1 — Introduction

The report on ' The Reshaping of British Railways ', published in 1963,emphasised the present and future importance of the railways as providers of mass transport over the trunk routes of the country, and their relative unimportance and unsuitability as providers of transport for light flows of local traffic.

In connection with that report it was pointed out that the railway system could be seen as falling into three parts :—

1. a part which is clearly sound now, and potentially sound under any foreseeable future conditions;
2. a part upon which judgment must be suspended because its future usefulness remains questionable; and
3. a part which is unsound now and never likely to be sound in future.

It is regrettable, though perhaps not surprising, that public attention has concentrated upon the proposed abandonment of the unsound parts of our railway system. Of much greater importance, however, were constructive proposals for the development of a new railway out of the old one which were made in the Reshaping Report, and other proposals which that report foreshadowed.

Those parts of British Railways' route system which fall in the first of the three categories referred to above are :—

Some of the routes carrying suburban traffics.

Some isolated lengths of route which carry heavy flows of bulk traffic, e.g. from mines to power stations, from ports or ore fields tosteel works, etc., but which do not link up to provide heavily loaded through routes.

A considerable proportion of the trunk routes linking main centers of population and industry, together with the feeder lines which serve them. Not all existing trunk routes can be included, however, because of the duplication which has resulted from the competitive building of the past.

The object of the present report is a critical examination of a crucial part of the system—the trunk routes—and it sets out for consideration the information and forecasts necessary to establish how the through route system can best be developed to match the future pattern of rail traffic demand.

To this end, the report looks ahead 20 years—a period which is considered to mark the limit of a realistic and quantitative appraisal. It is confined to the trunk routes and leaves out those parts of the system which can be dealt with as separate or subsidiary issues, namely the commuter services and feeder lines.

It should be recognised that the purpose of this study is to select routes for future intensive use, not to select lines for closure, and many of the lines not placed firmly in category 1 will remain in category 2 until their future prospects are seen more clearly.

The publication of this report is not a prelude to precipitate action on abroad front. It is, rather, the exposure of ideas about the way in which the trunk route system should be shaped, and is made for four important reasons:—

(i) Firstly, so that the selection of trunk routes can be subjected to constructive criticism,

(ii) Secondly, so that the next phase of development expenditure can be well planned,

(iii) Thirdly, so that any future proposals for trunk line closure, or diminutions of line utilisation, can be seen in a broader context,

(iv) Fourthly, so that commercial policies can be properly developed and customers be given a clearer view of the future.

The existing rail network between main centres of population and industry

The existing system of through routes connecting main centres is shown in Map i. Its complexity is a relic of an age in which the railways of this country were built by many competing interests, often operating over the same territory, and some indication of the extent to which routes are duplicated is made immediately apparent, on Map 2, by the colouring of routes which share the principal traffic flows.

The total route mileage involved is some 7,500 miles, subdivided as

TABLE 1

Type of Route	Miles
4 Track or more	1,400
2 Track	6,100

In certain instances, routes serve subsidiary purposes as well as their main function. This means that there must be an element of judgment in determining the extent to which duplication exists, but, in the view of the Board, the following Table summarises the position: —

TABLE 2

Total Miles in			
Quadruplicated Routes	Triplicate Routes	Duplicated :Routes	Single Routes
700	700	3,700!	2,400

Table 3 shows the utilisation of the through route system and compares this with the capacity that is available now.

TABLE 3

Type of Route	Miles	Present* Utilisation	Practical* Available Capacity
4 Track or more	1,400	8 ½ m	20m
2 Track	6,100	2 ½ m	8m

* Passenger/Ton miles per route mile per annum.

The extent to which the maintenance of this excess capacity influences the cost of handling through traffics is made clear if the following Table, which shows route cost per passenger/ton mile for various types of route and at various traffic levels, is used in conjunction with the previous one: —

TABLE 4

Route Costs (excluding Interest) per Passenger/Net Ton Mile		
Traffic Density Passenger/Net Ton Miles per annum	Route Costs per Passenger/Net Ton Mile	
	4 Track Route	2 Track Route
Millions	pence	pence
45	.07	-
30	.09	-
20	.13	-
15	.15	-
10	.22	-
8 ½	.26	-
7 ½	-	.21
5	-	.30
2 ½	-	.57

Note : The figures quoted are an average, assuming the best and most economical modern equipment and methods.

Studies of road and rail costs indicate that, on the trunk network, route costs should be less than about ^d. per ton mile, if railway transport is to be widely competitive. Tables 2, 3 and 4 together show that, over much of the trunk system at present in existence, high costs per ton mile are associated with duplication of routes.

Reasons why route selection appears necessary

It is evident that railway economics are such that the cost per unit carried falls rapidly as the traffic density over a route increases. In addition to the resulting reduction in route cost per unit carried, economies also arise from more effective utilisation of lineside facilities such as yards, maintenance depots, stations, etc., and from more intensive use of motive power and rolling stock. Therefore, if an available flow of traffic, which could be carried by one route, is spread over two or more alternative and under-loaded ones, the costs per unit carried are bound to be inflated.

There can be no doubt that British Railways costs are so inflated at the present time, because there is a gross excess of trunk route capacity in relation to the traffic pattern, and only about one-third of the total through route capacity is used. Moreover, much of the money which is being spent on the system for the sake of the direct economies which result from modernisation of our equipment and installations, also has the effect of increasing route capacity. This important by-product of sensible renewal and independently justifiable improvement expenditures will result in a very substantial increase in route capacity and, if spread over the through routes as a whole, will considerably increase the disparity between capacity and present traffic levels. Also, changes in the mode of operation of the railways which are already being developed, will have a similar effect. Therefore, unless future traffic levels over the through routes are likely to be many times higher than at present, the expenditure of the very large sums of money necessary for the maintenance, renewal, and improvement of all existing through routes cannot be justified, and the concentration of traffic and of development expenditure upon selected routes is clearly desirable.

The importance of the problem will be better appreciated when it is realised that the level of annual expenditure on through route maintenance, renewal, and improvement, is at present running at a level of around£85 million, and is likely to continue at that same general level for a good many years if the whole through route system is maintained. Substantially lower expenditure, upon a suitable selection of routes, is likely to provide all the capacity required to meet foreseeable future demand.

An outline of the study

In order to match a railway system to the transport requirement which it is expected to meet, it is obviously necessary to know much more than the total demand in terms of ton or passenger miles. The total traffic must be subdivided into categories which can be regarded as reasonably homogeneous from a transport point of view, and the location and density of the main flows of traffic in each category must be established. Only if this is done can route capacity be provided in the right manner.

It was considered that the best way of providing this information for a period of twenty years ahead was to analyse the trunk transport requirement associated with the present state of the economy, and then to forecast how the present pattern of traffic flows might be modified by global changes in transport demand resulting from growth in the economy, by changes in the pattern of industrial production, and by any major changes in the geographical distribution of population and industry. For that reason, this report deals with the general problem which has to be solved in the following stages: —

Examination of the present pattern of trunk transport of freight on rail, in relation to the total national demand for freight transport between main centres, and of the present inter-city flows of passenger traffic.

Consideration of those changes in the national economy and in the disposition of population and industry which are likely to affect the future demand for public transport, and, in particular, rail transport.

Assessment of the probable pattern of transport demand between main centres by 1984, and of the traffic flows favourable to trunk movement by rail.

Consideration of the potential capacity of rail trunk routes when developed technically and operated in the manner best suited to the types of traffic foreseen.

Selection from existing routes of those which can best be developed to provide the network and capacity required to handle the future trunk traffic demand.