggested that a period of colder weather, starting on 20 October 2003 (itself not unusual within a 'shoulder' month going into the winter), increased the general perception that if it was a severe winter supply might be insufficient to meet demand.

- **Uncertainty over the actual level of beach supplies.** Some respondents suggested that uncertainty over the level of supplies from this source might have resulted from a lack of timely and reliable information on offshore production. In addition, they suggested that the frequent rumours regarding offshore outages contributed to concerns over the market's ability to match demand with supply. Overall, uncertainty regarding the availability of supplies may have led participants to factor in a higher risk premium to the price that they were willing to pay for day-ahead gas as the perceived risk of ending the next day short or not being able to buy gas on the next day at a 'reasonable price' was greater.

Ofgem's view

4.105. Whether the concerns of market participants over security of supply were well-founded or not, Ofgem recognises that the concern did exist. Ofgem therefore considers it possible that these concerns may have added to the upward pressure on prices during October and November 2003. However, Ofgem considers that it is not possible to quantify the impact of such concerns upon gas prices, and Ofgem is therefore uncertain as to the extent to which this factor can explain the increase in prices. In any event, it is unlikely that these concerns contributed in any material extent to the increase in gas prices in October and November 2003. Ofgem is, therefore, not pursuing this line of enquiry further at this stage.

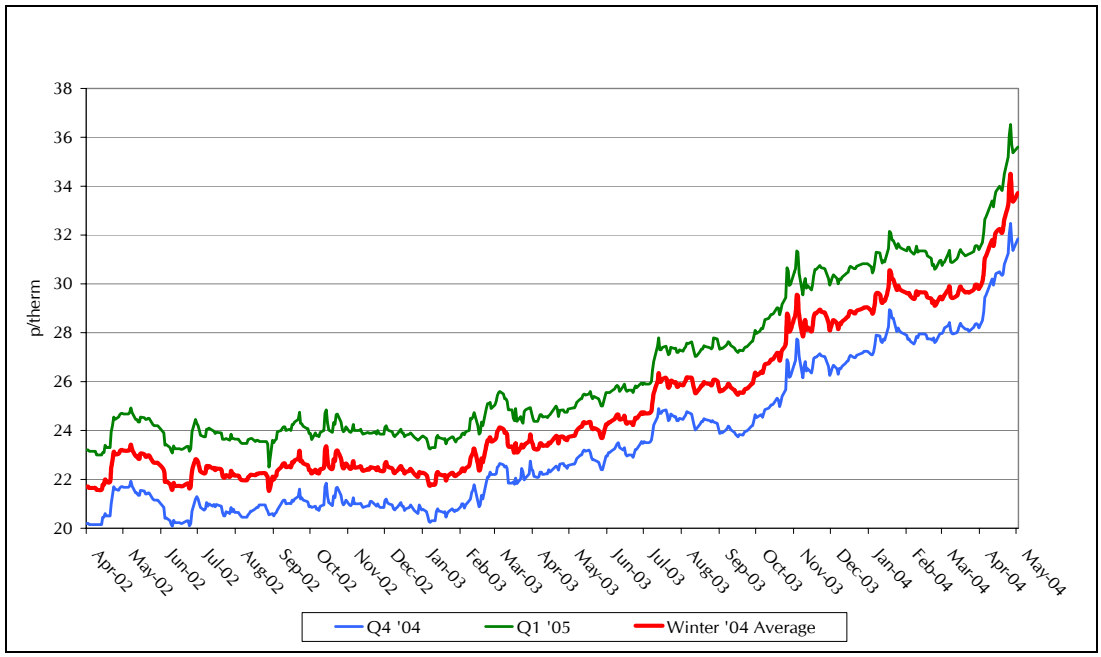
5. Gas prices winter 2004/05

5.1. This chapter outlines the increase in winter 2004/05 gas prices observed by Ofgem as part of its market monitoring activities. Ofgem is inviting views from customers, market participants and other interested parties on these recent movements in wholesale gas prices for winter 2004/05.

5.2. There are a number of potential demand and supply side explanations for the price increases observed. It is also possible that factors explaining movements in prices this time last year may also have been a contributing factor this year and that prices for winter 2003/04 have had an impact on winter 2004/05.

5.3. Figure 5.1, below shows the movement in winter 2004/05 forward gas prices (i.e. the price of a contract signed today for delivery during the winter 2004/05 period). It illustrates that price increases observed in the latter part of 2003 were sustained throughout the first quarter of 2004 and that since the start of April 2004, there has been a further increase in price levels.

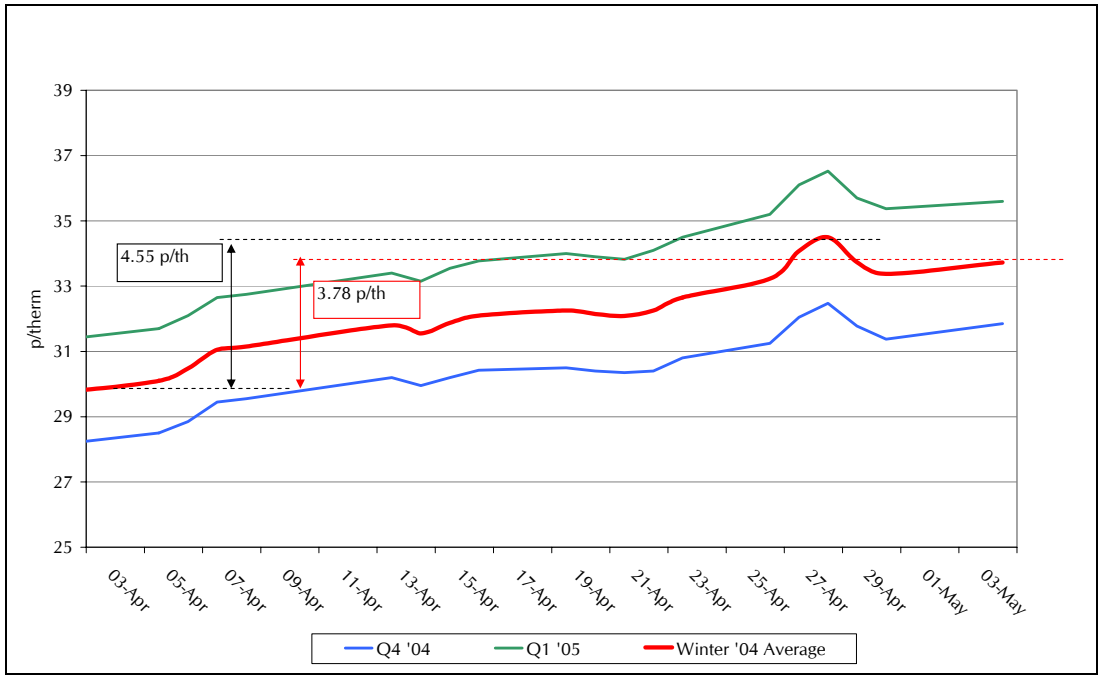
Figure 5.1: Movement in winter 2004/05 gas prices since April 2002



Source: Heren Energy Ltd

5.4. Figure 5.2 considers the recent increase in more detail and shows that winter 2004/05 gas prices rose by 3.8p/th between 1 April and 3 May 2004.

Figure 5.2: Movement in winter 2004/05 gas prices since 1 April 2004

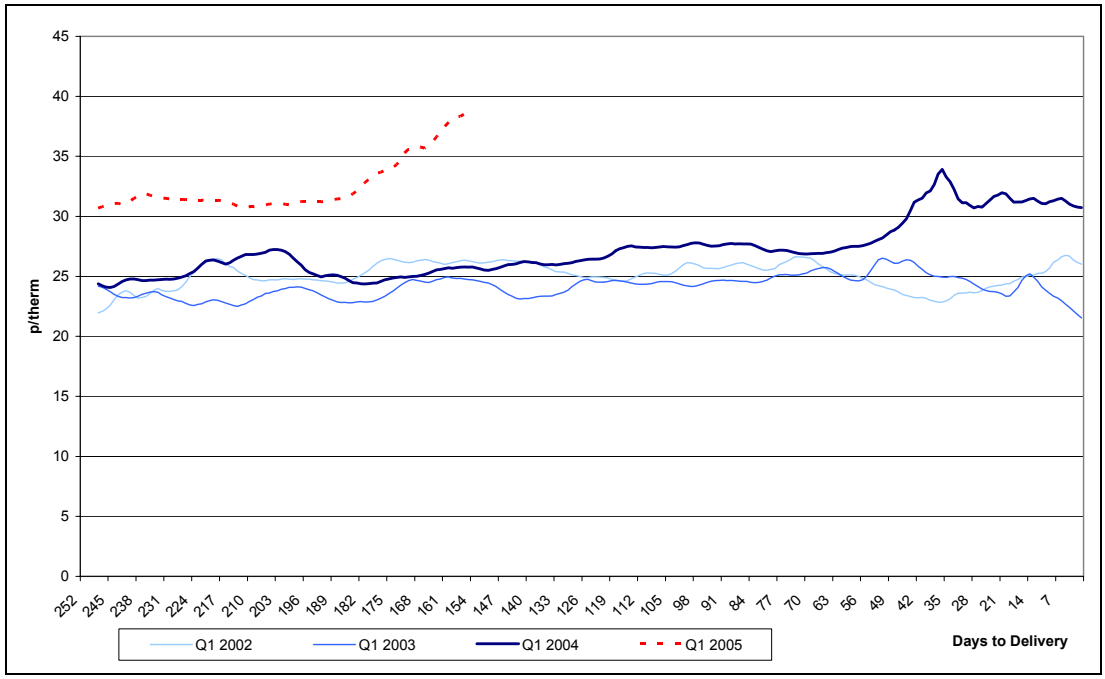


Source: Heren Energy Ltd

5.5. Figure 5.3 compares the movement in Quarter 1 2005 prices to those during previous years. The chart shows prices[29] for each Quarter 1 contract quoted in the twelve months prior to delivery. The chart highlights the observed increase in the Quarter 1 2005 contract relative to the Quarter 1 contracts of previous years.

[29] Each data point is a five-day moving average price..

Figure 5.3: Movement in Quarter 1 gas prices



Source: Heren Energy Ltd

5.6. Winter 2004/05 prices are trading at a premium of 16p/therm to winter 2002/03 and at a premium of 11p/therm to the start of the gas year in October 2003. In addition, winter 2004/05 prices have increased significantly since the start of April.

Views invited

5.7. Ofgem welcomes views from customers, market participants and other interested parties on the potential causes of the significant increases in the wholesale gas prices for winter 2004/05.

6. Conclusions and way forward

6.1. This chapter summarises Ofgem's initial conclusions on each of the possible causes of high prices experienced during October and November 2003, outlines Ofgem's proposed next steps and invites views.

Initial conclusions – winter 2003/04

6.2. Ofgem originally identified seven possible features, or 'price drivers', of the gas market that may have operated during October and November 2003 to either cause the increase in wholesale spot gas prices or to have maintained the higher prices. These are outlined below, together with a brief summary of Ofgem's initial conclusions.

Changes to the composition of supply

6.3. Ofgem has some concerns regarding low beach supplies, and the delay in interconnector shippers importing significant volumes of gas across the interconnector. Ofgem wishes to understand more fully why lower gas deliveries were lower than expected and than in previous years and why very few nominations to import gas were placed on days when they might otherwise have been expected**.**

Higher levels of demand

6.4. Ofgem considers that the pattern of daily demand was a contributory factor to the timing of the rise in gas prices, rather than a reason for the gas price rise in itself.

Alleged manipulation of Linepack within-day

6.5. Ofgem's conclusion from the analysis of movements in within-day linepack during the period of high prices is that, while linepack did exhibit significant within-day variations on a number of days over the period, these variations have been observed frequently in the past. While Ofgem does not consider that the variations in linepack to be directly responsible for the rise in prices in mid

October, Ofgem does consider that the volatility of linepack levels following a rise in gas prices may have contributed to prices remaining at their higher level.

Price movements in linked commodity markets

6.6. Ofgem does not consider it likely that price movements in other linked commodity markets were to any significant extent responsible for the rise in gas prices in October 2003 either for temporal reasons (oil and coal) or because the mechanism to transfer the price increase between markets (electricity).

Alleged manipulation of markets prices

6.7. The allegations of spot and forward market manipulation are currently being taken forward by the FSA.

Decreases in market liquidity

6.8. Ofgem considers that there was no significant reduction in liquidity during the period of high prices, either in terms of all nominated trades, or trading in within-day and day-ahead contracts. Ofgem therefore considers that, based upon the indicators of liquidity assessed, the suggestion that liquidity has decreased in recent months does not warrant further consideration at this stage.

Market sentiment

6.9. Ofgem recognises that concerns in the market over security of supply did exist and therefore considers it possible that these concerns may have added to the upward pressure on prices during October and November 2003. However, Ofgem considers it is unlikely that these concerns contributed materially to the increase in gas prices in October and November 2003.

Way forward

6.10. Of the seven price drivers originally identified, Ofgem has been able to focus its enquiry on two areas of one of these potential price drivers (the composition of gas supply) – namely, low beach deliveries and the delay in the interconnector importing significant volumes of gas. Ofgem has therefore informally written to a number of specific field and sub-terminal operators and to the interconnector

shippers[30] requesting further information to assist Ofgem determine the causes, as far as is possible, behind the high gas prices.

Views invited

Wholesale gas prices October and November 2003

6.11. Ofgem invites views from customers, market participants and other interested parties on Ofgem's analysis and initial conclusions on the causes of the high wholesale gas prices last winter.

Wholesale gas prices October and November 2004

6.12. In addition, Ofgem acknowledges that customers and market participants are concerned about the recent rises in prices for the coming winter and invites views on the possible causes behind the significant price movements in wholesale gas prices for winter 2004/05 and whether they appear to be consistent with underlying market conditions.

6.13. All responses will normally be published on the Ofgem website and held electronically in the Research and Information Centre unless there are good reasons why they must remain confidential. Respondents to the consultation should try to put any confidential material in appendices to their responses and mark it as confidential. Ofgem prefers to receive responses in an electronic form so they can be placed easily on the Ofgem website. Responses should be submitted by 25 June 2004 either electronically to becky.neale@ofgem.gov.uk or by post, addressed to:

Kyran Hanks
Director, Wholesale Markets
Office of Gas and Electricity Markets
9 Millbank
London
SW1P 3GE

[30] Shippers who own firm capacity to flow across the Belgian Interconnector.

6.14. If you wish to discuss any aspect of this document, please contact Sophie Tolley on: 020 7901 7262 (phone), 020 7901 7452 (fax), sophie.tolley@ofgem.gov.uk.

6.15. The next steps in Ofgem's probe into last winter's wholesale spot gas prices will clearly depend on the nature of any information received. Ofgem hopes to be in a position to publish a further update as soon as is practicable once this information has been received and analysed.

6.16. Ofgem intends to publish an update on this coming winter's prices once the responses, which are due by 25 June, have been analysed

Appendix 1. Offshore and onshore gas arrangements

1.1 This appendix describes the different offshore and onshore arrangements in place in the gas market. It explains some of the key activities, who undertakes them and how the onshore and offshore arrangements fit together.

The offshore system

Gas production

1.2 Gas was first discovered in the UK southern North Sea in 1965. Since then gas has been discovered and developed throughout the North and Irish Seas.

1.3 The offshore gas fields fall into two broad types: dry gas fields and associated gas fields. The key difference between the two major types of gas fields is that dry gas fields have no associated liquids (primarily oil), whereas associated gas fields produce liquids concurrently with gas. In these cases, the gas must either be sold or re-injected if liquids are to be sold. In the situations where no (or limited) gas re-injection is available, liquids production is dependent upon gas sales. There tends to be a commercial incentive for gas sales to be maintained at capacity throughout the year as the associated oil production tends to be much more valuable than the gas.

1.4 Typically, associated gas fields are located in the northern and central North Sea, whereas dry gas fields are located in the southern North Sea and the Irish Sea. Significant associated gas production is landed at the St Fergus terminal (see Figure A1.1 below for map of the main terminals where gas is brought onshore) whilst production landed at the Bacton terminal is dominated by dry gas fields.

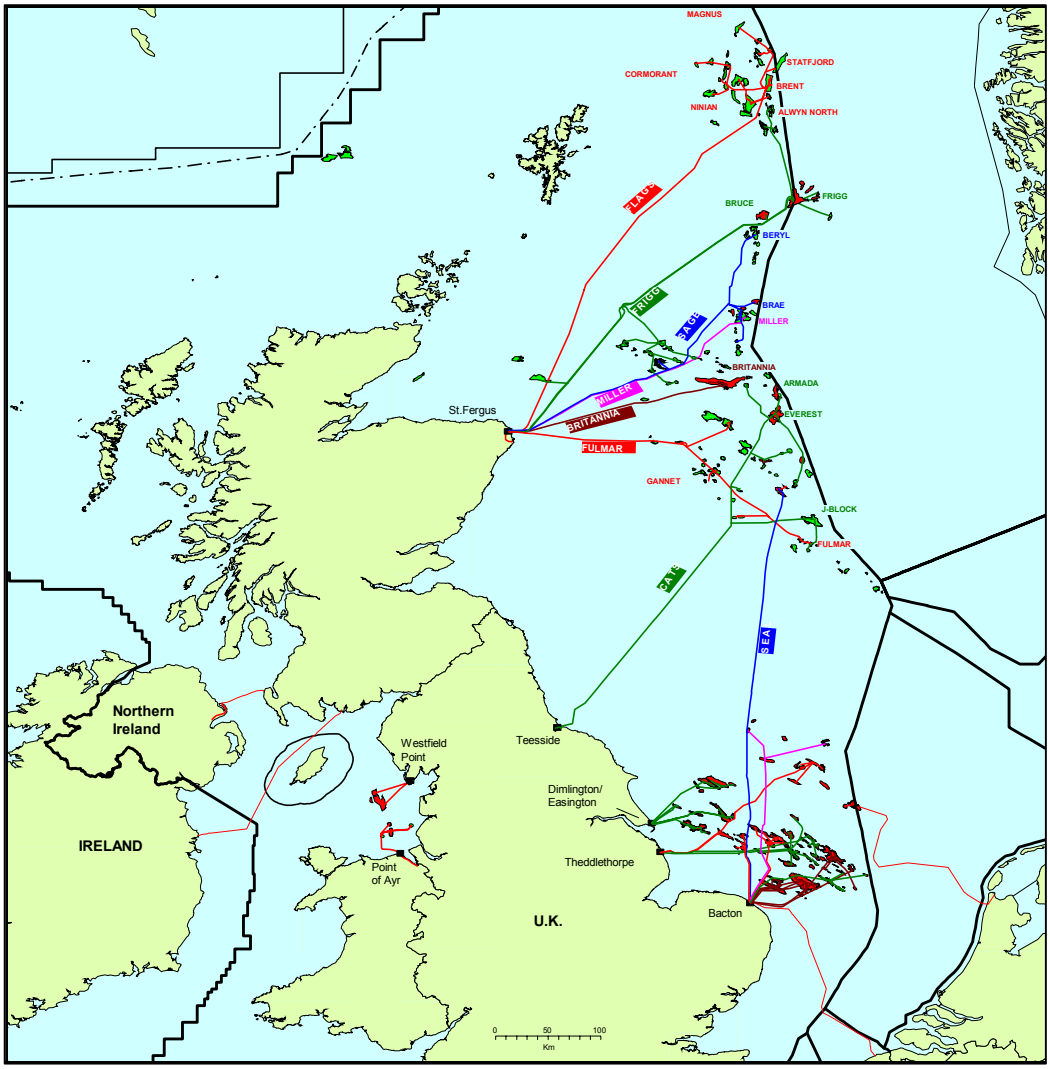
Pipeline infrastructure

1.5 A significant level of investment has been required both in offshore production facilities and in an offshore transportation system to bring gas to the UK market (Figure A1.1). Historically, offshore pipelines were built specifically to allow a particular field/complex of fields to be developed and the gas production to be

delivered to the UK. However, new fields may also use existing pipelines on a third party basis.

1.6 A significant feature of the offshore pipeline system that has developed is that each field is only connected to a single gas pipeline and each pipeline system only delivers gas to a single receiving terminal (often referred to as sub-terminals).

Figure A1.1 - UK offshore gas pipeline infrastructure



Source: Wood Mackenzie

Interconnection

1.7 In addition to gas being brought into the UK from offshore production, there are interconnectors that link the UK with mainland Europe and the Republic of Ireland.

1.8 The interconnector between Bacton in Norfolk and Zeebrugge is operated by Interconnector UK Ltd (IUK Ltd). IUK Ltd was formed in 1994 by nine major energy companies who made long-term shipping commitments to use the interconnector.

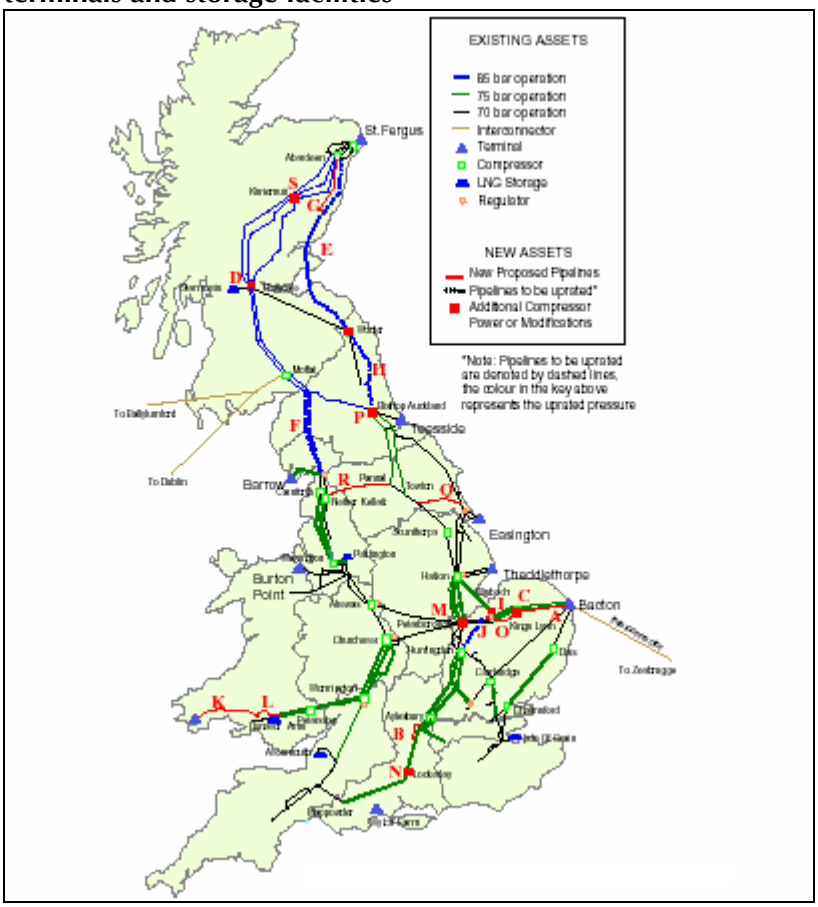
1.9 The UK/Republic of Ireland interconnectors (IC1 and IC2) are operated by Bord Gais Eireann. They are both one way flow pipelines to the Republic of Ireland and also have spurs to Northern Ireland (owned and operated by Premier Transco Ltd) and the Isle of Man.

1.10 Shippers book capacity on the appropriate interconnector in order to flow gas to and/or from the UK.

The onshore gas regime

1.11 Gas is input at high pressure into Transco's National Transmission System (NTS). The network is designed to defined security standards to ensure that there is enough capacity to transport gas to customers with firm gas demand even during severe winter conditions. Figure A1.2 shows the network of NTS pipelines and the location of the major storage installations.

Figure A1.2 Transco's National Transmission System - pipeline network, entry terminals and storage facilities



Source: National Grid Transco

1.12 The Gas Act 1986 (as amended by the Utilities Act 2000) provides for the regulation of the onshore gas regime and for the separate licensing of gas transportation, gas shipping and gas supply. This unbundling led to a split in responsibilities. In particular, the responsibility for building and running the main pipeline system onshore falls to Transco. The responsibility for buying gas from producers and selling gas to suppliers/customers falls to shippers.

1.13 Transco has in place a multilateral contract, known as the 'network code' that governs the terms for accessing and using the NTS. Gas shippers, who are licensed by Ofgem, must sign up to the terms of the network code to be able to trade gas and transport gas over the NTS. Transco charges shippers for using the NTS through commodity and capacity based charges. Shippers are able to input gas to the NTS and take gas from the NTS and sell it to gas suppliers and/or customers.

1.14 There are gas balancing arrangements in place which are designed to provide shippers with commercial incentives to balance their inputs to, and offtakes from, the NTS at the end of the gas day. If a shipper is out of balance at the end of the day, any imbalance volume is cashed out at prices determined by trades on the On-the-Day Commodity Market (OCM). To alleviate any imbalances, Transco has a number of tools available to it including buying and selling gas on the OCM and the use of linepack (gas stored in the pipeline system).

The interface between the offshore and onshore regimes

1.15 The interface between the offshore and onshore regimes can be considered at both the physical level and in terms of information flows.

1.16 Sub-terminal operators run facilities that control the volume and the quality of gas being delivered onto the NTS. Sub-terminal operators do not take commercial decisions about the volume of gas to be delivered.

1.17 The availability and quality of information within the system is important, particularly, with respect to the information available to Transco to balance its pipeline system and for shippers to balance their inputs and outputs to Transco's system. The following outlines the information flows between the industry participants.

- **Producers:** Based on the contracts that producers have struck with shippers, the producers (field owners) make their nominations, which are aggregated by the operator of the field (field operator). The aggregate nomination is passed to the relevant sub-terminal operators.

- **Sub-terminal operators:** There are fourteen main beach sub-terminals.[31] Before the gas day, the operators of the sub-terminals estimate the hourly flow rates from the sub-terminal to the NTS in the form of Daily Flow Nominations (DFNs). The DFNs are calculated by the sub-terminal

[31] The sub-terminal operators are: Perenco, Tullow, Shell, Centrica, BP, ExxonMobil, TotalFinaElf, ConocoPhillips and the administrators of Enron. It should be noted that some companies operate more than one sub-terminal.

operators who aggregate the nominations they receive from the field owners. DFNs are updated throughout the gas day.

- **Shippers:** The shippers' relationship with the producers depends on the nature of the contracts between them. There are buyer and seller nominated contracts. In the case of a buyer nominated contract the gas shipper nominates the amount of gas for delivery. In the case of a seller nominated contract the producer nominates the amount of gas for delivery and hence has more control over gas production. Regardless of how the offshore nomination between the shipper and producer is derived, the shipper makes a nomination to Transco via the AT-Link system (part of the information system that links Transco and the shippers).

- **Transco:** Before the gas day Transco receives input nominations from two sources. These are the DFNs from sub-terminals and nominations from shippers on AT-Link. Both sources are updated throughout the gas day.

Appendix 2. Regulatory framework

2.1 This appendix sets out a summary of the relevant regulatory arrangements governing the gas market both onshore and offshore.

The onshore regulatory regime

Gas Act 1986

2.2 The Gas Act 1986, as amended by the Utilities Act 2000, provides for the regulation of the onshore gas regime in Great Britain and for the separate licensing of gas transporters, gas shippers and gas suppliers. Transco is the largest gas transporter in Great Britain.

2.3 Section 4AA of the Gas Act 1986 sets out the principal objective and general duties of the Gas and Electricity Markets Authority (the Authority) in respect of gas. The principal objective of the Authority in carrying out its functions under the Gas Act 1986 is to protect the interests of consumers in relation to gas conveyed through pipes, wherever appropriate, by promoting effective competition between those engaged or concerned with the shipping, transportation or supply of gas or engaged in commercial activities relating to such activities. In carrying out its functions under the Gas Act 1986 in a manner which furthers the principal objective, the Authority will have regard to the following:

- the need to secure that, so far as it is economical to meet them, all reasonable demands in Great Britain for gas conveyed through pipes are met; and
- the need to secure that licence holders are able to finance the carrying on of the activities which they are authorised or required by their licences to carry on.

2.4 The Authority must carry out its functions in the manner it considers best calculated to:

- promote efficiency and economy on the part of authorised persons and the efficient use of gas;

- protect the public from dangers arising from the conveyance of gas through pipes or the use of such gas; and
- secure a diverse and viable long term energy supply.

2.5 The Authority must also have regard to the effect on the environment of activities connected with the conveyance of gas through pipes.

Utilities Act 2000

2.6 Section 1 of the Utilities Act 2000 created the Gas and Electricity Markets Authority.

2.7 The Utilities Act 2000 amended the Gas Act 1986 in a number of significant ways. The Utilities Act 2000 gave the Authority new duties (as outlined above) and functions in relation to licensing and setting performance standards. The Utilities Act 2000 also gave the Authority the power to impose financial penalties on companies found to be breaching, or to have been in breach of, licences issued to them under the Gas Act 1986 or Electricity Act 1989.

The offshore regulatory regime

2.8 Licensing exploration and regulating development of the United Kingdom's oil and gas resources is the responsibility of the Licensing and Consents Unit (LCU) of the DTI.

2.9 The Petroleum Act 1998, which consolidated a number of provisions previously contained in five separate pieces of primary legislation (including the Petroleum (Production) Act 1934), vests ownership of oil and gas within Great Britain and its territorial sea in the Crown and gives the Government rights to grant licences to explore for and exploit these resources and those on the United Kingdom Continental Shelf (UKCS). The Oil and Gas Licensing and Exploration branch of the LCU regulates the licensing process. It issues exploration and production licences, approves operators and issues production consents.

UK and EU competition legislation

2.10 The Authority has a number of concurrent powers with the Office of Fair Trading (OFT) under the Competition Act 1998 and the Enterprise Act 2002 in respect of Great Britain. In relation to the concurrent powers under the Competition Act 1998, the Authority's relationship with the OFT is governed by the Competition Act 1998 (Concurrency) Regulations 2004.

Competition Act 1998

2.11 The Competition Act 1998 prohibits anti-competitive agreements and abuse of a dominant position (respectively the Chapter I and Chapter II prohibitions). The OFT and Ofgem are able to enforce the Chapter I and II prohibitions using their concurrent powers under the Competition Act 1998. The extent of Ofgem's functions are slightly curbed in the sense that the exercise of functions with respect to competition in gas markets must relate in some way to the activities that Ofgem licences under section 5(1) of the Gas Act 1986.

2.12 The OFT has jurisdiction under the Competition Act 1998 throughout the United Kingdom and in respect of all sectors of the economy. This includes the offshore oil and gas industry. The OFT also has jurisdiction under the Enterprise Act 2002 to make market investigation references to the Competition Commission. There are provisions for the sectoral economic regulators (including Ofgem) to work with the OFT in investigating market issues which extend beyond the competence of the sectoral regulator.

2.13 Chapter I prohibits agreements between undertakings, decisions by associations of undertakings or concerted practices which have the object or effect of preventing, restricting or distorting competition in the United Kingdom and which may affect trade in the United Kingdom.

2.14 Chapter II prohibits conduct by one or more undertakings which amounts to the abuse of a dominant position in a market in the United Kingdom which may affect trade in the United Kingdom.

2.15 Under the Competition Act 1998 the Authority has the power to impose financial penalties for breaches of the Chapter I or Chapter II prohibitions.

Enterprise Act 2002

2.16 Under Part 4 of the Enterprise Act 2002, the Authority has concurrent powers with the OFT to make market investigation references to the Competition Commission. Recent amendments have been made to section 36A of the Gas Act 1986 to reflect this concurrent power. The Authority may make a reference to the Competition Commission where it has reasonable grounds for suspecting that any feature, or combination of features, of a market in the United Kingdom for goods or services prevents, restricts or distorts competition in connection with the supply or acquisition of goods or services in the United Kingdom or a part of the United Kingdom. This is insofar as it relates to commercial activities that the Authority licenses.

2.17 The Competition Commission will decide whether any feature or combination of features, of each relevant market prevents, restricts or distorts competition and what action, if any, should be taken to address that feature or combination of features.

EU competition law

2.18 Under the process of 'modernisation' the Authority also now has the ability as a 'national competition authority' to enforce (alongside national competition laws) European Community competition rules (specifically, Articles 81 and 82 of the EC Treaty) where conduct infringing these Articles has an effect on trade between Member States. Amendments are being made to the Competition Act 1998 to provide the Authority with the appropriate powers.

2.19 Article 81 of the EC Treaty deals with anti-competitive agreements between individuals and companies that have as their object or effect the prevention, restriction or distortion of competition within the common market and that may affect trade between Member States.

2.20 Article 82 prohibits conduct that amounts to an abuse of a dominant position within the common market insofar as it may affect trade between Member States.

2.21 The division of case work between Member States is the responsibility of the Commission and Member States' competition authorities inside the European Competition Network (ECN). Within the ECN information on cases that are

being investigated following a complaint will be made available to other members of the network before or without delay after commencing the first formal investigative measure.

2.22 A case could potentially be handled by one national competition authority, by several national competition authorities acting together or by the Commission. A case is more likely to be handled by the Commission where the case covers more than three Member States, when it involves a Community interest or could further an important legal principle.

Financial services regulation

2.23 The Financial Services Authority (FSA) is an independent non-governmental body, given statutory powers by the Financial Services and Markets Act 2000. The FSA was established to regulate financial services and protect consumers.

2.24 The regime relating to market abuse applies to the behaviour of all legal persons in relation to qualifying investments traded on 'prescribed markets', regardless of whether they require FSA authorisation. The Financial Services and Markets Act 2000 contains a regime for dealing with market abuse that may extend to markets such as the OCM[32] and trading upon such markets. The penalties for market abuse range from fines to censure. Individuals and companies are subject to the regime.

FSA's code of market conduct

2.25 The Financial Services and Markets Act 2000 contains the legal definition of market abuse and requires the FSA to produce a code to give appropriate guidance to those determining whether particular conduct would amount to market abuse. The FSA released this code, The Code of Market Conduct, in April 2001. The Code sets out in detail the standards that should be observed by all users of the United Kingdom's markets. The Code of Market Conduct deals with three broad types of behaviour that amount to market abuse: misuse of information; creating a false or misleading impression; and distorting the market.

[32] On-the-day commodity market – a within day gas trading market operated by EnMO.

Appendix 3. Extracts from letters to producers and sub-terminal operators

3.1 This appendix presents two extracts from recent correspondence:

- Part (a) – an extract from a letter to producers; and
- Part (b) – an extract from a letter to companies that are both producers and sub-terminal operators.

Part (a) – producers

Schedule 1 to information request dated 28 May 2004

Field Operators

In relation to

- the period from 06:00 01 October 2003 to 06:00 01 December 2003; and
- the fields for which you are the operator and that flow into the **<sub-terminal names>** sub-terminal(s);

The following information:

1. Expected daily flow rates (mcm/day), per field/field complex (estimated prior to the start of the gas year, for example in your annual planning round);
2. Nominated daily flow rates (mcm/day), per field/field complex, and the volumes (mcm/day) that were nominated by the producer and/or any contract counterparty;
3. Actual daily production rates (mcm/day) per field/field complex;
4. Details of planned maintenance and/or planned outages, including: start date, end date, reason, field(s) affected and flow volume affected (mcm/day); and
5. Details of unplanned maintenance and/or unplanned outages including: start date, end date, reason, field(s) affected and flow volume affected (mcm/day).

Part (b) – producers and sub-terminal operators

Schedule 1 to information request dated 28 May 2004

Operators of fields and sub-terminals

In relation to

- the period commencing 06:00 01 October 2003 to 06:00 01 December 2003; and
- the fields for which you are the operator and that flow into the **<sub-terminal names>** sub-terminals;

The following information:

1. Expected daily flow rates (mcm/day), per field/field complex (estimated prior to the start of the gas year, for example in your annual planning round);
2. Nominated daily flow rates (mcm/day), per field/field complex, and the volumes (mcm/day) that were nominated by the producer and/or any contract counterparty;
3. Actual daily production rates (mcm/day) per field/field complex;
4. Details of planned maintenance and/or planned outages including: start date, end date, reason, field(s) affected, flow volume affected (mcm/day);and
5. Details of unplanned maintenance and/or unplanned outages including: start date, end date, reason, field(s) affected, flow volume affected (mcm/day).

In relation to

- the period commencing 06:00 01 October 2003 to 06:00 01 December 2003; and
- the **<sub-terminal names>** sub-terminals for which you are the operator;

the following information:

6. Nominated daily flow rates made by field operators to the sub-terminal operator, including initial volumes nominated (mcm/day, time of nomination), renominations prior to and within the gas day (mcm/day, time of nomination);
7. Daily flow nominations and renominations submitted by the sub-terminal operator to Transco (mcm/day, time of (re)nomination), comparison with 6, and reasons for variations;

8. Actual flow rates (mcm/day), with:

    - A comparison with 7; and

    - Reasons for any material variations;

9. Details of planned maintenance including: start date, end date, reason, field(s) affected and flow volume affected (mcm/day); and

10. Details of unplanned maintenance including: start date, end date, reason, field(s) affected and flow volume affected (mcm/day).

Appendix 4. Extract from letter to IUK shippers

Schedule 1 to information request dated 28 May 2004

IUK Shippers

In relation to the period 1 October 2003 to 30 November 2003, the following information relating to the import of gas to the UK NTS:

1. Details of the steps taken to source gas on the Continent either for delivery to the UK or to satisfy your contractual commitments on the Continent, including:
    a. For traded hubs, separately in respects of offers posted and accepted:
        i. Volumes (mcm/day);
        ii. Prices (p/therm);
        iii. Posting/acceptance dates (dd/mm/yy) and times (hh:mm);
        iv. Locations (delivery point e.g. TTF, Zeebrugge Hub);
        v. Lead times (for delivery to the Interconnector at Zeebrugge).
    b. For offers made bilaterally:
        i. Names of Counterparties approached;
        ii. Volumes (mcm/day);
        iii. Prices (p/therm);
        iv. Contract agreement dates (dd/mm/yy) and times (hh:mm);
        v. Locations (delivery point e.g. TTF, Zeebrugge Hub);
        vi. Lead times (for delivery to the Interconnector at Zeebrugge);
        vii. If applicable the reasons why a contract was not concluded.
    c. Comments on any difficulties experienced in sourcing gas between 1 October 2003 and 31 October 2003.
2. Details of the steps taken to obtain capacity on relevant transportation systems on the Continent either for delivery to Zeebrugge/IUK flange or from relevant hubs to satisfy your contractual commitments on the Continent, including:
    a. Names of Gas Transporters approached:
    b. Details of requests to purchase transportation capacity:

i. Names of Gas Transporters approached;

ii. Volume (mcm/day);

iii. Price (p/therm);

iv. Periods for which capacity was requested (start date dd/mm/yy, end date dd/mm/yy);

v. Transit route (e.g. Emden to Zeebrugge);

vi. Whether the application was successful, and if not the reasons for refusal.

In relation to the period commencing 01 October 2003 to 30 November 2003, the following information relating to your flows of gas across the UK-Belgium interconnector:

3. Daily flow nominations and renominations submitted to IUK (mcm/day, time of (re)nomination);

4. Details of any linepack trades conducted (volume (mcm), counterparty and time of trade;

5. Actual daily Flow allocations for delivery to the continent and for redelivery to the UK.