AN ECONOMIC ANALYSIS OF THE FREIGHT MARKET

Report to the Office of the Rail Regulator

Executive Summary

Prepared by NERA

January 2000
London

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EXECUTIVE SUMMARY

Scope, Purpose and Method of the Study

1. This report to the Office of the Rail Regulator considers the future levels of rail freight traffic in Great Britain up to the year 2009/10. It also considers the impact of changes in rail access charges on future freight volumes and on the revenue that Railtrack can be expected to earn from these future rail freight traffics under different systems of rail access charges.

2. The report first presents a set of "base case" forecasts of traffic for different rail freight sectors. These forecasts are provided in terms of (net) tonnes lifted, and net tonne-kms (the two are linked by the average length of haul for each sector, since net tonne-kms equal net tonnes multiplied by length of haul). The "base case" forecasts are based on existing access charges and on what we regard as the most likely levels of other variables, such as GDP, electricity consumption and coal burn, steel production, road fuel prices, and maximum lorry weights.

3. The second main part of the report combines the "base case" traffic forecasts for each of the years between 1999/2000 and 2009/10 within a modelling framework which is used to estimate the impact of changes in track access charges on levels of freight, sector by sector. In order to do this, it has been necessary to model rail freight costs for each sector in order to understand the proportion that access charges form of total costs for different types of traffic and flow. Estimates of freight traffics under different access charge scenarios are then used to calculate Railtrack freight access charge revenues in each year.

Recent Trends in Rail Freight Traffics

4. Over the last ten years rail freight in Britain, measured in net tonne-kms, had continued its long-term decline until 1994/95. Thereafter rail freight volumes moved have recovered, so that by 1998/99 net tonne-kms were nearly back to their 1988/89 levels. Between 1994/95 and 1995/96 traffics were more-or-less stable. However, in the three years between 1995/96 and 1998/99 net tonne-kms rose by 30 per cent, and gross tonne-kms rose by 28 per cent. The two biggest drivers of this growth have been coal (primarily because of an increase in the length of haul as imported coal has been substituted for domestic coal), and containerised freight.

Basis of "Base Case" Traffic Forecasts

5. The analysis of the rail freight market in the report is provided for a detailed commodity classification based on Railtrack data on gross tonne-kms and train-kms.

6. The base case rail traffic forecasts are based on continuation of current freight access charges in real terms. As background, we expect that:

- GDP will grow at 1.6 per cent between 1998 and 1999, and then by 2.5 per cent per year in the first half of the next decade, and at 2.25 per cent per year for the second half.
- Road traffic will grow in line with the Government's current National Road Traffic Forecasts, while congestion will grow at a somewhat higher rate.
- The Government will approve use of 44-tonne goods vehicles for general use.
- Real diesel fuel prices for road vehicles will rise initially, but will stabilise from 2002 onwards.
- Rail freight operator efficiency will continue to improve.
- Rail quality of service will also improve.

"Base Case" Traffic Forecasts by Individual Sector

7. Forecasts of **coal** traffic for the electricity supply industry (ESI) are based on detailed discussions with all the major coal generators. We expect ESI coal traffic moved to peak in 1999/00 and 2000/01, and then to decline at an accelerating rate as coal-fired stations are retired. We have cross-checked these "bottom-up" forecasts against what we regard as a plausible "top-down" macro scenario. Other coal traffic will largely depend on UK steel production, which we expect to increase.

8. **Metals** traffic will also largely depend on UK steel production. We expect iron ore and semi-finished product traffic on rail to rise in line with Corus steel production, but we expect rail to gain traffic in the movement of finished product, and from other steel manufacturers. Traffics will be sensitive to any major reorganisation of UK steel production.

9. Traffic for the **oil industry** has declined in recent years, and this trend is expected to continue. Rail traffic volumes are now sensitive to the decisions of a few rail users, as the major oil companies have moved away from using rail.

10. We expect **aggregates** traffic on rail to increase faster than GDP in the short to medium term, as the industry moves to new sources of supply. We also expect other traffic for the **construction industry** to grow faster than GDP, especially as the cement industry increasingly moves back to rail.

11. The **industrial minerals** sector, which includes gypsum, potash, china clay, limestone for purposes other than aggregates, and some other basic materials, comprises an important component of rail tonnages. On the basis of a "bottom-up" analysis of these individual components, we expect rail growth slightly above

projected GDP growth. We also expect growth above GDP in the rail transport of domestic and other waste.

12. Current reorganisation of rail transport of **nuclear** materials will lead to a doubling of rail transport in terms of gross tonne-kms in the next two to three years. Thereafter traffic will be relatively stable, with some variations primarily due to decommissioning of nuclear power stations.

13. After the decline in production at the "heavy" end of the industry in recent years, **chemicals** traffic on rail had also declined. However, the business now has prospects for growth. In the short run this will be due to additional traffic from Grangemouth. In the longer term growth can be expected as a result of the increasing trend towards European-wide production patterns in the industry.

14. We expect both domestic and European **automotive** traffic on rail to grow, due to production increases at UK plants, and the increased emphasis on European-wide production, which encourages movements both of components and of finished vehicles. Overall we expect about a fifty per cent growth in automotive traffic on rail between 1998/99 and 2009/10.

15. **Domestic intermodal** traffic, particularly deep-sea boxes, has been growing strongly, and we expect this growth to continue, with a doubling of the traffic between 1998/99 and 2009/10. This projection is based on port industry projections of deep-sea traffic growth, together with increased rail penetration into the middle distance market.

16. **European intermodal** traffic through the Channel Tunnel has been static recently. Recovery of growth prospects is dependent on service quality improvements, particularly with regard to reliability.

17. We also expect growth in the remaining traffic sector, which consists of **domestic non-bulk traffics** (excluding auto industry traffics) which are not carried in containers. This is the most difficult sector to predict, since it is currently small, and the potential market consists of a very large number of individual customers, most of whom have little experience of using rail. However, there have been positive developments in the field, including Safeway's use of rail for distribution of chilled products in the Highlands of Scotland. Our projections for this sector are based on increased penetration of the existing road market over the break-even distances for which rail is competitive. We have also undertaken some sensitivity analysis to determine the sensitivity of overall rail freight projections to traffic growth in this non-bulk sector of the market.

18. There have been substantial investments in rail transport of traffic for **Royal Mail**. As a result of these, and of prospects for rail to gain traffic from air over the longer

distances, and from road over shorter distances, we expect Royal Mail traffic on rail (in terms of gross tonne-kms) to increase by over 50 per cent between 1998/99 and 2009/10.

Overall "Base Case" Traffic and Revenue Projections

19. Combining all the base case rail traffic forecasts, the report forecasts that net tonne-kms will grow from 18.2 billion tonne-kms in 1998/99 to 23.8 billion tonne-kms by 2004/05. This represents a growth of 30 per cent, with further expected growth of only four per cent between 2004/05 and 2009/10.

20. Net tonne-km projections by market sector for the five years between 1998/99 and 2004/05 are:

- All coal 4 per cent;
- Iron ore/metals 25 per cent;
- Oil and petroleum no growth;
- Chemicals 80 per cent;
- Construction materials 30 per cent;
- Industrial minerals/waste just over 20 per cent;
- Automotive 30 per cent;
- Domestic intermodal 67 per cent;
- European intermodal just over 20 per cent;
- Other domestic non-bulk over 100 per cent.

21. For those traffics whose volumes are not measured in net tonne-kms, we make the following growth projections for gross tonne-kms between 1998/99 and 2004/05:

- Nuclear 100 per cent;
- Royal Mail 25 per cent.

22. Total rail freight gross tonne-kms, the basis for track access charges, for all freight traffics combined are also projected to grow by over 30 per cent between 1998/99 and 2004/05, and by about six per cent from 2004/05 to 2009/10, as coal traffic declines.

23. On the basis of these forecasts of gross tonne-kms, we expect that Railtrack freight access revenue at constant 1998/99 prices would increase by 12 per cent by 2004/05 if the structure and level of charges were not to be changed.

Modelling the Impact of Changes in Rail Access Charges

24. The report outlines the model that NERA has developed to analyse the impact of changes in variable access charges on rail freight volumes, sector by sector, and year by year. This model determines break-even distances for rail freight on the basis of operating costs for both road and rail for particular types of traffic over different distances.

25. Changes in break-even rail distances as a result of changes in variable access charges are then related to the available road market over the estimated break-even distances. This means that it is possible to derive a sector-specific elasticity of demand which relates changes in the overall cost of using rail to the market available for rail to capture. The model can then estimate changes in rail volumes following the introduction of new access charging systems. These new traffic volumes can then be combined with the unit access charges to calculate Railtrack revenue.

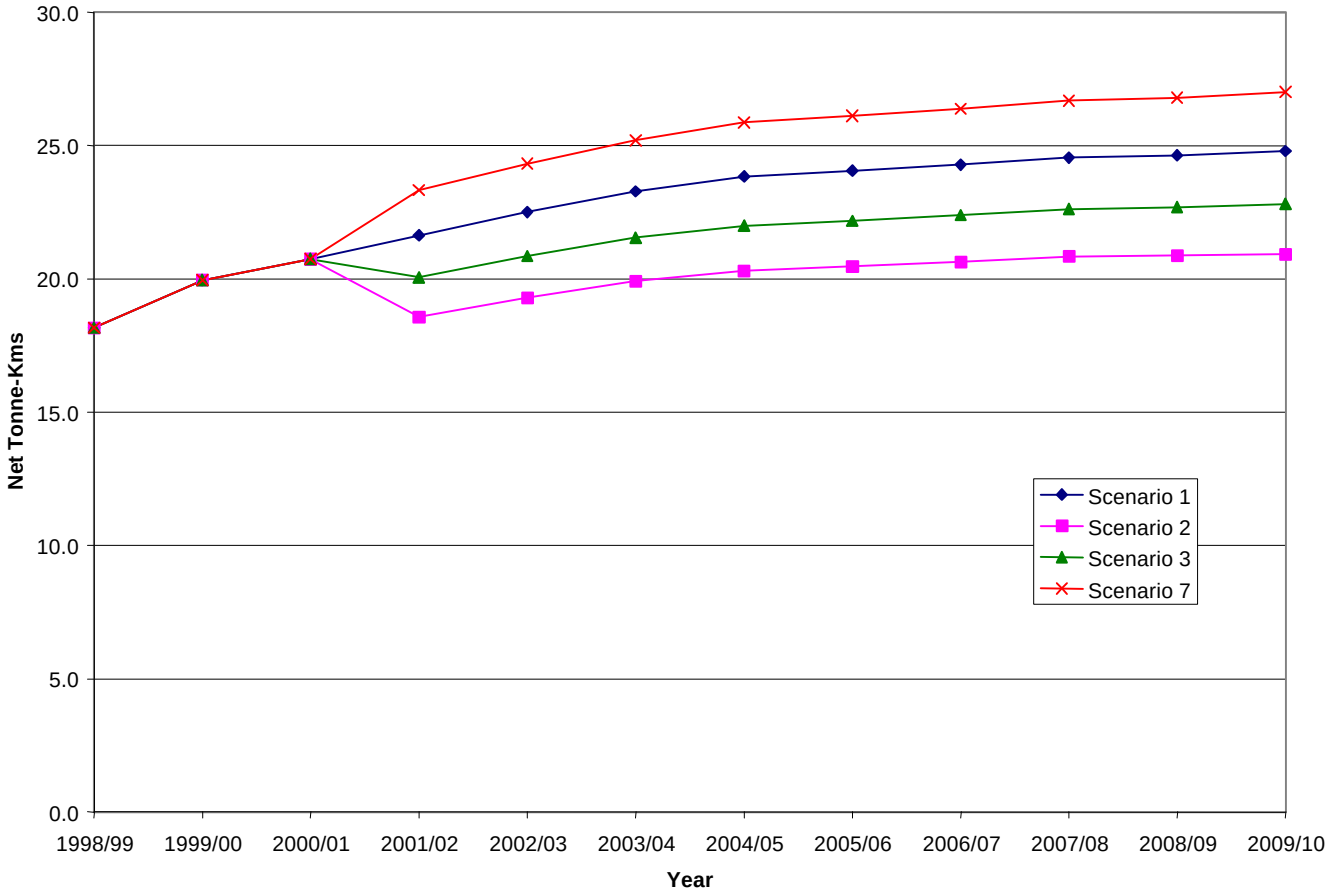
The Impact of Changes in Variable Freight Access Charges on Rail Freight Volumes

26. Rail freight volume forecasts have been derived in this way using six alternative access charging scenarios to the base case (which is Scenario 1). These new charging systems would all be introduced from 2001/02 onwards, and involve:

- Scenario 2. All freight access charges are recovered using a variable rate, with no fixed element.
- Scenario 3. Variable access charges half way between the above "fully variable" rate, and present rates.
- Scenario 4. Existing variable track access charges, reduced by five per cent per annum after 2001/02.
- Scenario 5. "Fully variable" track access charges, reduced by five per cent per annum after 2001/02.
- Scenario 6. Scenario 3 track access charges, reduced by five per cent per annum after 2001/02.
- Scenario 7. Zero variable track access charges.

27. Figure 1 shows forecasts of net tonne-kms under different track access charge scenarios.

Figure 1
Net Tonne Km Forecasts Under Main Access Charging Scenarios (1, 2, 3 and 7)



Note: Net tonne-kms exclude Royal Mail and nuclear traffic.