

# 9 Financial projections

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## Introduction

9.1. This chapter summarizes the financial projections for Transco submitted by the Director General and BG for the period 1 April 1997 to 31 March 2002 (the projection period) and provides some additional projections made by the MMC. Financial projections show the level of profitability implied by assumptions on:

- (a) operating expenditure (see Chapter 7);<sup>1</sup>
- (b) capital investment (see Chapter 8);<sup>2</sup>
- (c) the initial regulatory value<sup>3</sup> at 31 March 1997 (see paragraph 6.37 *et seq*) and the methodology used to calculate the regulatory value in future years;
- (d) cost of capital (see paragraph 6.59 *et seq*);
- (e) depreciation, including methodology and asset lives;
- (f) the structure of the proposed formula (see paragraph 5.27 *et seq*); and

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<sup>1</sup>Operating expenditure figures in Chapter 7 are reduced by the release of customer contributions (around £20 million a year). These are contributions by customers to the cost of BG's new investment which are held by BG as deferred income and released over the life of the relevant assets. In this chapter the release of these customer contributions is included in the depreciation figures as it is analogous to negative depreciation. Hence operating expenditure figures in this chapter are around £20 million a year higher than in Chapter 7. BG also receives contributions to its replacement expenditure, for instance from other utilities, but these are not held as deferred income.

<sup>2</sup>Capital investment figures in this chapter are shown in two ways: first, before contributions by customers and others to the cost of BG's investment; second, net of all contributions both to BG's new investment and to its replacement expenditure. This treatment differs from that in Chapter 8, where net investment equals new investment (gross of customer contributions) plus net replacement expenditure (net of contributions). Investment has been shown net of all contributions in this chapter because it is this figure that is relevant to the company's regulatory value.

<sup>3</sup>The regulatory value was implicit rather than explicit in BG's projections.

(g) the volume of gas transported.

Both the Director General and BG calculated the level of allowed revenue implied by assumptions on these issues and then established the value of  $P_0^1$  and X that generated this level of allowed revenue.

## **Depreciation and regulatory value**

9.2. The Director General told us that it had long been recognized that the goal of fairly reimbursing investors for their capital investment could be accomplished using any repayment (or depreciation) profile, so long as a rate of return equal to the cost of capital was paid on the outstanding investment. Under the Director General's approach, the initial regulatory value represents the amount investors are deemed to have invested in BG's transportation and storage business and is equal to the present value of future cash flow in the projection period and future periods assuming that future regulators continue with the same approach. The level of the initial regulatory value thus affects the balance between investors and consumers. The level of the depreciation charge in the projection period affects the balance between present consumers and future consumers.

### ***Director General's approach***

9.3. The Director General's approach in her August 1996 proposals to establishing a depreciation charge for the period 1 April 1997 to 31 March 2002 (the projection period) is described in Chapter 6. In these proposals:

- (a) depreciation on assets installed before 1992 (pre-1992 assets) was based on the estimated replacement cost of those assets at the beginning of the projection period multiplied by the MAR of 60 per cent which applied in December 1991 and was established in the 1993 MMC report in order to abate the cost of capital on existing assets;
- (b) depreciation on assets installed between 1992 and the beginning of the projection period (post-1991 assets) was based on the estimated replacement cost of those assets at the beginning of the projection period; and
- (c) depreciation on assets installed during the projection period was based on projected capital expenditure.

In each case, asset values were revalued after 1 April 1997 to out-turn prices by the RPI and depreciation was calculated on a straight-line basis (by dividing gross book value by asset life).

9.4. The Director General rolled the regulatory value forward through the projection period by adding net new investment to the regulatory value at the beginning of the period and adjusting for inflation. Net new investment was defined as investment<sup>2</sup> less depreciation.

9.5. The Director General's approach to regulatory value is similar to that used in some other regulated utilities, including water and electricity and in the 1996 BAA report.<sup>3</sup>

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<sup>1</sup>The starting value for the price control formula covering the projection period.

<sup>2</sup>Net of contributions.

<sup>3</sup>Op cit.

## ***BG's approach***

9.6. BG's projections of depreciation were based on the full CCA depreciation charge, as calculated in the statutory accounts of BG and the regulatory accounts of Transco (see paragraph 6.3 and Appendix 6.3) and in line with the approach taken in the 1993 MMC report. In projecting asset values forward, BG forecast significant reductions in real asset prices. Pipeline (including distribution mains and services) and meter values were assumed to fall by 2.5 per cent a year relative to the RPI and the value of other assets by 1 per cent<sup>1</sup> a year relative to the RPI.

9.7. BG did not itself identify a regulatory value for Transco. It calculated the appropriate level of Transco's profits as follows:

- (a) a full rate of return (equal to BG's proposed cost of capital of 8 per cent) was applied to the CCA NBV of post-1991 assets plus working capital; and
- (b) an MAR-reduced rate of return (4.8 per cent, which represents 60 per cent of the full rate of return) was applied to the CCA NBV of pre-1992 assets.

Provided a full CCA depreciation charge is used in calculating profits (as in BG's projections), this is equivalent to applying a full rate of return (8 per cent) to a capital value calculated as NBV of post-1991 assets plus working capital plus 60 per cent of the NBV of pre-1992 assets. For convenience, we refer to this as the implied regulatory value.

9.8. BG's methodology differs from that of the Director General in a number of respects:

- (a) in BG's approach, the real change in implied regulatory value is not necessarily equal to net new investment;
- (b) BG's projections allow for a full depreciation charge on pre-1992 assets whereas the Director General's projections allow only for an MAR-adjusted depreciation charge; and
- (c) BG's projections revalue assets year-by-year by the change in MEAV rather than the change in the RPI (this affects both the depreciation charge and the implied regulatory value).

## **Asset lives**

9.9. The asset lives currently used by Transco to calculate depreciation are shown in Table 9.1. The Director General told us that, like BG, she had used Transco's accounting lives in her calculations of depreciation.

TABLE 9.1 **Asset lives used by BG to calculate depreciation**

	<i>Years</i>
NTS:	
Pipelines	48
Above ground installations	23
Compressors	35
Terminals	30
LTS pipelines	48
Distribution mains	60
Services	35
Meters	20
Regional plant and machinery	20
Regional storage facilities	40
Storage business:	
LNG	40
Salt cavities	40
Rough	30

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<sup>1</sup>Except the value of computers the prices of which were assumed to stay the same in actual money. With inflation assumed to be 3 per cent, this implies a real fall in value of 3 per cent a year.

Telecommunications	10
Vehicles	6
Other	5

Source: BG.

9.10. The asset lives shown in Table 9.1 reflect BG's assessments of both the technical and the economic life of each type of asset. The economic life is particularly relevant to its pipelines and distribution mains which in some cases are estimated to have long technical lives. BG's estimates of economic lives take into account both supply and demand considerations. It considers that utilization of the NTS and regional transmission system (RTS) is dependent on the location of both supply and demand with estimates of economic life placing an upper limit of 50 years on their depreciation lives. BG considers that the lower-pressure tiers are more specifically dependent on demand distribution, that demand factors such as demographic change have a longer time horizon, and therefore that the lower-pressure tiers have a longer economic life (it assumes an upper limit of 70 years).

## Volume of gas transported

9.11. Table 9.2 shows the assumptions of the Director General and BG regarding the volume of gas to be transported during the projection period. The volume of gas is defined as in the price formula (as system throughput less shrinkage). Table 9.2 also shows BG's assumptions about the number of consumers, which are relevant to its proposed formula amendments.

TABLE 9.2 Volume and customer number assumptions

	<i>million therms</i>					
	<i>1996/97*</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
<i>Large user volume</i>						
DG August 1996	4,610	5,608	7,159	8,859	10,431	11,457
BG 1997 Transco plan	4,723	5,596	7,027	8,712	10,202	11,241
<i>Business and domestic volume</i>						
DG August 1996	20,959	21,482	21,717	21,937	22,172	22,411
BG 1997 Transco plan	21,662	22,199	22,443	22,649	22,839	23,035
<i>Business and domestic consumer numbers</i>						
	<i>'000 consumers</i>					
BG 1997 Transco plan	19,908	20,125	20,344	20,528	20,690	20,850

Sources: OFGAS and BG.

\*In May 1997, BG advised us that the 1996/97 out-turn was 27,383 million therms (27,169 million therms excluding BP Salt End). This was significantly higher than both the Director General's assumptions (25,569 million therms) and BG's assumptions (26,385 million therms) for total volume.

9.12. BG assumed a higher business and domestic consumer volume than the Director General, and said that this reflected a change in the 1997 Transco plan assumptions that occurred after the Director General had prepared her projections. The change reflected an increase in the market share of gas relative to other fuels in the business sector which BG expected to continue through the projection period. During the course of our inquiry, the Director General told us that in the light of the latest available information large user volumes should be increased from the level in her August 1996 proposals by about 200 million therms in 1997/98 rising to about 800 million therms in 2001/02.

## The Director General's projections

9.13. Table 9.3 shows a summary of the Director General's projections underlying her August 1996 proposals at 1996 prices:<sup>1</sup>

<sup>1</sup>The Director General's August 1996 proposals were at 1994 prices and we restate them at 1996 prices applying an inflation factor of 1.0594.

- (a) The allowed revenue shows the level of revenue projected by the Director General on the basis of her proposed transportation formula (see Appendix 1.1), her projected transportation volume (see Table 9.2) together with projections of the costs to be passed through (see paragraph 5.16 *et seq*) and her proposed storage formula (see Appendix 1.1). Both revenue and costs were projected on the basis that Transco would continue to provide a full meter-reading service to shippers. The revenue figures in Table 9.3 and other tables in this chapter do not take account of under-recovery against the present formula and the consequent K value in the Director General's proposed transportation formula.
- (b) The regulatory return represents revenue less costs and includes (as a cost) a projected write-down on meters. This represents the projected regulatory value at the time of disposal of meters which are reading outside of their allowed tolerances. The Director General's regulatory return also included an adjustment to offset the benefit she considered that Transco had received from underspending against the level of capital expenditure for 1994 and 1995 that had been allowed when the present RPI-5 price cap was set.
- (c) Regulatory value was calculated broadly as described in paragraphs 9.3 to 9.5 and increased from £12.4 billion at the beginning of the projection period to £12.9 billion at the end of the projection period.
- (d) Regulatory cash flows in Table 9.3 are shown as the NPV (using a 7 per cent discount rate in line with the Director General's cost of capital) of annual cash flows (revenue less operating and capital expenditure) plus the closing regulatory value less the opening regulatory value.<sup>1</sup>
- (e) The annual return on regulatory assets, which we have calculated, averages 6.8 per cent.

9.14. In March 1997, the Director General provided us with some revised projections, shown in Table 9.4. The Director General's revised calculations of operating expenditure, investment and the opening regulatory value are described in Chapters 7, 8 and 6 respectively. The Director General told us that the profile of allowed revenues in Table 9.4 was consistent with an initial real reduction in allowed revenue per therm of 29 per cent (higher than the 20 per cent reduction in her August 1996 proposals) and a value for X of 2.5, as before.

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<sup>1</sup>The NPV shown in Table 9.3 is -£92 million reflecting a rate of return through the projection period of about 6.8 per cent, slightly below the Director General's 7 per cent cost of capital. The Director General's August 1996 calculations were based on operating expenditure after release of contributions (£20 million a year lower than in Table 9.3) and showed a rate of return of 7 per cent. Late in our inquiry, the Director General indicated that, to avoid double counting in the financial modelling, operating expenditure should be stated before release of contributions, as in Table 9.3, and that removing the element of double counting would have increased the appropriate level of allowed revenue in the August projections by £20 million a year.

TABLE 9.3 Director General's August 1996 projections

£ million, 1996 prices

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02	Present value (7%)	Simple average
<i>Regulatory revenue and costs</i>								
Allowed revenue	-	2,874	2,836	2,797	2,755	2,710	11,876	2,794
Operating expenditure*	-	1,421	1,391	1,314	1,261	1,219	5,634	1,321
Decontamination costs	-	0	0	0	0	0	0	0
Depreciation†	-	637	645	645	633	650	2,722	642
Total costs	-	2,058	2,035	1,959	1,893	1,869	8,355	1,963
Investment underspend adjustment	-	7	7	7	7	7	32	7
Regulatory return	-	824	808	846	870	848	3,552	839
Investment‡	-	858	819	792	788	768	3,427	805
Investment net of contributions	-	764	750	733	733	715	3,141	739
NBV of pre-1992 assets at end year	8,080	7,630	7,199	6,781	6,378	5,978	-	-
NBV of post-1992 assets at end year	3,837	4,425	4,973	5,492	6,012	6,494	-	-
Working capital at end year	477	477	477	477	477	477	-	-
Regulatory value at end year	12,394	12,532	12,648	12,750	12,866	12,949	-	-
Adjusted return on regulatory value (%)§	6.8	6.6	6.8	7.0	6.7	6.8	-	-
<i>Regulatory cash flows</i>								
Cash flow¶	-	690	695	750	762	775	3,101	-
Meter write-down⊞	-	(14)	(14)	(14)	(15)	(17)	(63)	-
Investment underspend adjustment	-	-	-	-	-	-	32	-
Closing less opening regulatory value	(12,394)	-	-	-	-	12,949	(3,161)	-
Total	-	-	-	-	-	-	(92)	-

Source: MMC based on OFGAS information.

\*Includes restructuring costs but excludes decontamination costs.

†Includes meter write-down after subtracting release of customer contributions.

‡Including replacement.

§Annual rate of return consistent with present value (see Appendix 9.1).

¶Revenue less operating expenditure, decontamination costs and investment (net of contributions).

⊞The Director General told us that the projected NBV of assets and hence regulatory value had not reflected early disposal of meters. Therefore it was appropriate to treat the meter write-down as if it was a cash flow in determining allowed revenue.

TABLE 9.4 Director General's March 1997 projections

	<i>£ million, 1996 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
Allowed revenue	2,590	2,556	2,521	2,486	2,446
Operating expenditure	1,337	1,301	1,211	1,140	1,078
Investment	604	557	443	387	398
Opening regulatory value	10,882				

*Source:* MMC calculations based on OFGAS data.

## BG's projections

9.15. BG's 1997 Transco plan projections on the basis of its proposed form of control for transportation and storage and its proposed X of 2.25<sup>1</sup> are summarized in Table 9.5. As described in paragraphs 9.6 to 9.8, the implied regulatory value is calculated as the NBV of post-1991 assets plus working capital plus 60 per cent of the NBV of pre-1992 assets. BG told us that, in its projections, working capital was initially negative due to a prepayment by Centrica (on which, however, BG must pay interest); working capital would increase as Centrica moved to credit terms after two years. As a result of the prepayment, debt was initially lower and subsequently increased when the prepayment ended after two years. The annual accounting rate of return on implied regulatory assets averages about 8 per cent in line with BG's proposed cost of capital of 8 per cent. The NPV (at 8 per cent) of annual cash flows plus the closing implied regulatory value exceeds the opening implied regulatory value: this occurs as a result of net gains in regulatory value that are not reflected in regulatory return (see paragraph 2 of Appendix 9.1).

9.16. BG's projections of Transco's notional financial ratios, post-tax cash flows and net debt are shown at out-turn prices in Table 9.6.

- (a) The projections do not include income due to the carry forward of under-recovery against formula in 1996/97 (estimated to be around £300 million) as BG considered that if this cash had been collected in earlier years, it would have been paid out as dividends, net of tax (given BG's CCA dividend cover policy).
- (b) BG's projections of Transco's notional dividends are based on CCA dividend cover of 1.
- (c) BG's projections assume a change in the tax treatment of replacement expenditure which materially increases Transco's tax payments.
- (d) The projections assume notional levels of net debt and preference capital, and a nominal interest rate of 8.5 per cent, which were in line with Transco's regulatory accounts.

<sup>1</sup>The starting level of revenue per therm proposed by BG was similar to the maximum allowable for 1996/97 under the present formula.

TABLE 9.5 BG's 1997 Transco plan projections

*£ million, 1996 prices*

	<i>1996/97</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	<i>Present value (BG's basis)</i>	<i>Present value (Director General's basis)*</i>	<i>Simple average</i>
<i>Regulatory revenue and costs</i>									
Allowed revenue	-	3,420	3,387	3,392	3,387	3,339	13,525	14,056	3,385
Operating expenditure	-	1,543	1,490	1,451	1,456	1,435	5,905	6,136	1,475
Decontamination costs	-	63	63	63	58	40	232	241	57
Depreciation†	-	867	871	861	850	838	3,428	3,563	857
Total costs	-	2,473	2,424	2,375	2,364	2,313	9,565	9,940	2,390
Regulatory return	-	947	963	1,017	1,023	1,027	3,960	4,116	995
Investment‡	-	939	950	867	868	852	3,590	3,731	895
Investment net of contributions	-	841	854	786	786	772	3,238	3,365	808
NBV of post-1991 assets at end year	13,276	12,337	11,421	10,539	9,696	8,917	-	-	-
NBV of post-1992 assets at end year	3,855	4,567	5,273	5,893	6,492	7,028	-	-	-
Working capital at end year	(36)	(132)	(85)	491	482	449	-	-	-
Regulatory value at end year (implied)§	11,785	11,836	12,041	12,708	12,790	12,826	-	-	-
Return on opening regulatory value (%)	-	8.0	8.1	8.4	8.1	8.0	-	-	8.1
Return on closing regulatory value (%)	-	8.0	8.0	8.0	8.0	8.0	-	-	8.0
<i>Regulatory cash flows</i>									
Cash flow¶	-	1,069	933	516	1,097	1,126	3,771	3,919	-
Closing less opening regulatory value	(11,785)	-	-	-	-	12,826	(3,055)	(3,055)	-
Total	-	-	-	-	-	-	716	864	-

Source: MMC calculations using BG data.

\*BG calculated the NPV using end-year discount factors. The Director General calculated the NPV using mid-year discount factors and NPV on this basis is shown for comparability with the Director General's projections (see Appendix 9.1). The present value calculations use an 8 per cent discount rate in line with BG's assumed cost of capital.

†Including meter write-down after subtracting release of customer contributions.

‡Including replacement.

§60 per cent of the NBV of the pre-1992 assets plus the NBV of the post-1991 assets plus the working capital.

¶Revenue less operating expenditure, decontamination costs, investment (net of contributions) and change in working capital.

TABLE 9.6 **BG's projections of Transco's financial ratios and cash flows**  
times

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
<i>Financial ratios</i>						
HCA interest cover		[				
HCA dividend cover				<i>Figures omitted. See note on page iv.</i>		]
<i>£ million, out-turn prices</i>						
<i>Summary cash flow</i>						
Revenue less operating and capital expenditure		1,008	1,046	1,201	1,232	1,274
Change in working capital		100	(51)	(633)	11	39
Abandonment of Rough Tax		4	4	4	5	5
Interest		(333)	(422)	(444)	(468)	(470)
Dividends		[		<i>Figures omitted. See note on page iv.</i>		]
Total cash inflow		154	(138)	(669)	(45)	15
Net debt at end year	(2,589)	[		<i>Figures omitted. See note on page iv.</i>		]
Preference debt at year end		(700)	(700)	(700)	(700)	(700)

Source: BG.

9.17. BG provided us with revised projections in March 1997. As well as revised operating expenditure proposals (see Chapter 7) and a minor revision to depreciation and asset values, these provided for the unbundling of storage and meter reading. BG's March 1997 projections envisaged a transportation formula with a 5.6 per cent reduction in  $P_0$  compared with the current transportation and storage formula of which 3.2 per cent was due to unbundling of storage; 2.1 per cent to meter reading; and 0.3 per cent to other factors. In addition BG proposed a separate term in the formula to allow it to recover meter-reading costs of £29 million in 1997/98. BG envisaged that, from 1998/99, any meter reading it provided would be on an unregulated basis.

## Comparison of the Director General's and BG's projections

9.18. A complication in comparing the projections of the Director General and BG is that each has used a different method to calculate the present value of cash flows. The Director General has applied mid-year discount factors to cash flows while BG has applied end-year discount factors. BG argued that end-year discount factors were appropriate since it received a disproportionate amount of its revenue in the last quarter of the formula year. The difference is illustrated in Appendix 9.1.

9.19. Table 9.7 compares the Director General's August 1996 projections with BG's 1997 Transco plan identifying areas of difference. It shows the present value of costs and revenue using mid-year discount factors and a real discount rate of 7 per cent (as proposed by the Director General). The most important contributors to the difference in revenue between BG and the Director General of £2.2 billion (over the projection period) are the depreciation methodology used, operating expenditure and the cost of capital. Differences in capital expenditure assumptions affect both depreciation and the regulatory return but the total effect is modest (less than £100 million NPV). The differences in all areas have increased as a result of the changes the Director General made to her projections in March 1997.

TABLE 9.7 Comparison of Director General's August 1996 projections with BG's 1997 Transco plan

£ million, 1996 prices

(Discount rate for present value)	Present value, 1997/98 to 2001/02			Difference (BG less Director General) (7%)
	Director General (7%)	BG (8%)	BG (7%)	
Operating expenditure	5,634	6,136	6,270	636
Decontamination costs	0	241	246	246
Depreciation*	2,722	3,563	3,641	919
Capital investment underspend adjustment	(32)	0	0	32
Regulatory return†	3,552	4,116	4,209	657
Total of above = allowed revenue	11,876	14,056	14,366	2,490
Effect of lower discount rate			(310)	(310)
Total			14,056	2,180

Source: MMC calculations.

\*Of the total difference of £919 million, around £30 million is due to differences in capital expenditure assumptions; the remainder is due to the methodological differences discussed in paragraphs 9.18.

†The difference in capital expenditure affects regulatory return by about £50 million, giving a total effect of capital expenditure differences (through both depreciation and regulatory return) of about £80 million. The 1 per cent difference in the cost of capital would impact by about £240 million (the effect of higher profits due to 8 per cent rather than 7 per cent rate of return is partially offset by a higher discount rate in the NPV calculation). The difference in regulatory return is also affected by the difference in regulatory value, where BG's figures are slightly lower (its initial figure is lower and the effect of higher capital expenditure in BG's projections is more than offset by falling real asset prices which affect BG's regulatory value but not that of the Director General).

## MMC projections

9.20. We have considered a further set of projections (summarized in Table 9.8). These are based on the following assumptions:

- (a) operating expenditure, on average, just under £100 million a year lower than in BG's 1997 Transco plan (in 1996 prices) plus lower decontamination costs;
- (b) investment, on average, about £85 million a year less than in BG's 1997 Transco plan (in 1996 prices);
- (c) an initial regulatory value at 31 March 1997 of £11,643 million (see Appendix 9.2), rolled forward to 31 March 2002 for assumed inflation of 3 per cent a year and net new investment (investment excluding contributions less depreciation). No changes in working capital or other current liabilities are included in the projections. Since the effects of the Centrica prepayment (see paragraph 9.15) are temporary, it has not been reflected in either the initial or projected future regulatory values;
- (d) a real rate of return, for the projection period as a whole, of 7 per cent;
- (e) the Director General's August 1996 approach to depreciation, including RPI indexation of asset values from 1 April 1997, adjustment of pre-1992 asset values by the MAR of 60 per cent and use of BG's book asset lives (shown in Table 9.1). Our calculations are described in Appendix 9.3; and
- (f) total transportation volumes as projected by BG (see Table 9.2). Projected large user volumes reflect supplies to LDZ supply points consuming over 50 million therms<sup>1</sup> as well as supply points connected to the NTS. Volumes are shown in Table 9.9.

<sup>1</sup>The large user category includes all existing supply points connected to the NTS and the following existing supply points connected to LDZs: BP Salt End (North Eastern LDZ), Derwent Cogen Ltd (East Midlands), ICI Wilton (Northern), Kemsley Power Station (South East), Lots Road (North Thames), British Steel Port Talbot and Llanwern (Wales); new NTS and LDZ sites over 50 million therms and the interconnectors to Ireland and Belgium.

TABLE 9.8 MMC projections

*£ million, 1996 prices*

	<i>1996/97</i>	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>	<i>Present value*</i>	<i>Simple average</i>
<i>Regulatory revenue and costs</i>								
Allowed revenue		2,892	2,863	2,809	2,782	2,751	11,979	2,820
Operating expenditure†		1,498	1,399	1,356	1,344	1,328	5,897	1,385
Decontamination costs		27	27	27	27	18	107	25
Depreciation		565	583	603	616	626	2,531	599
Total costs		2,090	2,009	1,986	1,987	1,972	8,536	2,009
Regulatory return		802	853	823	795	779	3,444	811
Investment (including replacement)		890	861	760	764	779	3,458	811
Investment net of contributions		792	765	679	682	699	3,084	724
Regulatory value at end year‡	11,643	11,842	12,024	12,099	12,165	12,238	-	-
Adjusted return on regulatory value (%)§	-	7.1	7.4	7.1	6.8	6.6	-	7.0
<i>Regulatory cash flows</i>								
Cash flow¶	-	603	672	747	730	706	2,917	-
Closing less opening regulatory value	(11,643)	-	-	-	-	12,238	(2,917)	-
Total	-	-	-	-	-	-	0	-

*Source:* MMC.

\*Net present value at beginning of projection period at 7 per cent calculated using mid-year discount factors (see Appendix 9.1).

†Including restructuring costs.

‡Regulatory value at end year equals value at end of previous year plus investment (net of contributions) less depreciation.

§Annual rate of return consistent with present value (see Appendix 9.1).

¶Revenue less operating expenditure, decontamination costs and investment (net of contributions).

*Note:* 1997/98 cash flow and regulatory value at end year reflect projected receipts of £28 million from the disposal of telecommunications assets.

These projections cover transportation, including meter reading, and storage (described as a bundled basis).

TABLE 9.9 Analysis of MMC projected revenue

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
Value of X		2	2	2	2	2
<i>Transportation formula*</i>						
Large users						
Volume (m therms)	5,381	6,130	7,590	9,327	10,861	11,922
Formula value (p, out-turn prices)	1.86	1.76	1.61	1.47	1.38	1.33
Revenue (£m, out-turn prices)		108	122	137	150	159
Business and domestic users						
Volume (m therms)	22,002	21,665	21,880	22,034	22,180	22,354
Formula value (p, out-turn prices)	12.10	12.32	12.38	12.46	12.55	12.62
Revenue (£m, out-turn prices)		2,669	2,709	2,746	2,783	2,822
Total of above at out-turn prices		2,777	2,831	2,883	2,933	2,980
Total of above at 1996 prices		2,678	2,650	2,620	2,588	2,553
Transco non-daily meter reading (£m, 1996 prices)		29	-	-	-	-
Projected revenue from transportation formula (1996 prices)		2,707	2,650	2,620	2,588	2,553
<i>Storage formula†</i>						
Maximum revenue (out-turn prices)		160	161	163	164	166
Maximum revenue (1996 prices)		154	151	148	145	142
Projected revenue (1996 prices)		160	148	136	134	137
Subtract purchases of operating margins by transportation business from storage business (1996 prices)						
		(36)	(31)	(24)	(18)	(16)
Total Transco projected revenue (1996 prices)		2,830	2,768	2,732	2,704	2,674
Meter reading (non-daily) not provided by Transco (1996 prices)		61	95	77	78	77
Total bundled projected revenue (1996 prices)		2,892	2,863	2,809	2,782	2,751

Source: MMC.

\*The assumed formula is as proposed by the Director General (see Appendix 1.1) but amended to exclude the pass-through elements (F and Z) except in respect of non-daily meter-reading costs; with X of 2 rather than 2.5 and with  $A_{t-1}$  for 1997/98 = 12.10p and  $C_{t-1}$  for 1997/98 equal to 1.86p as shown in the table. The table also takes no account of cumulative under-recovery against the present formula up to 1996/97 and consequent K value for 1997/98.

†The assumed formula is as proposed by the Director General (see Appendix 1.1) but with X of 2 instead of 2.5.

9.21. Table 9.9 shows the composition of the allowed revenue in Table 9.8. Table 9.9 assumes a transportation formula with similar structure to that of the Director General but pass through only of non-daily meter-reading costs, X of 2 and  $P_0^1$  of 12.10p for business and domestic users and 1.86p for large users. The basis of these figures is that the ratio of other user to large user formula value is assumed to be 7 to 1 in 1997/98 (thus Table 9.9 shows values of 12.32p and 1.76p in 1997/98); this was the ratio assumed by the Director General (shown in Table A1 in Appendix 2 of the Director General's August 1996 proposals). Storage revenue is based on BG's projections of market revenue assuming peak availability of beach gas at 80 per cent of peak demand<sup>2</sup> (see Appendix 9.4). As shown in Table 9.9, the revenue projected on this basis is slightly lower than the maximum revenue under the Director General's proposed storage licence condition (see Appendix 1.1) with X amended from 2.5 to 2. The NPV of the difference is about £21 million over the projection period. Appendix 9.5 shows the MMC projections of Transco's revenue, costs and regulatory value, by business.

9.22. The projected 1997/98 bundled revenue of £2,892 million (at 1996 prices) shown in Tables 9.8 and 9.9 compares with actual 1996/97 revenue under the present formula of £3,430 million (also bundled and at 1996 prices), a real reduction of about 16 per cent. As shown in Table 9.10, the implied reduction in allowed

<sup>1</sup>This is the formula value for 1996/97 shown in Table 9.9.

<sup>2</sup>BG described this as its 'high case'. Nevertheless projected revenue (in 1996 prices) declines by 14 per cent between 1997/98 and 2001/02, mainly due to a 20 per cent decline in revenue from Rough. BG also projected 'base' and 'low' cases which assumed respectively 73 per cent and 85 per cent declines in revenue from Rough (see Appendix 9.4) over this period.

revenue per therm (before correction factor) is 21 per cent, which compares with the 20 per cent proposed by the Director General in her August 1996 proposals.

TABLE 9.10 **Projected reduction in allowed revenue per therm (before correction factor)**

Projected 1997/98 allowed revenue (£m, 1996 prices)	2,892
Projected 1997/98 volume (m therms)	27,795
Projected 1997/98 allowed revenue per therm (p, 1996 prices)	10.40
1996/97 allowed revenue per therm (p, out-turn prices)	13.22
1996/97 allowed revenue per therm (p, 1996 prices)	13.14
Reduction: 1997/98 on 1996/97 at 1996 prices (%)	20.8

Source: MMC.

The values of  $P_0$  proposed by the Director General in August 1996 are nevertheless lower than those mentioned in paragraph 9.21 due to the larger proportion of costs that the Director General proposed be subject to pass-through and hence not reflected in her  $P_0$  values.

9.23. Table 9.11 shows a comparison of the transportation revenue under the Director General's August 1996 proposals with that under the MMC's proposed formula, using the volume projections of Table 9.9 and the 1996/97 out-turn volume. Allowing for projected pass-through costs, Table 9.11 suggests that the Director General's August 1996 proposed formula generates slightly higher transportation revenue than the MMC's proposed formula. The comparison does, however, depend on the level of the pass-through costs that eventually prevails and on the allocation of sites between the large user category and the business and domestic user category.

TABLE 9.11 **Comparison of allowed transportation revenue (excluding non-daily meter reading)**

	1996/97	1997/98	1998/99	1999/2000	2000/01	2001/02
<b>Director General's proposed formula</b>						
<i>Director General's August 1996 projections</i>						
Large users						
Volume (m therms)	4,610	5,608	7,159	8,859	10,431	11,457
Formula value (p, out-turn prices)	1.80	1.65	1.48	1.34	1.25	1.20
Revenue (£m, out-turn prices)		93	106	119	130	137
Business and domestic users						
Volume (m therms)	20,959	21,482	21,717	21,937	22,172	22,411
Formula value (p, out-turn prices)	11.63	11.55	11.55	11.54	11.54	11.54
Revenue (£m, out-turn prices)		2,481	2,507	2,533	2,559	2,585
Total (at out-turn prices)		2,574	2,613	2,652	2,689	2,723
Total (at 1996 prices)		2,482	2,446	2,410	2,373	2,333
<b>Director General's proposed formula</b>						
<i>MMC projections</i>						
Large users						
Volume (m therms)	5,381	6,130	7,590	9,327	10,861	11,922
Formula value (p, out-turn prices)	1.80	1.69	1.53	1.40	1.31	1.26
Revenue (£m, out-turn prices)		103	116	130	142	149
Business and domestic users						
Volume (m therms)	22,002	21,665	21,880	22,034	22,180	22,354
Formula value (p, out-turn prices)	11.63	11.71	11.71	11.73	11.75	11.76
Revenue (£m, out-turn prices)		2,536	2,562	2,584	2,605	2,628
Total (at out-turn prices)		2,640	2,678	2,714	2,747	2,778
Total (at 1996 prices)		2,545	2,507	2,466	2,424	2,380
<i>£ million, 1996 prices</i>						
<i>Pass-through costs</i>						
Supply point administration		42	60	51	41	37
Operating margins*		36	33	29	24	24
Shrinkage†		88	88	100	108	112
Other‡		6	6	6	6	6
Total pass-through costs		172	187	186	179	178
Total transportation revenue		2,717	2,694	2,653	2,602	2,558
MMC projected total revenue (excluding non-daily meter reading)		2,678	2,650	2,620	2,588	2,553
Difference		40	44	32	15	5

Source: MMC.

\*The difference from the totals in Table 9.9 represents operating margins purchased from sources other than Transco's storage business.

†The figures are from BG's 1997 Transco plan which are included in the MMC projections in Tables 9.8 and 9.9. The Director General's March 1997 projections were about £20 million a year lower.

‡Scottish independent networks and daily metering.

Note: The MMC projections of the revenue generated by the Director General's proposed formula are higher than the Director General's August 1996 projections due to the higher volumes assumed.

9.24. Appendix 9.4 shows BG's projections of its storage cash flow up to 2015/16. The projected NPV of cash flows at 1 April 1997 (excluding the Rough native gas charge which is a transfer from BG's storage business to its E&P business) exceeds the 1 April 1997 regulatory value of the storage assets (of £716 million, representing the NBV of post-1991 assets plus 60 per cent of the NBV of pre-1992 assets at 1996 prices) in both BG's 'high' revenue case and its base revenue case.

## Comparison of projected revenue from proposed formulae with current formula

9.25. Appendix 9.6 shows our projection of the maximum revenue (excluding any effect of the correction factor) from continuation of the current RPI-5 formula (for revenue per therm of transportation and storage). Table 9.12 compares maximum revenue under the present formula with the revenue projected by the Director General and BG on the basis of a rate of return equal to the cost of capital.

TABLE 9.12 Projected revenue from the current and the proposed formula

	<i>£ million, 1996 prices</i>				
	<i>1997/98</i>	<i>1998/99</i>	<i>1999/2000</i>	<i>2000/01</i>	<i>2001/02</i>
<i>Revenue from current formula</i>					
At DG August 1996 volume assumptions	3,385	3,433	3,483	3,509	3,468
At DG March 1997 volume assumptions	3,410	3,469	3,529	3,573	3,550
At BG projected volume assumptions	3,473	3,503	3,547	3,556	3,510
<i>Projected revenue</i>					
DG August 1996 projections	2,874	2,836	2,797	2,755	2,710
DG March 1997 projections	2,576	2,543	2,508	2,473	2,433
BG 1997 Transco plan	3,420	3,387	3,392	3,387	3,339
MMC projections	2,892	2,863	2,809	2,782	2,751
<i>Excess of revenue from current formula over:</i>					
DG August projections	511	597	687	753	758
DG March 1997 projections	822	914	1,009	1,090	1,106
BG 1997 Transco plan	53	116	155	169	171
MMC projections*	581	640	738	774	759

Source: MMC calculations.

\*Total volume, and hence revenue from current formula, is as in BG's projections.

Note: Revenue from the current formula for 1997/98 to 2001/02 is based on volume figures including BP Saltend (consistent with the volume figures in Tables 9.2 and 9.9 although this site has been excluded from formula volumes up to 1996/97). The impact of including BP Salt End in the volume figures is to increase revenue under the current formula by about £30 million a year.

9.26. The NPV of the excess of revenue with the current formula is about £2.8 billion on the Director General's August 1996 projections; £4.1 billion on the Director General's March 1997 projections; £0.5 billion on BG's projections and £2.9 billion on the MMC projections.