

## **5.11 GWM 1.3.1 Dedicated GWML 2+9 Fleet**

### **5.11.1 Specification**

To alleviate overcrowding primarily on the Bristol and South Wales routes we test the option whereby a proportion of HST diagrams have one additional standard class coach added to the formation.

Out of 37 HST traffic diagrams currently, 10 are used in the cost peak on West of England services, 2 on the Hereford route, 2 on Cheltenham and the remaining 23 are deployed on London – Bristol /South Wales.

At this stage we test this option by assuming that 28 additional standard class TS vehicles are leased and deployed to strengthen all London / Bristol / South Wales services to 2+9 formation. Standard class seating increase per train is from 360 to 434.

Although additional HST Mk3 trailer cars are likely to be available, the option would incur deliverability issues in terms of the inability of certain fleet maintenance depots and station platforms to accommodate 2+9 HST length trains. A capital investment programme of £20m is assumed to be triggered. The HST's would accelerate more slowly which would add to journey times (approximately 3 minutes Paddington – Bristol) and significant additional vehicle mileage and operating costs would be incurred.

### **5.11.2 Qualitative Criteria: Deliverability and Performance**

Performance impact should be neutral provided the schedules are decelerated to match the poorer acceleration characteristics of the revised formation HST set.

Deliverability is likely to be rather difficult to achieve as existing depot layouts are not large enough to handle a predominately 2+9 formation fleet, e.g at St Phillips Marsh Bristol. Bath Spa and Neath platforms are too short for 2+9. Also a significant number of platforms off the Paddington-Bristol/Swansea core GWML route are short for 2+8 HST but with grandfather rights which may lapse if 2+9 formation were introduced.

### **5.11.3 Qualitative Criteria: Other**

The option looks superficially to have potential in terms of coping with passenger growth. However there may be more efficient ways of addressing the critical point for passenger loads which occur at the London end of GW routes rather than conveying more empty seats west of Swindon. The deliverability issues associated with this option render it relatively risky in our view.

#### 5.11.4 Financial and Economic Appraisal

Costs (£kPV)	65,178
Total Revenue (£kPV)	11,608
User Benefits (£kPV)	27,611
Non- user Benefits (£kPV)	3,159
Net financial effect (£kPV)	-34,900
Net economic effect (£kPV)	-4,129
<b>Benefits : cost Ratio</b>	0.7
<b>NPV / K</b>	-0.12
Subsidy / passenger mile (£)	0.66
Subsidy / passenger journey (£)	66.13

- Substantially worse in financial terms
- Significantly worse in economic terms
- Substantial negative effect on affordability

In this analysis the considerable cost of providing additional capacity to alleviate overcrowding on these routes is not outweighed by the resultant economic benefit. It should also be noted that capital expenditure of £20m has been assumed for depot modifications, it is felt that there is some risk around this figure.

#### 5.11.5 Recommendation

**Reject:** As projected crowding is primarily contained within the Thames Valley part of the GWML route we concluded that there are more cost effective ways of coping with growth.

## **5.12 GWM 1.3.2 Rediagramming of HST and Adelante Fleets to Improve Peak Seating Capacity**

### **5.12.1 Specification**

One feature of the proposed December 2004 HST and Adelante diagrams is that the latter are operating certain peak services to and from Paddington whilst HSTs are working contra-peak trains. The standard class seating capacity of an Adelante is 226 whereas an HST can carry 369. Through a re-diagramming exercise involving exchanging parts of diagrams between fleets we have been able to increase capacity on two morning and two evening services as follows:

0532 Great Malvern to Paddington (arr 0802). HST replaces 5 car Adelante  
0729 Oxford to Paddington (arr 0827). HST replaces 5 car Adelante  
1833 Paddington to Exeter. HST replaces 5 car Adelante  
1852 Paddington to Hereford. 10 car Adelante to Oxford replaces 5 cars

The other consequential changes are as follows:

0622, 0822, 0852, 1122, 1252, 1522 Paddington to Oxford. HST replaces Adelante  
1649 Paddington to Worcester. HST replaces Adelante  
0600, 0630 Paddington to Bristol. Adelante replaces HST  
0715, 1115, 1415 Paddington to Cardiff. Adelante replaces HST  
2015 Paddington to Swansea. Adelante replaces HST  
2035 Paddington to Plymouth. Adelante replaces HST  
0330 Swansea to Paddington. Adelante replaces HST  
0830, 0900 Bristol to Paddington. Adelante replaces HST  
1000, 1130, 1300, 1530, 1700 Oxford to Paddington. HST replaces Adelante  
1055, 1455, 1755 Cardiff to Paddington. Adelante replaces HST  
2010 Worcester to Paddington. HST replaces Adelante

### **5.12.2 Qualitative Criteria: Deliverability and Performance**

The exchanging of work between diagrams is possible without creating any sub-standard turnrounds. However, the Paddington platform workings will not have been validated when the original diagrams were compiled and therefore the degree of difficulty in getting the diagrams to work with the available platforms cannot be ascertained.

### **5.12.3 Qualitative Criteria: Other**

The option would appear to have the potential to make a significantly positive impact on rail's contribution to the market and managing growth.

### **5.12.4 Recommendation**

**Progress** to detailed specification stage. This will be taken forward as part of a fleet optimisation package (ref TVO 3.2.2).

## 5.13 GWM 1.4.1 Ealing Broadway Calls

### 5.13.1 Specification and Deliverability

This option tests the value of calling services at Ealing Broadway to tap in to the west London market and to provide connections with Heathrow services.

The optimal specification calls for two trains per hour to call at Ealing Broadway in the off-peak and contra-peak, of which one is a Bristol and the other a South Wales train. We have considered the pathing implications and the time penalty of calling on the main line is 5 minutes. Taking the Down direction first we will consider the implications of each of the 4tph calling at Ealing Broadway. The potential services are the XX00 to Bristol, XX15 to Cardiff, XX30 to Bristol and XX45 to Swansea. The XX00 would depart Ealing Broadway at XX09, passing Southall at XX13½. This is the same time that the following XX05 West of England train passes. It is only possible to retime the XX00 earlier by two minutes as the XX55 slot is occupied by Heathrow Express and the West of England train would be delayed by 3 mins together with a further 2 mins at Reading. This would knock-on to the next HEX slot and is therefore rejected. A similar situation exists in the case of the XX30 slot as the previous train is the XX25 HEX and the following the XX33 to Bedwyn / Exeter, this is also rejected.

The XX15 slot is preceded by the XX10 HEX and followed by the XX20/21 to Oxford. The earliest that the XX15 could leave is XX13 and the latest the Oxford train can leave is XX22 (provided that it is HST / 180 operated) The retimed XX15 would then pass Southall at XX26½ and the Oxford train at XX30 ½ and this is therefore possible even with the latter departing at XX21. In alternate hours, however, there is a Cheltenham train at XX18 and when this runs it will not be possible for the XX15 to call at Ealing Broadway. A similar situation exists for the XX45 slot and in the absence of an XX48, all trains at XX45 can call. The XX45 hourly and the XX15 two-hourly have therefore been selected to call.

In the Up direction it is the Swansea departures that will not be able to call at Ealing Broadway when the Cheltenham train runs. Therefore all XX55 departures from Cardiff together with alternate XX25 departures from Swansea will call. Again, the penalty for stopping will be 5 minutes and this will be implemented by retiming later from Ealing Broadway to Paddington.

The following trains are retimed to leave Paddington 2 minutes earlier, call additionally at Ealing Broadway at XX24 and run 3 mins later to destination:

Paddington dep 0715, 0915, 1115, 1315, 1415, 1915, 2015, 2115, 2215 (to Bristol)

The following trains are retimed to leave Paddington 2 minutes earlier, call additionally at Ealing Broadway at XX54 and run 3 mins later to destination:

Paddington – Swansea 0645, 0745, 0845, 0945, 1045, 1145, 1245, 1345, 1545

The following trains will call at Ealing Broadway at XX53 and arrive at Paddington 5 minutes later than shown:

Swansea dep 0700, 0800  
Cardiff Cen dep 0955, 1055, 1155, 1255, 1355, 1455, 1555, 1655, 1755

The following trains will call at Ealing Broadway at XX22 and arrive at Paddington 5 minutes later than shown:

Swansea dep 0930, 1130, 1330, 1530, 1730, 1830, 2030

### 5.13.2 Qualitative Criteria: Deliverability and Performance

Although technically deliverable, with the platforms long enough, there would be some performance risk in calling some trains on the main lines between Paddington and Reading.

### 5.13.3 Qualitative Criteria: Other

The calls at Ealing Broadway would bring benefits in terms of transport integration given that Ealing Broadway provides good connectivity with west London's Underground network.

### 5.13.4 Financial and Economic Appraisal

Costs (£kPV)	-642
Total Revenue (£kPV)	-10,437
User Benefits (£kPV)	-17,111
Non- user Benefits (£kPV)	-3,355
Net financial effect (£kPV)	-9,795
Net economic effect (£kPV)	-30,261
<b>Benefits : cost Ratio</b>	48.1
<b>NPV / K</b>	-3.09
Subsidy / passenger mile (£)	-0.22
Subsidy / passenger journey (£)	-38.51

- Substantially worse in financial terms
- Substantially worse in economic terms

### 5.13.5 Recommendation

**Reject**

