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1 INTRODUCTION

1.1 Purpose of report

This report provides details of the options and evaluation results for the detailed service specification work-stream covering the Bristol travel to work area and the inter-regional services to assist SRA in the development of the franchise specification for Greater Western Franchise replacement. This work builds upon work carried out at Outline Definition stage.

1.2 Structure of report

This report details the findings of more detailed work on refining the outline train service specification emerging from the Outline Definition Stage for the Bristol area and inter-regional services. The Base Case comprises the emerging train service and rolling stock deployment for the December 04 timetable. We have then defined a "Straw Man" specification, developed from the Outline Definition stage findings, which is evaluated against the Base Case. The remainder of the report examines incremental options tested against the "Straw Man" specification. From this conclusions are drawn and an emerging specification is proposed.

1.3 Specific Objectives for the Bristol area and Inter-Regional Services

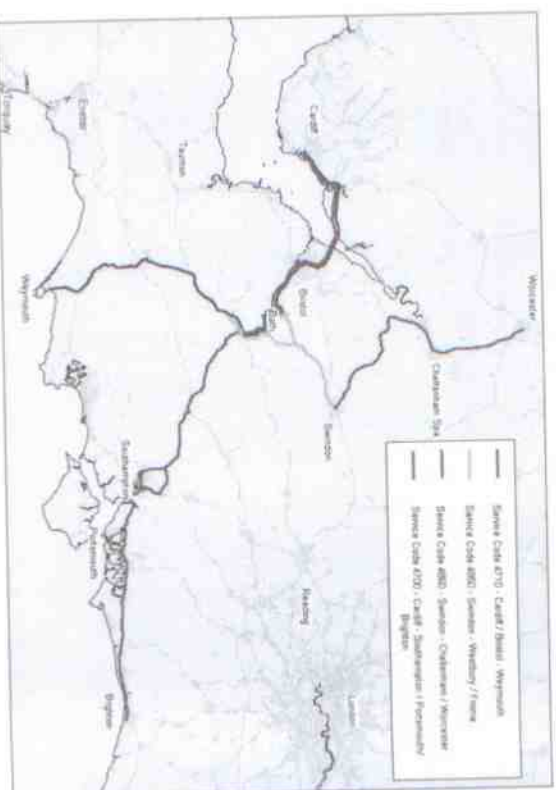
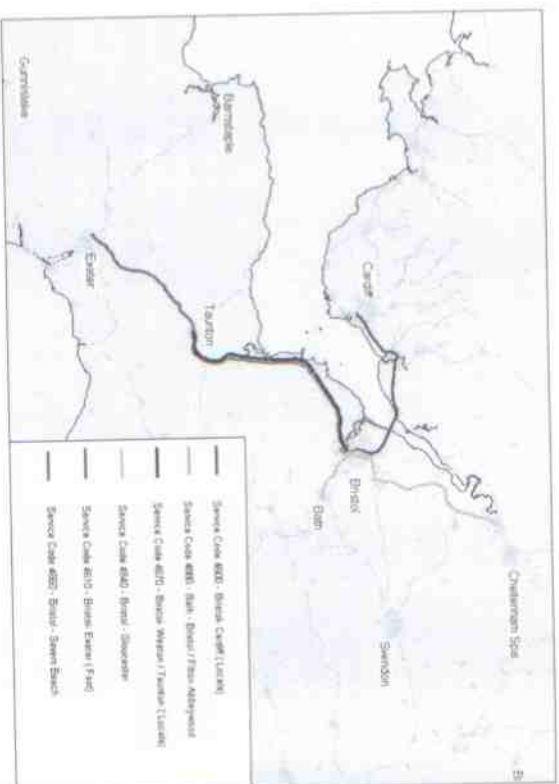
The overarching objectives for the franchise include:

- Improved efficiency and overall cost
- Improved performance
- Value for money
- Develop rail's contribution to the transport market
- Manage growth
- To operate within NATA 5 point framework
- Improve accessibility to stations (To be covered as a separate work-stream within the Detailed Definition phase)

The specific service group objectives agreed with SRA for the Bristol area and inter-regional services includes a review of service provision to:

- achieve cost reduction synergies and improve market offer of the train service specification in the Bristol area, including North Bristol service provision.
- manage current crowding and future growth in the Bristol area.

1.4 Route Maps



2 KEY ASSUMPTIONS

2.1 Timetable Assumption

Our detailed timetabling work has concentrated on Monday to Fridays as typically the level of service on these days will govern the overall resource requirement employed. The Saturday overall level of service will be similar on most routes and for evaluation purposes we are assuming that the Monday to Friday timetable operates Monday to Saturday.

2.2 Option Appraisal

Costs, revenues and benefits are expressed as Net Present Values 2004/5 prices. The economic and financial appraisal of the identified options covers the full duration of the Greater Western Franchise, including the extension period, i.e. to 2015/16. A discount rate of 3.5% has been adopted in line with SRA practice.

Options have been modelled using the SRA Western version of Moira, containing revenue for 2003/4, with each option evaluated within Moira against a base of the December 2004 wider benefits timetable bid as supplied to us by the SRA. Prices have been uplifted to 2004/5 levels assuming an annual RPI rate of 2.5%.

The financial and economic evaluation assumes that the train service changes would apply on Mondays to Saturdays only. The profile of demand and service provision on Sundays is fundamentally different and is outside the remit of this study.

2.2.1 Demand Growth

Demand growth is based on the SDG GW RUS forecasts (using PDFH4-based methodology). Demand growth rates between 2002/3 and 2016/7 have been converted into average annual growth rates by broad geographical area as shown in Table 1 below.

Table 1 Average Annual Demand Growth (all ticket types)

Orig	Dist	Colchester	W. London	Berkshire	Chiltern	Slough Area	Stam	West	South	West	Chiltern	Western	Eastern	Total
Colchester	0.2%	2.5%	1.7%	1.5%	2.0%	2.5%	2.1%	2.2%	3.5%	2.2%	2.7%	2.7%	2.7%	2.4%
W. London	2.1%	2.6%	1.5%	1.3%	2.4%	2.1%	2.1%	2.2%	1.4%	1.8%	2.1%	2.1%	2.2%	2.2%
Berkshire	2.5%	2.2%	2.1%	1.8%	0.9%	0.9%	1.4%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Chiltern	2.2%	2.2%	1.2%	0.8%	0.8%	0.8%	1.4%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Slough Area	2.2%	2.2%	1.2%	0.8%	0.8%	0.8%	1.4%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%	1.3%
Stam	2.8%	1.4%	1.2%	0.9%	0.9%	1.0%	1.2%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.2%
West	2.3%	1.4%	1.2%	0.9%	0.9%	1.0%	1.2%	1.1%	1.1%	1.1%	1.1%	1.1%	1.1%	1.2%
South West	3.0%	1.9%	1.2%	0.7%	0.9%	1.1%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Chiltern	2.5%	2.2%	2.0%	0.7%	0.9%	0.9%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Western	2.5%	2.2%	2.0%	0.7%	0.9%	0.9%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Eastern	2.5%	2.2%	2.0%	0.7%	0.9%	0.9%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Total	2.5%	2.7%	2.0%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%

Each option has been mapped to the appropriate Origin-Destination growth rates (weighted by 2002/3 volumes) in the table to arrive at a suitable annual growth figure for each option. Note that for Peak service options, season ticket growth was used rather than overall growth.

2.2.2 Revenue

The demand forecasts assume that real pricing of 1% p.a. is achieved over the forecast period, and the demand forecasts are already adjusted for price elasticity effects. For

each option revenue is assumed to grow at 1% p.a. above the specific option demand growth.

2.2.3 Unpriced Benefits

(a) User Benefits

Calculated user benefits for each option consists of the user Value of Time and the crowding cost.

Value of Time growth follows DfT Transport Economics Note, section 2.15, i.e. 2.19% pa between 2000 and 2005, thereafter 2.03% pa.

Crowding Costs – in order to appraise the crowding benefits (or disbenefits) for each option, the escaped (or worsened) economic costs of crowding have been calculated. Crowding levels were calculated on a train-by-train basis using Moira with loads, with the resultant future year crowding cost change compared to the base year calculated using PDFH 4 crowding cost values.

(b) Non-User Benefits

Non-user benefits have been calculated on a flow basis using outputs from Moira. Key assumptions are that half of new users have transferred from road, with a car occupancy rate of 1.5 and a decongestion value of 15 pence per vehicle kilometre (assumed to be at 2003/4 prices). These values are consistent with SRA advice on recent proposals.

2.3 Cost Modelling

Each option has been assessed using the generic Jacobs cost model. Each option has a specification, which details changes to the timetable and/or resources. From this specification the following input data are derived:

- Change in units and HST vehicles leased by unit type
- Change in train mileage by unit type
- Change in train hours by unit type

The change in units has been evaluated by timetable analysis. The train mileages and train hours have been calculated from Moira outputs. Average empty train mileage is assumed as 1.5% train mileage for Thames and Great Western services and 4% for Wessex. On a few options where this is significantly different this has been overwritten by option.

Fleet availability is assumed to be:

- HST train set 76%
- Adelante unit 71%
- Voyager unit 80%
- Thames unit 82%
- Wessex unit 84%

The national rail revenue change attributable to the option is also calculated.

Input data are entered into an operating cost model, which calculates incremental costs for a range of broad cost categories. The unit cost data is derived from benchmark values Jacobs Consultancy has access to from previous studies and from information

supplied by SRA for this project. The following assumptions are made in calculating these values, based on our experience and knowledge of the businesses concerned.

- ROSCO costs for additional units. Figures are based on existing leases provided by SRA. For older rolling stock types these estimates are probably robust. For newer rolling stock types (Adelante and Voyager) we consider there is a greater risk that higher lease costs may be applicable for the new franchise.
- Servicing and light maintenance – SRA advised, by rolling stock type
- Diesel fuel costs – SRA advised, by rolling stock type
- Cleaning – assumed at £10 per carriage (Jacobs average from a number of industry studies)
- Staff Costs – Estimated using average employment costs for drivers (£45k pa), conductors (£15k pa) and other on-board staff (£9k pa) derived from FGW pay rates and assuming that current Thames and Wessex rates would 'level up'. Staff productivity is assumed at 56.25% of train hours (i.e. 4.5 productive hours in a standard 8 hour shift). Staff requirements for the train formations are assumed as: HST: 1 Driver, 1 Conductor and 1 on-board staff, Adelante and Voyager: 1 Driver, 1 Conductor and 1 on-board staff, Thames Turbo: driver only operation is assumed for Thames Inners and a view on driver / conductor and driver only mix has been taken from timetable analysis for Thames Outers. Wessex: 1 Driver and 1 Conductor
- Network Rail usage costs
- Station charges
- Marginal station running costs - £20k per station closure (based on escaping the lighting and routine maintenance costs of a small unstaffed halt)
- Retailing commission charges – assumed at 9% of revenue
- Other revenue driven overheads – including NRES, assumed at 3% of revenue
- Traincrew management and HQ overheads – assumed at an average 10% of TOC controllable costs (i.e. excluding ROSCO, Network Rail and retail commission charges)

3 BASE CASE

The starting point is a Base Case train service and resource position reflecting the available view of the December 04 timetable as provided by SRA in October 04. This section describes the services in that Base Case.

The Bristol and Inter-Urban group comprises the following services which are described within their current Service Groups:

(a) 4700 Cardiff – Southampton / Portsmouth / Brighton

This group comprises four distinct services operating over the core Bristol to Southampton route. First is the limited stop service between Cardiff Central and Portsmouth Harbour. Second is the limited stop service between Cardiff / Bristol and Brighton, third is the local stopping service between Westbury and Southampton, some trains of which are extended to Bristol Temple Meads or Swindon and fourth is local services between Cardiff, Bristol, Bath and Westbury not included in the Filton Abbey Wood group 4880.

(i) Cardiff to Portsmouth

On Mondays to Saturdays an hourly service comprising 16 trains operates between Cardiff Central and Portsmouth Harbour calling at Cardiff Central, Newport, Severn Tunnel Jn or Filton Abbey Wood, Bristol Temple Meads, Bath Spa, Trowbridge and/or Westbury, Warminster, Salisbury, Romsey, Southampton, Fareham, Cosham, Fratton, Portsmouth & Southsea and Portsmouth Harbour. At peak times and at the fringes of the day certain trains call additionally at Bradford-On-Avon. The alternate calls at Severn Tunnel Jn and Filton Abbey Wood are determined by market requirements and particularly journey to work opportunities to Abbey Wood. Calls at Westbury are predominantly to provide interchange opportunities whereas Trowbridge is an important traffic originator itself.

(ii) Cardiff / Bristol to Brighton

On Mondays to Saturdays there is one afternoon southbound and two northbound services (one morning and one afternoon) between Bristol Temple Meads and Brighton. An additional balancing early morning service operates from Havant to Brighton (Westbury on Saturdays). The stopping pattern is Bristol Temple Meads, Keynsham, Oldfield Park, Bath Spa, Bradford-On-Avon, Trowbridge, Westbury, Warminster, Salisbury, Romsey, Southampton, Fareham, Havant, Chichester, Barnham, Worthing, Shoreham, Hove and Brighton.

(iii) Westbury to Southampton

On Mondays to Fridays eight services are provided between Westbury and Southampton operating at approximately hourly intervals although there are some longer intervals at the fringes of the operating day. The stopping pattern is Westbury, Dilton Marsh, Warminster, Salisbury, Dean, Durnbridge, Romsey, Redbridge and Southampton. Four of these services are extended to Swindon within Service Group 4850 and the other four services are extended to Bristol Temple Meads or Filton Abbey Wood within Service Group 4700.

On Saturdays four services are provided between Westbury and Southampton operating at irregular intervals. The stopping pattern is the same as Monday to Friday.

