

✓ FSCS



✓ Mr Wolfson
Mr Waller

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Prime Minister

Qa 05667

To: MR LANKESTER ✓

From: J R IBBS

This is the report
concerning the GGP with
the multiple scheme
which you asked for
after last week's mtg.

GAS GATHERING PIPELINE

1. As requested at the Prime Minister's meeting on 1 September, I attach a note which has been prepared by the CPRS in collaboration with the Department of Energy and the Treasury. It sets out the case for an integrated gas gathering pipeline that would at least initially be in the public sector compared with the alternative of bringing ashore Northern Basin gas through multiple private sector pipelines.

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2. I am sending copies of this minute and attachment to the Chancellor of the Exchequer, the Secretaries of State for Industry, Energy and Scotland, the Chief Secretary, and to Sir Robert Armstrong.

8 September 1981

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GAS GATHERING PIPELINE

1. Following a meeting with the Prime Minister (Mr Pattison's letter dated 1 September refers), officials were requested to prepare a factual assessment of the prospects of the integrated gas gathering pipeline and the economic case for it; in particular, examining the basis of the Bank of Scotland's interest in providing loan finance. The present paper has been prepared by the CPRS in consultation with Departments to fulfil that remit.
2. Over the last year BP, Mobil and BGC have carried out pre-construction work on the integrated pipeline, committing over £8 million for this purpose. To keep the project on schedule for completion in 1985, major contracts must start to be let before the end of September. By end December ultimate financial commitments under the contracts would be £359 million.
3. The CPRS and officials met with representatives of the Bank of Scotland to explore whether the proposal they have put forward would enable the necessary funding to be provided by the private sector. It was clear however that the Bank of Scotland scheme is designed to provide funds for the integrated project on the security of guarantees given by Government (either directly or indirectly through BGC) that the pipeline will be completed and any gap between the revenue covered by the line and the cost incurred in construction will be made up and the bank loans repaid. In the view of officials, the Bank of Scotland proposals would not take the project outside the public sector, and the loan finance offered would be expensive compared with NLF (Annex 2 gives a fuller account of the Bank of Scotland scheme).
4. It is therefore clear, as Liverman stated in his report, that private sector risk finance will not be forthcoming in time to meet the September deadline, even if changes were made to the present guidelines or concessions offered on gas pricing. The choice therefore before Ministers is either:
 - (i) to launch the integrated line as a publicly financed project with the objective of subsequent privatisation; or
 - (ii) to abandon the integrated project and allow multiple private sector pipelines to be developed as necessary.

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5. In order to make this judgement the CPRS believes Ministers require four pieces of information:

- (i) what are the comparative economics of the integrated and multiple pipeline approaches in terms of national resources (including any benefits that may not be capable of quantification);
- (ii) what conditions attach to each scheme;
- (iii) what are the financial implications of each scheme;
- (iv) what risks are involved.

6. The CPRS has not been directly involved in the issues raised by the alternative approaches to development of gas in the Northern Basin of the North Sea. Differences of view still exist between officials on some of the issues associated with each of the schemes. We have not been able fully to resolve these, but the CPRS believes that this paper, in view of the short time available, is a fair representation of the arguments.

7. The paper starts with an introductory summary of the main arguments, follows this with a more detailed factual description of the integrated and multiple approaches and their characteristics and concludes with an appraisal under each of the headings identified in paragraph 5 above.

SUMMARY OF THE MAIN ARGUMENTS

8. There is no doubt that the vast bulk of the gas reserves in the area that would be served by the proposed pipeline will be developed whether or not the integrated scheme goes ahead. In national terms the economic case for their development is overwhelming. The basic question is whether the earlier commitment and greater call on public funds attached to proceeding with an integrated pipeline is justified by the extra benefits generated and the risks entailed, compared with the alternative of private sector multiple pipelines.

9. The principal benefit of the integrated line is that on the basis of present knowledge of the fields, it offers the better economic return to the nation. However, the timing of the development of individual fields is not within the initiative of Government, but depends on the decisions of individual producers. Their decisions are influenced by many factors,

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including the availability of attractively priced gas contracts, availability and cost of corporate funds and the technical problems of development. One major risk associated with the integrated line is that delay in the development of the fields would mean only partial utilisation in the early years and which would result in a worse commercial return. (There are also the normal risks that go with such a project such as technical difficulties and cost over-runs, but these apply also to multiple developments although the sheer scale of the integrated project might add to these risks.) There are a number of reasons why the oil companies are unwilling to finance the pipeline. One is that they need to be assured that a major risk of low utilisation has been eliminated. Other reasons for the oil companies' non-participation identified in Mr Liverman's report include ownership of existing pipelines, preferential access to pipeline capacity, desire for tax offsets. These represent quite proper commercial negotiating considerations rather than reflecting on the viability of the integrated pipeline itself. To ensure adequate utilisation the oil companies would need reassurance on:

- (i) gas prices;
- (ii) a depletion policy that did not delay or prevent development of the relevant fields;
- (iii) no diversion of gas to competing lines until it was clear that the utilisation of the integrated line would be satisfactory.

The same uncertainties need to be removed if a satisfactory return on a publicly owned pipeline is to be ensured.

10. The multiple approach in addition to having a lower economic return would also only permit partial collection of natural gas liquids for potential use as a feedstock for the UK petrochemical industry. However, it entails different risks. Individual companies will provide pipelines in the light of their own commercial judgement although they would offset the major part of the investment against their tax liabilities. The pipelines would be developed in relation to individual fields at a later date than in the integrated approach; it is therefore arguably more adaptable to changes in the pattern of discoveries and development of gas fields. With the multiple scheme any loss due to under-utilisation falls on the private sector.

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THE TWO SCHEMES

Integrated Approach

11. The integrated approach proposes collecting rich gas (natural gas liquids for use as chemical feedstocks in addition to methane for the gas grid) by means of a 36" diameter pipeline to be laid from Statfjord to St Fergus via a junction in the Thelma area and with a 24" southern leg from this junction to Lomond. This proposal has been the subject of the full feasibility and design study by the Organising Group comprising representatives from Mobil, BP and BGC. The route of the pipeline has been carefully sited to take best advantage of current and future reserves on the basis of existing knowledge. It has also been designed to achieve bulking of natural gas liquids for potential petrochemical use. The total cost in 1981 money is an estimated £1.5 billion of which some £875 million (55 per cent) is offshore, the remainder being onshore facilities at St Fergus and Nigg.

12. A characteristic of the integrated line is that it involves earlier financial commitments and investment for the future. The line is being designed to be capable of transporting a minimum of 11 tcf of gas over its lifetime; firm developments currently amount to 2.3 tcf and the scheme needs an estimated 4 tcf of gas to ensure its commercial viability. The Department of Energy expect that a further 3.4 tcf will come forward over the next two years. The whole or greater part of the integrated line is to be laid at the outset to take advantage of the associated gas now available from oil fields (see paragraph 15 on possible project break-points). However, the overall economics of line depend only partially on associated gas, two-thirds of the throughpnt will come from subsequent development of condensate and unassociated gas fields along the route of the line.

13. The financial return in the early years from the integrated line depends on enough gas being developed and transported during that period. For this reason the following conditions need to be fulfilled if it is to show a satisfactory commercial return (this would be true irrespective of whether the pipeline was financed publicly or privately):

- gas from fields in the vicinity is fed exclusively into the integrated pipeline and not into rival pipelines;
- gas field developments in the Northern Basin are not delayed by depletion policy;

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- if BGC's monopsony were removed the development of some cheaper cost Southern Basin gas might have to be delayed to make room for Northern gas depending on the total volume of gas production, the size of the UK market and whether or not exports were permitted.

All these points are fully within the Secretary of State for Energy's control under existing powers. It should be added, of course, that once there was satisfactory utilisation of the line there would be no reason to block further pipelines or constrain depletion policy decisions. Once that stage was reached, probably by the end of this decade, there would be competition between pipelines; at present, because of the different areas they serve, the existing pipelines are each in an effective monopoly position.

14. A particular problem that might apply in the case of publicly financing the integrated line is whether BGC would accept the total risks associated with the pipeline if its monopsony were relaxed. As long as BGC is a monopoly purchaser of gas, it is willing to accept the risks. When the CPRS saw Sir Denis Rooke in the preparation of its previous report (Mr Ibbs's minute to Mr Lankester dated 31 July), the BGC Chairman was adamant that BGC would not accept the total risks if its monopsony were removed. The Department of Energy believe that this may be a negotiating stance and hope that it would be possible to persuade the Corporation to set aside its reservations. However, BGC's attitude is understandable and in principle is the same as the one the oil companies have used in laying down their conditions for participation: the oil companies will not accept a share of the risks involved in the integrated pipeline unless they receive some reassurance on price and therefore the pace of gas development; BGC will accept all the risks as long as it has control over prices and availability. The integrated pipeline predicates a commitment to produce a minimum quantity of higher cost Northern Basin gas in preference to cheaper Southern Basin gas and, if BGC's monopsony were removed, the Corporation may not be willing to shoulder the commercial risk entailed unless it received satisfactory depletion assurances from the Department of Energy.

15. The integrated scheme does provide some flexibility in that the whole of £1.5 billion capital expenditure need not be committed at the outset. Offshore, no commitment is yet needed on the southern section of the line from the T junction to Lomond; onshore, an additional gas

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processing module at St Fergus could be delayed. These break-points in capital expenditure mean that a decision to launch the integrated scheme would represent a definite financial commitment of £1180 million, corresponding to about 80 per cent of the total estimated project cost. The contracts would, of course, contain the usual clauses permitting cancellation at a cost in the event of circumstances changing.

The Multiple Approach

16. The alternative scheme examined by Department of Energy and Treasury officials involves multiple development of the 16 fields supplying the integrated line. Because we cannot predict the state of knowledge at the time they are built, it is not possible to predict precisely the configuration or timing of such multiple pipelines. For the purposes of comparison with the integrated scheme Department of Energy and Treasury officials have agreed an overall multiple scheme as being a fair representation of the best outcome. In this scheme Beryl and some other fields would bring their gas ashore through a smaller diameter dedicated pipeline (Mobil's original proposal) whilst other fields construct long laterals connecting into the existing Flags and Frigg trunk pipeline systems.

It is assumed that gas from the southern field Lomond is collected by a subsequent private sector gas gathering line at a later date and at a cost equal to that of this part of the integrated system.

17. Because it makes use of existing pipelines the estimated capital cost of the best multiple alternative at £1.2 billion is lower than the integrated line but the annual running costs would be higher. The capital costs would be spread over a much longer period because expenditure would be made only as fields were developed. It follows that gas supplies from the Northern Basin would be lower in the early years in comparison with the integrated scheme.

18. It should however be emphasised that whereas the integrated scheme has been thoroughly costed by BP, Mobil and British Gas in detailed engineering and design studies, the multiple approach costings are very much a broad-brush estimate. It assumes that the configuration of pipelines and the timing of field developments takes place in such a way as to minimise the pipelines involved. The eventual reality may be different; the tax incentives or disincentives in future and the scope for charging high tariffs on existing pipelines may be strong distorting forces.

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19. The multiple approach involves a later commitment of capital than in the integrated project and gas fields are developed as and when market forces demand and as knowledge of gas reserves improve; the economics are not dependent on the conditions in paragraph 13 being observed. In this sense it is more flexible, albeit that the two major gas collecting pipelines in the scheme (Flags and Frigg) are already in place.

20. In the multiple approach to the extent that ethane or LPG had to be routed through the Frigg system those materials would not be landed in sufficient quantities to justify economically their separation from the stream sold to British Gas (Department of Energy officials assume some 9 of the 16 known fields would be so routed). This would reduce the availability of gas liquids for use as chemical feedstock. This, in combination with a more extended profile of gas production in the multiple scenario could reduce the availability of ethane for petrochemical plants by 60 per cent. Depending on the state of the market, this could mean anything from forgoing the opportunity of an additional ethylene cracker in the UK in the 1990s to not preserving one of our existing complexes.

COMPARISON BETWEEN THE APPROACHES

Economic Appraisal

21. Department of Energy and Treasury officials have carried out an economic comparison between the two approaches to Northern Basin gas development. This has already been submitted to Ministers. It assumed that both schemes collect the full 11 tcf in 16 fields with sizeable gas reserves taken into account by the Organising Group (BP estimate that ultimate reserves may exceed 20 tcf). This demonstrated conclusively that in view of the huge disparity between the total net value of reserves and the capital cost of development (a) there is an overwhelming case for the development of a line or lines to bring those resources ashore; and (b) this conclusion will remain robust against realistic sensitivities in the key economic parameters - variations in the cost of the schemes, variations in reserves, uncertainty as to future energy prices, etc.

22. Furthermore, in national terms this analysis showed a real net present value in favour of the integrated scheme of at least £50 million discounted at 5 per cent and £300 million discounted at 10 per cent. The

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integrated pipeline, although more expensive in capital terms, realises a higher value for the gas by full separation of LPG and has lower operating costs.

22. This economic advantage in favour of the integrated line would be further advanced if the configuration of pipelines in the multiple approach turned out in reality to be less favourable than assumed, and if gas prices rose more slowly than assumed (the value of gas is assumed to rise by almost threefold in real terms from 1980 to 2000). Sensitivities were quantified in the joint Department of Energy and Treasury economic comparison.

23. In addition to this quantified advantage the integrated approach has further potential benefits that are not quantifiable:

(i) it permits full separation of ethane as a potential feedstock for the UK petrochemical industry;

(ii) the absence of an integrated line would make it impossible to obtain Norwegian Statfjord gas at distress prices for a few years if, as is quite likely, the Norwegian pipeline encountered delays;

(iii) towards the end of the century an integrated pipeline would offer better access for obtaining gas supplies from Norwegian waters;

(iv) the integrated scheme offers larger and earlier orders for UK contractors;

(v) in the integrated approach there will be less leakage of money to existing (foreign) pipeline owners in the form of monopoly tariffs, but it is difficult to quantify the amounts involved;

(vi) it offers better insurance against the possibility of distress sales of associated gas to Norway where there is no appropriate UK pipeline.

24. The integrated approach also brings gas from the Northern Basin ashore sooner than in the multiple case, but no value or penalty in national terms has been put on this in the economic calculation other than through the assumption on steadily increasing gas prices.

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Comparison of the Practical Implications of the Alternatives

25. As described previously (paragraph 13) to ensure the commercial viability of the integrated line gas development policy throughout the North Sea could become constrained by the need to provide the early throughput for the line. Rival pipelines would need to be banned and it could be necessary to restrain production of the cheaper cost Southern Basin fields. In contrast, since most of the investment required for the multiple scheme would not be committed until later than that entailed by the integrated line, decisions concerning alternative schemes could be taken in the light of later information concerning depletion policy and ending of BGC's monopsony as well as prospective gas supplies, demand and prices.

26. The Table below illustrates the level of expenditure involved in the integrated pipeline and multiple approach:

	<u>Capital Expenditure at January 1981 Prices £m.</u>					
	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>Later Years</u>
Integrated Pipeline	60	230	470	450	180	150
Multiple Alternative				300	350	550

Note The timing of pipeline expenditure in the multiple alternative is uncertain.

27. The effect of the PSBR is extremely complex, involving a combination of capital expenditure under the integrated approach and tax reliefs under both approaches. The uncertainties inevitably increase as one looks further ahead. Looking at the effect of pipeline expenditure over the next 5 years, it seems likely that -

- (i) an integrated line which remained in the public sector would involve a higher PSBR charge than multiple schemes;
- (ii) but an integrated line which was privatised could offer a lower PSBR charge than multiple developments. *However, early privatisation cannot be guaranteed. The Treasury believes that it is a prudent assumption to make that control is unlikely to pass to private shareholders for a number of years.

* While the pipeline company remains in the public sector, proceeds from the sale of shares would be classified as public sector borrowing and would not reduce public expenditure or the PSBR. Only when control passed to the private sector, would proceeds from the sales of the residual BGC holding of shares reduce public expenditure and the PSBR.

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Looking to the longer term, an integrated line which remains in the public sector will yield positive PSBR contributions from tariff income.

28. Thus the key decision Ministers are required to make is whether the greater economic benefits offered by the integrated pipeline are justified by the incremental capital expenditure, greater burden on the PSBR in the early years and possible constraints on North Sea gas development policy during the 1980s. In making this judgement consideration must also be given to the differing risks involved in the two schemes. Some of the major risks to be compared are:

(i) by definition the financial risks of multiple pipeline approach falls to the private sector, albeit that tax offsets mean that the bulk of the burden is likely to be passed on to the Exchequer. However, in the integrated scheme the public sector would be directly exposed to all the financial risks until the pipeline company was successfully privatised. The risk would be larger (£1.5 billion compared with £1.2 billion) and would arise sooner;

(ii) an extremely large project like the integrated pipeline inevitably concentrates the risk of cost over-runs; against this all the figures for the multiple scheme are very broad-brush and approximate;

(iii) there is a risk that the multiple approach might not collect all the available gas. Any shortfall could carry with it a significant penalty in national terms. Department of Energy officials argue that in the absence of readily available collection facilities smaller accumulations of gas are unlikely to be developed and one could not rely on companies' decisions to achieve the collection of all the gas that could economically be recovered. On the other hand, the integrated line has been designed on the basis of existing knowledge and the multiple approach, with its later capital expenditure, can arguably better profit from future knowledge.

SUMMARY

29. As an aid to Ministerial discussion the major factors are summarised in tabular form in Annex 1.

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ANNEX 1

SUMMARY

A. Description of projects and conditions necessary for their success:

	<u>Integrated</u>	<u>Multiple</u>
Project	Construction of a 36" pipe from Statfjord to St Fergus via Thelma, with a 24" southern leg from Thelma to Lomond.	Construction of a small diameter dedicated pipe from Beryl, and long laterals to the existing FLAGS and Frigg Lines. Lomond gas to be landed later through a future Southern Basin gas gathering line.
Project Definition	Detailed	Outline only.
Gas separation capability	Facilities for bulking NGLs onshore.	Limited facilities for separating NGLs.
Investment Start Date	September 1981	Probably 1983-4.
Flexibility	Very limited, about 20% of the investment could be delayed until late 1980s (Southern leg to Lomond, gas processing module at St Fergus, onshore investment elsewhere in Scotland).	The FLAGS and Frigg lines already exist. Additional capital expenditure will be committed in stages.

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	<u>Integrated</u>	<u>Multiple</u>
Conditions necessary to ensure planned return on investment	<ol style="list-style-type: none">1. No rival pipelines.2. May require imposing equivalent depletion controls if BGC's monopsony is removed.3. No delay in development of N Basin reserves, to ensure adequate throughput.	<ol style="list-style-type: none">1. PRT Tax relief for pipelines continues.

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B. Economic Factors*

	<u>Integrated</u>	<u>Multiple</u>
Capital cost	£1.5bn	£1.2bn
Operating cost per year	£50m	uncertain, but more than £50m
Reserves of gas available to line	11 tcf identified (maximum estimate 21 tcf)	11 tcf identified (maximum estimate 21 tcf)
Value of gas landed at full opportunity cost	£25bn	£25bn maximum, but perhaps £23bn or less
Quantity of NGLs captured	All available	much less, about 40% of available ethane
Field development cost	about £3bn	about £3bn
Comparison in national terms (but without risks) shows NPV in favour of integrated scheme		
Capital Expenditure Profile* (£m)		
1981	60	-
1982	230	-
1983	470	-
1984	450	300
1985	180	350
Later Years	150	550

*January 1981 prices

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C. Risks (including factors identified in A as conditions necessary for success).

	<u>Integrated</u>	<u>Multiple</u>
Premature investment, siting and sizing	more vulnerable	
Technical difficulties and cost overruns	more concentrated risk	
Failure to capture full gas reserves		more vulnerable
Risk that producers might not develop fields to use the pipeline	more vulnerable	
Risk of flaring		more vulnerable
Potential loss of UK gas to Norway and subsequently Norwegian gas to UK		more vulnerable
Loss of NGLs and reduced opportunity for bulking for petrochemical use		more vulnerable (possible 60% lost) might mean forgoing a new cracker; or loss of an existing complex
Opportunity for early placing of contracts with UK companies		less opportunity
Speed of subsequent privatisation	uncertain	fully private ab inito

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BANK OF SCOTLAND LOAN FINANCE

PROPOSALS

Officials have discussed with representatives of the Bank of Scotland their proposals for providing loan finance for the gas gathering pipeline project.

The Bank Study Group includes Barclays, Citibank, Lloyds, Morgan Guaranty and National Westminster and is chaired by the Bank of Scotland. The Group was originally asked to put forward proposals for interim finance of £700m but having reviewed the project they suggested that project financing on the basis of estimated ultimate cost and for a more extended period should be considered.

Bank of Scotland Scheme

The essential features of their scheme are that the banks would lend money to be repaid from the cash flow generated by the completed pipeline. The money would be secured against pipeline fees attributable to "bankable" reserves of gas, ie. reserves for which Annex B development approval had been given. As Annex B approvals were granted, the amount of bankable gas would increase and so in turn would the amount of money available from the banks. The banks would not, however, enter into the loan unless they were satisfied from the beginning that sufficient funds would be forthcoming to complete the project. At present there is not enough bankable gas to cover the project's estimated cost. The banks would therefore require a guarantor to meet any deficiency that might arise; if expenditure on the pipeline ever exceeded the value of bankable gas, the deficiency guarantee would be called. The guarantor would then have to decide whether to stop the project and pay bank the loans, to put up the money necessary to allow the project to continue or to arrange for more bankable gas to be approved.

Benefits

The purported attractions of such a scheme are first, that money could be borrowed against gas for which development approval had been given, rather than having to wait until a throughput contract had been signed. Secondly,

provided the pipeline project is viable, no actual liability would arise in the long term because the value of pipeline fees attributable to the bankable gas would greatly exceed the construction cost of the pipeline. Sufficient volumes of gas would however have to come forward and, at least until enough gas was contracted to pass through the integrated line for the project to become viable, no competing pipelines could be allowed. Thirdly, the pipeline construction company could be a small company with only nominal capital. The running of the company would be contracted to an organisation with the appropriate experience. Equity in the company could be sold at a later date, perhaps in 2 or 3 years time, when throughput contracts had been signed and the net worth could be more accurately assessed.

Disadvantages

The repayment of the loan finance is intended to come from the cash flow generated by the pipeline, that is, by the tariffs earned from gas passing through the line. The "value of bankable gas" referred to by banks would be based only on fields that had been given Annex B approval (currently 2.3 tcf of the total 11 tcf), and would be derived for each field, mainly from the reserves, production profile and transmission charge that could be made. Although the Bank of Scotland representatives emphasised that they could not be expected to be specific before the details of any loan had been sorted out, it appeared that they had in mind an interest rate of around $\frac{3}{4}$ - $1\frac{1}{2}\%$ above LIBOR. This is likely to be expensive compared with not only NLF finance but also the rate at which nationalised industries borrow from the banks. The amount of money to be raised is large but the Bank believed it would be possible to raise it from a worldwide syndicate of banks. Fees would be charged for the placement of loans with these banks.

The most serious limitations of the Bank's proposals are, however, the need for a deficiency guarantee (amounting in practice to a completion guarantee) and the problem of responsibility for the pipeline company. Ultimate responsibility for it would lie with the deficiency guarantor who would be liable for any gap between the value of bankable gas and what was required by the company for building the line. The Bank emphasised that the deficiency guarantor would have to be a credible and creditworthy source; they suggested the Treasury or BGC.

Conclusions

This scheme is designed to provide funds for the project on the security of guarantees given by the Government, either directly or indirectly through BGC, that the pipeline will be completed and that any gap between the revenue earned by the line and the cost incurred in building it will be made up and the bank loans repaid. If BGC or the Government were the deficiency guarantor, the Bank of Scotland proposals would not take the project outside public sector and the loan finance they offer would be expensive.