

Heart of Wessex Line

The Case for Service Improvement

Produced For: **Heart of Wessex Rail Partnership**

Produced By: **Andrew Griffiths, ImageRail**

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post **Kirkby Stephen Station, Kirkby Stephen, CA17 4LE**
phone **01768 800 208**
email **andrew@imagerail.com**
web **www.imagerail.com**

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Summary

The Heart of Wessex Line (HoWL) links the major centres of Weymouth, Yeovil, Trowbridge, Bath and Bristol. Despite this, its timetable is irregular and infrequent, having changed little in the last three decades. It is, for example, unsuited to commuting into Yeovil from either the north or south. Yet there are no significant obstacles to making a major improvement to the timetable - and even without taking into account the wider economic, social and environmental benefits that would accrue the net cost would be neutral. The new 'Great Western' train operator franchise in 2013 is the ideal opportunity to deliver this enhancement.

The problem:

- The HoWL timetable has remained relatively unchanged for decades, the few changes there have been reflecting external resourcing issues.
- This is in stark contrast to most comparable routes, where there have been significant increases in service frequency and moving to clockface timings.
- Despite being the major town on the route (between Westbury and Weymouth) Yeovil is poorly served. Despite employing 33,000 people, including many from Bristol, Bath and Weymouth, it has no services suitable for commuters.
- Day trips on Sundays outside of Summer are effectively impossible, due to the late start in operations. This goes against changes in modern leisure demands and the national aspiration for a '7 day railway'.
- Whilst current usage has grown faster than average for the region (the credit is in no small part due to the HoW Community Rail Partnership), it is nonetheless lower than that of similar towns and routes where the timetable has improved.

The solution:

- Direct modelling plus a consideration of spin-off benefits indicates that a significant timetable upgrade can be achieved at little or no extra subsidy requirement, and without the need for capital investment in infrastructure.
- This will, however, require extra trainset and traincrew resourcing; but the timetables tested (see next page) are theoretically valid and robust.
- The proposed timetable upgrade brings wider benefits through meeting 4 of the 5 'transport goals' stated by Government for Local Transport Plans, including carbon reduction per rail passenger journey in the medium term.
- To achieve this upgrade it is essential that it is tied into the Greater Western refranchising process, so as to achieve resource balancing and optimisation.

The options:

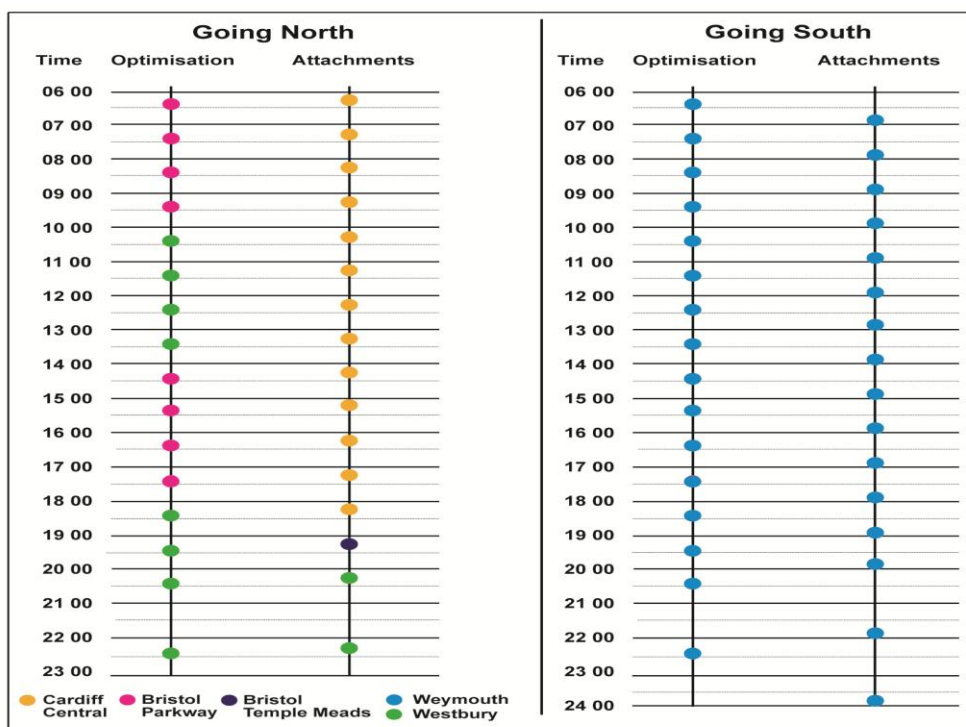
Timetable options for evaluation had to meet the following enhancement criteria:

- A choice of services for commuters to Bristol, Bath, Yeovil and Weymouth (through services by preference).
- A choice of services for taking leisure day trips to these key places from both ends of the line (including on Sundays year round).
- A 'clockface' departure pattern, hourly at peak times and two-hourly off-peak.

Four options were developed. Of the four, option A **Optimisation** and option C **Attachments** require no additional subsidy, and so should be taken forward for detailed consideration. Their description, pros and cons can be summarised as:

- **Optimisation.** This represents the best use of train set resources to meet the varying needs. One extra train set is required, producing 8 extra round trips on weekdays (doubling the current total). A balance is made by providing the basic hourly pattern south of Westbury whilst also maintaining through running to and from Bristol at peak times.
- **Attachments.** This joins most Weymouth services with existing Portsmouth to Cardiff services at Westbury. 2 extra train sets are required, and 8 extra round trips produced. It has the highest cost and highest risk, but provides the greatest increase in revenue, and also generates extra seating capacity between Bristol and Cardiff.

The timetable for Yeovil Pen Mill weekday departures is shown below:



ImageRail provides photography, graphic design and consultancy services to the rail industry. It was formed in 2002 and since 2009 has been based at Kirkby Stephen station on the historic Settle & Carlisle line in Cumbria.

Andrew Griffiths joined ImageRail as a Managing Partner in 2009, with responsibility for consultancy work. He gained a First in Human Geography from Reading University in 1986, where his dissertation 'Modelling rail passenger flows from Gloucester' won the Halford Mackinder Prize. After a spell in academia he ran his own market research consultancy for ten years, before fulfilling a lifelong ambition to work in the rail industry. Andrew became Business Manager Devon & Cornwall for the newly-formed Wessex Trains from 2002 to 2006 and then Regional Manager Severn & Solent for First Great Western from 2006 to 2008. In the former role his achievements included improving the timetables, fares and marketing across the region, the showpiece being the St.Ives branchline, a 'Community Rail' pilot project which achieved a 50% increase in passenger numbers in two years and a doubling of revenue in four years. In the latter role he facilitated the £1m investment by Bristol City Council in the Severn Beach Line, plus the change to the cross-Bristol timetable pattern that delivered a half-hourly service pattern on the Bristol-Westbury corridor.

1. Timetable development and resourcing.

- 1.1 The evolution of the Heart of Wessex Line (HoWL) timetable from 1973 to 2010 is detailed in Appendix 1a. The route in the post-Beeching, post-steam era had 7 weekday services in each direction south of Westbury, at irregular intervals, and with an uneven calling pattern. Summer Saturdays saw an enhanced timetable, still with some through holiday trains to the Midlands, but with fewer intermediate stops. Summer Sundays had a full timetable (apart from at 7 of the smaller stations, which were closed); but in Winter this reduced to one service in each direction, in the evening. Four decades on, and whilst there have been significant improvements in some respects, in many ways the basic timetable has not moved on at all.
- 1.2 In essence, the following changes - and similarities - can be identified:
- The weekday timetable south of Westbury in 2010 is recognisably similar to that of 1973, albeit with timings now being dictated by resourcing issues off route.
 - By contrast, north of Westbury enjoys a much more intensive service, with an half-hourly (almost) clockface pattern contrasting strongly with previous gaps in excess of two hours at (for example) Bradford-on-Avon.
 - HoWL services continue to centre on Bristol, with the occasional through service to Cardiff now being supplanted (except on Sundays) by workings to Gloucester or further north¹.
 - The long-time pattern of most services calling at most stations, creating some large gaps in the timetable at individual stations (probably) for operational reasons, has finally been superseded by a universal all-stations pattern².
 - The standard-interval clockface pattern which has underpinned significant passenger growth on an increasing number of routes (major and minor) remains as elusive on HoWL as ever.
 - Frome has picked up a modest number of extra services north (and east), but more as timetable-specification 'fillers' than plugging the times where there is obvious potential demand.
 - Winter Saturdays used to have the same timetable as weekdays, but this link has been lost - nationally, as has the notion of a year-round timetable.
 - Summer Saturday additional services have shrunk to the single 'sea, sand and cycle' loco-hauled round trip, not enshrined in the Train Operating Company's timetable specification; and long-distance holiday services have disappeared.
 - Summer Sundays enjoyed a relatively good day-long pattern, but the loss of a return trip since the 2006 'Greater Western' timetable specification has imbalanced the pattern and constrained day-trip opportunities.

¹ This being part of the FGW cross-Bristol local service initiative of 2007, providing better links to employment centres across the city region, especially the major employment zone around Filton.

² The loss of a 'fast' (or even a 'semi-fast') on such a long route is not uncommon .

- The Winter Sunday pattern is three services each way, starting in the afternoon, rather than the single evening round trip; but the absence of any morning services for a large part of the year is still archaic, given the radical change in leisure travel on Sundays and the improvements on other routes.
 - However, the smaller stations do now at least have service calls on Sundays.
 - End-to-end journey times have barely changed - and the quickest services have in fact got slower, due to the all-stations calling pattern³.
- 1.3 Privatisation in 1994 did not require the new operators to do anything substantively different from what had gone before, and the PSR (passenger service requirement) built into the 2002 Wessex Trains TOC (train operator company) requirement simply put more detail on what was the existing timetable pattern - see Appendix 1c. The timetable specification from the SRA (Strategic Rail Authority) did at least give the TOC the freedom to exceed the minimum levels if it so wished, and indeed Wessex did make some enhancements notably on Winter Sundays.
- 1.4 The December 2006 timetable change was due to see the implementation of the new timetable specification framework (SLC2) associated with the introduction of the new 'Greater Western' franchise⁴. This was the first such exercise carried by the DfT (Department for Transport), following the abolition of the SRA. It prescribed in considerably more detail the timetable the TOC had to deliver, including maximum as well as minimum service levels. The consultants engaged by the SRA (and whose conclusions were largely adopted by DfT) examined over 100 options for service level changes, those with a clear net financial and/or economic benefit being taken forward for detailed consideration⁵.
- 1.5 The exercise was very thorough, and looked at much more than just cuts - despite the popular perception. In the case of the Bristol region, the "overarching objectives" were as follows:
- "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.
 - 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." (p5)

³ In 1973 the fastest journey from Weymouth to Bristol T.M. took 128 minutes; in 2010 it was 141 minutes.
⁴ Department for Transport (December 2006) *Greater Western Franchise: Service Commitment Level 2*, DfT.
⁵ The Jacobs Consultancy (August 2004) *Greater Western Franchise Replacement: Outline Business Case Report*, SRA; and (November 2004) *Greater Western Franchise Replacement: Bristol and Inter-Regional Detailed Train Service Specification Evaluation, Draft Report*, SRA.

- 1.6 Unfortunately, the rigidity of the modelling and validity of the input data was not sense-checked using local experience, and somewhat strangely for lines outside of the optioneering process the requirement was simply the timetable of a decade before, ignoring any improvements since then - even if cost neutral or generative. The result was widespread furore across the South West, and in many cases changes were made before the December 2006 timetable was implemented.
- 1.7 For HoWL the implications were significant, as the line was earmarked to feel the impact of cuts in trainset resourcing through a reduction of services at peak times. This came about more through the way in which the line was tied in to the proposed new cross-Bristol pattern than being deliberately targeted. Little attention was paid to HoWL directly, beyond deleting all but a single call each way at Thornford and Chetnole (Freshford, Avoncliff, Yetminster and Upwey were also scrutinised for this, but were exempted). The principal problem was that no account was taken on the impact of changed times on local flows on the Westbury-Weymouth part of the route, because this was outside the ability of the modelling. As such the proposed new timetable, despite having the benefit of a two-hourly pattern, was almost universally regarded as a retrograde step.
- 1.8 SLC2 as it affected HoWL (as part of the cross-Bristol) consisted of the specification shown below. For the cross-Bristol package as a whole the forecast outcome was “significantly better” in financial terms and “substantially better” in economic terms⁶:
- Cardiff - Weymouth: 1 train on alternate even hours from 0600 to 2000.
 - Weymouth - Cardiff: 1 train at alternate odd hours from 0509 to 1909.
- 1.9 HoWRP successfully led a campaign lobbying against this, specifically winning the following concessions:
- [M-F] Earlier first arrival at Weymouth, for commuter flow to Weymouth.
 - [M-S] Reinstatement of a second southbound service arriving in Weymouth before noon - one would restrict day-trip opportunities and lead to severe overcrowding.
 - [M-S] Reinstatement of a second southbound service departing Bristol / Bath in late afternoon - one would restrict leisure and commuter flow and lead to severe overcrowding.
 - [M-F] Earlier first departure from Weymouth, to maintain connection at Castle Cary into Paddington service.
 - [M-F] Earlier second departure from Weymouth, for commuter flows to Trowbridge / Bath / Bristol.
 - [M-F] Earlier third departure from Weymouth, for commuter flows to Dorchester / Yeovil.
 - [M-F] Earlier evening peak departure from Weymouth, better for commuter and leisure users.

⁶ Jacobs (November 2004) *op.cit.*, Option BL 7.1.1. through running from Weymouth to Worcester or Taunton instead of Cardiff was also considered, but rejected.

- [M-S] Reinstatement of through working to/from Bristol rather than changing at Westbury (this brought the added benefit of through working beyond Bristol to/from Cardiff).

1.10 The above was achieved without additional resourcing, but the same could not be done for a popular Winter Sunday morning service that Wessex Trains had introduced without subsidy. There were further changes with the Winter 2007 weekday timetable, which had varying impacts for HoWL:

- Bristol - Westbury. Incorporated properly into the 'Cross-Bristol' half-hourly pattern for local services, by replacing a southbound pattern that had seen the hourly 'fast' from Cardiff arrive at Westbury only a few minutes after the 'all stations' from Cardiff, so creating a very unbalanced pattern. This entailed switching of the destination of the 'all-stations' from Cardiff to Gloucester / Cheltenham / Worcester, enhancing through links to the fast-growing northern side of Bristol. Bradford-on-Avon also became a standard stop in the Cardiff-Portsmouth 'fasts', and so had been upgraded from a service pattern with gaps of up to two hours into one of half-hourly frequency. It was also possible to eliminate the remaining two-hour gap at Keynsham.
- Westbury - Weymouth. Because the 'all stations' services from Gloucester headed south from Bristol in a different standard path (xx49, as opposed to xx04 from Cardiff), this precluded the continuation of the same paths south from Westbury. Local flows within Somerset and Dorset thus had again to accommodate a new pattern. Some fine tuning proved possible, but it was still the case that Westbury-Weymouth was entirely reliant for its resourcing on the 'Cross-Bristol' timetable.

1.11 The upshot of all this, and with some subsequent adjustments, was that by 2010 there were still 8 round trips between Bristol and Weymouth, but Frome had added some infill turns, including an extra call in a Paddington - West of England and return service. The spacing of trains was still uneven, with only a vestigial clockface pattern. Despite the changes, the first Weymouth arrival was a familiar 0823 and Bristol at 0806, with the last arrivals of 2309 and 2244 respectively. Three southbound service now started back at Great Malvern and one at Worcester, but northbound none penetrated beyond Gloucester.

1.12 In essence, there is little sign that the HoWL timetable has evolved in any systematic or meaningful way - instead, it has simply responded to external pressures which required retiming. To a degree this is understandable, given its nature as a relatively quiet cross-country route; but it does stand out as unacceptable given the overhaul of many branchline timetables in the past decade.

1.13 Appendix 1b lists in more detail the times of train at Yeovil Pen Mill. As the largest town on the route between Westbury and Weymouth, and thus potentially the largest generator of traffic, it ought to be the focus for the timetable with respect to key commuting and leisure flows. In practice this does not seem to have been the case. The list below shows the nearest times to the ideal 0830 arrival and 1730 departure times for the typical '9 to 5' worker in each direction:

• 1973	south	0729	north	0825	south	1746	north	1654, 1841
• 1980		0700		0753		1802		1802 ^{FX} , 1855
• 1982		0706		0800		1810		1901
• 1986		0752		0755		1800		1759
• 1994		0739		0739		1810		1712*, 1810
• 2002		0739		0739		1805		1804
• 2004		0737		0739		1803		1804
• 2006		0719		0728, 0859		1807		1806
• 2008		0734		0731		1838		1823
• 2010		0735		0730		1821		1823

^{FX} - Fridays excepted; * - high summer only

1.14 It has thus been the case for at least 30 years that a Yeovil employee wishing to travel from Weymouth/Dorchester or Westbury/Frome would have a long wait both before and after work. In consequence only the most dedicated are likely to have persevered with commuting by rail. Leisure flows, being more flexible, are better served, but 3-hour gaps in the timetable are unlikely to have encouraged the casual traveller or tempted people out of their car.

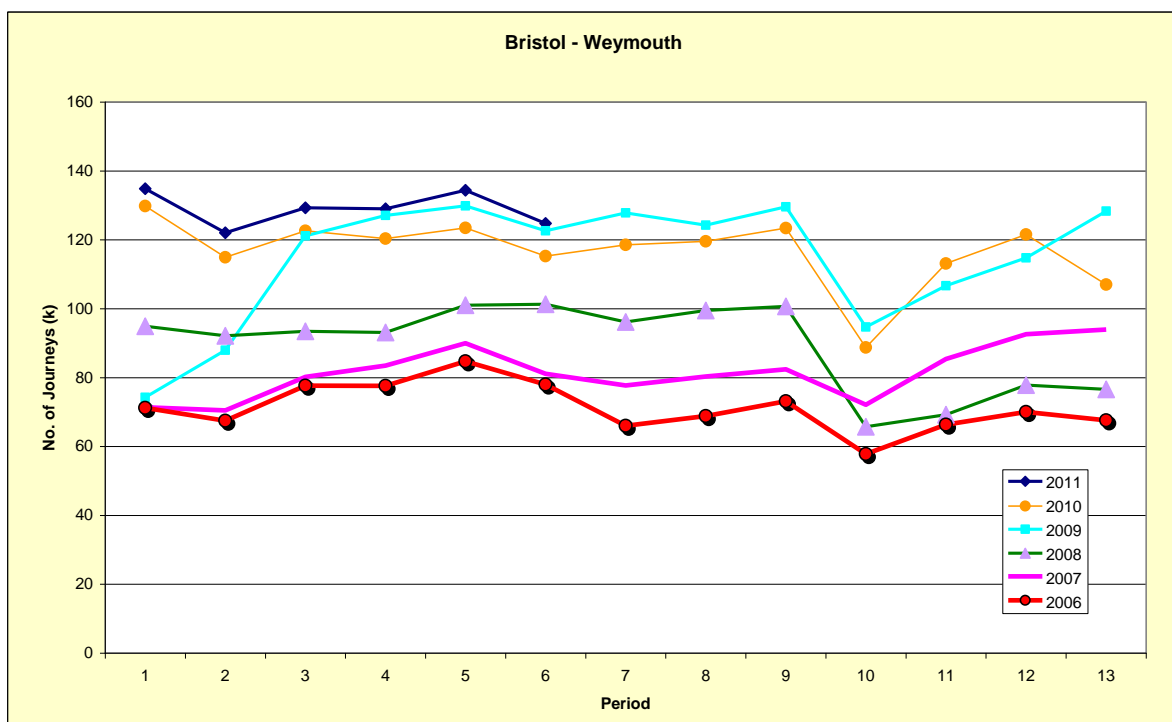
1.15 The conclusion has to be that the timetable has not developed to keep pace with changing patterns of work or leisure demand, and as such this represents a significant missed opportunity.

2. Service loadings.

2.1 **Journeys.** The Bristol - Weymouth route has seen strong growth in passenger numbers this century. Partly this reflects the national trend of increasing rail usage, to the point where the thirty-year decline to the 1990s has been more than countered. However, it is not straightforward to calculate the differential effect for HoWL with respect to other lines, for a variety of reasons. On the one hand, many routes have seen a dramatic rise in the number of services - Plymouth to Penzance, for example, has more than doubled in frequency since the mid 1970s. Bristol city region frequencies have also improved, and the number and timing of services on the Bristol - Westbury part of HoWL significantly impacts on the number of journeys assigned to HoWL⁷.

2.2 The graph below illustrates the rising trend of journey numbers (see also the Tables in Appendix 2). In the year 2002/03 708k journeys were credited to the route; this grew 8.2% and 3.8% over the next two years, then jumped by 16.8% to 927k in 2005/06 and a further 14.5% to break the one million mark in 2006/07. Growth was 9.5% the following year and fully 28.2% in 2008/09, before easing to 2% in 2009/10, the total being 1,518k journeys. This represents more than doubling (+115%) over 7 years: an impressive result by any standard.

Number of journeys on HoWL, 2006/07 to 2010/11⁸.



⁷ A journey from Bath to Trowbridge, for example, could be undertaken on a FGW Bristol - Westbury / Weymouth 'stopper', a FGW Cardiff - Portsmouth 'semi-fast' or a SWT Bristol - Waterloo service. The total journeys are divided between the types depending on the number of services, the number of carriages and the timing (if there are two departures per hour at xx25 and xx30, the former would be allocated the majority of trips).

⁸ Source: LENNON ticket data provided by FGW. Horizontal scale is 4-weekly rail period starting April.

- 2.3 The data for the Spring and Summer of 2010 indicate that despite the recession and a national slowdown in rail travel this growth is continuing, the total being up 6.7% on the same timespan in the previous year.
- 2.4 This is a real success story by any standards. However, the picture is not entirely straightforward, and the sharp downward movement in December 2007 and upward movement in May 2008, for example, probably are a reflection more of changing allocations between service groups more than real changes in numbers of passengers⁹.
- 2.5 Looking at the Bristol region picture as a whole for the past 7 years, HoWL ranks third out of the seven routes in the rate of growth. Top is Bristol - Gloucester / Worcester / Great Malvern, a route affected in a large way by the rise in Wessex / FGW services (especially to Malvern) and decline in those from other operators (especially the deletion of most Gloucester calls by Cross Country). Both Bristol - Cardiff and Bristol - Weymouth appear to have benefited significantly at the expense of Cardiff - Portsmouth, although again the increase of SWT services south of Salisbury and Southern east of Southampton complicate the position. It is beyond the scope of the analysis here to untangle this web.
- 2.6 What matters most from the perspective of service development on HoWL is the change in the number of journeys made south of Westbury. North of Westbury, the half-hourly clockface can be taken as a satisfactory position, i.e. maximising the potential for journey creation. This is best addressed by examining flows (ticket issues between specific stations) and footfall (ticket origin and destination totals for a specific station).
- 2.7 **Flows.** Back in 2003/04, when local services across the region were operated by Wessex Trains, an analysis of all station-to-station flows was undertaken. In terms of the value generated, the Cardiff - Bristol - Bath route dominated the rankings, but with Trowbridge - Bath Spa in 6th position and Trowbridge - Bristol Temple Meads in 17th. Five other flows in the Bristol - Westbury half of HoWL were in the top 50, but the Westbury - Weymouth half is notable by its lowly showing. Highest position was Bristol - Weymouth, which despite the long distance only ranked 49th, with a value of £87k from 14k journeys. Next was Yeovil - Weymouth in 70th (£63k from 25k journeys); then Yeovil - Bristol TM in 88th (£49k from 8k journeys); Frome - Bristol in 90th (£48k from 12k journeys); and Weymouth - Bristol TM in 96th (£44k from 6k journeys). Thus even for a local train operator, it is fair to say that south of Westbury was not in the top rank of importance.
- 2.8 Coming up to date, Appendix Table 2f shows the flows in terms of numbers journeys between stations in the Westbury - Weymouth corridor. These total 113k, only around 5% of the total credited to the route as a whole¹⁰ (the remainder are to / from destinations Westbury - Bristol or elsewhere on the network).

⁹ This is even more clear in allocations of services on the Cardiff -Bristol and Filton - Bath routes. Plus even slight changes in timings can have significant impacts on the numbers per service group.

¹⁰ After excluding double counting, i.e. a Yeovil-Yetminster return would appear as two journeys for both stations.

- 2.9 The dominant flow by a large margin is Yeovil Pen Mill to Weymouth, accounting for 22% of the internal total. Weymouth to Dorchester (West or South), Frome to Weymouth and Weymouth to Yeovil PM are all in the 7-8% range, and so these four flows alone account for not far short of a half (44%) of the total. When two-way flows are considered (i.e. Chetnole to Thornford plus Thornford to Chetnole), then the dominance of Weymouth / Yeovil is increased (29%), ahead of Dorchester / Weymouth and Frome / Weymouth (8-9% range), and Dorchester / Yeovil and Dorchester / Maiden Newton (5-6% range). The top 10 two-way flows account for three quarters (75%) of the total.
- 2.10 One notable aspect of the pattern of internal flows is that only Dorchester and Weymouth are more attractive as a destination as opposed to an origin of trips - by a factor of almost 3 to 1¹¹. By contrast, the other 10 stations on the route are all much more important as originators of traffic rather than acting as a magnet for trips from elsewhere.
- 2.11 Table 2g illustrates the total flows between each of the stations on the Westbury - Weymouth part of the HoWL route and any other destination. Those accounting for more than 5% of the total at each station are as follows:
- **Westbury:** to Bath (15%), to London (9%); to Bristol (7%); to Trowbridge (6%); from London (5%).
 - **Frome.** To Bristol (13%); to Bath (10%); to Weymouth (7%); to London (7%); to Trowbridge (5%).
 - **Bruton.** To Bath (15%); to Yeovil (14%); to Bristol (10%); from Bristol (5%); from Bath (5%); to Weymouth (5%).
 - **Castle Cary.** To London (27%); from London (15%); to London with Underground (6%).
 - **Yeovil Pen Mill.** To Weymouth (23%); to Bath (9%); to Bristol (8%); from Weymouth (8%).
 - **Thornford.** To Yeovil (20%); to Bath (18%); to Dorchester (16%); to Weymouth (13%); from Yeovil (7%); from Dorchester (5%); to Bristol (5%).
 - **Yetminster.** To Weymouth (22%); to Bath (15%); to Dorchester (15%); to Yeovil (8%); from Yeovil (8%).
 - **Chetnole.** To Dorchester (24%); to Yeovil (16%); to Weymouth (13%); to bath (8%); from Yeovil (7%).
 - **Maiden Newton.** To Weymouth (23%); to Dorchester (23%); to Bath (10%); from Dorchester (8%); from Weymouth (6%); to Yeovil (6%).
 - **Dorchester (West).** From Weymouth (19%); to Weymouth (11%); from Maiden Newton (9%); to Bristol (8%); to Yeovil (7%); from Yeovil (7%).
 - **Upwey.** To Dorchester (25%); to Weymouth (10%); to Bath (9%); to Yeovil (8%); from Weymouth (6%); to Bristol (6%).

¹¹ A day return ticket purchased from Yetminster to Yeovil PM and back counts as two 'origin' trips for Yetminster and two 'destination' trips for Yeovil. If the overall origin and destination totals for a station were roughly equal it would indicate that it generates as much traffic as it receives.

- **Weymouth.** From Yeovil (15%); from Bristol (7%); to Dorchester (5%); from Frome (5%).

2.12 From the above it can be seen that Castle Cary is dominated by London flows, and Westbury also has a significant long-distance 'hub' function, but the other stations are dominated by on-route flows. Unsurprisingly those at the Northern end tend to look towards Bath and Bristol, while those at the southern end look more to Dorchester and Weymouth. The most important groups of flows are, in order:

- To Weymouth, mainly from Yeovil (30k), but also with significant volumes from Bristol (12k) and Frome (10k), plus Swindon, Trowbridge and Bath (8-9k each). There is a strong seasonal element to this, implying that these trips are primarily for outdoor (seaside) leisure purposes.
- To Bristol and Bath, mainly from Frome (20k & 15k respectively) and Yeovil (11 & 10k), these being of a less seasonal nature, and so more likely to be work and indoor leisure (shopping) related¹².
- To Yeovil, and a lesser extent Dorchester, acting as 'market town' attractors, notably from Weymouth (10k in each case¹³). However, it is notable that the volumes are much lower than for the other two groups of flows.

2.13 The impression of a route where the potential for internal flows is not being fully realised is backed up when the proportion of internal (Westbury - Weymouth) to external (from other origins or to other destinations) is addressed, as per the data in Appendix Table 2h. A mere 3% of traffic at Westbury is internal, and at Castle Cary the figure is 5%. Frome is also heavily focussed outside of the Westbury - Weymouth corridor (16% internal), whereas at Yeovil the ratio is almost equal (48% internal), and at the halts a majority of flows are internal.

2.14 **Footfall.** This indicates the number of passengers using a station. What is not often appreciated is how this translates to the numbers of tickets issued and the value of those tickets. Analysis of data from 2003/04 (Table 2c) shows just how far down the league table HoWL stations fell. Yeovil Pen Mill and Frome combined generated less value of sales than the much smaller town of Bradford-on-Avon, and less than a third of the total at Westbury. Indeed, Cheltenham Spa station was no less than 20 times more important to Wessex Trains than Frome in terms of sales - a strong implicit indictment of the train service.

2.15 A very similar picture is painted with regard to the value of flows to and from a specific station (Appendix Table 2d). Excluding Castle Cary, with its London-centric flows, the 7 stations from Frome to Maiden Newton had a combined footfall of 231k and revenue of £1.1m. This is less than the Wiltshire town of Warminster, only served by hourly Cardiff - Portsmouth trains, with a footfall of 294k and revenue of £1.7m; and barely a half that delivered by the small seaside resort of Exmouth in Devon (but which has a half-hourly service), with 680k footfall and £2.1m revenue.

¹² NB that at 60k the Westbury - Bath flow eclipses all of that from HoWL stations south of there combined.

¹³ The Weymouth - Dorchester flows is likely to be mainly focussed on Dorchester South, and thus outwith the scope of the HoWL analysis.

- 2.16 Nevertheless, growth in footfall at HoWL stations has been strong over the last 8 years (Appendix Table 2e) - but not as strong as the route journeys total discussed previously. However, it does strip out the service group allocations issue, and allows a clearer comparison between stations north and south of Westbury, with their contrasting timetable development.
- 2.17 Between 2001/02 and 2009/10, footfall at Keynsham rose by 89%, and on the line from Westbury northwards only Trowbridge (at +52%) failed to exceed 60% growth. Frome was at the lower end of this range (+55%), with Yeovil (+32%) Dorchester (+23%) and Weymouth (+25%) some way adrift, and Maiden Newton barely growing at all (+5%).
- 2.18 The bulk of growth has been in the last 4 years (2005/07 to 2009/10), with Bradford-on-Avon leading the way at 51% growth. The halts of Freshford, Avoncliff and Bruton are not far behind (albeit from a much lower baseline), with the slowest growth being recorded at Yeovil Pen Mill (17% - although still greater than the 9% at Yeovil Junction on the SWT route to Waterloo).
- 2.19 **Loadings.** FGW declined to release service loadings data, but fortunately HoWRP and Local Authorities along the route have been taking robust snapshots of usage for a number of years. The TOC is not obliged to monitor or report on overcrowding as a franchise obligation - it only becomes apparent where delays are caused or through complaints received. From a financial standpoint there is no incentive for the train operator to cater for spikes in demand, as the cost of keeping standby resource (or hiring it in) is not covered by the extra farebox revenue. A classic example is the large numbers of people who want a day at the seaside in Weymouth, but only if it is hot and sunny. Monitoring of the busier services by HoWRP directly led to the reinstatement of the 'Sun, Sea and Cycle' loco-hauled set on summer Saturdays in 2008 to cater for this unpredictable surge in demand.
- 2.20 Appendix 3 (Table 3a) summarises the findings from the August 2010 survey. Indifferent weather meant that the 'bucket and spade' market was partly deterred from travelling, and so while not capturing the extremes of demand, it does show a more typical picture that could be expected from Spring through to Autumn. Key points to note on weekdays are:
- From Bristol, all but the last service (2049 departure) required a 2-car formation. Commuting from Bristol and Bath meant that the 1649 and 1749 departures needed to be 4-car formations as far as Westbury.
 - The 0840 and 0948 departures needed to be 3- and 2-car respectively from Westbury, for leisure traffic to Weymouth. The other 6 arrivals at Weymouth only required a 1-car set.
 - Return from Weymouth is strongly focussed on the 1730 (3-car) and 1508 (2-car) departures, although Yeovil boarders meant two others also need to be 2-car.
 - However, the lightly-loaded 0533, 0640 and 0850 departures all serve commuter traffic and needed a 3-car set from Westbury to Bath / Bristol.

- 2.21 On Saturdays the picture is similar, except that the leisure flow to Weymouth is stronger and later in returning north, and the early commuter flow to Bath and Bristol is replaced by a slightly later leisure flow. Although on the date surveyed no service needed to be more than 4-car, the nature of the class 150/153/158 rolling stock makes high-density loadings over long distances an uncomfortable travel experience, especially without (working) air conditioning. The family car can unsurprisingly be viewed as a more attractive proposition, congestion and parking problems notwithstanding.
- 2.22 On Sundays 2- and 3-car formations sufficed for different legs of each service, apart from the last trip in each direction when a 1-car was adequate throughout.
- 2.23 From the above summary it is clear that HoWL services are a combination of quite distinct market elements. The tidal flows north and south do not match in terms of capacity requirements, making resource allocation problematic and potentially inefficient - a significant obstacle to timetable reform.
- 2.24 **Conclusions.** It is undeniable that HoWL has performed well in terms of growth - as well as, if not better than, average for the region. However, what makes this remarkable is that unlike many other routes there has been no dividend from timetable improvements. It also must be remembered that the route has a relatively low baseline usage, the assumption being that this is less than the population and attractions of the destinations would warrant. In turn the unattractive timetable, with its three-hour gaps, is assumed to be the key inhibitor to realising the full potential.
- 2.25 The Heart of Wessex Rail Partnership (HoWRP) has played an important role in this success. It has exemplified the 'Community Rail' approach to rural service development, long before this was enshrined as Government policy in 2005. Recent research by ACoRP¹⁴ has shown that for every £1 invested in Community Rail Partnerships (CRPs) over £4 of benefit is generated, through the activities of community engagement, PR & marketing, and indirectly through facilitating station improvements. Furthermore, nationally the volunteering that CRPs have fostered has a value of between £7-28m¹⁵.
- 2.26 It is impossible to quantify the financial impact of HoWRP on station footfall and journeys, but nonetheless the value of branding of the line plus the subsequent raising of awareness must be very significant.

¹⁴ Transport Regeneration Ltd (June 2008), *The Value of Community Rail Partnerships*, Association of Community Rail Partnerships (ACoRP).

¹⁵ Independent Rail Consultancy Group (July 2009), *Making a Difference: The Value of Community Rail Volunteering*, ACoRP.

3. Timetable comparisons with elsewhere.

- 3.1 Two salient comparisons of service enhancements in the South West involve Falmouth and Barnstaple, both towns of a similar size to Yeovil. The Severn Beach branch in Bristol, although very different in nature to HoWL (being urban and short-distance), is also instructive of the difference that a more frequent, more attractive timetable can make. So too are the St.Ives and Newquay branches in Cornwall, both of which are even more tourism-reliant than HoWL. Finally, the Exmouth branch in Devon can be regarded as a smaller version of HoWL - but which generates many more journeys per head of population.
- 3.2 **Falmouth.** The 'Maritime Line' (Truro - Falmouth) has seen strong growth from 185k journeys in 2001 to 478k in 2010 (+158%)¹⁶. The bulk of this (+68% 2008-2010) came as a result of the Cornwall County Council scheme (with EU funding) to create a loop in 2009 at Penryn, the half-way point on the 12 mile branch, to facilitate a more frequent and clockface service. Indeed, the January 2011 total was almost double the January 2009 one, and three times the 2004 total. Frequency rose from a longstanding quantum of 12 on weekdays to 29 as a result of the investment.
- 3.3 **Barnstaple.** The 39-mile 'Tarka Line' (Exeter - Barnstaple) has not benefited from infrastructure upgrades, and in fact the frequency enhancement has been at the expense of journey times, due to the location of crossing places. In 2001 199k journeys were made on the branch, rising to 447k in 2009 (+124%). Much of this has come in the last four years, growth being +48% 2007-10. This is despite the introduction of inferior rolling stock (cl.142 'pacers' vice class 150 'sprinters'), but down to plugging gaps to make a roughly hourly service, plus providing a service on Sunday mornings throughout the year. The weekday quantum has risen from 11 in 2007 to 14 in 2010.
- 3.4 **Severn Beach.** In 2008 Bristol City Council invested £1m over 3 years to improve stations on this 9-mile line (Bristol - Avonmouth), and also to fund an extra train unit and crews. This enabled a rise from a weekday frequency of 14 to 24 (on the inner section from Avonmouth). The result has been growth from 313k journeys in 2001/02 to 674k journeys in 2009/10 (+115%), of which the bulk follows the service and stations upgrade: +60% in the last two years. April - September 2010 saw more journeys made than in the whole of 2003/04, this on a line where seasonality is negligible.
- 3.5 **St.Ives.** By contrast, the 'St.Ives Bay Line' (St.Erth - St.Ives) is 20 times busier in high summer than in winter, being used overwhelmingly for leisure trips to the seaside resort. A modest stations and marketing investment was implemented in 2004 together with a revamp of the timetable on this short (4-mile) branch. The quantum of 23 services on an irregular pattern rose to 28 services on a half-hourly clockface for most of the day (this being done without any increase in train-unit or crew resourcing). A simplified ticketing structure was also introduced. The result was a 52% rise in journeys in two years, and a doubling of revenue inside four years.

¹⁶

Source: LENNON ticket data provided by FGW (applies to all examples in 3.2 to 3.7).

- 3.6 **Newquay.** A seaside resort of a similar size and profile to Weymouth, Newquay is served by the 21-mile 'Atlantic Coast Line' (Par - Newquay). There are still a handful of long-distance 'holiday' trains, but the local service has for long been worse than that provided on HoWL. Until 2008 the weekday quantum outside of high summer was just 4, but an increase to 7 has helped the footfall at the intermediate stations more than double in two years (Bugle, for example, rose by 137%, albeit from a very low base)¹⁷.
- 3.7 **Exmouth.** Another interesting insight from a Westcountry branchline is that of the 'Avocet Line' (Exeter - Exmouth). It is 11 miles long and only serves intermediate villages plus the town of Exmouth itself, which is both a dormitory for workers in the city of Exeter and a seaside destination its own right. Its population of 33k makes it comparable to Yeovil and Trowbridge, but despite this the line netted 1,130k journeys in 2010. Of course, proximity to Exeter is a key factor, but so too is the half-hourly clockface timetable that has been in place for over a decade.
- 3.8 PDFH (Passenger Demand Forecasting Handbook - the 'toolkit' for predicting change in rail patronage resulting from different service levels) is weak when examining usage changes of branchlines and lightly used cross-country routes, and Exmouth is a good example where the level of traffic greatly exceeds what the basic model can be expected to predict. However, on a simple level it can be expected that usage is proportional to population¹⁸ (expressed as footfall) and service frequency (on weekdays). For towns in the region the figures are:
- | | | | | | | |
|----------------------------|----------------|----|----------|-----|--------------|------|
| • Yeovil ¹⁹ | Population (k) | 38 | Services | 60 | Footfall (k) | 327 |
| • Dorchester ²⁰ | | 18 | | 78 | | 543 |
| • Weymouth | | 53 | | 78 | | 747 |
| • Frome | | 26 | | 26 | | 121 |
| • Trowbridge | | 35 | | 84 | | 652 |
| • Bradford-on-Avon | | 11 | | 78 | | 378 |
| • Chippenham | | 28 | | 68 | | 1517 |
| • Salisbury | | 50 | | 116 | | 1758 |
| • Honiton | | 12 | | 38 | | 293 |
| • Weston-super-Mare | | 72 | | 86 | | 936 |
| • Exmouth | | 33 | | 62 | | 723 |
| • Barnstaple | | 21 | | 28 | | 303 |
| • Newton Abbot | | 24 | | 110 | | 941 |
| • St.Austell | | 23 | | 46 | | 395 |
| • Truro | | 17 | | 106 | | 1042 |
| • Falmouth ²¹ | | 22 | | 58 | | 233 |

¹⁷ Newquay itself only rose by 17% in the same timeframe, but experienced a poor tourist season in 2009.

¹⁸ Source: ONS 2001 Census. See Appendix 4b for analysis of ward-level data of station catchment areas.

¹⁹ Yeovil Pen Mill and Yeovil Junction combined.

²⁰ Dorchester West and Dorchester South combined.

3.9 The above shows that there is indeed evidence a clear underlying relationship between population, service frequency and footfall. Of the 16 towns shown in the table it can be seen that Yeovil, even allowing for its two stations, is about the same size as Chippenham and with only 8 fewer services, but generates only 22% the patronage. Newton Abbot is roughly the same size as Frome, but has four times the number of train services, and eight times the number of passengers. Indeed, Bradford-on-Avon highlights the poor performance of nearby Frome - half the population, three times the number of services, and comfortably more than three times the number of passengers

3.10 The difference in service pattern and speed is demonstrated with the national cross-country route comparisons shown below. HoWL is significantly slower, with significantly fewer services:

• Aberdeen - Inverness	108 miles	47 mph avg.speed	22 services
• Cambridge - Norwich	67	51	34
• Cardiff - Crewe	140	52	36
• Bristol - Weymouth	87	35	16

3.11 Similarly, an examination of similar routes (selected on the basis of being cross-country linking significant towns or cities) underlines the poor position of HoWL with respect to provision of at least an hourly weekday service pattern²²:

• Reading - Redhill	46 miles	Yes (half hourly 0434 - 2334)
• Sheffield - Huddersfield	37	Yes (hourly 0536 - 2241)
• Scarborough - York	42	Yes (hourly 0630 - 2207)
• Bridlington - Hull	31	Yes (hourly 0646 - 2240)
• Newcastle - Middlesbrough	47	Yes (hourly 0700 - 2245)
• Newcastle - Carlisle	62	Yes (hourly 0654 - 2122)
• Crewe - Derby	66	Yes (hourly 0607 - 2045)
• Nottingham - Skegness	80	Yes (hourly 0550 - 1845)
• Norwich - Sheringham	30	Yes (hourly 0520 - 2245)
• Hereford - Birmingham	54	Yes (hourly 0535 - 2130)
• Crewe - Cardiff	140	Yes (hourly 0454 - 2212)
• Swansea - West Wales	74	Yes (hourly 0550 - 2345)
• Blackpool - Colne	50	Yes (hourly 0542 - 2200)
• Clitheroe - Manchester	34	Yes (hourly 0707 - 2240)
• Barrow - Preston	55	Yes (hourly 0531 - 2143)
• Cambridge - Ipswich	54	Yes (hourly 0641 - 2243)
• Cambridge - Norwich	67	Yes (hourly 0605 - 2255)
• Aberdeen - Inverness	108	No (11 trains 0621 - 2155)

²¹ Falmouth Town and Falmouth Docks combined.

²² Source: National Rail Timetable, June 2009.

- Bristol - Weymouth 87 No (8 trains 0544 - 2049)
- Leeds - Carlisle 113 No (6 trains 0849 - 1756)

3.12 Not only does HoWL rank 19th out of the 20 routes in terms of frequency, it also has the second-earliest finish to through services. What is arguably as important as frequency is that most of the other routes work to a clockface pattern for the major part of the day.

3.13 The rail industry has, in some instances, been slow to embrace the concept of clockfacing, often citing practical pathing issues. However, if the 'Valley Lines' network focussing on Cardiff Central, which still sees considerable freight movements in addition to the passenger services, can be rewritten to an entirely clockface timetable with exceptional success in terms of both patronage and service reliability, then it is hard to see why the HoWL route should be regarded as too difficult a proposition.

4. Stated demand for improvement.

- 4.1 A key element in verifying the need for an enhanced timetable on the HoWL route is providing evidence of demand. The standard modelling technique (Section 8) uses the standard methodology for predicting change in the number of journeys, but is a somewhat crude tool that is inflexible to local issues. Ideally a professional survey of both users and potential users, stratified by type (such as socio-economic group and current travel behaviour) is required.
- 4.2 In lieu of this, a questionnaire was administered to a small group of stakeholders connected with the line, being those known to the HoWRP. The responses (12 in all) are not meant to give robust quantitative data, but rather to provide a valuable qualitative insight into the views of those most closely associated with the line. This was carried out by email in November 2010. The questionnaire form is shown in Appendix 5a, and the results plus comments in Appendix 5b.
- 4.3 The first aspect asked about was if there were any perceived weaknesses of the current timetable in terms of journey options and meeting local travel needs. All respondents felt that there were weaknesses, with lack of frequency (both the large gaps on weekdays and absence of a winter Sunday morning service) repeatedly raised, along with the inadequacy of commuting services for Yeovil. Overcrowding was the only other weakness spontaneously raised by more than one respondent.
- 4.4 Next, potential improvements to the timetable were enquired about. Again frequency and timings were most mentioned (8 people), together with capacity (3 people). The need for a timetable that would work for commuting to and from Yeovil was a specific need.
- 4.5 This area of enquiry was taken a stage further by asking respondents to score on a scale of 0 (irrelevant) to 10 (essential) a total of ten issues. All were scored 10 by at least one respondent. Of these issues, and arguably somewhat counter to the previous comments, the one with the highest average (9.4 out of 10) was the reliability of the train service. Next came a more frequent weekday service (9.0), ahead of services geared around key commuting times (8.6). Next came all services to call at all stations (8.2), then good connections for London and the Westcountry (7.7). Relatively less significant, but nonetheless still highly important to a majority of respondents, were services on a standard pattern or clockface timings (7.4), a Sunday morning service year-round (7.1), and comfort and quality of the rolling stock (7.0). The only two issues to score less than 7 out of 10 on average were speed of journey and a special 'bucket & spade' summer service to Weymouth (both 6.6).
- 4.6 Other issues raised here were the need for greater capacity for people and for cycles, later last services, and information screens.
- 4.7 Views were then sought on the potentially contentious subject of whether fewer through journeys (Weymouth to Bristol) was an acceptable trade-off for having a more frequent service pattern south of Westbury (i.e. having to change onto a Westbury-Bristol service). In the event, all bar one of the respondents were

supportive, although many qualified this with concern that connection times must not - in theory or in practice - be offputtingly long. It was recognised that the 'average' traveller might not take this wider, enlightened view if it inconvenienced them personally.

- 4.8 Identifying important trends that might affect demand was the final question, the intention being to catch any issues that may not otherwise have been picked up. Little in the way of specifics were raised, the two main themes being the 2012 Olympics and the growth of Yeovil. Housing at Bruton was also raised, as was the potential increase in public transport requirements from the younger people staying higher education for longer.
- 4.9 It is fair to say that the survey did not produce any unexpected results, but it was nonetheless valuable in confirming the widely-held views of the problems with the current timetable. A sense of frustration was evident, in particular that the development of Yeovil was potentially being impeded by the lack of an adequate rail service pattern on what should be an important north-south transport corridor.
- 4.10 This message is reinforced by the existence of the 'Yeovil Rail Study Group', set up in 2009 with the aim "To build the argument for an improved rail service to Yeovil on the Bristol to Weymouth rail route, specifically addressing the lack of any viable services from either direction for commuting for employment and education"²³. The group is a mix of private and public sector organisations, the founding members being:
- Augusta Westland
 - Heart of Wessex Rail Partnership
 - South Somerset District Council
 - Yeovil Chamber of Commerce
 - Yeovil College
 - Yeovil District Hospital
- 4.11 A scoping study was initiated including four other major employers (Honeywell, NHS PCT, SSVCA and Yarlington Housing Association). These organisations represent around a quarter of employment in Yeovil, and have pledged to work together to improve access links from their sites to Pen Mill station. It was estimated that the total rail catchment of workers and students coming into the town was in the order of 3,000. Even a 1% penetration rate (i.e. the proportion who would in practice use an enhanced rail service) would make a significant impact, both on rail loadings and alleviating road congestion.
- 4.12 The above analysis makes it clear that there is a strong sense of dissatisfaction with the current service on the HoW route, and a widespread belief that there is considerable latent demand for increased use of the line, especially with regard to accessing Yeovil.

²³ Catherine Phillips (October 2010), *Yeovil Rail Study and Travel Planning*, HoWRP (unpublished).

5. Theoretical demand for improvement.

- 5.1 Rail demand is calculated using PDFH - the Passenger Demand Forecasting Handbook. Its techniques are relatively crude, and not tailored for regional or local circumstances. Specifically, the following aspects are not explicitly or adequately addressed by PDFH:
- Modal shift, from car and bus.
 - Frustrated resident demand , i.e. people unable to use existing modes.
 - Latent tourist demand, e.g. for seaside or countryside visits.
 - Demand from new developments, e.g. Yeovil housing expansion.
 - Unlocked development potential, i.e. due to existing transport constraints.
 - Policy changes, e.g. parking availability.
- 5.2 Systematic calibration is beyond the scope of this report, and would depend on the availability of additional data streams, such as:
- Census journey-to-work trip matrices.
 - Modal choice stated preference surveys.
 - Identification of target markets, through user and non-user surveys.
 - Traffic counts and congestion indices.
 - School catchment area and trip data.
 - Other modelling techniques, e.g. National Trip End Model.
- 5.3 At a broad scale, HoWL ought to have greater potential than an 'average' route due to three main factors:.
- The line links six strategically significant cities and market towns (SSCTs)²⁴, on a corridor largely lacking in fast dual-carriageway roads.
 - Yeovil as a regional centre does not have any services suitable for commuters.
 - Northbound shopping / cultural tourism flows and southbound seaside tourism flows are poorly catered for in terms of peak demand.
- 5.4 A comparison of rail distance versus road distance between all stations on the route is shown in Appendix 4a. There is a clear advantage in favour of rail (assuming equal average speed²⁵) between Bristol and Bradford-on-Avon / Trowbridge, and between Westbury and Frome / Castle Cary / Yeovil. A number of internal flows within Dorset and north of Westbury provide a small bias towards rail, but most longer distance flows (especially to Bath and Bristol) favour car. The relatively slow journey times, partly a function of the large number of station calls, does not assist competitive advantage.

²⁴ As defined in the erstwhile Regional Spatial strategy, see Appendix 4c. There are 21 in the SW region, and a through train from Weymouth to Cheltenham links no less than 8 of them.

²⁵ Rail end-to-end- average speed is 35mph, and the road network lacks much dual carriageway.

- 5.5 With the exception of Bristol, the urban settlements on the route are not city-scale, and so do not suffer from the extreme levels of congestion to justify major investment in public transport infrastructure (e.g. tram schemes). This is likely also to be reflected in higher car ownership rates. The catchment population of Bath is around 90k, Weymouth 50k, and Trowbridge, Frome, Yeovil and Dorchester each at the 30k level (Appendix 4b). These figures are not essentially great enough to generate very large volumes of traffic between them, as simple gravity modelling would show. Nonetheless, they do represent a far higher potential travel demand than a train service of 8 per day would indicate.
- 5.6 This becomes a ‘catch 22’ situation with regard to Network Rail’s own analysis of the infrastructure investment cost which would justify each extra minute of journey time saving (Appendix 4d). The low service level and thus relatively low usage means that NR does not consider major infrastructure investment on the line to be the most effective use of its limited resources. Therefore Paddington - Reading tops the list of 26 routes by a wide margin, at £129m. 15th is Bristol - Westbury, at £7m, while Castle Cary - Dorchester is third from bottom, at £1m.
- 5.7 However, the HoWL centres mentioned in paragraph 5.5. above are (apart from Frome) all designated as SSCTs, and although the regional planning status of the definition may have been lost, it is unlikely that the planned growth quotas for these locations will be significantly reduced. Over a 15-year horizon Yeovil is indicated to receive an increase of roughly 9k jobs, 6k dwellings and 12k population (Appendix 4c), plus the possible development of an ‘eco town’. Weymouth, Dorchester and Trowbridge have levels only slightly lower. Transport is arguably still a poor relation in regional development terms, but it is self-evident that significant growth in jobs and homes will require additional capacity on all inter- as well as intra-urban transport modes.
- 5.8 A key factor in determining the uptake of an improved timetable will be the co-operation of major employers and education establishments, particularly in Yeovil, the major employment centre on the route. There is already active participation by key players in the Yeovil Rail Study Group, and one such establishment has made its employee postcodes available for catchment area analysis. Of the over 3,000 people involved, the breakdown by postcode area is shown below, with the much finer scale of postcode sectors shown in Appendix 5c.

• POSTCODE AREA	NUMBER	%
• Bath (BA)	2016	55.5
• Taunton (TA)	810	22.3
• Dorchester (DT)	447	12.3
• Bristol (BS)	62	1.7
• Salisbury (SA)	45	1.2
• Exeter (EX)	43	1.2
• Truro (TR)	29	0.8
• Others	177	4.9

5.9 The data is also mapped over the following three pages to show how the catchment areas of HoWL stations intersects with the residence locations of these people. In essence, although the spread of residences is wide, more than half (55%) are concentrated within the Bath postcode area, and nine tenths (90%) in the Bath / Taunton / Dorchester areas. By postcode sector, the greater density of residences is to the west rather than the east of Yeovil, with over a third (37%) living within 3 miles of the site itself in the four sectors covering the town (BA20 2, BA21 3/4/5).

5.10 As far as potential rail access is concerned²⁶, Thornford / Yetminster / Chetnole do feature in a significant concentration of residences, with Maiden Newton, Dorchester West, Weymouth and Castle Cary at a much lower level. The numbers of people are shown below. It does not, of course, follow, that they all have easy access to the respective stations, or even if they do are amenable to using rail to get to the site:

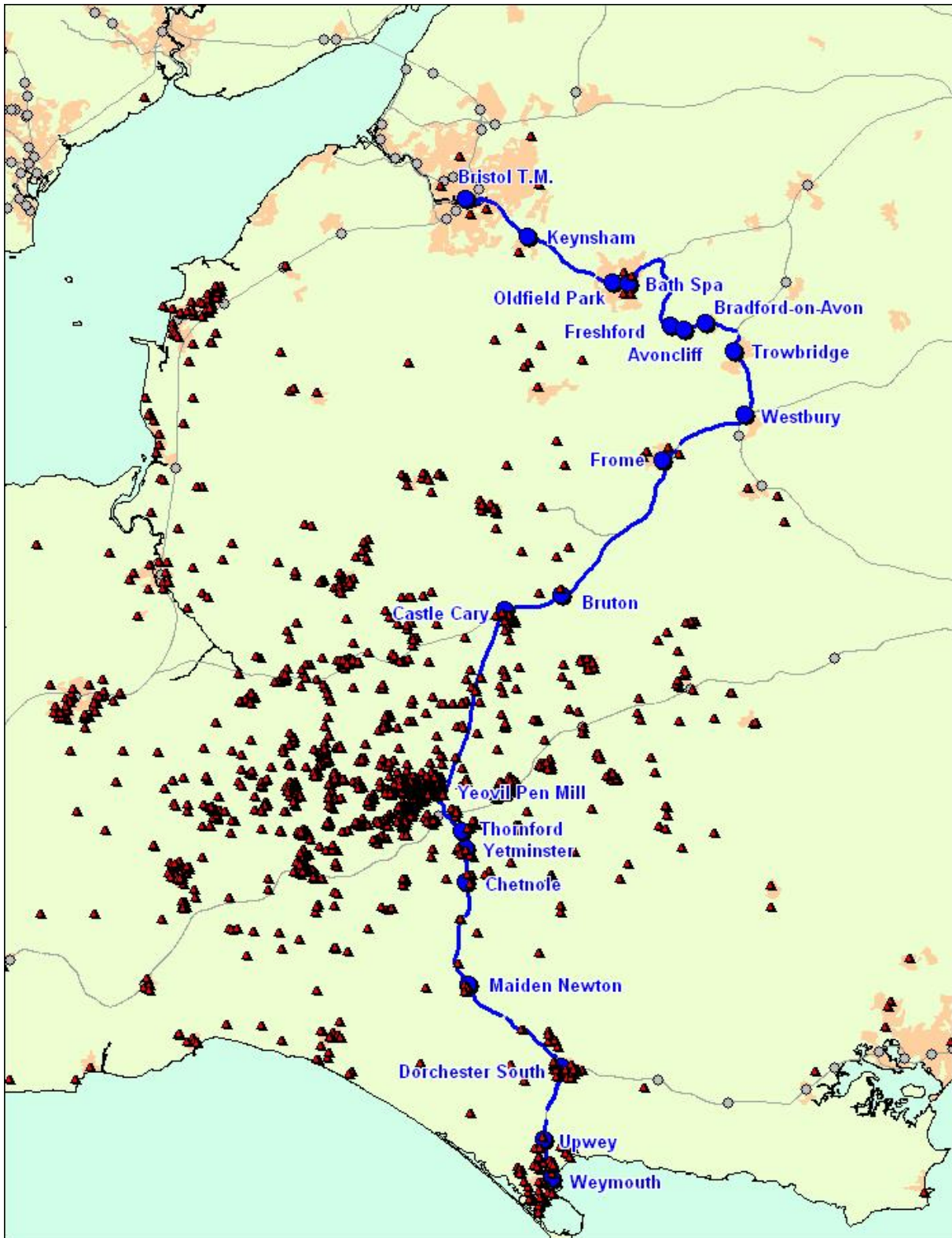
STATION(S)	SECTOR(S)	NUMBER
• Thornford / Yetminster / Chetnole	DT9 6	104
• Maiden Newton	DT2 0/9	31
• Dorchester West	DT1 1/2/3	27
• Upwey	DT3 5/6	18
• Weymouth	DT4 7/8/9	36
• Castle Cary	BA4 6,7 7	27
• Bruton	BA10 0	3
• Frome	BA11 1-5	4

5.11 The total above is 250 people. In the absence of survey data, a potential penetration rate of no more than 20% can be assumed; but even so, if one Yeovil establishment could generate 50 new commuters to Pen Mill by rail the prospects are positive. However, this does assume that a simple, affordable and effective transfer from the station to the establishment would be available, as all the key sites are not within easy walking distance.

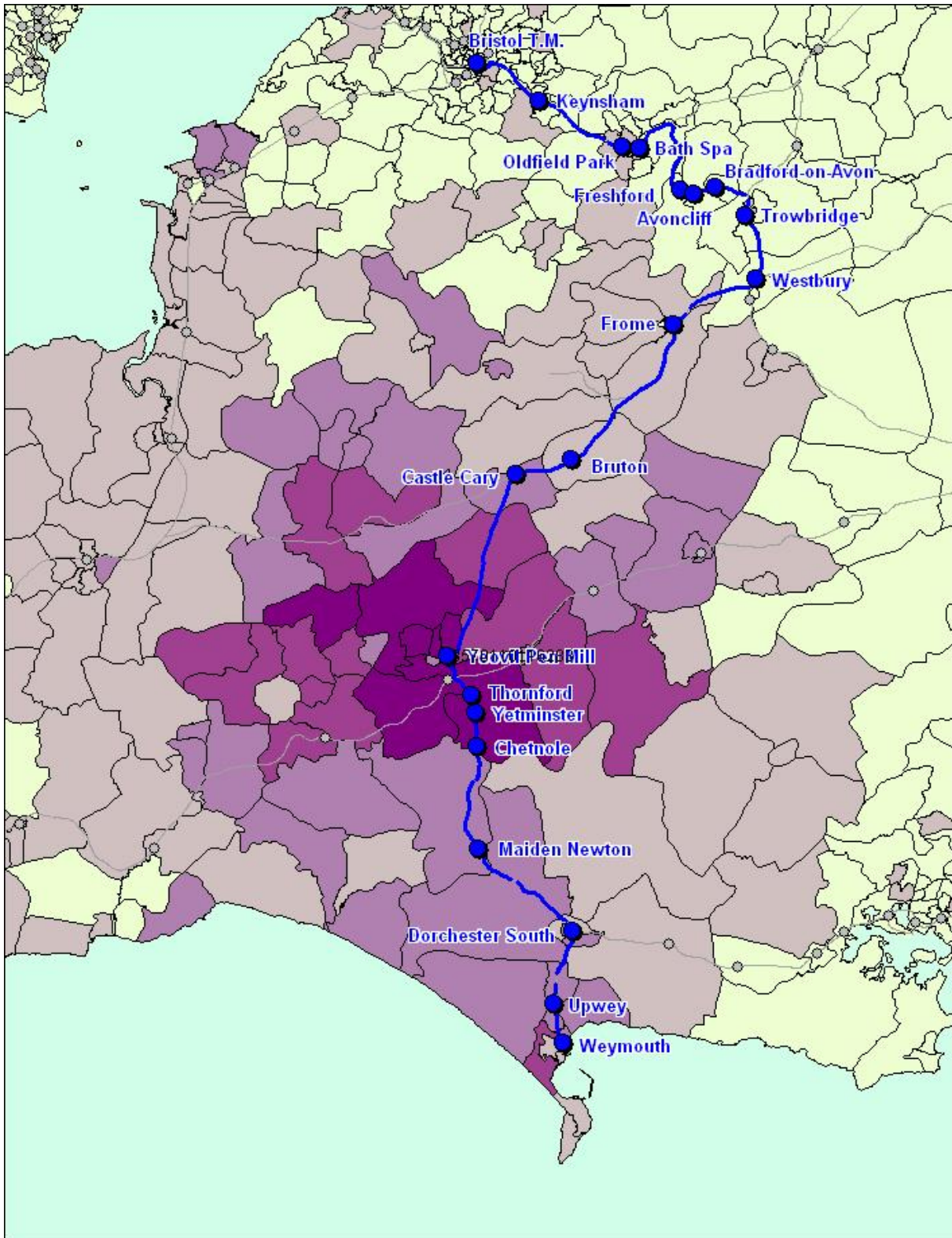
5.12 Factoring this up to the Yeovil workforce as a whole - a conclusion which must remain highly speculative - suggests that in the order of 500 people could switch to rail, if the train service was suitable. This represents a 7-carriage loading (i.e. without standing). In the HoWL context this is a step-change in potential capacity, but it is (for example) less than the commuter flow from the Exmouth branch into Exeter.

²⁶ Postcode sectors falling within an approximate radius of 3 miles of the station.

Residences of people at a major Yeovil establishment - scatter map.

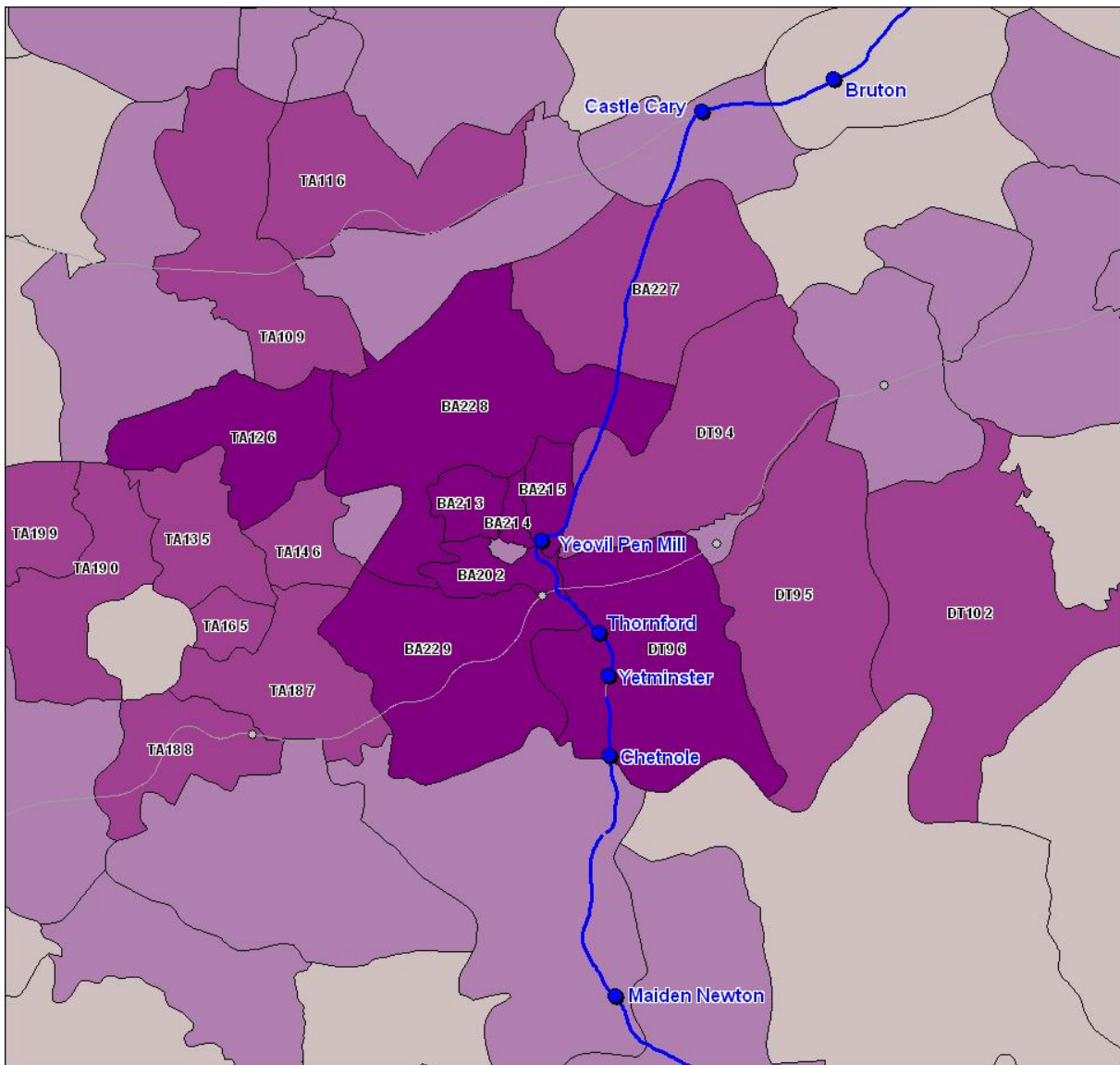


Residences of people at a major Yeovil establishment - by postcode sector.



Key:	Darkest shading	101- 514 people
	Next shading	26-100 people
	Next shading	6 - 25 people
	Lightest shading	1 - 5 people
	No shading	No people

Residences of people at a major Yeovil establishment - detail of postcode sector.



Key:	Darkest shading	101- 514 people
	Next shading	26-100 people
	Next shading	6 - 25 people
	Lightest shading	1 - 5 people
	No shading	No people

6. Wider benefits of service improvement.

- 6.1 The business case for improving the HoWL timetable (Section 8) is predicated entirely on the PDFH methodology used by the rail industry and Government. The fundamental flaw with this, however, is that the 'wider benefits' - in terms of social mobility and accessibility to services, community cohesion, environmental benefits of modal switch, reduced congestion and road accidents, and even promoting economic regeneration - are not included. Largely this is because they are far from straightforward to quantify in economic terms. Even where this could be attempted, the results are open to interpretation, and would not be taken as more than supporting evidence for bottom-line financial considerations.
- 6.2 The growth forecast for Yeovil in particular (Section 5) would imply that an adequate transport infrastructure is a prerequisite for this to be delivered efficiently. Rail undoubtedly is seen as playing an important role in total provision, and the outdated HoWL timetable (especially the absence of any services for '9 to 5' commuters) can only be viewed as a brake on wider economic development - even if it is difficult to translate this into financial terms.
- 6.3 **Local Transport Plans.** The clearest expression of wider benefits can be found in terms of goodness of fit with national and local government policy objectives. In particular, there are five 'transport goals' set by Government for consideration in Local Authorities 'Local Transport Plans' (LTPs):
- Reduce carbon emissions.
 - Support economic growth.
 - Promote accessibility.
 - Contribute to better safety, security and health.
 - Improve quality of life and a healthy natural environment.
- 6.4 The West of England Partnership (WEP) contains four authorities. The two on the HoW route each have a 'key transport theme' which feeds into the WEP Joint LTP3²⁷:
- Housing and employment growth is supported by appropriate improvements to transport infrastructure (especially public transport, walking and cycling - *Bath & North East Somerset Sustainable Community Strategy*).
 - Climate change and the need to reduce energy use and carbon emissions from transport, homes and the economy; develop an integrated transport system that reduces congestion, increases the use of public transport and makes it easier and safer for cyclists and pedestrians - *Bristol Partnership 20:20 Plan*.
- 6.5 A switch of transport mode to rail self-evidently fits with these themes, and of the 28 specific 'challenges' identified, there is a close match for HoWL with the following 5 (there is also an ancillary role in a further 12):

²⁷ West of England Partnership (March 2011) *West of England Local Transport Plan 3*, WEP.

- Reduce greenhouse gas emissions.
 - Promote use of alternatives to the private car.
 - Promote access to employment growth areas.
 - Promote access to services for rural residents
 - Promote better access to leisure activities and countryside.
- 6.6 The WEP LTP does not specially mention HoWL (being concerned primarily with internal movements), although the ‘vision’ does include resignalling and a half-hourly local service frequency on the Bristol-Bath corridor.
- 6.7 The Wiltshire LTP²⁸ has the following as one of the four ‘main challenges’ facing the County’s rail system: “Overcrowding at peak times continues to be an issue, particularly on the Bristol to Weymouth route where summer weekend and bank holiday peak trains can be so full that passengers are left behind and the train company has to hire road coaches to supplement them”. The ‘preferred option’ for rail development is to: “Increase rail connectivity through provision of bus-rail links and assist with the implementation of some new stations. Support the function of rail stations as transport hubs and proactively work with partners to introduce service and corridor improvements particularly between the Chippenham, Salisbury and Trowbridge. Cover the administration costs of community rail partnerships and where appropriate and necessary, safeguard and purchase land for rail improvements.”
- 6.8 This translates into an assessment where public transport is deemed ‘important’ for delivering four of the five national goals (the exception being improving quality of life, where the role is ‘limited’). Similarly, the contribution is important to the following 6 strategic objectives (and limited for a further 7):
- To support and help improve the vitality, viability and resilience of Wiltshire’s economy and market towns.
 - To provide, support and/or promote a choice of sustainable transport alternatives including walking, cycling, buses and rail.
 - To improve sustainable access to a full range of opportunities particularly for those people without access to a car.
 - To reduce the level of air pollutant and climate change emissions from transport.
 - To support planned growth in Wiltshire and ensure that new developments adequately provide for their sustainable transport requirements and mitigate their traffic impacts.
 - To reduce barriers to transport and access for people with disabilities and mobility impairment.
- 6.9 Somerset’s LTP policies²⁹ identify Yeovil as a key location, especially with regard to its projected growth, and states that the strategy “helps to support people to live more sustainably by introducing measures to encourage them to make less

²⁸ Wiltshire Council (March 2011) *Wiltshire Local Transport Plan 2011-2026*, WCC

²⁹ Somerset County Council (March 2011) *Transport Policies: Schedule of Policies*, SCC

single occupancy car trips and provide more opportunities for travel on foot, by bike or by bus or train". For rail, irregular intervals and gaps in timetables are highlighted as a particular problem, and HoWL "due to its infrequent service (and lack of Sunday morning services), would need greater enhancement to align with our connectivity aspirations". Encouraging more people to use rail is a headline policy (SUS 7), but the 7 possible action points are general in nature and do not focus on specific lines or stations. However, the cross-boundary issues identified include Bristol-Weymouth rail service improvements with both Wiltshire and Dorset (plus Weymouth-Yeovil-Exeter with the latter, a journey that presently requires a bus transfer between Yeovil Pen Mill and Yeovil Junction, or travelling via Castle Cary).

6.10 The 'Yeovil Transport Strategy' within the Somerset LTP does not list a rail scheme among the 12 non-highways improvements - and indeed the proportion of people commuting by rail into Yeovil is so low that it is not even stated.

6.11 Dorset's Joint LTP³⁰ identifies Weymouth-Dorchester a 'prime transport corridor', and contains a Transport Package for the town in connection with the 2012 Olympics. Rail is described as "relatively under-used mode of travel. Passenger growth has been largely constrained by service frequencies and infrastructure. A lack of quality interchange facilities presents a barrier to using linked modes". Also, "there is a need to increase its use for shorter distance local commuting trips.". Public Transport alternatives is one of the 7 key strategy measures, with rail and transport interchanges identified as among the delivery methods. In the medium term the following are identified, as part of policy H-5:

- Negotiate enhanced rail services / frequencies.
- Weymouth travel interchange.
- Develop rail park and ride at selected suburban and rail stations.

6.12 HoWL is mentioned specifically with regard to four desired improvements³¹:

- Improve marketing and attractiveness.
- Increase frequency to hourly.
- Address overcrowding issues (especially in summer).
- Establish a new rail service between Weymouth and Exeter via Yeovil.

6.13 In essence, the line demonstrates a good fit with a broad spectrum of the LTP policy initiatives, but for the most part these lack detail of how the HoW route could in practice make a difference. Also, due to their geographical scope, they tend not to address the regional strategic significance of the route, a situation that will not be helped by the move away from regional spatial planning.

6.14 At a more local level there is also a positive link with similar policy frameworks. An example is South Somerset's *Local Strategic Partnership*, of which Strategic Priority 13 is to "Support the development of integrated, low carbon infrastructure",

³⁰ Dorset County Council, Bournemouth Borough Council, Borough of Poole (April 2011) *Bournemouth, Poole and Dorset Local Transport Plan 3*, DCC

³¹ Ibid., p79.

such as through the implantation of Green Travel Plans. There is also a specific recent sustainable transport programme for Yeovil, as well as the 'Yeovil Vision' initiative³², but these are largely intra-urban in scale. Broadening the scope, there also needs to be a link to Local Development Framework, Local Enterprise Partnerships and Community Plans.

6.15 Rail studies. The Department of Transport has sponsored various rail development modelling initiatives over the years, but only at a macro level³³. It has, for example, expressed an interest in assessing the wider benefits of the proposed Crossrail programme (a rail link across Central London). One strand of this has been to look at house price changes as a surrogate for perceived benefits³⁴, based on the enhanced desirability of housing at locations as a consequence of time and convenience of rail commuting. However, it is unlikely that time savings would be significant in the HoWL context, especially because of the onward transit required from Pen Mill to the workplace.

6.16 ATOC (Association of Train Operating Companies) and industry partners have flagged up the wider benefits of rail in their 'Planning Ahead' document³⁵, and lists the following aspects in support of this:

- Congestion relief on roads and at airports, saving time lost in traffic jams.
- Improved productivity through faster business travel, and with more productive use of that travel time.
- Improved industrial competitiveness through more efficient freight transport.
- Support for urban development, taking pressure off greenfield sites by providing affordable mass transit to city centres.
- Access to retail and leisure destinations, especially for tourists, making a significant contribution to local economies.
- Lower pollution and carbon emissions through modal switch.
- Provision of additional jobs in the supply chain (150,000 nationally).

6.17 With the exception of the tourism economy, the above probably have marginal relevance to HoWL. The tourist industry itself uses models to assess the economic contribution of new developments and its contribution to the wider economy³⁶, but without a transport mode-specific dimension. If it could be proven that any rise in the number of rail journeys generates extra visitors for a destination, then it would be possible to demonstrate their value to the economy and jobs created or sustained. As a rough rule of thumb, an additional 2,000

³² University of the West of England for Department of Health South West (2010) *Active and low carbon travel: a transport vision for Yeovil*, UWE; also the Second Yeovil Transport Strategy Review (www.yeovilvision.co.uk).

³³ E.g. as part of the National Transport Model, www.dft.gov.uk/pgr/economics/ntm/railmodelexecutivesummary.

³⁴ Gibbons, S. & Machin, S. (2003) *Rail Access and House Prices: An Evaluation of Transport Improvement Benefits*, www.dft.gov.uk/pgr/economics/rdg/railaccessandhousepricesanev3099

³⁵ ATOC / NR / FTOA (2009?) *Planning Ahead: Control Period 5 and Beyond Britain's Railway from 2014*, section 2.4 'Wider benefits of the railway to society', p7.

³⁶ The regional Tourist Boards, for example, use the 'Cambridge' or STEAM models on the scale of towns upwards to assess the contribution of tourism, but despite the name of the latter there is no specific consideration of the role of rail.

visitors produces 1 FTE (full-time equivalent) job and regeneration benefits worth at least £30k³⁷.

6.18 External organisations have also recognised the wider value of rail. The ‘Centre for Cities’ group, for example, in their report ‘On Track: Why Rail Matters’, claim that cities experience job growth and higher wages as a result of rail improvement schemes³⁸. Even for smaller towns such as Bathgate, electrification and line doubling could see 3,600 businesses with productivity gains, 75k people with wage benefits and 700 private sector jobs created. The argument is based on three aspects:

- Businesses becoming more productive through access to a larger pool of labour and choice of suppliers, thus promoting competition.
- Better connections between urban centres and with their catchment economies permits specialisation benefits and being able to draw on complimentary industries in other centres.
- Residents gain new employment opportunities and with that the possibility of higher wages.

6.19 These are general accessibility benefits rather than being rail-specific, beyond the way that rail can be the best placed of the transport modes to supply this improved connectivity. The handicap of relatively slow linespeed and frequent stops somewhat negates this argument for HoWL, and no particular support was detected among stakeholders for faster journey times (Section 4).

6.20 In terms of studies of the wider benefits from rail route upgrades, these have tended to focus on step-change developments such as new high speed lines. In addition to the current HS2 national proposal, Glasgow to Edinburgh has been studied recently by Halcrow for the Local Authorities there³⁹. This concluded that there is “clear evidence that high speed rail can create and facilitate significant economic impacts and wider benefits” (p1), but these consist largely of the agglomeration effects discussed above, and which are greater at higher scales, in other words when access times are decreased by greater amounts. In broad terms, it is stated that the ‘wider benefits’ case can add 12-25% to the direct economic case. Arguably this is a surprisingly low figure - but comes back to the debate about what these benefits actually are. As such, it is hard to see how this form of research could be particularly useful in the HoWL case

6.21 For Community Rail lines and services (of which HoWL is of course one), recent research⁴⁰ has shown that Community Rail Partnerships produce ROI (return on investment) for TOC and Local Authority funders of no less than 4.6:1. This is achieved primarily through generating an increase in journeys and thus revenue, but also “wider benefits to the economy and society as a whole not captured

³⁷ From 2008 research into the economic impact of tourism in Winchester, using the Cambridge model.

³⁸ Centre for Cities (2010) *On Track: Why Rail Matters*, www.centreforcities.org/assets/files/pdfs/10-07-21%20On%20Track.pdf.

³⁹ Halcrow Group (2009) *High Speed Rail: Wider Economic Benefits Study*, for Glasgow Edinburgh Collaboration initiative.

⁴⁰ Transport Regeneration (2008) *The Value of Community Rail Partnerships*, for ACoRP, [www.acorp.uk.com/Assets/Values%20\(1\).pdf](http://www.acorp.uk.com/Assets/Values%20(1).pdf).

through the fares increase” (p7). The methodology used is discussed below, and a worked example of CRP input is given. For the purposes here the way in which the revenue increase was achieved is not relevant, only the ratio of additional benefits is of interest:

- South Fylde line: +£28k revenue created +£25k wider benefits (+£9k value of reduced car use and +£16k value of regeneration impacts). Uplift = +89%.

6.22 It is immediately clear that 89% is in a different league from the maximum 25% envisaged from the creation of a high speed line. Even just taking the value of reduced car use alone gives an uplift of 32%. It is no wonder that the schemes studied fall comfortably into the DfT’s ‘high value for money’ category, where the benefit:cost ratio is over 2. However, the ACoRP research used the DfT’s own methodology (TAG - Transport Analysis Guidance). The detail is not given in the ACoRP work, but the TAG 2003 ‘Wider Economic Impacts Sub-Objective’ and associated guidance notes do provide the methodology⁴¹. It is not, however, intended for timetable enhancement schemes, being designed for infrastructure investment schemes. If the sponsors of the research here feel it worthwhile, based on the initial approval stage that is constituted by this report, then further research of this sort could be undertaken.

6.23 In essence, the TAG guidance for ‘small’ (under £25m) investment schemes suggest that for every extra 100 passenger-km travelled by rail there will be a net increase of 46km in all travel, with a reduction by other modes:

- Walking: -0.5km.
- Cycling: -0.5km.
- Car driving: -26km.
- Car passenger: -20km.
- Bus passenger: -7.4km.

6.24 Similarly in terms of journeys, there is no net increase, but an additional 100 rail journeys will bring about the following reductions in other modes:

- Walking: -13 journeys.
- Cycling: -4 journeys.
- Car driving: -44 journeys.
- Car passenger: -24 journeys.
- Bus passenger: -16 journeys.

6.25 These are very significant changes, and if the proportions can straightforwardly be mapped to the results of the HoWL timetable proposal (see Section 8, where the four scenarios are described), this would result in changes in the number of journeys as follows:

- Optimisation: -8k walking, -2k cycling, -27k driving, -15k car pass., -10k bus.

⁴¹ DfT WebTAG: www.dft.gov.uk/webtag/, see in particular TAG Unit 3.5.8 *The Wider Economic Impacts Sub-Objective*, www.dft.gov.uk/webtag/documents/archive/1104/unit3.5.8.pdf.

- Minimisation: -4k walking, -1k cycling, -14k driving, -7k car pass., -5k bus.
- Attachments: -12k walking, -3k cycling, -41k driving, -22k car pass., -15k bus.
- Connections: -2k walking, -½k cycling, -7k driving, -3k car pass., -2k bus.

6.26 The next stage is to monetise the cost savings of reduced car travel, in terms of (in order of importance) congestion reduction, accident reduction, local air quality improvement, greenhouse gas emission reduction, noise reduction and infrastructure savings, partly offset by a fall in indirect taxation gains. In 2005 this was estimated to be 9.4p per car kilometre. Congestion outweighs all the other factors by a large margin, an issue probably less important in the HoWL corridor than nationally. Even so, assuming 12p per car kilometre in 2010 this equates to annual savings for the HoWL scenarios (see section 7) of:

- Optimisation: £3.3k.
- Minimisation: £1.7k.
- Attachments: £5.0k.
- Connections: £0.8k.

6.27 **Carbon emissions.** The aspect of 'wider benefits' which receives greatest attention is the saving in carbon emissions from modal switch⁴². Again, the quantified benefits are either vague or open to dispute, depending on the assumptions and calculation method used. There is no doubt that even a 25 year old cl.150 diesel unit produces less carbon than an equivalent fleet of cars or buses - but only if it is well loaded. As the data in Appendix 3 shows, loadings vary dramatically along HoWL on most services, so there could easily be a switch from a clear net carbon gain to a net carbon loss on, for example, the afternoon southbound departures from Bristol.

6.28 It is relatively straightforward to calculate the carbon output of the revised HoWL timetable options, together with the carbon per seat/km and per journey (Appendix 6g⁴³). Some caution needs to be exercised, as a full account of movements north of Westbury in terms of unit use cannot be taken, and one option ('Attachments') generates significantly more usage than the others - but equally the vehicles could expect to be used by more passengers, especially to ease overcrowding for local journeys between Cardiff and Bristol.

6.29 The upshot is that carbon per journey would initially increase slightly (by 0.7kg per passenger journey) with the favoured timetable variants, as even though there are more passengers travelling, the proportion of seats being occupied falls. Over time, if expected growth trends continue, then loading rates would increase to previous levels. Assuming passenger growth at 10% per annum, the results become net positive in carbon terms after 10 years (but note that one of the many assumptions is that the existing timetable could continue to grow passenger numbers even although already at capacity at key times).

⁴² For example the Campaign for Better Transport (2011) *InterCity west Coast Consultation - Response from the CBT*, www.bettertransport.org.uk/system/files/West-Coast-franchise-consultation.pdf.

⁴³ Base data being loadings, distance travelled, engine fuel consumption and carbon content of emissions.

- 6.30 The option that performs worst in carbon terms is Connections; but this would leap to the top of the table if a 1-car cl.153 could be substituted for a 2-car cl.150 on one of the rosters. This should be achievable for at least the winter season in the early years of the new timetable.
- 6.31 The slight increase in carbon per journey would need to be offset against the decrease due to fewer road journeys. As the degree of road congestion is the major driver, but for the HoWL corridor is not known, no attempt has been made to made to quantify this difference.
- 6.32 The above discussion illustrates the difficulty in drawing up meaningful, quantifiable conclusions about the 'wider benefits' of timetable change. It is noteworthy that the Jacobs report for the 2006 timetable specification⁴⁴ included external factors in the comprehensive list of qualitative issues for consideration - although for the various service options evaluated there is no indication of the results or significance attached to them:
- Improve efficiency (unit cost) and overall cost of franchise (subsidy reduction).
 - Improve performance (punctuality and reliability).
 - Provide value for money.
 - Develop rail's contribution in the transport market in the region.
 - Manage growth.
 - Operate within NATA framework:
 - Protect environment.
 - Improve safety.
 - Achieve a sustainable economy.
 - Improve accessibility and social inclusion.
 - Improve transport integration.
 - Improve station accessibility to train services.
 - Affordability.
 - Fit with stakeholder aspirations and objectives.
 - Fit with freight paths / FOC aspirations.
 - Fit with engineering access requirements / nr aspirations.
 - Deliverability / ease of achievement.
 - Risk.

⁴⁴ The Jacobs Consultancy (August 2004) *Greater Western Franchise Replacement: Outline Business Case Report*, SRA

7. Options for service improvement.

7.1 **Context.** The high cost of rail infrastructure, rolling stock hire and operation mean that farebox revenue covers only a relatively low proportion of costs on most rail routes, even a secondary mainline such as HoWL. The loco-hauled set hired in as the 'Sand, Sea & Cycle' additional service on summer Saturdays to Weymouth, for example, barely covers its costs even if every seat was filled by fare-paying passengers throughout its journey (although admittedly this is an expensive rolling stock option, albeit one with few alternatives given the national shortage of multiple-unit stock).

7.2 However, the McNulty report has acknowledged that line closures or significant cuts in services are not on the political agenda (providing that cost savings can be made)⁴⁵. Furthermore, there is recognition by Government that even in the current economic climate Local Authorities and others should not be precluded from pump-priming service enhancements, which if they can demonstrate 'value for money' (as yet undefined) then after 3 years and not before 2015 there would be a case for rolling them into TOC franchise obligations:

“We recognise the arguments put forward by promoters that regional and local rail services need to adapt to population, housing and economic growth in localities. Therefore, it is only right that, once they have demonstrated value for money after a trial period, new or improved services promoted by local authorities are treated in a similar way to the more established services which are currently funded as part of the national network”⁴⁶.

7.3 This could potentially be relevant for upgrading the HoWL timetable, in terms of testing the case for proposed changes. However, the immediate imperative is that these changes should be considered for inclusion with the 2013 Greater Western franchise timetable respecification. The importance of taking this window of opportunity to influence the respecification process cannot be overstated, as it will almost certainly include a significant element of public consultation.

7.4 **Infrastructure.** Another important underlying assumption concerns the track, stations, signalling and other fixed components of the route. Neither the Great Western nor South West Mainline Route Utilisation Strategies from Network Rail⁴⁷ pay much attention to HoWL, as not unexpectedly other problems are seen as having a greater magnitude ('Bristol area capacity', 'Bristol area performance', and Westbury area performance' are 3 of the 21 highlighted issues). For HoWL, the Castle Cary - Dorchester section of the route is key, but it is almost off the radar with regard to infrastructure improvements. The one important issue that could benefit HoWL, however, is the reinstatement of the fourth platform at Westbury, which would enhance operational flexibility and facilitate handling of terminating services.

⁴⁵ www.dft.gov.uk/pgr/rail/strategyfinance/valueformoney/interim/

⁴⁶ 28/02/2011, Written Statement from Minister of State for Transport (Theresa Villiers) read by Earl Attlee, as reported in *Hansard*.

⁴⁷ Network Rail (March 2010) *Great Western Route Utilisation Strategy*, NR. Network Rail (March 2006) *South Western Main Line Route Utilisation Strategy*, NR

- 7.5 The NR Sectional Appendix shows that the route between Bath and Westbury and between Castle Cary and Dorchester is limited to a maximum speed of 75mph, but this masks the 'light' maintenance regime, which has resulted in 40mph limit for loco-hauled trains being imposed between Yeovil and Dorchester. Furthermore, Castle Cary - Dorchester has the most restrictive loading gauge, W6. However, it appears that keeping the line fit for locomotive-hauled movements (heavier than multiple units, thus requiring higher line standards) is being maintained as policy, with track relaying in the section between Castle Cary and Yeovil planned for the winter of 2011
- 7.6 As such there is no realistic prospect of linespeed gains, and so the restrictive 10mph through Yeovil Pen Mill platform 1, 45mph from there to Thornford, 15mph through Maiden Newton and 25mph through Dorchester West are unlikely to be eased in the foreseeable future.
- 7.7 Whilst the above undeniably limits the scope for faster journey times, it does not necessarily mean that this is a significant brake on developing demand. The Barnstaple branch in Devon demonstrates this: the additional services introduced are constrained by the passing places on the single line, and as a result the average journey time from Exeter has increased by 10% since 2002 - but this has not stopped a doubling of patronage in that time (even with inferior rolling stock being used).
- 7.8 **Resources.** It has already been noted that demand patterns and thus current loadings often mean that a service requiring to be 4-car Bristol - Westbury needs only be 2-car Westbury - Weymouth, and vice versa. The use of fixed formations throughout is an operating assumption that could - and should - be challenged. The 0544 ex-Bristol for a number of years has divided at Westbury with portions for Weymouth and Portsmouth, and of course on much of the third-rail network in the South East this is considered standard practice. Permissive working for attaching and detaching units is permitted at all platforms at Westbury, so no change to the signalling rules would be required for its more frequent use.
- 7.9 An important issue is that of current traincrew and trainset resource use devoted to HoWL. Unfortunately this is far from straightforward to determine, as sets are diagrammed to interworking with other routes as required. In particular, the Bristol - Westbury local service group is linked operationally to the Bristol - Malvern service (as per the cross-Bristol imperative), as of course is the Bristol - Weymouth service. The Filton - Bath group also must be considered. Finally, crew diagrams have not been made available, so the implications of the options have had to be estimated.
- 7.10 In terms of the 'internal' element of the HoWL route (Westbury - Weymouth), it was calculated in 2002 that no less than 12 train units spent some of each weekday on it - this includes the Westbury - Frome 'extensions'. For the full Bristol - Weymouth service, and only the Westbury - Frome 'extensions' of other services, the requirement per day was as follows:

• 2-car	150	Diagram	351	Hours	11
•	150		352		8

•	150	360	10
•	150	361	12
•	150	362	20
•	150	369	6
•	150	370	11
•	150	371	8
• 1-car	153	553	8
•	153	555	5
•	153	557	8
• 2-car	158	653	1

7.11 There is no reason to assume that, given the similarity of the timetable structure, the scale of the trainset resource requirement is significantly different. What is beyond the scope of this report is to determine how any proposed changes could be integrated with other routes to maximise efficiency of resource use, or indeed if the current pattern of usage represents optimal efficiency (especially with regard to use of 2-car sets throughout, as opposed to 2 x 1-car sets that could be split at Westbury). However, from the perspective of timetable robustness, and avoiding importing delays from one route to another, there is much to be said for keeping routes operationally separate.

7.12 The 2002 analysis indicates a requirement for 215 car-hours. Given that the timetable runs for 18 hours a day (0500 - 2300), this equates to a theoretical requirement of a dedicated fleet of 12 cars, in practice 6 class 150s, or 5 class 150s plus 2 class 153s, or 4 class 150s plus 4 class 153s. (Of course, crew requirement increases if there are 8 formations running as opposed to just 6.) This can be taken as the baseline position for rolling stock resourcing.

7.13 **Strategy.** On this basis there are three options of service development:

- Do nothing. This would apply if the outline case for change established thus far is not deemed sufficiently robust.
- Add resource to the existing timetable. This is the route taken by FGW in 2010 in response to a request to examine enhancement options.
- Revise the existing timetable, with potentially extra resource requirement. This would entail a wider consideration of interworking with other routes, and at the least a comprehensive resource use re-evaluation exercise.

7.14 *Do nothing.* This is rejected due to the evidence presented here, which strongly suggests that the current timetable does not unlock the full potential of the route.

7.15 *Additions to existing timetable.* The two timetable options generated by FGW (Appendix Table 6a) were based on adding one 2-car class 150 unit, which required 2 additional driver and conductor turns, and thus 4 additional drivers and conductors on the headcount. Maintenance downtime for the unit would be covered by the existing fleet.

7.16 Option A delivered three additional round trips between Westbury and Weymouth:

- New 0540 Westbury - Weymouth arrive 0703, earlier first arrival at Weymouth before 0829.
- New 0735 Weymouth - Westbury arrive 0909, plugs gap in departures from Weymouth 0642 - 0850.
- 0905 Bristol Parkway - Westbury extended to Weymouth arrive 1126, plugs gap in arrivals at Weymouth 1102 - 1208.
- New 1410 Weymouth - Westbury arrive 1541, plugs gap in departures from Weymouth 1310 - 1508.
- 1442 Gloucester - Westbury extended to Weymouth arrive 1825, plugs gap in arrivals at Weymouth 1709 - 1913.
- New 1912 Weymouth - Westbury arrive 2051, plugs gap in departures from Weymouth 1730 - 2021.

7.17 Option B also delivered three additional round trips, but at later times:

- 0644 Bristol TM - Westbury extended to Weymouth arrive 0902, plugs gap in arrivals at Weymouth 0824 - 1101.
- New 1010 Weymouth - Westbury arrive 1159, plugs gap in departures from Weymouth 0850 - 1110.
- New 1343 Westbury - Weymouth arrive 1523, plugs gap in arrivals at Weymouth 1408 - 1709.
- 1838 Westbury - Cheltenham extended back to start Weymouth 1652, plugs gap in departures from Weymouth 1508 - 1730.
- 1730 Cheltenham Spa - Westbury extended to Weymouth arrive 2115 plugs gap in arrivals at Weymouth 2008 - 2309.
- New 2130 Weymouth - Westbury arrive 2305, later last departure after 2018.

7.18 This approach has the following advantages:

- Simplicity. There are no ramifications to consider on other services or resource use; the extra trains are simply slotted in.
- Commuter services to Yeovil. Option A provides a useful commuting service from Weymouth to Yeovil (arr 0826), also valuable for leisure trips further north. There is a return service from Yeovil (dep 1725) to Weymouth. Similarly, Option B provides a commuting service from Frome to Yeovil (arr 0815), and an equivalent return northbound (dep 1738).
- Timetable gaps plugged. Option A plugs northbound gaps of 2, 3 and 2 hours; southbound is not so successful, but one 2-hour gap is filled. For Option B southbound all 3 new services plug 3-hour gaps, whilst northbound gaps of 2½ and 2 hours are filled, plus after last departure from Weymouth.

7.19 However, it also has the following disadvantages:

- Value for money. The cost of the extra unit and crews, track access and operating costs is put at an excessive £790k for Option A, but the additional revenue is estimated at just £50k. Option B costs are £710k offset by £111k revenue. Annual subsidy is thus between £600k (Option B) and £720k (Option A).
- Inefficient use of resources. Option A's 0540 Westbury - Weymouth is unlikely to attract more than handful of passengers, and the 0954 ex-Westbury is only 23 minutes behind the previous service.
- Timetable gaps remain. Both options fill some of the holes in the current timetable, but ideally *both* would need to be adopted for the basic frequency to become 2-hourly. Even then, there is no advancement to a true clockface pattern.

7.20 On balance, the high cost and relatively low benefit are such that the approach is not recommended.

7.21 *Revising the timetable.* This is the recommended way forward, due to the deficiencies of the other approaches. However, some prerequisites and assumptions need to be made clear:

- The proposals discussed below are a timetable framework, not a verified timetable. The TOC would need to undertake this, and although theoretical impacts on other services have been minimised, it would undoubtedly be a much larger scale exercise than simply slotting in some extra services on the route, as above.
- Similarly, without access to the crew and unit diagrams (which also needs to be undertaken by the TOC), the impact of a rebalancing of the entire Bristol region local services resources cannot be assessed. This is a key reason why the exercise should be conceived as being linked to refranchising, when other changes to the timetable specification would mean this process has to be undertaken anyway.
- The current half-hourly (almost) clockface pattern between Westbury and Bath / Bristol is deemed sacrosanct. There is no obvious need for increased frequency on this route, or for more calls at Avoncliff and Freshford. (Bath - Bristol is a separate issue: Keynsham and Oldfield Park do warrant a half-hourly service to maximise their potential, as identified in the GW RUS, but this is a separate project).
- As such, the primary focus is on the Westbury - Weymouth part of the route, although connections and through working to Bristol and beyond remain an important consideration, and variation between the options discussed.
- The principle of clockface timing is adopted throughout. It is much more customer-friendly and thus likely to generate more traffic, and can still be achieved in principle on HoWL despite the single-track between Castle Cary and Dorchester with only 3 passing places.

- No linespeed improvements are assumed for the foreseeable future, although it should be recognised that this would have a significant positive impact on revenue. The critical issue is which crossing points are used, and times between them. In practice the single line and fixed position of the crossing loops makes any upgrade very difficult to achieve.
- NR need to be amenable potentially to flexing signal box opening times (at Yeovil Pen Mill), and the 'Rules of the Route' which state when the line is open for running any services.
- All services remain calling at all stations. However, as part of this research it was calculated that deleting most calls at the 4 least-used stations could in theory raise revenue by 5% - assuming that pathing would permit the time savings to be retained, which as mentioned above is unlikely, and so can be discarded.
- The base timetable is proposed for year-round operation, but strengthening will be required in summer, on Bank Holidays etc. Contingency for strengthening should be hard-wired into the replacement franchise, for all relevant routes, not just HoWL.

7.22 The following attributes are required for the revised timetable:

- Through services at commuting times to Bath and Bristol in the morning peak and return in the evening peak.
- Services at commuting times to Yeovil, preferably from north and south.
- Services at commuting times to and from Dorchester and Weymouth.
- Through services for days out to Bath and Bristol, and for onward connections for making longer-distance trips.
- Through services to and from Weymouth for day trips.
- An hourly pattern Mondays - Saturdays as standard, but which can be reduced to two-hourly off-peak and in the evening.
- A year-round Sunday service that permits day trips to Weymouth and Bath / Bristol (this will almost certainly require a change to the 'Rules of the Route', but is in line with NR's own '7 Day railway' strategy).

7.23 Taking into account the above factors, four timetable variants have been drawn up:

- **A: Optimisation.** This looks to make best use of trainset resources, bearing in mind that the flows of key demand do not match up, so for example sets arriving on the morning tidal flow into Weymouth may be spare until the return tidal flow in the afternoon.
- **B: Minimisation.** This addresses the basic timetable requirements but does not attempt to balance trainset diagrams internally in the way that A does. In other words, some inter-working with other routes remains.
- **C: Attachments.** This works on the premise that the HoWL set (a class 153 in winter and 150 in summer) attaches / detaches at Westbury to the hourly Cardiff 'fast' services to / from Portsmouth. This gives through working to Cardiff but increases the resourcing requirement.

- **D: Connections.** This looks at reducing resourcing by making a cross-platform connection at Westbury with all Cardiff services; the trade-off being an increased frequency on the Westbury - Weymouth section.

- 7.24 **A: Optimisation.** The timetable framework and trainset diagramming is shown in Appendix Table 6b. All crossings are done at Yeovil Pen Mill, better from the passenger perspective (because there is no waiting time for the high proportion of passengers going to/from Yeovil). There are 16 Monday - Saturday services each way between Westbury and Weymouth, 8 of which run through to / from Bristol Parkway (this is partly to open up through journey opportunities to Filton and north Bristol, and partly to avoid spare time at Temple Meads).
- 7.25 Weymouth departures are at the xx35 clockface, start at 0535 and continue at hourly intervals until 1935, with a final one at 2135. The 0535 runs through to Bristol Parkway, arriving 0820, as do the following 3 services, and the 1335-1635 departures. The former cater for commuters and leisure travellers to Bath / Bristol, the latter for returning day trippers from Weymouth. The remaining services all provide connections at Westbury for the north.
- 7.26 These departures are formed out of xx15 clockface arrivals, formed from xx40 departures off Westbury, with 8 extended back to start as xx30 off Bristol Parkway. In turn some of these are formed from the incoming xx20 from Weymouth. The Parkway services are the 0630-0930 and 1430-1730 block of 4, facilitating the key leisure and commuting flows. Thus anyone from Weymouth wanting a day in the shops at Bath or from Bath wanting a day at the seaside would have a choice of trains both ways. Again the pattern is hourly until the last service of the day, before which there is a 2-hour gap (which could in due course be filled with existing trainset resources, should demand warrant it).
- 7.27 Work and education flows to Yeovil, currently not catered for, would have an 0825 arrival and 1725 departure in both directions, as well as xx25 at other hours. Commuters to Weymouth would have an 0815 arrival and 1735 departure.
- 7.28 This timetable would require 6 units, which due to the through workings would need to be 2-car class 150s. 4 of these have no useful downtime, but 2 would be released inter-peak (for example for maintenance at St Phillips Marsh depot), one for 5 hours and one for 3 hours.
- 7.29 On Sundays, in Summer there are 6 services on a 2-hourly pattern, arriving Weymouth at xx15 odd hours. Two of these start back from Bristol TM, at 0850 and 1650, so again through leisure trips are catered for. This requires 3 cl.150s, although one is free for almost 5 hours at Bristol. A Winter version requires only 2 units (one spare at Bristol for almost 5 hours); this has 4 services in each direction, with 2 starting back at Bristol (the second at 1450), but does include 4-hour gaps and the last Weymouth departure earlier at 1735. This is, however, considered adequate for the probable traffic available.
- 7.30 **B: Minimisation.** The timetable framework and trainset diagramming is shown in Appendix Table 6c. As with Option A, it features crossing services at Yeovil Pen Mill, some through working to Bristol Parkway, and clockface Weymouth arrivals at xx15 plus departures at xx35.

- 7.31 However, there are only 12 services each way, plus an extra one northwards from / southwards to Yeovil only (being served by empty stock working from Westbury). There are 2 (not 4) morning xx40 departures from Bristol Parkway and return through workings in the late afternoon; and two 2-hour gaps in the basic hourly pattern around midday in the Westbury - Weymouth section. Also, the last trains of the day run an hour earlier (2040 ex-Westbury, 2035 ex-Weymouth). The deleted services are likely to be the most lightly loaded under Option A, and so make savings on running costs without materially affecting the overall appeal of the timetable. Despite this, the quantum of trainsets required for operation is increased by one; but of these, one is not required off Westbury until 1200, another off St Phillips Marsh until 1600, and third lays over for over 4 hours at Weymouth.
- 7.32 The Summer Sunday proposal is the same as Option A, except different unit diagramming and a reduction of layover time at Temple Meads means that 3, not 2, services work to / from Bristol. This provides an extra 1250 departure and arrival at 1400 there; but these are not peak demand times, and so their value is debatable. The Winter Sunday timetable is unchanged from Option A.
- 7.33 **C: Attachments.** The timetable framework and trainset diagramming is shown in Appendix Table 6d. In order to attach to the northbound Portsmouth - Cardiff train at Westbury and detach southbound, crossings must be made at Castle Cary and on the double track in the vicinity of Upwey. The former is not ideal operationally, as one platform is shared with the down West of England mainline, and a late HoWL service could export delay to the Exeter route. An even greater risk is that 13 extra attachments and 13 detachments would need to be made each day at Westbury, and delays on the Weymouth route would knock on to the Portsmouth route, and vice versa. However, this level of operational efficiency is managed comfortably in other parts of the country, and there is no intrinsic reason why Westbury could not follow suit.
- 7.34 Because Cardiff - Portsmouth is hourly it is simplest to leave the Weymouth unit on each service, and advertise all departures from Cardiff Central as to both Portsmouth and Weymouth. An advantage is that a fleet of 1-car class 153s only is required: for all but the tidal flow into Weymouth, and extra units could be attached at Westbury if needed. The major disadvantage is that 8 units are required, with little in the way of useful downtime. If the stock position was such that only 150s could be used, it would be costly for HoWL - but equally would provide much-needed extra capacity between Cardiff and Westbury. As such it becomes part of the bigger picture of catering for Bristol city region flows.
- 7.35 The weekday pattern is for an hourly clockface of 16 departures from Weymouth at xx30, starting 0530 and ending at 2130 (again there is a 2-hour gap only before the final one). Arrivals are at xx40 from 0740 to 0040 (but with two 2-hour gaps in the evening). 12 start and 13 terminate at Cardiff, one at Bristol and the rest (mainly late evening) at Westbury.
- 7.36 '9-to-5' commuters to Yeovil can arrive at 0820 from the south and 0750 / 0850 from the north. By contrast, Weymouth fares better for optimum timing under this approach, with an 0840 arrival and a 1730 departure.

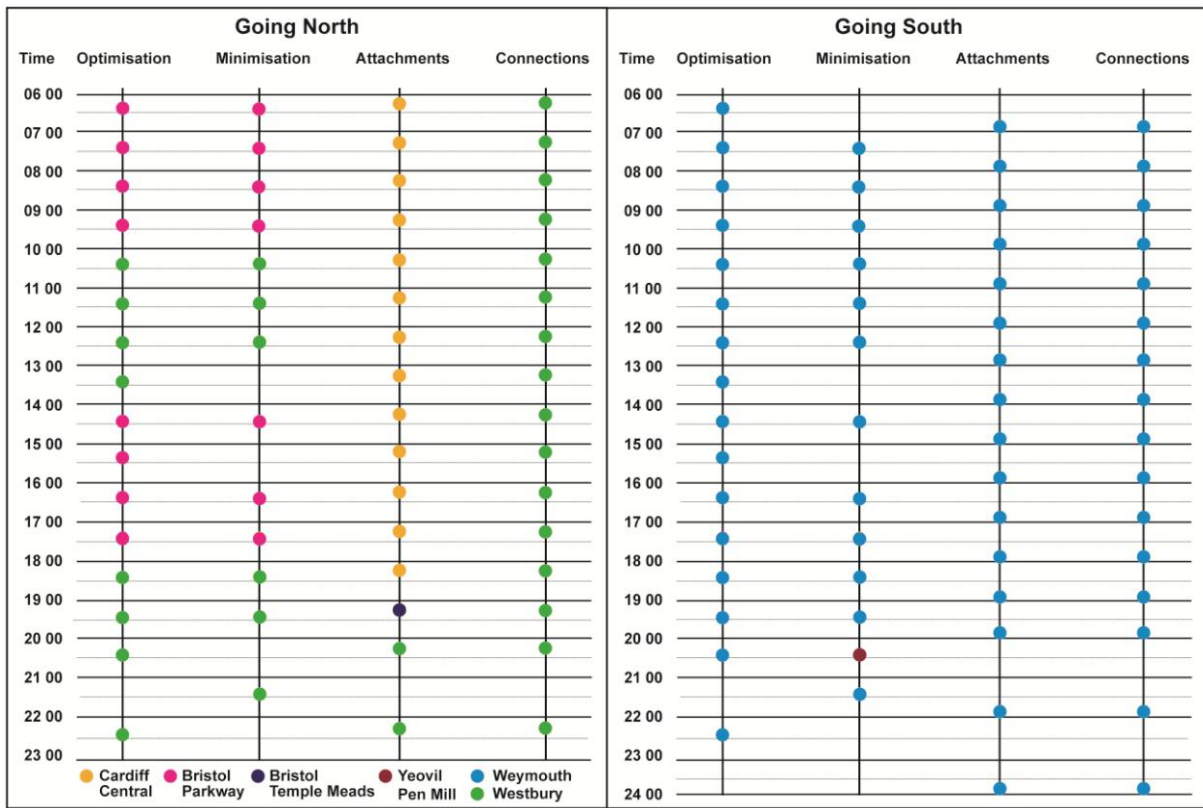
- 7.37 The Sunday timetable is the same as Option A, for both Summer and Winter.
- 7.38 **D: Connections.** The timetable framework and trainset diagramming is shown in Appendix Table 6e. It is the same structure as Option C, except that instead of services from Weymouth attaching at Westbury to those from Portsmouth, they instead make a connection. This would have to be cross-platform, for simplicity and convenience, and so the reinstatement of the fourth platform at Westbury is in effect essential. Operationally, this would be the most robust timetable of all the options (despite the 5-minute turnarounds at Westbury), due to the lack of through working on the busy lines north of Westbury. That, of course, is also its severe disadvantage from a passenger perspective, as any change of train adds uncertainty, stress and the potential for aggravation.
- 7.39 Option D only requires 4 units, and their associated crews. These units would be fully used throughout the day, with one cycling overnight to Westbury for maintenance. This is very much a self-contained operation, without the ambiguities of cross-allocation of resources with the Gloucester - Bristol - Westbury services, which without their having to work through would also become more reliable. In practice a lot would depend on how well Westbury could function as an interchange, i.e. for all 4 routes converging on it. Indeed, it certainly has the potential to function as a true 'parkway' station.
- 7.40 Monday - Saturdays times between Weymouth and Westbury are identical to Option C, while on Sundays 2 units are required to shuttle on a 2-hourly frequency over a 10-hour period (0935 to 1935 ex-Weymouth, 0940 to 1940 ex-Westbury) to connect with the Cardiff / Portsmouth trains at Westbury. Services would cross at Yeovil at xx25 on even hours. For simplicity, this pattern would continue year-round, and at least one if not both rosters could comfortably be worked by 1-car cl.153s over Winter.
- 7.41 The principle advantages and disadvantages of the four options with respect to each other can be summarised as follows:
- A: Optimisation.
 - *Pros:* Good balance of through working at key times with Westbury turnarounds at other times.
 - *Cons:* May be regarded as trying to please all interests and not fully satisfying any.
 - B: Minimisation.
 - *Pros:* Slimmed-down version of A that saves cost but preserves the key benefits.
 - *Cons:* Less services than the others; less through workings than A or C; interworking of units.
 - C: Attachments.
 - *Pros:* Large majority of services work through to Bristol and Cardiff.
 - *Cons:* Highest use of resources; performance risk of attaching / detaching units.

- D: Connections.
 - *Pros*: Simple and self-contained; operationally more robust than the others.
 - *Cons*: Lack of through journey opportunities likely to be seen as an unacceptable handicap.

7.42 In summary, weekday departures from Yeovil Pen Mill are as shown below. The same information is shown in diagrammatic form on the next page, with the vertical axis representing time through the day.

Optimisation		Minimisation		Attachments		Connections	
<i>North</i>	<i>South</i>	<i>North</i>	<i>South</i>	<i>North</i>	<i>South</i>	<i>North</i>	<i>South</i>
0625 BPW	0625 WEY	0625 BPW	0725 WEY	0620 CDF	0650 WEY	0620 WSB	0650 WEY
0725 BPW	0725 WEY	0725 BPW	0825 WEY	0720 CDF	0750 WEY	0720 WSB	0750 WEY
0825 BPW	0825 WEY	0825 BPW	0925 WEY	0820 CDF	0850 WEY	0820 WSB	0850 WEY
0925 BPW	0925 WEY	0925 BPW	1025 WEY	0920 CDF	0950 WEY	0920 WSB	0950 WEY
1025 WSB	1025 WEY	1025 WSB	1125 WEY	1020 CDF	1050 WEY	1020 WSB	1050 WEY
1125 WSB	1125 WEY	1125 WSB	1225 WEY	1120 CDF	1150 WEY	1120 WSB	1150 WEY
1225 WSB	1225 WEY	1225 WSB	1425 WEY	1220 CDF	1250 WEY	1220 WSB	1250 WEY
1325 WSB	1325 WEY	1425 BPW	1625 WEY	1320 CDF	1350 WEY	1320 WSB	1350 WEY
1425 BPW	1425 WEY	1625 BPW	1725 WEY	1420 CDF	1450 WEY	1420 WSB	1450 WEY
1525 BPW	1525 WEY	1725 BPW	1825 WEY	1520 CDF	1550 WEY	1520 WSB	1550 WEY
1625 BPW	1625 WEY	1825 WSB	1925 WEY	1620 CDF	1650 WEY	1620 WSB	1650 WEY
1725 BPW	1725 WEY	1925 WSB	2025 YVP	1720 CDF	1750 WEY	1720 WSB	1750 WEY
1825 WSB	1825 WEY	2125 WSB	2125 WEY	1820 CDF	1850 WEY	1820 WSB	1850 WEY
1925 WSB	1925 WEY	BPW - Bristol Parkway BRI - Bristol Temple M. CDF- Cardiff Central WSB - Westbury WEY - Weymouth YVP - Yeovil Pen Mill		1920 BRI	1950 WEY	1920 WSB	1950 WEY
2025 WSB	2025 WEY			2020 WSB	2150 WEY	2020 WSB	2150 WEY
2225 WSB	2225 WEY			2220 WSB	2350 WEY	2220 WSB	2350 WEY

Yeovil Pen Mill departures



8. Business case for service improvement.

- 8.1 On the assumption that the four timetable options discussed in Section 7 could be implemented, the business case for their introduction rests on the changes to cost and revenue. The question of additional demand that will be generated on the route is addressed first. This needs to be done in two parts: that which is internal to Weymouth - Westbury (where only HoWL services operate); and that which is external (i.e. where the origin or destination is north of Westbury, where the route is shared with other service groups).
- 8.2 **External traffic.** Journeys between stations Weymouth - Westbury and those north of Westbury totalled 186k in the year October 2009 - September 2010. Almost two thirds of this (62%) is derived from just 8 flows: from Weymouth, Yeovil Pen Mill, Castle Cary and Frome to Bath Spa and Bristol TM. Modelling of the impact of the changes is done using these 8 flows, which are assumed to be a satisfactory surrogate for all flows, being well spaced out along the line.

Flow	Journeys	Journey time (mins)
Frome - Bristol TM	25222	56
Frome - Bath Spa	18780	38
Yeovil PM - Bristol TM	15057	88
Yeovil PM - Bath Spa	13636	70
Weymouth - Bath Spa	13385	124
Weymouth - Bristol TM	11550	142
Castle Cary - Bristol TM	9370	75
Castle Cary - Bath Spa	7502	57

- 8.3 The first stage of the process is to determine the Generalised Journey Time (GJT) This is a function of frequency, journey time and interchange penalties (which PDFH⁴⁸ fixes at 30 minutes, due to passengers dislike of having to change), plus the actual connection time. The variations in GJT as a result of the new timetable options is shown on the next page.
- 8.4 One aspect of GJT is 'headway', the average gap between services. PDFH adds a penalty calibration for this, as passengers would have to travel to fit the train pattern rather than when they wanted (see table on next page). In the HoWL case, there is only a small net reduction of GJT, of 4 minutes for each option, due to the regularity of the service pattern.

⁴⁸

PDFH - the Passenger Demand Forecasting Handbook, the rail industry's manual of techniques.

Flow	GJT (minutes)				
	Baseline	Optimise	Minimise	Attach	Connect
Frome - Bristol TM	107	98	106	89	114
Frome - Bath Spa	89	80	88	71	96
Yeovil PM - Bristol TM	139	130	138	121	146
Yeovil PM - Bath Spa	121	112	120	103	128
Weymouth - Bath Spa	175	166	174	157	182
Weymouth - Bristol TM	193	184	192	175	200
Castle Cary - Bristol TM	126	117	125	108	133
Castle Cary - Bath Spa	108	99	107	90	115

- 8.5 Finally, a demand elasticity coefficient of -0.8 is added to the calculation, as derived from PDFH. The elasticity is dependent on the mix of ticket types using the line. Season ticket holders, being regular rail travellers, are deemed to be less sensitive to interchanges than other ticket holders and have a lower elasticity. However, as the results table below for net change in demand demonstrates, the results are not particularly sensitive to changes in the elasticity figure used.

Flow	Optimise	Minimise	Attach	Connect
Frome - Bristol TM	+7.4%	+1.1%	+15.7%	-5.1%
Frome - Bath Spa	+9.1%	+1.3%	+19.6%	-6.0%
Yeovil PM - Bristol TM	+5.6%	+0.8%	+11.6%	-4.0%
Yeovil PM - Bath Spa	+6.5%	+1.0%	+13.6%	-4.5%
Weymouth - Bath Spa	+4.4%	+0.7%	+9.0%	-3.2%
Weymouth - Bristol TM	+4.0%	+0.6%	+8.1%	-2.9%
Castle Cary - Bristol TM	+6.2%	+0.9%	+13.0%	-4.3%
Castle Cary - Bath Spa	+7.3%	+1.1%	+15.5%	-5.0%
Weighted average (-0.8 elasticity)	+6.5%	+1.0%	+13.7%	-4.5%
Weighted average (-0.7 elasticity)	+5.7%	+0.8%	+11.9%	-4.0%
Weighted average (-0.9 elasticity)	+7.4%	+1.1%	+15.6%	-5.1%

8.6 From the above analysis it can be seen that Option C (Attachments) provides the greatest increase in demand, at 14%, ahead of Option A (Optimisation) on 7%. Option B (Minimisation) has only marginal effect, at 1% growth, while Option D (Connections) causes a decline in demand, of 5% - arguably less than might have been expected with the abolition of all through workings.

8.7 **Internal traffic.** For the purposes of the modelling, this comprises both journeys where the origin and destination are within the Westbury - Weymouth, and those who interchange at Castle Cary or Westbury for onward transit to Reading, London, Exeter etc.⁴⁹ Six flows account for 58% of the internal traffic, as follows, for the same time period as before:

Flow	Journeys	Journey time (mins)
Weymouth - Yeovil PM	39224	52
Weymouth - Frome	11154	85
Weymouth - Dorchester	11830	13
Dorchester - Yeovil PM	7664	39
Yeovil PM - Frome	4720	33
Frome - Westbury	4291	9

8.8 In the same manner as before, GJTs are calculated. Options A, C and D have the same frequency Westbury - Weymouth and so derive the same GJTs:

Flow	GJT (minutes)				
	Baseline	Optimise	Minimise	Attach	Connect
Weymouth - Yeovil PM	198	176	180	176	176
Weymouth - Frome	231	209	213	209	209
Weymouth - Dorchester	159	137	141	137	137
Dorchester - Yeovil PM	185	163	167	163	163
Yeovil PM - Frome	179	157	161	157	157
Frome - Westbury	155	133	137	133	133

8.9 Similarly, the change in demand as a result of applying these GJTs and headways is then calculated:

⁴⁹ It is assumed that an insignificant number of transfers take place between Yeovil pen Mill and Yeovil Junction, and between Dorchester West and Dorchester South.

8.14 The great weakness of the PDFH approach is that it is 'one size fits all', and does not adequately address the concepts of suppressed demand or latent potential, as derived from the wider benefits that may be accrued from service enhancement (Section 6). It would be inappropriate to put a firm figure in terms of journeys or revenue that may accrue due to this, partly because of the difficulty of quantifying so many of the factors and partly because many can easily be influenced by external factors. For example, the rising price of oil could quickly have a dramatic impact on travel patterns by all modes, to a degree that more than counters the uplift of an improved timetable. Even here, the impact would not be straightforward, as the effect is likely to be ameliorated by a switch from road to rail, depending on fares policy and capacity. A final factor outwith PDFH is the differential role of marketing; and it is certain that HoWRP would instigate a vigorous campaign that would maximise awareness and thus potential growth.

8.15 One specific area of potential is journeys taken on Sundays. The HoW breakdown by day of week for October 2009 - September 2010 is shown below, with Sundays at 5% a third of the average of other days. This contrasts with a national figure of around 8%⁵¹, suggesting that HoW is indeed lagging behind:

- Sunday 5%
- Monday 17%
- Tuesday 16%
- Wednesday 16%
- Thursday 16%
- Friday 17%
- Saturday 13%

8.16 Overall, it is estimated that the real uplift of an improved timetable is in the order of 20-50% greater than the figures generated by using PDFH. In the summary below (section 8.21), an improvement of one third (33%) is factored.

8.17 Additional costs incurred from the enhanced timetable are more reliable to calculate, the only difficulty being to tease out the additional resourcing required. Clearly, this must come down to additional train units, and for each unit a headcount complement of drivers and guards (4 of each if the unit is to be used for as much of the day as possible). The difficulty arises where these resources are shared between routes, as happens now and has been the case for many years (section 6.9), when it is not always straightforward to allocate a proportion of the resource to a specific route. For the purposes of analysis, only the difference in the service level between Westbury and Weymouth is considered, although in practice the TOC would need to undertake a detailed resourcing analysis of its entire fleet and timetable requirements: it is possible the figures below are too conservative.

8.18 For the four timetable options generated, the estimated additional resourcing is as follows:

⁵¹ Personal communication.

- A: Optimisation: 2-car units +1 crews +4 round trips + 8
- B: Minimisation: 2-car units +1 crews +4 round trips + 5
- C: Attachments: 2-car units +2 crews +4 round trips + 8
- D: Connections: 2-car units +1 crews +4 round trips + 8

8.19 The elements of incremental extra cost that would be included in a TOC cost model are as follows:

- Unit hire: at least £250k p.a. for a 2-car cl.150, scarcity and the short-term franchising system forcing the market value of the 25 year old trains to a high level.
- Headcount. One unit requires two drivers and guards to be restored, plus a further two to cover actual availability; total at least £180k p.a. Note that Attachments does not require more than the others as for half the time the units are coupled to other services, and so do not require additional crewing.
- Track access charges (TACs). There are fixed TACs and variable TACs, the latter the issue here, and calculated on vehicle miles. This works out to approximately £60k p.a. for Minimisation and £90k for the others.
- Unit running costs and maintenance. Although the maintenance facility at Bristol St Phillips Marsh is at near capacity, it is assumed that extra units could be accommodated. Cost in the order of £80k for Attachments and £40k for the others

8.20 Note that the above analysis does not take into account catering for the peaks of demand, although the wider choice of travel options in the timetable can be expected to flatten out the pressure on individual services, and so ameliorate the problem.

8.21 Overall, the additional cost and revenue results are as shown below. It can be seen that Minimisation and Connections require substantial subsidy and so cannot be recommended as a way forward. However, both Optimisation and Attachments are at around the break-even level, and thus merit further consideration.

- **A: Optimisation:** cost +£560k revenue +£530k difference £- 30k
- **B: Minimisation:** +£530k +£230k £-300k
- **C: Attachments:** +£850k +£860k £ 10k
- **D: Connections:** +£560k +£ 30k £-530k

9. Conclusions and recommendations.

9.1 The analysis in the previous sections contains some clear messages:

- The HoWL timetable has remained relatively unchanged for decades, the few changes there have been reflecting external resourcing issues.
- This is in stark contrast to most comparable routes, where there have been significant increases in service frequency and moving to clockface timings.
- Despite being the major town on the route (between Westbury and Weymouth) Yeovil is poorly served, and has no services suitable for commuters.
- Day trips on Sundays outside of Summer are effectively impossible, due to the late start in operations. This goes against changes in modern leisure demands and the national aspiration for a '7 day railway'.
- Whilst current usage has grown faster than average for the region (the credit is in no small part due to HoWRP), it is nonetheless lower than that of similar towns and routes where the timetable has improved.
- Direct modelling plus a consideration of spin-off benefits indicates that a significant timetable upgrade can be achieved at little or no extra subsidy requirement, and without the need for capital investment in infrastructure.
- This will, however, require extra trainset and traincrew resourcing; but the timetables tested are theoretically valid and robust.
- There are wider benefits in terms of goodness of fit with 4 of the 5 LTP 'transport goals'; and carbon reduction per passenger journey in the medium term.
- To achieve this upgrade it is essential that it is tied into the Greater Western refranchising process, in order that resource balancing and optimisation can be achieved.
- In essence, this is a much-needed and long overdue development, and with the refranchising consultation about to start now is the ideal opportunity for putting it on the agenda.

9.2 Of the four timetable options devised and examined, two merit further consideration by the DfT and bidders for the new Greater Western train operator franchise. Both should aim to be cost neutral over the duration of the franchise, given strong and enthusiastic support by stakeholders coupled to effectively targeted marketing.

9.3 Both options provide 16 weekday services each way south of Westbury on a clockface pattern, and 6 Summer / 4 Winter Sunday services.

9.4 The **Optimisation** approach sees hourly Weymouth arrivals on weekdays at xx15 from 0715 to 2115 (and then 2315), plus hourly Weymouth departures at xx35 from 0535 to 1935 (and then 2135). 8 services work to and from Bristol Parkway (given access to the North fringe zone of major employment and

education establishments, and 8 to Westbury, for connections northwards. Turnarounds are 10 minutes at Bristol Parkway (minimising platform occupancy), 30 minutes at Westbury, and 20 minutes at Weymouth. 6 trainsets are required, 2 of which become spare inter-peak at Bristol (thus with the option of maintenance). All crossings are made at Yeovil Pen Mill.

- 9.5 On Summer Sundays 3 sets are required, 1 being available at Bristol inter-peak. The 6 services are on a two-hourly frequency, on odd hours at Weymouth (xx15 arrivals from 1115 to 2115, and xx35 departures from 0935 to 1935). 2 services work to / from Bristol Temple Meads, the other 4 turn at Westbury. Crossings are made at Dorchester. The Winter Sunday pattern uses 2 sets, still with 2 through workings to / from Bristol (to maintain the base long-distance leisure flows), but with a 4-hour gap. Should demand warrant it, the enhancement to a year-round pattern would be straightforward.
- 9.6 The **Attachments** approach is similar for operations south of Westbury, but the big difference is that most HoWL services involve attachments / detachments being made at Westbury with Cardiff-Portsmouth (and vice versa) services. Although uncommon in the South West region, being regarded as potential performance risk, this is standard procedure in 'third rail' territory (and indeed at Salisbury). The big advantage is through working to Bristol and beyond for most services, but is more resource-intensive (although the benefits of extra capacity will be felt more widely too). Crossings are made on the SWML in the vicinity of Upwey and the GWML at Castle Cary, on weekdays.
- 9.7 The 16 services feature hourly Weymouth arrivals at xx40, from 0740 to 2040 (then 2240 and 0040), with departures at xx30, from 0530 to 1930 (then 2130). From both Cardiff Central and Weymouth all services from the 0630 to the 1730 in each direction run through, with the Westbury split. The one before southbound and one after northbound only work from / to Bristol Temple Meads, whilst at the start and end of the day workings are only south of Westbury, with connections northwards. Eight sets are needed, but one becomes free in the evening peak at Cardiff.
- 9.8 The Sunday timetable is identical to that for the Optimisation proposal. It should be noted, however, that as an alternative 2 units could cycle on a two-hourly clockface timetable between Westbury and Weymouth giving 6 round trips and a 10-hour period of operation.
- 9.9 The principal advantages and disadvantages of the Optimisation approach are:
- + Only one additional 2-car set required.
 - + Resourcing is self-contained to the route (therefore cannot import problems)
 - + Links to Bristol's North Fringe, and connections at Bristol Parkway.
 - - Financial analysis £40k worse than best-performing option.
 - - Possible timetable pathing issues north of Westbury.
- 9.10 The principal advantages and disadvantages of the Attachments approach are:
- + Best financial return (£10k annual net revenue forecast).

- + Through working to and from Newport and Cardiff.
- + Provides much-needed additional capacity Cardiff, Bristol and Westbury.
- - Two additional 2-car sets required.
- - Possible performance risk of attaching / detaching at Westbury.

9.11 In practical terms, a detailed study of performance risk is required, based on a validated timetable. The Attachments approach is elegant and has the considerable extra benefit of increasing capacity on not just one route (from Westbury / Bath) but two (from Cardiff / Newport) into Bristol; on its own, this could be enough to swing the argument, and certainly the views of Bristol region stakeholders (notably the West of England Partnership) should be sought for supporting the project.

9.12 In the short term, though, finding one additional unit would be challenging, but finding two could easily prove unachievable, even given the limited cascades planned from current investment nationwide. The best hope is for electrification of the Cardiff 'Valley Lines' network, which would release a significant number of cl.150 units.

9.13 Optimisation scores in that less resourcing is required, although it is likely to be more reliant on the reinstatement of the 4th platforms at both Westbury and Bristol Parkway for robust performance - both relatively expensive infrastructure projects that could not be delivered quickly. However, both schemes are essential if these stations are to achieve their full potential as interchange hubs, whilst at the same time being efficient operationally. Again, the chances of delivering the HoWL upgrade are linked to external initiatives, and so it should not be seen in isolation.

9.14 In conclusion, either the Optimisation or the Attachments approach are recommended as sensible ways forward to get the greatest benefit from the HoWL route. Which of the two should be pursued will come down to practical issues of planning and performance - and the critical question of additional trainset availability.