cc A Walters

Prime Minister

MAIN LINE ELECTRIFICATION OF BRITISH RAILWAYS

I attach a note by the Department's Chief Economic Adviser, Humphrey Cole, on Mr Walters' paper on this subject. It does not cover the issue of the appropriate rate of return for a programme of this kind, which will I understand be dealt with in a note from the Treasury. Treasury economists have seen and are generally content with the analysis in the annex to this note.

I should add one point. Mr Walters raises the issue of a much more concentrated rail network. This of course is a prospect which both you and I have publicly rejected. I really do not see how we could change our stance on this. Having said that let me add I would welcome a further look by CPRS at the figuring in the review and its relation to the prospects for the Inter City and freight businesses. I think this would be potentially a very valuable exercise.

I am sending a copy of this minute to Leon Brittan and David Howell. Copies also go to Sir Robert Armstrong, Mr Ibbs and Mr Walters.

NORMAN FOWLER
6 April 1981

MAIN LINE ELECTRIFICATION OF BRITISH RAILWAYS

NOTE ON MR WALTERS' PAPER BY HUMPHREY COLE, CHIEF ECONOMIC ADVISER, DTp

There are 3 distinct economic issues that arise from Mr Walters' note. These are:

(1) Is the assessment by BR/DTp a reasonably unbiased one of the costs and benefits of electrifying much of the main line system as compared with its continued operation by diesel power?

(2) Are the commercial prospects for inter-city and freight such that any major investment should not be undertaken without examining the case for reducing the network substantially?

(3) What minimum rate of return should such an investment be expected to earn?

2. The third point is being commented on by the Treasury who, with the Department of Energy, took part in the study.

3. The first point is not the key one. As the attached annex of detailed points shows the net return from electrification is not very sensitive to the main queries Mr Walters raises. Because the main gains from electrification come from cost savings, results are fairly robust to substantial changes in revenue assumptions, as long as the main line system remains around its present size. Even if British Railways fail to achieve their commercial objectives, the analysis in the Review is correct in showing that it will in the long run be worth investing in order to operate a predominantly electric rather than a predominantly diesel railway. This assumes that the 7% discount rate is the right one. It has been tested for robustness against developments that are substantially less favourable than the central ones used in the Review.

4. The second point is more difficult. If British Rail fails to achieve its commercial objectives for the inter-city and freight railways, the cost-saving gains from electrification will still be largely achieved unless the then Government's reaction to BR's failure

would be to close some of the 52% of the network now proposed for electrification. (That network does not include the branch line rural railways where the subsidy is highest; the economic, but not the political call for closure is strongest for these lines.)

5. It would only make economic sense not to electrify on the proposed scale if the likelihood of such closure decisions was substantial. The risks of wasted investment from electrifying lines that were subsequently closed would have to be set against the risks from forgoing the economies achievable by their electrification. Since the former risks are essentially political ones, they would be impossible to quantify. But the scale of the risks can be reduced by ordering the programme of electrification so that, as far as is consonant with efficient operation, the priority is given to electrifying the lines about whose future there can be no room for doubt.

ANNEX

DETAILED NOTES ON MR WALTERS POINTS

Price Base

All figures are in 1980 Survey Prices. Using this price base the Net Present Values (NPVs) are:

Option III slow -£200m
Option III fast -£240m
Option V fast -£305m

The Basic Approach

The issue analysed was simply "whether the railway would do better with electric than diesel traction". Nevertheless it is misleading to suggest that a strategic decision would "inhibit further slimming down of the railway network for many years". Even in the largest option only 52% of BR's route miles would be electrified, and that stage would not be reached at the earliest until the year 2000.

The Profitability of the Railway

The report does not make any estimates of the overall profitability of the railway, but the results do suggest that, by the time of completion, Option V would improve the Board's net cash flow by £125m.

The importance of Revenue Forecasts

Mr Walters criticises the revenue forecasts as over optimistic. But the main benefits from electrification are cost savings, £600m, as against revenue gains of £170m. The cost savings alone would justify eletrification. The 1% per annum real pricing is not a major factor improving the case for electrification, rather it weakens the case by reducing the volume of traffic to be carried. The 6% premium fare for the better quality of the electric service does contribute to the case for electrification, the premium fare is only 6%, not 12%, when there is a switch from HST to APT.

Trends in Demand: Passenger Traffic

The 1% exogenous growth has been applied to Inter-City only, not to all passenger traffic. The growth rate for passenger volume is slightly lower than experience over the period 1966-80 would suggest. We have no reason to regard the trends as dubious, nor would we expect competition to railways to grow more rapidly than in the past. Motoring costs have been broadly stable in real terms over the last decade and are unlikely to fall in the future. Air competition is only significant for rail flows between London and Scotland, served by two lines, one of which is already electrified. The competition from coaches has increased because of deregulation. This is a once and for all effect which may have reduced Inter-City rail travel by 5%. The sensitivity test in the Report showed that even with a 22% fall in traffic, before allowing for the effect of rising prices, the rate of return to electrification is still 9%.

Freight Forecasts

The principal difficulty in constructing forecasts of freight traffic is in identifying the volumes which it would be profitable to carry, mainly by trainload operations. This cannot be discovered by examining past trends, which reflect the deliberate policy of shedding wagonload traffic. Given the composition of traffic towards which the Board has been working it is felt unlikely that total carryings will drop below 150m tonnes. The effect of carrying only 150m tonnes was examined in the Review and reduced the NPV of Option V fast by about £35m. Using 100m tonnes as suggested by Professor Walters, would imply carrying only coal.

Option III is justified by the benefits to the passenger business alone.

Fares Elasticity

The figure of 0.65 was based on statistical work in the Department of Transport. More recent work (over the last three months) does suggest a higher figure of 0.8, the figure used in sensitivity tests. Using

this elasticity reduced the NPV of Option V fast by £25m, using 1 would reduce the NPV by £50-60m.

Journey Time Elasticity

The figure used is soundly based on experience since the early 1960s and recent backchecks on the effects of HSTs have confirmed its continuing validity.

Productivity

Tough assumptions about productivity were incorporated, because weaker assumptions would improve the case for electrification, but would worsen the railways' finances. BR's productivity record has been relatively poor in the 1970s, but in the 1960s the last major change in traction was followed by a 95% improvement in productivity over a decade.

Fuel Costs

The low oil/high electricity price combination was regarded by the Department of Energy as not feasible, because the cost of electricity can be no higher than the cost of generating it by oil. Because of the relationship between oil and coal prices the high oil/low electricity price combination was also considered not feasible and was not tested. If fuel prices were not to increase at all above the levels actually paid by BR in 1980 the NPV of Option C fast would be £185m, giving a return of about 9%. The standard fuel price forecasts in the Review raise the NPV to £305m. The Department of Energy's latest view of prospects for fuel prices would raise the NPVs to:

Option III slow - £260m
Option III fast - £300m
Option V fast - £380m

Delay

Paragraph 17 of the Chairmen's preface states:

> "A rough assessment that we have made suggests that a delay of four years for any of the larger programmes would reduce the net present values by £60-120m".

The modelling showed that a delay of four years would give rise to difficulties in matching electrification to the need to replace existing rolling stock, with the result that a number of diesels would need to be constructed for relatively short working lives.

Costs

A backcheck was undertaken on the Great Northern electrification scheme. It did not cover the capital costs. It showed that the submission had significantly underestimated the maintenance costs of the new rolling stock. The maintenance cost figures used in the Electrification Review are in line with the outturn figures on Great Northern. Latest indications from BR are that the capital costs of the electrification infrastructure between Bedford and St Pancras are turning out to be lower than in the submission on that scheme.

The total bid for investment in electrification is £775m. We do not recognise, the figure of £5bn, which must come from the Board's recent statement of 'Rail Policy', which does not reflect Departmental policy.

Australian Electrification

The Australian report states that improved speeds are not a priority in Australian conditions and that maximum passenger speeds are limited by track conditions. Nevertheless Table 1 of the Executive Summary Report suggested that electric freight trains would travel 19% faster on average than diesels.

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FILE

10 DOWNING STREET

cc HMT
CO
CPRS
BC D/N

From the Private Secretary

3 April 1981

Dear Anthony,

I enclose a paper and some further notes by Alan Walters on the British Rail Electrification Review. The Prime Minister would be grateful for your Department's and the Treasury's comments on these papers, in advance of the E Committee discussion next Wednesday. Please could you ensure that these comments are with us by close of play on Monday evening.

I am sending a copy of this letter to John Wiggins (HM Treasury), David Wright (Cabinet Office) and Robin Ibbs (CPRS).

Yours sincerely,

T. P. LANKESTER.

CS

Anthony Mayer, Esq.,
Department of Transport.

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