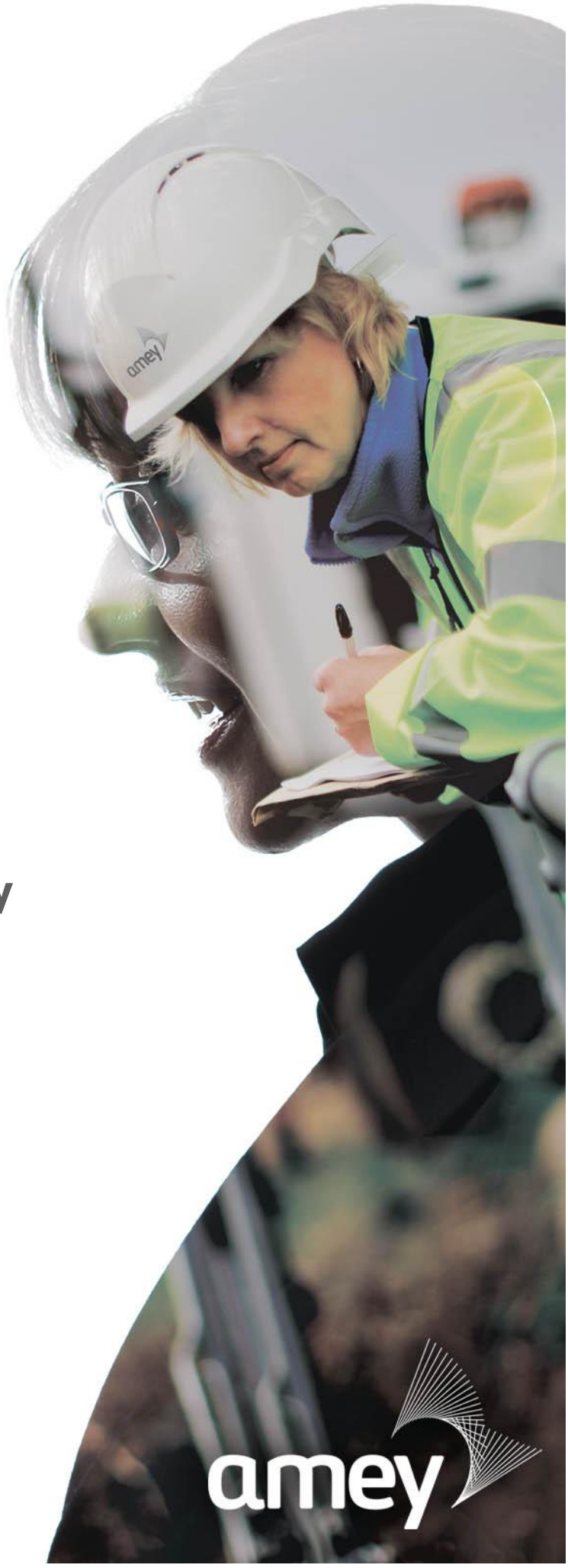
Gloucestershire COUNTY COUNCIL



Rail Study Report

Gloucestershire Rail Study

COGL14R037 /Rep01 Revision 01

September 2015

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Executive Summary

Introduction and Context

This study is designed to review a number of rail development proposals within Gloucestershire in the light of wider developments within the rail sector and economic growth plans within the county. It will form the foundation for the County's Rail Strategy as part of the wider Local Transport Plan.

Gloucestershire stands in a strategic location between the growing City Regions of Bristol, Cardiff and the West Midlands and its rail links enable commuting and commercial links to Oxford, Reading and London. This location and the high quality of life available in its towns, villages and rural areas will enable significant housing and employment growth which is reflected in the local plans of the six district, city and borough councils. Gloucestershire's pivotal position on the rail network is a key asset in delivering these plans in an effective, sustainable manner.

A number of proposals have been put forward for new stations and for increases in service at existing stations. Alongside this, the rail industry has put in place a long term investment planning process, with the forthcoming delivery of Route Studies for each of the regions (including the Western and Welsh routes) along with short, medium and long-term proposals for electrification and resignalling. All of this has been taken into account when considering the opportunities presented by rail connectivity in Gloucestershire and the barriers which must be overcome to exploit them.

Expansion of services, new stations and additional stops can only be introduced in the context of wider investment by the rail industry, alongside complementary funding through partners such as local authorities and Local Enterprise Partnerships. This study seeks to understand these synergies in order to present a strategic approach designed to make the best of Gloucestershire's strengths in the short, medium and long term.

Growth and Opportunity

The electrification of the Great Western Mainline (GWML), the completion of Crossrail in 2018 and its integration with the GWML at Reading will provide significantly improved access to the economy of the South-East, enhanced further in the future by improved links to Heathrow. In parallel, the Bristol City Region has developed its MetroWest programme which includes funding for enhanced links to Yate and potentially to Gloucester. This complements the existing fast links to Bristol, Birmingham and beyond.

Growth in employment and housing will be supported and strengthened through these developments. However, it is important that local connectivity is improved to ensure that all residents, existing and new, can benefit from Gloucestershire's location.

The proposals for housing and employment growth in the Local Plans have been analysed in the study in relation to the development of existing stations and the services which use them, along with the potential for new stations.

Gloucestershire Rail Proposals

In its Local Transport Plan and in the draft Rail Strategy published by the Gloucestershire Local Transport Board, a number of proposals for new stations were put forward. The following proposals have been considered by this study:

- Hunts Grove, on the main line south of Gloucester, approximately 5km from Gloucester Town Centre;
- Stonehouse Bristol Rd on the mainline towards Bristol, south of the junction with the route towards Swindon and the existing station at Stonehouse;

- Stonehouse North, encompassing both the Bristol and Swindon lines;
- Charfield (in South Gloucestershire), on the main line towards Bristol, 26km from Gloucester and a similar distance to Bristol and;
- Chipping Campden on the North Cotswold Line, approximately 7km north of the existing station at Moreton-in-Marsh.

The case for these stations has been considered in relation to their strategic importance, the feasibility of stopping trains at these locations (with reference to line capacity and speed) and the commercial and economic performance likely to be achieved with current and forecast demand in the area, including forecast housing and employment growth. The feasibility of provision of the stations has been considered in terms of an indicative cost of construction, which has been used to undertake the economic analysis. Rail infrastructure costs (ie additional track and signalling) have not been built into this analysis since it is assumed that local stations of this nature could only go ahead if they could be supported by existing infrastructure or that any additional infrastructure would be provided as part of the wider rail investment programme.

Alongside this, in the context of the wider rail investment programme, the potential for increasing train frequencies at existing stations has been considered as part of a wider investment programme in rail station facilities. This takes account of the existing and potential demand at these stations, current journey patterns, their location relative to existing or planned development and the wider rail investment programme set out in the Route Studies. As well as increased frequencies, the provision of car parking, improved integration with the surrounding areas and the provision of improved cycle and bus links have been considered. Census Journey to Work and rail ticketing data were used to determine the likely pattern of patronage from each of the stations (existing and proposed) in their overall context, taking account of existing and proposed development in the area. Consultation was undertaken with stakeholders to understand the performance of the existing stations, the train service frequencies and destinations available and the physical constraints affecting access to assist in this process.

The analysis has been conducted on a station-by-station basis with each of the proposals being considered in isolation. Whilst this is adequate to provide the overall strategic direction and the required indication on the likely economic performance of the individual proposals, further analysis would need to be conducted before a business case could be developed for any of the proposals.

The results of these assessments are reported below.

Summary of Proposals – Demand/Economics, Strategic and Deliverability Factors

Cheltenham Spa

Findings	Short-Term Recommendations (to 2019)	Medium to Long-Term Recommendations (2019-2029+)
Key gateway to one of two main urban centres Excellent connectivity across UK, including London Rail Interchange point Distant from town Poor passenger facilities Lack of parking Long-term train capacity issues	Investment in facilities Increase car parking (including short-term use of area for potential bay platforms Improve concourse Improve bus interchange Improve cycle access & facilities	Review train capacity requirements and potential need for bay platforms (terminating trains) Review overall service patterns as part of wider planning

The patronage and economic analysis of frequency increases at Cheltenham Spa indicates that a total discounted benefit (PVB) of £19.5m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 5% (2015) and 32% (2030).

Gloucester

Findings	Short-Term Recommendations (to 2019)	Medium to Long-Term Recommendations (2019-2029+)
Key gateway to one of two main urban centres Excellent connectivity across UK, including London (some with interchange at Cheltenham Spa) Central location provides focus for development of Gloucester City Poor environment around station Poor access to town centre Very poor access to north side, including hospital Limited car parking	Develop car park on north side New pedestrian entrance to north side (car park and hospital) Improve highway access to north-side car park Improve north-south access (improve subway) Integrate station with town centre, via Kings Quarter and new bus station Improve forecourt and station buildings Develop land to north of station – good connectivity	Work with GFirst, Bristol and West of England LEP to fund & deliver half-hourly Bristol-Gloucester service Work within rail industry long-term planning to increase Gloucester-London frequency

The patronage and economic analysis of frequency increases at Gloucester indicates that a total discounted benefit (PVB) of £18.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 7.6% (2015) and 50% (2030).

Stroud

Findings	Short-Term Recommendations (to 2019)	Medium to Long-Term Recommendations (2019-2029+)
Market town station Hourly services to London and to Swindon (from Cheltenham via Gloucester) Central location and attractive environment Limited car parking Good cycle access but limited cycle parking Poor access across tracks (old footbridge not Equality Act compliant)	Improve station facilities and access (eg footbridge) Increase and improve cycle parking	Work with rail industry on long-term increase in frequency (eg half-hourly to London)

The patronage and economic analysis of frequency increases at Stroud indicates that a total discounted benefit (PVB) of £12.6m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 56% (2030).

Kemble

Findings	Short-Term Recommendations (to 2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves Cirencester and surrounding rural area Fast hourly service to London (from Cheltenham/Gloucester) – excellent scope for growth Significant housing growth at Cirencester and possibly at airport Station lies 6km from Cirencester Car park full – awaiting planning permission for larger new one Car parking always likely to be constraint Poor highway access (queuing at A433/A429 junction) Poor cycle access from Cirencester Irregular and complex bus links, not timed to trains	Deliver new car park and plan further provision to meet growth Improve highway, bus and cycle links (developer contributions) Work collaboratively with Cotswold District Council, GFirst and the rail operator on plans to develop the station, based on housing growth in the area	Work within rail long-term planning to advocate London-Swindon additional service runs to Kemble Electrification to Kemble to enable the above

The patronage and economic analysis of frequency increases at Kemble indicates that a total discounted benefit (PVB) of £28.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 20% (2015) and 61% (2030). The methodology used does not take full account of all housing growth in Cirencester and does not include the potential housing on the former airport. With this additional growth, the commercial and economic case for Kemble station will be improved further.

Moreton-In-Marsh

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves village and surrounding rural area Good links to London (from Worcester) via Oxford Low growth in patronage (2001-2012) Relatively low housing growth planned	Improve station facilities and car parking Respond to Electrification Route Study Consultation, advocating electrification of the route	Work within rail long-term planning system to explore potential for redoubling of track and electrification potential. Note that Government rejected redualling in April 2015.

The patronage and economic analysis of frequency increases at Moreton-in-Marsh indicates that a total discounted benefit (PVB) of £19.2m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 11% (2015) and 48% (2030).

Cam & Dursley

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves rural area and is distant from settlements Recently extended car park is full Bus links are provided but infrequent Relatively quiet roads for cycling	Improve station facilities and car parking	Work with GFirst, Bristol and West of England LEP to fund & deliver half-hourly Bristol-Gloucester service

The patronage and economic analysis of frequency increases at Cam and Dursley indicates that a total discounted benefit (PVB) of £10.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 18% (2015) and 64% (2030).

Lydney

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves Lydney and wider Forest of Dean Trains stop roughly hourly (irregular) Distant from town, with poor access Limited parking available Significant planned housing growth in area, with more possible at harbour. Availability of rolling stock constrains additional stopping services Longer-term plans include extra Cardiff train, which may go via Lydney or Bristol Parkway	Implement Lydney Transport Strategy to improve access Enlarge car park and develop plans for more parking Work with GFirst, developers and neighbouring areas to fund rolling stock/staffing for additional stopping services	Work within the long-term planning system to develop most effective approach to Lydney connectivity, taking account of access to Cardiff, Bristol and Gloucester/ Cheltenham

The patronage and economic analysis of frequency increases at Lydney indicates that a total discounted benefit (PVB) of £15.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 33% (2015) and 93% (2030)

Stonehouse

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
2-hourly service to London (hourly with change at Swindon) Basic station facilities Very constrained location, making access and parking difficult Cycling to station from surrounding area quite feasible Poor cycle storage (unsuitable location, poor security)	Improve station facilities, including cycle storage Promote walk and cycle access	Work within rail long-term planning process to enhance frequencies to hourly

The patronage and economic analysis of frequency increases at Stonehouse indicates that a total discounted benefit (PVB) of £3.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 31% (2030).

Ashchurch for Tewkesbury

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Infrequent (2-hourly) service Significant housing growth planned Poor connections to Tewkesbury by bus, rail Very basic station facilities Rolling stock/staffing constrains additional stopping services	Seek funding to improve station facilities, including parking Work with GFirst, FGW and developer to fund hourly service	Seek further improvements in service through engagement with long-term planning process, especially in terms of Bristol-Birmingham electrification and most effective approach to line capacity improvements Develop business case to extend Bristol-Gloucester services to Worcester, via Ashchurch

The patronage and economic analysis of frequency increases at Ashchurch for Tewkesbury indicates that a total discounted benefit (PVB) of £9.2m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 39% (2015) and 100% (2030). If frequencies were increased further (ie to half-hourly), the patronage growth would be 72% (2015) and 147% (2030), though this is from a very low base. The projections are based on existing journey patterns, with a relatively high level of local trips. The developments at Ashchurch may attract people with longer-distance travel horizons, leading to a significant increase in net benefit.

Stonehouse Bristol Road (Proposed)

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Location on Bristol-Gloucester route Close to existing Cam and Dursley station and very close to Stonehouse (different line) Some housing growth in area Location close to existing employment Low BCR and PVB Some stakeholder support Additional stop not favoured by Cross-Country or FGW due to capacity constraints	Not recommended to take forward	Reconsider only if in the long-term there was very high housing growth planned in the area (3000+ homes). This would be in the context of a review of station locations in the area, including Cam and Dursley, Stonehouse and Stonehouse North (proposed)

The patronage and economic analysis of Stonehouse Bristol Road indicates that a new station at this location would generate a total discounted benefit (PVB) of £12.9m and a BCR of +1.34. This is insufficient to justify a station at this location, especially taking into account that 56% of users would be abstracted from existing stations.

Charfield (Proposed)

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Also located on Bristol-Gloucester route Significant housing growth in area Moderate patronage (second highest on basis of comparable frequencies) Moderate abstraction (37%) from existing stations	Continue dialogue with FGW and Network Rail on feasibility Safeguard site Work with South Gloucestershire Council and FGW on the development of a Transport Business Case at initial (SOC) stage, including initial feasibility. This would be based in large part on housing growth	Engage with rail long-term planning to ensure that line capacity changes enable station to be provided Develop business case for delivery of new station

The patronage and economic analysis of Charfield indicates that a new station at this location would generate a total discounted benefit (PVB) of £18.6m and a BCR of +2.31. The high level of housing growth in the area may enable a sound case to be developed for a station at this location. This would need to encompass adequate commercial revenue (versus abstracted trips).

Hunts Grove (Proposed)

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Located on Bristol-Gloucester and Gloucester-Swindon-London routes, with the potential to stop London trains Potential for housing growth in area, with considerable development already in place High patronage projections, with 36% abstracted Limited stakeholder support High PVB and positive BCR	Continue dialogue with FGW and Network Rail on feasibility Safeguard site Advocate housing development as means to provide adequate patronage Develop a Transport Business Case at initial (SOC) stage, including initial feasibility	Engage with rail long-term planning to ensure that line capacity changes enable station to be provided Develop business case for delivery of new station

The patronage and economic analysis of Hunts Grove indicates that a new station at this location would generate a total discounted benefit (PVB) of £18.7m and a BCR of +1.93. This suggests that a business case for the construction of a station at this location could be made, though the predicted BCR is slightly below the 2.0 threshold normally applied to LGF funding. The TEMPRO-based growth forecasts used in the demand modelling probably does not take account of all potential housing developments. The case must demonstrate adequate commercial revenue from new trips (as opposed to those abstracted from other stations).

Stonehouse North (Proposed)

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Would be possible to stop both London and Bristol services 57% of projected patronage abstracted from existing stations Low housing growth in immediate area Not likely to be feasible with either Stonehouse (existing) or Stonehouse Bristol Road. Likely to be mutually incompatible with Hunts Grove. Low patronage projections	Not recommended to take forward	Reconsider only if in the long-term there was very high housing growth planned in the area (3000+ homes). This would be in the context of a review of station locations in the area, including Cam and Dursley, Stonehouse and Stonehouse Bristol Road (proposed)

The patronage and economic analysis of Stonehouse North indicates that a new station at this location would generate a total discounted benefit (PVB) of £10.7m and a BCR of +0.95. However, since 57% of the users would be abstracted from existing stations (primarily Cam and Dursley and Stonehouse) this indicates that a sound business case could not be made for this proposed station.

Chipping Campden (Proposed)

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Would be served by Worcester-Oxford-London Probably mutually exclusive with Moreton-in-Marsh Low housing growth in area Very low patronage projections High level of abstraction (76%) from existing stations	Not recommended to take forward	It is unlikely that a case could be made even with frequency increases and electrification. Investment in existing stations, including car parking and better connectivity is likely to offer better value for money

The patronage and economic analysis of Chipping Campden indicates that a new station at this location would generate a total discounted benefit (PVB) of 13.1m and a BCR of 1.63. However, this is based on very few users and growth projections stemming from overarching Rail Market Study predictions which will overstate the true growth in this area. This is reflected in very low growth at Moreton in Marsh station (only 31% between 2001 and 2014, the lowest in Gloucestershire). 76% of the users would be abstracted from existing stations, primarily Moreton in Marsh and Honeybourne. This strongly indicates that a sound business case could not be made for this proposed station.

Long-Term Opportunities

The First Great Western Rail Franchise, is pivotal for Gloucestershire, along with the Cross Country and Arriva Trains Wales franchises. The company's priority in relation to Gloucestershire is focussed on improving services from the main centres, including Cheltenham and Gloucester and especially to London and the wider South-East. These improved links should be complemented by enhanced connectivity to growth centres, including Bristol, Birmingham, Cardiff, Oxford, Swindon and Reading. It is likely that more people will come to live in Gloucestershire with the intention of working in these centres and development should be focused on locations where this is possible by rail, such as Kemble.

A key priority is to fund and deliver a half-hourly Bristol-Gloucester service as an extension to the MetroWest Phase 2. This could provide the opportunity to extend the service to Worcester, providing further stopping services at Ashchurch to serve its growing population as the ex-MOD site develops. This would require co-operative working with Worcestershire County Council and their LEP and would be linked to the plans for Worcestershire Parkway station. These opportunities are linked in turn to the longer-term plans for the route, including options to improve capacity through signalling and active loops. Gloucestershire, neighbouring authorities and their respective LEPs should engage with Network Rail's planning process to ensure that the requirements for local and longer-distance connectivity are incorporated into the plans.

The provision of additional stopping services at Lydney can be explored in relation to the proposed housing developments, though this may require the funding of rolling stock. In the longer term the opportunity exists to improve links to Cardiff, Bristol and Gloucester. This derives from the long-term plans for additional Gloucester-Cardiff services. Decisions are yet to be made on whether to route the additional trains via Lydney or Bristol Parkway. With co-ordination of timetables, either route may support improved connectivity at Lydney and by engaging with the rail sector, the eventual approach can be influenced.

There is great potential for Gloucestershire through the development of Crossrail, MetroWest, Heathrow Western Link and HS2. However, it is critically important that we express our needs

and the contribution which Gloucestershire can make in the development of the economy of the South-West and wider United Kingdom. This includes:

- Advocating the electrification of the Birmingham-Bristol route as a priority, along with the North Cotswold Line;
- Planning alongside Network Rail and First Great Western for electrification of the Swindon-Kemble section of the Golden Valley Line to enable additional trains to serve growth in Cirencester and Kemble;
- Capitalising on the benefits brought by Crossrail and Heathrow connectivity through the integration with the Great Western Mainline route;
- Working collaboratively with Bristol and the West of England LEP to develop a case for extending the planned half-hourly MetroWest (Bristol-Yate) services to Gloucester and potentially Worcester;
- Ensuring that good connectivity through Birmingham onto HS2 is provided, enabling the continuation of fast trains to Manchester and Leeds alongside regional links on existing lines

Addressing these connectivity issues is critical for the county to benefit from the emerging City Region agenda and the scale of economic growth planned in these areas. Collaborative cross boundary working with neighbouring LEP's and Local authorities is essential to achieve this.

Gloucestershire's local services are bound up with fast long distance services which are the very thing which gives its connectivity advantages. Gloucestershire needs to actively engage in future discussions on long-term capacity planning to enable enhanced local services along with high-speed services. This will be alongside dealing with important local issues. Whilst not all solutions will benefit the county, Gloucestershire must be actively involved in these discussions.

Summary of Key Findings

- *Short Term* – Investment in the improved integration of **Cheltenham Spa and Gloucester** stations into their surroundings, making them attractive, effective gateways into the county's primary urban centres. Continue to improve all stations.
- *Short term* - contribute and influence the debate surrounding medium and long term developments such as **MetroWest and HS2** connectivity through Birmingham. Look at opportunities and how to exploit them in terms of broader connectivity to London, Bristol and Birmingham.
- *Short to Medium term* – work with partners (including the developer) to improve services at **Ashchurch** – initially to an hourly service and longer-term work alongside the wider rail industry to improve frequencies further. Work in partnership to prepare a Transport Business Case, as part of the wider approach to Junction 9 M5, for the funding and delivery of an enhanced rail service.
- *Short to Medium term* – work with partners to improve service frequencies at **Lydney** and longer-term work alongside the wider rail industry to improve frequencies and connections further. Extend the current Transport Business Case (Lydney Transport Strategy) to take into account the long-term opportunities presented by the rail station in the context of planned developments in the town and harbour area.
- *Short to Medium term* – work with partners to manage growing demand at **Kemble** Station. Promote this station as a Cirencester Parkway facility. This would require improvements to station facilities, further car parking spaces, improved sustainable transport linkages with the town and longer-term work alongside the wider rail industry to improve frequencies

further. Prepare a Transport Business case which takes account of planned developments in the area, improved integration with the surrounding area and the opportunities presented by the existing and potential Swindon and London services.

- *Short term* (for longer-term implementation) - work in partnership with the Gloucestershire First, West of England Partnership and Great Western Cities to develop and fund the extension of the enhanced Bristol-Yate service to Gloucester and potentially to Worcester.
- *Medium term* – explore with First Great Western and Network Rail the most effective approach to station development and stopping patterns on the Bristol-Gloucester route, including the development of the existing Cam and Dursley station and the potential for one or more new stations. This process will be informed by the demand forecasts in this study as well as the relationship with further housing development and the development of rail infrastructure on the route. Prepare a Transport Business Case at Strategic Outline Case (SOC) level to explore the options.
- *Short term* – implement complimentary enhancements to existing stations including the developments of travel plans, integration of bus services, improved cycle parking and customer facilities.
- At **Charfield**, a Transport Business Case could be prepared. However, since this proposed station is in South Gloucestershire, any further work would need to be commissioned by this neighbouring local authority. A station at Charfield and the revenue it may generate could support the overall business case for the extension to Gloucester of the forthcoming half-hourly Bristol-Yate service.

Vision for Key Gloucestershire Rail Routes

There are four main rail axes which provide both local and longer-distance connectivity for Gloucestershire and its individual communities. Using the key findings from this study and the rail industry's long-term planning considerations, the following table summarises the key recommendations relating to each of these.

<table>
<tr><th colspan="4">Bristol-Gloucester-Cheltenham Spa-Ashchurch</th></tr>
<tr><td colspan="4">Including connectivity to Worcester, Birmingham, the South-West, North-West and North East</td></tr>
<tr><td rowspan="2"></td><td>Short-term (2015-2019)</td><td>Medium-term (2019-2029)</td><td>Long-term (2029+)</td></tr>
<tr><td>Control period 5</td><td>Control Periods 6 & 7</td><td>Control period 8+</td></tr>
<tr><td>Route as a whole</td><td rowspan="2">Develop case for extension of Metrowest Bristol-Yate service expansion to Gloucester and potentially Worcester.

Work with TOC & Network rail to plan additional stopping service at Ashchurch

Support electrification of route</td><td>Provide additional stopping service at Ashchurch

Work with rail industry on most appropriate locations for active loops to enable additional stopping services</td><td rowspan="2">Provide a comprehensive Bristol-Worcester service to complement fast Bristol-Birmingham with co-ordination of stops & interchange to enable increase journey choice.</td></tr>
<tr><td>Service frequencies</td><td>Deliver Metrowest extension</td></tr>
</table>

Bristol-Gloucester-Cheltenham Spa-Ashchurch			
Stations	Improve car parking and station facilities at Gloucester, Cheltenham Spa, Cam & Dursley, Ashchurch	Continued development of main stations. Link Develop business case for additional stops, favouring Hunts Grove & Charfield	Deliver new stations with co-ordinated timetables (dependent on sound business case)
Wider connectivity	Work with neighbouring areas to plan & commit good HS2 connectivity in Birmingham		Deliver seamless links to HS2 using Classic Compatible trains

Cheltenham Spa/Gloucester-Kemble-Swindon-Reading-London (Golden Valley)			
Including connectivity to Crossrail (2018+) and Heathrow Western Link (2021)			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole Service frequencies	Hourly London service - committed	Plan most appropriate approach to extension of some Swindon services	Extend additional peak services from Swindon to Kemble
Stations	Improve station facilities at Cheltenham Spa, Gloucester, Stroud & Stonehouse Improve connectivity & facilities at Kemble	Develop business case for additional station at Hunts Grove	Deliver new station at Hunts Grove (with some London trains stopping)
Wider connectivity	Integration with Crossrail at Reading	Further integration with Heathrow Western Link	

Worcester-Moreton-in-Marsh-Oxford-London (North Cotswold Line)			
Including connectivity to Crossrail (2018+) and Heathrow Western Link (2021)			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole Service frequencies		Develop case for redoubling track on full route and electrification. Increase frequency of service (as set out in Western Route Study)	
Stations	Improve facilities and integration with bus at stations Work with neighbouring authorities on case for Worcestershire Parkway		
Wider connectivity	Integration with Crossrail at Reading	Further integration with Heathrow Western Link	Consider case for re-opening Honeybourne Line to Stratford-on-Avon

Cheltenham Spa-Gloucester-Lydney-Cardiff			
Including connectivity to Birmingham, Midlands, North-West and North East			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole		Develop most appropriate approach towards additional hourly service, taking account of route and connections	Deliver service frequency improvements, with appropriate stopping patterns and connections
Service frequencies	Engage with Cross Country on additional stopping services at Ashchurch		
Stations	Improve facilities and access at Lydney	Continue to improve station and local connectivity as new housing is developed	
Wider connectivity		Improve connections at Severn Tunnel Junction to improve Bristol links	

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1 Introduction and Context

1.1 Introduction

This report sets out the results of a relatively short-term investigation of the feasibility of delivering a range of rail service improvements in Gloucestershire. The proposals investigated include a number of new rail stations and improvement of facilities and rail services at others.

The primary focus of the work is geared towards exploring rail service improvements which will facilitate Gloucestershire's economic, social and spatial development plans. The tenor of the study is pragmatic and focused on:

- Plans for housing and employment growth in the areas surrounding existing and proposed stations;
- Establishing the commercial and economic potential of the rail proposals;
- Judging the feasibility of the proposals in the light of known constraints on the rail network and the current rail franchise arrangements;
- Assessing opportunities presented by programmed changes such as electrification or rolling stock developments;
- Longer-term potential and how such opportunities could be exploited;
- Prioritisation of proposals to reflect their strategic importance and practicality;
- Efficient application of resources to develop schemes in the long and short-term.

1.2 Study Context

The context of the study is set within the following:

- The developing spatial strategies (Local Plans) of the Gloucestershire local authorities and the inclusion of overall and specific development plans within these
- The policies, programmes and schemes within the Gloucestershire Local Transport Plan, especially in the context of the recent consultation exercise undertaken on the draft Local Transport Plan 2015-31
- The devolution of capital investment through the Local Enterprise Partnership (Gloucestershire First/GFirst) and the Gloucestershire Strategic Economic Plan prepared by GFirst.
- The developing Route Studies for the rail routes within the area and the plans for rail within the region encompassing the current (to 2019) and subsequent Control Periods;
- The rail franchises affecting the delivery and development of rail services in the area. This especially applies to First Great Western but also encompasses Cross-Country and Arriva Trains Wales;
- Metro West proposals for rail enhancements serving the Bristol City Region, along with longer-term devolution potential through the Great Western Cities proposals;
- Other major infrastructure programmes (including HS2) and how these can provide further opportunities.

1.3 Overall Approach

This study was designed as a short-term exercise to establish the priorities for rail in Gloucestershire in the context of the developing Local Transport Plan, Local Plans and Strategic Economic Plan. This takes account of plans being developed by the rail industry, coupled with consultation with key stakeholders. A robust approach has been followed using published information alongside demand modelling at existing stations and a number of proposed stations put forward in the Local Transport Plan. This is intended to establish which potential investments are likely to meet the needs of Gloucestershire communities in the future. However, a relatively limited study of this nature cannot establish a clear business case of the sort required for investment to be taken forward. Those investment options which are to be progressed will be subject to the development of a Transport Business Case which addresses all aspects of strategic fit, value for money and deliverability. Commercial and funding aspects, which are not addressed in this study, will be a key element of the development of the proposals.

The study encompassed the following:

- Analysis of the policy context, especially in terms of the Gloucestershire Local Transport Plan, the Strategic Economic Plan (in the context of devolution of local investment planning to Local Enterprise Partnerships) the Local Plans of Gloucestershire Borough and District Councils and the National and regional policies and plans being developed by the rail industry;
- Analysis of the opportunities arising from the electrification of the Great Western Route, the development of CrossRail and the Heathrow Western Link, the MetroWest proposals being developed by Bristol and its partners and the longer-term development of HS2 and Great Western Cities;
- Consultation with stakeholders, including District Councils, train operating companies, Network Rail, local Elected Members and a number of rail user groups;
- Analysis of overall current demand for rail travel (in the context of overall travel demand) and the likely increases in demand due to new housing, based on existing and developing Local Plans;
- Modelling of the likely demand which would be generated through the construction of new rail stations at a number of locations throughout Gloucestershire, using a Local Station Model developed by the University of Southampton.
- Modelling of demand generated through frequency enhancements at existing stations, using the approach set out in the Rail Passenger Demand Forecasting Handbook.
- Transport economic appraisal of the modelled frequency enhancements and new station proposals, based on the above demand forecasts in the context of WebTAG recommendations.
- Use of published information and consultation evidence, coupled with judgements on engineering feasibility, to assess the likely timescales for implementation of investment options. Limited assessment of costs, especially for new stations;
- Recommendations on prioritisation and timescale based on a combination of strategic fit, value for money and deliverability, coupled with recommendations for engagement on longer-term connectivity issues.

1.4 Constraints

Although this report sets out as far as possible the definitive status of rail opportunities, there are a number of factors which cannot be taken into account. These include:

- The uncertainty regarding the location, quantity and types of housing and jobs to be created across Gloucestershire. Whilst this study has taken into account all current forecasts, this must be seen in the context that several Local Plans are not yet adopted and will be subject to change. Even where such plans are fixed, the details in terms of timing and types of development are uncertain. This affects the feasibility and timing of any new station developments or service enhancements to existing stations.
- Furthermore, the selection of locations and prioritisation may be subject to political changes. The proposed station locations were determined by Gloucestershire County Council and its partners and no attempt was made within this study to identify alternative locations. Whilst the prioritisation set out in this report in this based on the likely demand (derived by modelling) at each location, this may need to be re-evaluated if local plan proposals alter and other locations are suggested.
- The incomplete Route Study process being undertaken by the rail industry and the uncertainty of the decision-making processes and investment plans which will follow. The Western Route Study, Welsh Route Study and the updated Electrification RUS are due to be published after the completion of this report. This report takes account of the most up-to-date information on the options being considered by Network Rail and its partners and their implications for the Gloucestershire proposals under consideration here. However, rail industry plans may change and the investment decisions which follow may be different from the assumptions made in this report. Whilst this will not affect the underlying demand projections made in this study, this will impact significantly on the feasibility of some of the proposals.
- Commercial aspects, which are largely the domain of the franchise holders, may alter over time. Whilst the commercial and operational imperatives and views of First Great Western, Cross-Country and Arriva Trains Wales have been taken into account, these franchises may be let to other operators with significantly different perspectives. Both the Department for Transport and the Welsh Government may significantly change the parameters of the franchise. These factors may change the feasibility of the proposals considered in this report.
- Demand modelling is based on individual stations in isolation. No attempt was made to undertake modelling of the complex interactions between station demand, though some assessment of likely abstraction rates has been made in calculating the economic impacts of the various proposals.
- Although indicative costs for the provision of new stations has been provided, more detailed costing of rail infrastructure, rolling stock and operation has not been undertaken for existing or proposed new stations.

2 Description of Proposals Considered

2.1 New Stations

The Rail Study is required to assess the viability and priority of potential new stations at:

- Hunts Grove, on the main line south of Gloucester, approximately 5km from Gloucester Town Centre;
- North of Stonehouse (encompassing both the Bristol and Swindon lines) or, as an alternative, Stonehouse Bristol Rd (encompassing only the Bristol line);
- Charfield, on the main line towards Bristol, 26km from Gloucester and a similar distance to Bristol and;
- Chipping Campden on the North Cotswold Line.

The locations of existing and proposed rail stations can be seen in Figure 2. The 'Potential Electrification Schemes' are the view of Gloucestershire County Council in relation to the development of the Local Transport Plan.

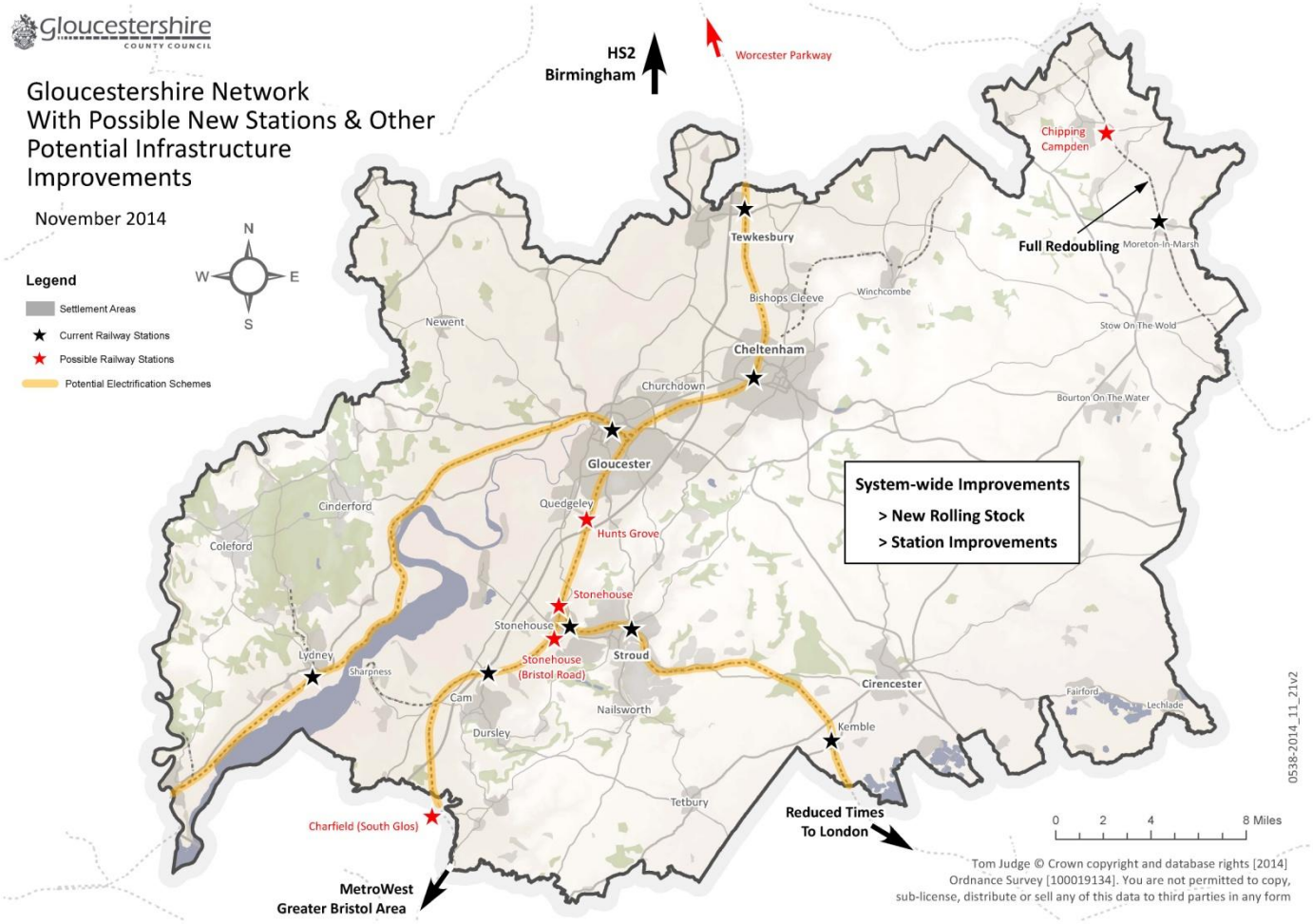

Figure 2 - Rail Station Locations

2.2 Additional Services at Existing Stations

The potential for additional services calling at County stations particularly Ashchurch for Tewkesbury, Moreton in Marsh, Kemble, Cam and Dursley and Lydney over the next 5,10,15 years taking into account, amongst, other things, proposed development within the County as set out in the respective district local plans and forecast passenger growth. Also, the scope for new services, both local and regional based on the emerging Network Rail Route Studies should be considered.

2.3 Other Aspects

Alongside the Rail Study, Gloucestershire County Council is considering proposals for improvements at Cheltenham Spa Station, Gloucester Station and a number of smaller stations elsewhere in the County. Although these will not be directly incorporated in the Rail Study, these improvements will impact on the commercial performance of these stations since they are designed to improve access, car parking, passenger facilities and signage. These factors will be taken into account in the Rail Study.

In considering the potential for new stations, the opportunities and constraints in terms of accessibility and car park capacity will be incorporated within the study, alongside key demand elements

The overall scope of the study requires:

- Understanding the background in terms of spatial and economic plans and in terms of the committed and potential changes being put in place by the rail industry
- Incorporation of the relationship with key development/spatial imperatives. For example, the Ashchurch station proposals are linked to the 2,500 homes on the MOD site near J9 M5. The study must show how Ashchurch Station can help enable the MOD site development.
- Taking account of the relationship between existing and new stations. For example, the projected Worcester Parkway station may impact on Ashchurch Station.
- Modelling the demand at each of the candidate station locations, on a 5, 10, 15 year horizon and adjusting for alternative mode / 'variable demand' influences
- Outline assessment of the engineering feasibility, constraints and costs of the development of the proposed/enhanced stations
- Preparation of an economic cost/benefit calculation (including qualitative factors where appropriate) for each site
- Prioritisation according to strategic importance, economic cost/benefit and deliverability
- Consideration of funding availability, limitations and implications for station delivery
- Documentation and presentation of the results

2.4 Overall Vision for Gloucestershire

It is important that the Rail Study is conducted in relation to the manner in which transport and connectivity can contribute to the development of Gloucestershire and the communities and businesses within the County.

The Rail Study will take these factors into account, though it is important to recognise that a single overarching vision for the County is not feasible since many of the primary responsibilities lie with district councils and are represented in the individual local plans. These elements will be taken into account in relation to the individual rail station proposals. Overarching factors which will be taken into account will include:

- The vision set out in the GFirst Strategic Economic Plan of a County encouraging world class companies, a diverse business portfolio and a reputation for starting and growing great businesses
- A high quality of life and access to jobs and good education in the local area and further afield
- The availability of good quality housing across a wide range of categories and prices, with easy access to jobs and services
- Transport links which provide inclusive choice without unnecessary reliance on the private car
- Effective planning, development, management and maintenance of transport assets and systems to provide reliable, resilient, sustainable and safe connectivity
- Mitigation of the negative effects of transport, including congestion, health impacts, greenhouse gas emissions and community impacts
- Opportunities arising from wider development of the strategic rail network, including electrification of the London-Birmingham- Bristol routes, new rolling stock and services on other routes, the Western Rail Link to Heathrow (WRLTH), Metrowest proposals and HS2.

2.5 Strategic Economic Plan and Local Growth Fund

There is a clear commitment set out in the Gloucestershire Strategic Economic Plan (SEP) in support of the economic development of the county. However, there is a focus on highway connectivity, with little reference to the role of rail.

Following the submission of the Strategic Economic Plan, GFirst LEP has secured £62.5m from the Government's Local Growth Fund to support economic growth in the area – with £11.7m of new funding confirmed for 2015/16 and £16.6m for 2016/17 to 2021. This includes: as part of the Government's ongoing commitment to GFirst LEP a provisional award of a further £10.4m of funding for projects starting in 2016 and beyond; and £23.8m of funding which the Government has previously committed as part of Local Growth Deal funding to the area.

This substantial investment from Government is expected to bring forward at least £80m of additional investment from local partners and the private sector. Combined together this will create a total new investment package of £142.5m for Gloucestershire.

The SEP does contain a commitment to fund improvements around Junction 9 of the M5 in order to enable housing and employment development in the area. This includes upgrading the rail station and the services available there, though no detail is provided and no funds have been allocated in the current LGF round. However, discussions with GFirst have confirmed that this development area is a priority for future funding and that subject to the submission of a sound business case it seems likely that funding could be made available for the rail station and associated services.

In addition, the SEP contains reference to the rail industry Long-Term Planning Process (LTPP) as described in Section 4.2. The SEP supports Network Rail's LTTP and recognises the benefits rail improvements can deliver for businesses in Gloucestershire. A number of potential elements extracted from the LTTP are incorporated, including:

- An hourly through service from Cheltenham and Gloucester to London;
- Additional north-south west connections calling at Gloucester;
- A possible future through service to Oxford;
- An improved service to Worcester.

Whilst these do not entirely coincide with the proposals put forward in the Western Route Study (see Appendix A), the importance of these potential new or improved links to Gloucestershire can be inferred from the presence in the SEP

The SEP also makes reference to the electrification from Bristol to Birmingham in order to reduce journey times and increase capacity along the route and link up with other electrified lines.

The renewal of the Great Western franchise is identified as an opportunity for service improvements, new rolling stock and station investments. As set out elsewhere in this report the franchise has now been re-let to First Great Western to 2019. All of the service improvements detailed in the SEP are either implemented or are due to be implemented in due course.

Funding for Gloucester bus station and Kings Quarter are incorporated in the LGF settlements as is Phase 1 of the Lydney Transport Strategy, which has £1m allocated.

2.6 Local Transport Plan

The Local Transport Plan (2011-2026) (LTP) published in April 2011 is currently undergoing a substantial review. The 2011 LTP was difficult to link to wider economic imperatives such as housing and employment growth.

The new LTP is a more comprehensive document and it is relatively straightforward to combine the 'Link and Place' approach to specific initiatives geared towards delivery. The Link and Place approach is area-specific and provides a clear definition of the types of link (eg for traffic, for people and traffic and for people). These are further identified in terms of Connecting Places Strategies (CPS) across each of the local authority areas:

- **Central Severn Valley**, including Gloucester and Cheltenham and incorporating a number of rail connectivity issues, including poor connectivity to Lydney and Worcester and the need for improvements at both Cheltenham and Gloucester stations. A proposal for a new station at Hunts Grove considered in this study is also raised;
- **Forest of Dean**, including Lydney and identifying the relatively poor service and poor access to the station. Initiatives identified in the LTP include the provision of increase car parking at the station, as well as addressing the access and rail service issues;
- **North Cotswold**, including Moreton-in-Marsh with its existing station and Chipping Campden where a proposed station is considered in this study. Car parking problems at Moreton-in-Marsh are identified (and with Oxfordshire County Council at Kingham Station). Enhancement of the Moreton-in-Marsh station is also included as an initiative.

- **South Cotswold**, including the station at Kemble and its relationship with Cirencester and the wider area. Car parking issues at Kemble are identified and initiatives include travel planning, car parking and station facilities. A429/A433 junction (access to the station from Cirencester) is also raised as an initiative.
- **Stroud, Stroud Valleys and South of Stroud**, including the stations at Stonehouse, Cam and Dursley and Stroud itself and the two proposed new stations at Stonehouse (Bristol Road) and Charfield. The poor rail frequency at Cam and Dursley is identified, as well as the need to improve access and car parking. As well as the new stations, the initiatives include travel plans for the existing stations and improvements at Stroud and Stonehouse. Reinstatement of railfreight access to Sharpness Docks is also raised, though this is outside of the scope of this study.
- **Tewkesbury**, including the station at Ashchurch and its relationship to the M5 Junction 9 developments. Poor access from Tewkesbury (due to M5/railway severance) is identified. As detailed elsewhere, the poor rail service and scant facilities are identified as problems and are addressed by initiatives.

The importance of rail connectivity and relationships with neighbouring areas and the major conurbations is detailed in the LTP. Initiatives include:

Table 1 - LTP Wider Area Rail Initiatives

Initiative Name	Description
Increased rail services at Ashchurch Station	Increased frequency
Rail links to Oxford	Further enhancements to service frequency and capacity
Kemble Station improvements - access to Swindon and London	Strategic improvement to filter off eastbound road traffic onto rail west of Swindon - for accessing Swindon/London and SE
Avon rail link/Circular metro service via Cam/Gloucester/Lydney/Severn Tunnel Junction	Development of the MetroWest concept to embrace commuter needs in Stroud/Forest of Dean and improvement in services to Gloucester
New rail station for Stonehouse an enhanced provision at Cam and Dursley	Target accessibility to Bristol for Stroud Valleys and South Stroud area
Lydney station travel plan and improvements	Enhanced rail access to Bristol, Newport and Cardiff
Make better use of Severn Tunnel Junction	As above

A SWOT analysis relating to rail-based connectivity is included within the LTP and has been used to inform this Rail Study.

The diagram in Figure 4 shows how the LTP links to the Council's corporate strategy and the SEP, along with the Local Plans of the District Councils.

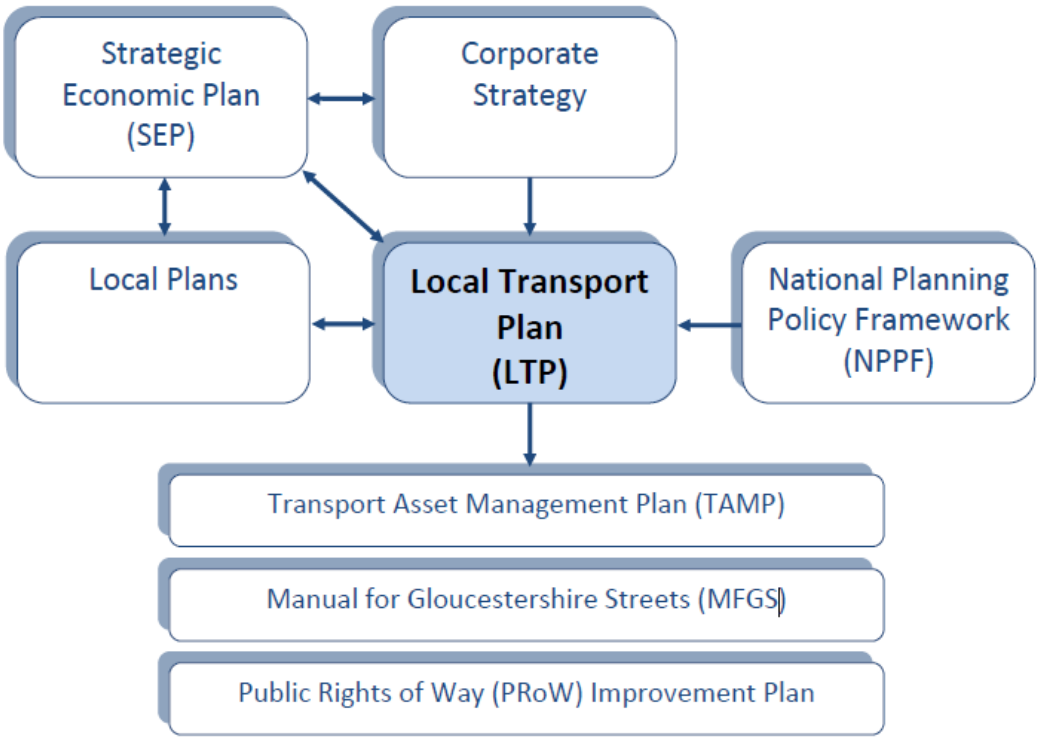

Figure 3 - LTP Relationship Diagram (From 2015 LTP Consultation Document)

2.7 Gloucestershire Rail Strategy

In March 2014, the Gloucestershire Local Transport Board published a Draft Rail Strategy for consultation. Following this, the development of the Local Transport Plan has provided the opportunity to incorporate the Rail Strategy within the LTP.

This Rail Study can be best seen as part of a continuum to progress the Rail Strategy and prioritise some of the issues explored within the 2014 document. Whilst the key components of the Rail Strategy have been built into this study, a great deal of additional information has been made available since its publication, primarily through the Network Rail long-term planning framework detailed in Section 4.2. This focuses the key issues in a way in which will assist in engaging the rail industry in both short and longer-term issues. Above all it helps in understanding the scale of change which will be required to deliver the requirements of Gloucestershire as a whole and its constituent communities. This in turn points to the need to engage actively with neighbouring authorities (and their LEPs).

Rather than repeat the issues raised in the text of the Rail Strategy, the elements have been incorporated within subsequent sections. However, the following strategy diagram summarises the approach represented within the Rail Strategy and used to guide this Rail Study.

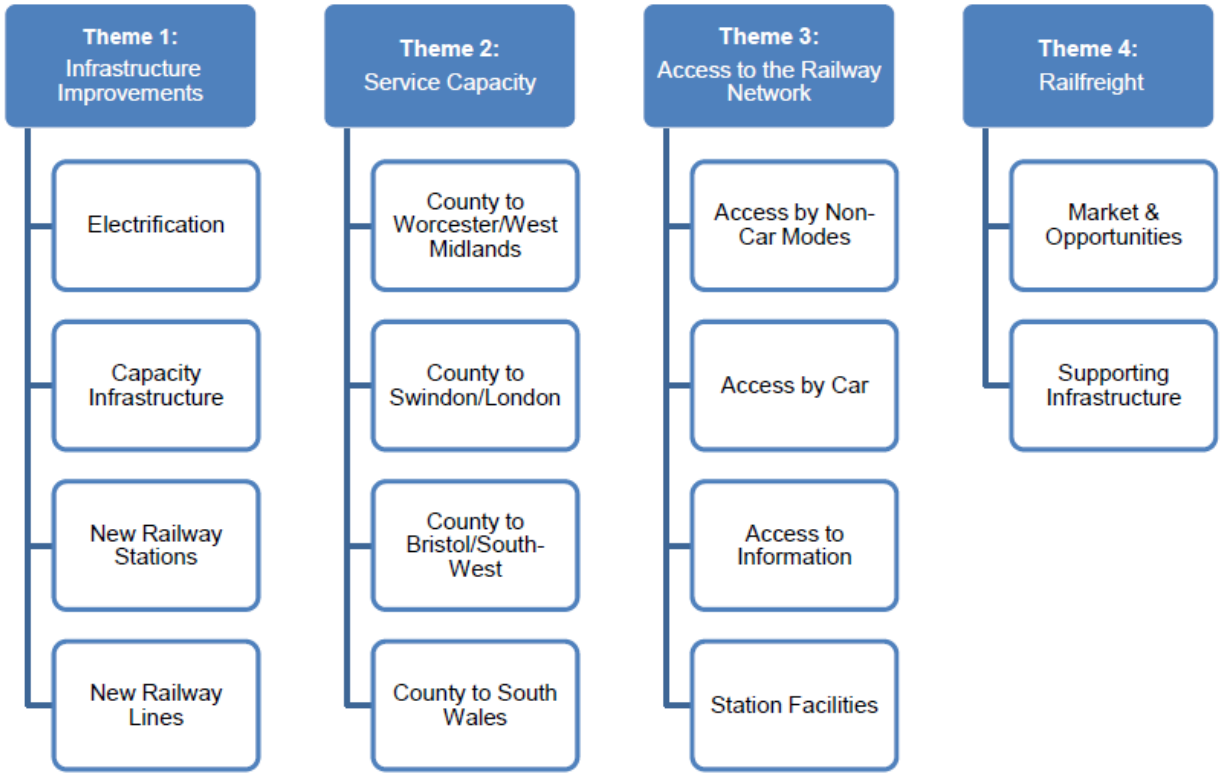

Figure 4 - Rail Strategy Summary (from GLTB Rail Strategy)

In addition, the GLTB Rail Strategy contained a number of potential actions. For clarity, some of the detailed text surrounding these proposed actions has been removed.

Table 2 - GLTB Rail Strategy Proposed Actions

Proposed Action (GLTB Rail Strategy)	Mechanism to Address in Rail Study
Provide appropriate evidence of the need for provision of track, signal and station capacity enhancements as part of Network Rail's Western Route and Market Studies	This study takes account of the results of the Western and Welsh Route Study Consultation Drafts and the refresh of the Electrification Route Utilisation Strategy which in turn are based on Conditional Outputs from the Market Studies
Contribute to Network Rail's Western Route Strategy in making the transport and wider economic case for roll-out of electrification through Gloucestershire	
Establish whether any potential new railway stations represent value for money, and are fundable / operationally deliverable projects, two feasibility studies and business cases will need to be undertaken by Gloucestershire partners	Demand projections and economic analysis has been undertaken in this study.
Gloucestershire partners will review any realistic proposals for railway line re-openings where a robust business case can be provided. Support may be provided if there is clear evidence of benefits to the economy and deliverability	Honeybourne Line not considered in detail but taken into account in relation to the North Cotswold Line. No other rail line re-openings considered.

Proposed Action (GLTB Rail Strategy)	Mechanism to Address in Rail Study
Commissioning business case and feasibility work to assess the costs, benefits and potential implementation timescales of improvements on the key routes. Provide input to future franchises.	This study provides guidance on taking forward these agendas
Explore the provision of improved bus services and the provision of improved timetables, station surroundings and information to complement this	Whilst the detail of delivery of these is not within the scope of this study, further guidance on taking forward the agenda is provided. In addition, the progress against these elements is incorporated.
Provide high quality walking and cycling links to railway stations	Not directly within the scope of this Rail Study but incorporated into specific recommendations
Improve cycle provision at rail stations	
Investigate and improve car parking at rail stations	
Improve information at rail stations	
Identify additional improvements at stations, which can then be potentially included in future franchise agreements.	
Gloucestershire partners to work with NR to ensure that the capacity of the network to accommodate freight is maintained and enhanced, including consideration of new flows generated by the Bristol Port Company.	Freight capacity requirements taken into account in relation to analysis of Market Studies and Route Studies. Freight not included in the scope of this study
Gloucestershire partners to consider retaining the freight unloading facilities at both Sharpness Docks and Lydney.	Not within the scope of this study

2.8 Stakeholder Consultation

During the study, consultation with stakeholders was conducted, including:

- Gloucestershire local authorities, including Gloucestershire County Council and the six district councils (Gloucester City Council, Cheltenham and Tewkesbury Borough Councils, Forest of Dean, Stroud and Cotswold District Councils). Consultation was through both formal consultation meetings and less formal one-to-one discussions;
- Network Rail, primarily in relation to the Western Route Study;
- Train Operating Companies, including First Great Western, Arriva Trains Wales and Cross Country and;
- Gloucestershire First (GFirst), the Local Enterprise Partnership and now the primary vehicle for capital funding through Local Growth Fund.

Due to the timescale of the study programme and the conflicting priorities of stakeholder representatives, not all the questions were answered at this stage, leaving some elements of stakeholder inconclusive. The consultation was complemented by analysis of published material, including Local Plans published by local authorities, details from rail franchise commitments (and related initiatives such as Access for All and the National Station Improvement Programme) and documents prepared through the rail industry planning process set out in Section 4.2. Overall this has provided sufficient information on the priorities, plans and constraints of the key stakeholders, sufficient to inform the study. The SWOT provided in Table 7 summarises many of the points raised by stakeholders and provides very strong indications of how Gloucestershire should take advantage of its position on the rail network and address any weaknesses and threats in an effective manner.

2.8.1 Local Authority Consultation - Key issues

Alongside formal and informal meetings with local authority officers, a preliminary presentation of the study results was made on 12th June to a wide range of stakeholders, including local authority officers, Elected Members and rail user groups. The following key points reflect an amalgamation of points raised through these various consultation exercises.

Gloucester City Council

The construction of the new bus station is planned to start in 2016, finishing in February 2017. This is part of a wider committed scheme for the Kings Quarter redevelopment and a longer-term proposal to form a public transport hub, reconfiguring the station forecourt to improve pedestrian access into the city centre and bus station. Discussions have taken place with the Ministry of Justice regarding a disused car park on Great Western Rd which is hoped to be used by FGW for additional car parking. This is in turn linked to commitments made by First Great Western in terms of increased frequency and speed of services to London and the provision of improved station facilities, including car parking. It is also planned to create an access onto platform 4 of the station to allow easier access to Gloucester Royal Hospital along with significant improvements to the underpass which is currently in a poor state.

Gloucester has enormous potential for economic growth as one of the two major centres in the county. The centrally-located rail station is a key asset and could assist in the provision of valuable development land attractive to high-value businesses. The improved links to London and the access to Birmingham, Bristol and Cardiff are key to this. However, although the bus station/Kings Quarter developments are important, there are still a number of remaining issues in terms of achieving the planned station front 'plaza' and dealing with practical issues such as junction capacity, access across the rail line to the hospital and access routes to the new car park when it is constructed.

Cheltenham Borough Council

Cheltenham Spa is the busiest station in the county with nearly 2 million passengers a year. It is categorised as C1 by Network Rail, in the same category as Manchester Oxford Road. The threshold for a Category B station (eg Bristol Parkway) is 2 million passengers/year. The station, though distant from the town centre, is a major asset and is key to the development of the town and its economy. Cheltenham Borough Council/Cheltenham Development Task Group are progressing plans to significantly improve the station. These include increasing car parking, improving bus access on the forecourt and enhancing the station facilities. A package of different funding sources is being worked on including the Gloucestershire Local Transport Board, commitments made through the FGW franchise, Access for All and National Station Improvement Plan funding. A Station Commercial Project Fund bid is currently being submitted, led by FGW with the support if Cheltenham Borough Council and Gloucestershire County Council. Funding has recently been secured to create a cycle/pedestrian link from the station to the A40 which is being led by Sustrans. Phase two of the station improvements could include additional bay platforms to accommodate terminating trains which currently have to cross the main line into the sidings north of the station. Concerns have been raised about the state and appearance of the station which hadn't had any significant improvements in recent decades.

Tewkesbury Borough Council

The key concern is related to the poor level of service at Ashchurch for Tewkesbury which is currently every two hours. The service is not consistent and a number of additional stopping trains have ceased over the past few years. The council would like to see at least an hourly service. The unmanned station has only basic facilities and there is a need for investment in improvements. There are significant developments planned in the area including around 2700 houses on the MoD site, a supermarket and a retail outlet centre. These would all increase demand for rail services and it is important to get these in place before the development happens. The local road network is already congested particularly along the A46.

Although there was a proposal in LTP 3 to locate a rail freight facility at the MoD site, this has been removed due to the wider benefits of delivering a brownfield site for mixed use development in the Joint Core Strategy. This will also enhance the potential for achieving enhanced rail services at Ashchurch.

Forest of Dean District Council

Lydney is the only station in the FoD area and is thus an important facility. Lydney is the focus of the bulk of the District's development in part due to its transport links. FoDDC are keen to see improvements to the station as currently facilities are poor. Services have improved in recent years but there is still scope for more stopping services. Parking capacity at the station is an issue and plans to address this are under way. Other plans to improve access to the station have received provisional funding through GLTB, including re-opening of the subway under the rail line, junction improvements and improved walk cycle access. Further proposals are under consideration for redevelopment of the harbour just over 1km to the east of the station.

Stroud District Council

There is a need to improve local services at Cam and Dursley but it is understood that the conflicts between local and express services constrain this. All three stations (Stroud, Cam and Dursley and Stonehouse) need upgrading. In particular, Stroud needs a new DDA compliant footbridge, upgrading of facilities and increased car parking. There are three proposed new stations in the SDC administrative area: Hunts Grove, north of Stonehouse and Stonehouse Bristol Rd. However, it is recognised that there is only likely to be line capacity and demand for only one new station between Gloucester and Bristol. Stroud District Council supports a new station at the Stonehouse Bristol Rd site. There is a need to look beyond the current timescale of 2031 as districts are looking beyond their current local plans. The council is clear that the rail strategy can support growth and the development of spatial options in emerging local plans.

There can be on-train capacity issues between Bristol and Gloucester at certain times.

Cotswold District Council

Parking is a major problem at Kemble with travellers parking in the village causing conflict with local residents. With considerable development planned at Cirencester this is only likely to get worse. The area is popular with people moving in as links to London are good. The line has recently been redoubled. Cirencester is proposed to get between 2300 – 3000 new houses in the emerging local plan. Proposals have also been put forward to redevelop Kemble airfield for housing. All of this will increase demand at Kemble station. Cirencester is the largest settlement in the CDC area but doesn't have a station. Moreton-in-Marsh is the only other station in the district. Again parking is a major problem at the station. Moreton is located in the north Cotswolds and has received a lot of development in recent years. There is unlikely to be sufficient demand for a new station at Chipping Campden given its size and the proximity of other stations e.g. Honeybourne. The food research establishment attracts a number of visitors and is the biggest employer but unlikely to justify demand for a new station.

2.8.2 GFirst Local Enterprise Partnership

The Strategic Economic Plan (SEP), has very little relating to rail connectivity. More detail can be found in Section 2.5. The results of this Rail Study will inform further consideration of the strategic connectivity requirements for Gloucestershire.

2.8.3 Train Operating Companies and Network Rail

Discussions were held with Network Rail and all three of the rail operators (First Great Western, Cross Country and Arriva Trains Wales). The most detailed discussions were with First Great Western, reflecting the importance of the FGW franchise to Gloucestershire and the pivotal location of the county in the Great Western network.

First Great Western

Wider Economic Growth & Connectivity

Gloucestershire occupies a key point on the rail network, providing connectivity to a wide range of important destinations. This provides great opportunities for existing residents and businesses as well as for new developments.

Current patronage growth for FGW in Gloucestershire is focused on Cheltenham Spa & Gloucester, building on the enhanced services – especially to London.

There are current weaknesses in connectivity to Bristol & Birmingham, which are significant destinations in terms of economic growth. This wider connectivity is crucial for Gloucestershire's future – linked to the development of the West Midlands and the Bristol/Cardiff (Great Western Cities).

It is important that development takes place at inherently well-connected places, especially if Gloucestershire is marketing itself as somewhere which is connected to the main economic growth areas (Bristol, Cardiff, Birmingham – and London).

In the longer term, it is important to plan how Gloucestershire will benefit from large infrastructure investments such as HS2. This is linked to planning for long-term connectivity for Cardiff and Bristol.

Ashchurch Station

Ashchurch sits in the middle of a key link in the network but currently has a poor rail service, generally 1 train every 2 hours (with some gaps). A 2,500 home development is planned. A better service would also attract residents and increase house prices.

Land values are known to increase where a rail station exists which provides links to key destinations. The crucial thing is that an uplift in house price stemming from connectivity is additional profit for a developer. This should mean we can get a larger contribution from the developer to assist in funding service improvements at Ashchurch.

In the short term we should improve passenger facilities, including walk & cycle access, buses and car parking. Above all we should invest in improved links between Tewkesbury and the station. These improvements are a critical target for developer contributions, along with the delivery of ready access from the Ashchurch developments into the station.

The primary constraint to improving the service at Ashchurch is shortage of rolling stock. If this could be resolved (with the attendant staffing), an hourly service could be offered without rail infrastructure changes.

In the longer term, the potential for service improvements at Ashchurch is dependent on wider developments, especially the changes prompted by HS2 and the potential to extend Gloucester trains northward. We should not over-plan this and should focus on describing the opportunities and needs.

Kemble Station

Kemble provides an enormous opportunity. The car park is full and it is hoped that planning permission will shortly be granted for the proposed 330 space car park (a short walk from the station).

The hourly service to London will be transformational. If car parking could be increased further, traffic would grow – probably indefinitely for all intents and purposes. The line has more capacity and more trains could be provided. Given the location as a 'parkway' station for Cirencester, patronage could increase without further car parking provision only if housing growth took place in the area around the station or through the provision of improved bus and/or cycle access.

Fundamentally, Kemble is a well-connected location and is infrastructure-rich. It provides a significant development opportunity.

Gloucester Station

As one of the main urban centres, Gloucester should be a priority for development. Especially following the service improvements, these developments are more about integration with the City and not 'rail-side'. Plans have been put forward for extending MetroWest services to Gloucester, though Gloucestershire County Council, South Gloucestershire Council and GFirst would need to provide strong support for this to go ahead.

Fundamentally Gloucester's connectivity is good – but it has a poor station with unattractive links to the City Centre and the land on the other side. First Great Western would contribute to a redevelopment of the station and its links with the City Centre.

Cheltenham Spa Station

Although somewhat distant from the town, the same principles as for Gloucester apply and the station needs to be made more integral to its surroundings. The committed work (hopefully supplemented by the SCPF bid) will make a good start and we should continue to plan to improve matters further. Further tranches of Access for All and NSIP funding can be applied to future improvements.

These improvements must be focused on improved passenger facilities. An attractive forecourt, steps straight down from the road and improved retail/waiting facilities are key.

However, it has been suggested that more train capacity may ultimately be needed so it is suggested that the area where bay platforms have been proposed could be used for car parking, but could be freed up for rail-side capacity increases (whether bay platforms of other schemes).

Stonehouse Bristol Road

FGW have considerable reservations about the commercial viability of this station in the short term. Unless there are significant developments in the area, it is unlikely that this would change. The demand modelling being undertaken within this study will inform further consideration as to what infrastructure interventions would be required to enable a station to be developed there. However, this is likely to be very long-term and linked to the options for dynamic loops (and ERTMS/ETCS signalling) put forward in the Western Route Study.

Hunts Grove, North of Stonehouse, Charfield and Chipping Campden Stations

FGW do not see commercial potential for these stations and it is not surprising that the modelling results show relatively low levels of patronage. Only with significant levels of development (akin to Ashchurch) would these locations make sense.

2.8.4 Lydney Station

The scope for this station was discusses in consultation with Arriva Trains Wales, the County Council and Forest of Dean Council.

The provision of additional parking is under negotiation. The main barrier to the provision of additional services at Lydney is the shortage of rolling stock. Within the near future, even if funding could be provided for enhancements, it is unlikely that they could be provided. In the longer term it is important to engage with the wider rail industry in the context of proposals for enhanced Birmingham-Gloucester-Cardiff services which could be routed either via Bristol Parkway and the Severn Tunnel or via Lydney. Either way could provide improved access for Lydney, especially if combined with additional stopping trains on the existing services.

2.8.5 Rail User Groups

Alongside the issues raised by individuals and user groups during the interim presentation on 12th June, responses were received from Cotswold Line Promotion Group and Ashchurch, Tewkesbury and District Rail Promotion Group. Key points raised are detailed below:

Cotswold Line Promotion Group

- The proposal for a station at Chipping Campden is strongly supported by Chipping Campden Town Council, and is included in the draft Neighbourhood Plan;
- The potential for a second hourly service along the North Cotswold Line indicated in the Network Rail Western Route Study line is welcomed and strongly supported. It is hoped that such a service could be introduced before the suggested 2025 date. This aspiration is supported by the investment in the route being undertaken by FGW, including increased car parking and the proposed Worcestershire Parkway station. The group feels that a twice-hourly service would improve the scope for a station at Chipping Campden and would enable journey time reductions for some services, achieved by missing stops on alternate services;
- The group would like to see the re-opening of the former line between Stratford on Avon and Honeybourne, which would provide hourly services between Stratford and both Oxford and Worcester. The group would like to see support in principle for this within the Gloucestershire Transport Strategy;
- Although Honeybourne and Kingham stations are not in Gloucestershire, they have natural catchment areas encompassing the north of the County. The group would like to see these stations considered by Gloucestershire County Council as County Stations;
- The early provision of a reliable hourly service between the Worcester and Gloucester is seen as a key priority. This would also benefit Ashchurch for Tewkesbury, in the context of the rapidly growing population in its catchment area and;
- Improved bus links to the North Cotswold Line stations are important. The regular hourly rail service planned for 2018 will provide an opportunity for more effective interchange between bus and rail.

Ashchurch, Tewkesbury and District Rail Promotion Group

- The main aim of the group is to increase the number of people using the station and the number of trains stopping. The establishment of at least an hourly service is seen as crucial. The group would also like to see the re-introduction of the Cross-Country (Cardiff-Nottingham) stopping services which were lost in 2008. These are seen as essential improvements in the light of the additional housing and jobs growth in the area;
- Overwhelming support has been received for a renaming of the station to *Tewkesbury Parkway*. This would reflect its role as a gateway to Tewkesbury;
- The strong growth at Ashchurch for Tewkesbury station was identified, with the group's own surveys indicating that usage is 38% higher than the published data;

- The group is aware of the proposals for active loops in the Western Route Study. However, they are also aware of options being considered by Network Rail to re-open the old Evesham platform to provide a lengthened bi-directional active loop and a passenger platform. By incorporating configuration changes this arrangement could accommodate longer freight trains as well as enabling stopping services at Ashchurch for Tewkesbury to be passed by express trains. Potentially this arrangement would enable trains to turn at Ashchurch for Tewkesbury, providing a means to extend services currently terminating at Gloucester or Cheltenham Spa;
- Discussions with Stagecoach have indicated that with an hourly rail service, bus integration could be improved, including the re-routing of the 3 buses per hour service 41 into the station car park;
- The group would like to see a holistic approach to the management of traffic and transport in the area. Whilst Ashchurch for Tewkesbury Station would assist in this, the role of the key highway routes in the area must be considered. This would include the future of the A46 corridor in terms of its local and strategic roles and the potential to link the M5 and M50. This holistic approach has the support of GFirst and Tewkesbury Borough Council;
- The recognition in the study of the importance of Ashchurch for Tewkesbury station is welcomed, especially since in the past it has been overlooked due to its presence on the boundary of previous route study areas;.
- Providing more services from Gloucestershire stations to Oxford is seen as important and it is understood that this is seen as desirable by the County Council;

3 Spatial and Economic Factors in Gloucestershire

3.1 Overall Gloucestershire Perspective

3.1.1 Character and location of Gloucestershire

Gloucestershire is the northernmost county in the Southwest region of England and is one of four English counties connecting to Wales. The county is bordered by Worcestershire to the north and Herefordshire to the north-west. Monmouthshire lies to the west in Wales with Warwickshire and Oxfordshire to the north east and east respectively. South of Gloucestershire lies the county of Wiltshire, alongside Swindon, Greater Bristol (including South Gloucestershire) and Somerset to the south-west. The county consists of six district areas with the cathedral city of Gloucester as the county town. The District Councils are Gloucester City Council, Cheltenham Borough Council, Tewkesbury Borough Council, Forest of Dean and Cotswold District Councils.

The M5 strategic route links the county North-South and serves the northeast and southwest commuter belts, including linking Gloucester, Tewskesbury and Cheltenham in the North to Stroud in the South. Cheltenham and Gloucester are the two key urban clusters of the county. The Forest of Dean is situated to the west of the county, somewhat severed by the River Severn.

A number of market towns are present within Gloucestershire such as Stroud providing services to residential communities, acting as employment hubs and displaying unique local characteristics and heritage. Cotswold forms a large portion of eastern Gloucestershire and contains the largest Area of Natural Beauty (AONB) in England and Wales. It contains a variety of rural settlements, including areas attractive to retirees. Cirencester also falls within the Cotswold district and is the largest town in the district. The Gloucester to Newport/Cardiff line, Cotswold Line (Worcester-Oxford-London), Birmingham to Bristol Main Line, Golden Valley Line (Gloucester to Swindon) and Great Western Main Line (London-Swindon to Newport via the South Wales Main Line) are the main railway lines running through the county.

88% of the resident population work within Gloucestershire and the county has a higher proportion of people aged 65+ compared to the average for England and Wales. Many more people travel from Gloucestershire to Bristol and Swindon for employment than those making the reverse journey into the county. Growth in Gloucestershire is underpinned by attracting business and staff into the county showing that it is a great place to live and work. The iconic landscapes, natural environment, heritage and culture within the county also play a major role in contributing to significant growth and unlocking latent potential.

3.1.2 Overall growth plans (Strategic Economic Plan)

The growth plans for Gloucestershire, set out in the Strategic Economic Plan, aim to deliver 33,909 jobs and to protect up to 2,125 more, 3,200 new homes. In terms of skills there are aims for 6,108 new qualifications and 5,421 apprenticeships. From the period 2015-2021 the aim is to grow the economy in Gloucestershire by £493m using the three flagship projects contained within the Strategic Economic Plan; the Growth Hub, GREEN and the Growth Zone with a number of smaller predominantly transport related projects which will complement and enable growth at the three flagship projects. The growth plans are in addition to the annual GVA increase of 3.2% to 2030/31 incorporated within the Core Strategies.

In support of the long term growth plan, the Gloucestershire Growth Deal aims to focus on 3 key areas to deliver transformative growth:

- Providing a highly employable and economically productive workforce that meets the needs of local businesses
- Attracting, retaining and developing successful businesses
- Exploiting opportunities to open-up new sites for development and providing the transport infrastructure to accelerate growth.

GFirst Local Enterprise Partnership (LEP) has secured a combined total new investment package of £142.5m for Gloucestershire from central government's Local Growth Fund, local partners and the private sector. The Growth deal is expected to create 5,000 jobs and support 1,041 new apprenticeships by 2021 contributing to the overall growth plans set out in the Strategic Economic Plan.

3.1.3 Description of District Council areas and status of Local Plans for each

Gloucester

Gloucester is a cathedral city located on the River Severn in the centre of Gloucestershire surrounded by Tewkesbury to the north and Stroud to the South. It is the county town and one of the six district council areas within Gloucestershire. 2011 census data shows that Gloucester city had a population of 121,900 (entire urban area including the outlying districts - 149,820) and has the largest population of any district within Gloucestershire. Gloucester aims to be a flourishing, modern and ambitious city, which all residents can enjoy. Gloucester is a historical cathedral city well served by the M5 motorway and Gloucester railway station which has services to London, Reading, Bristol, Cardiff, Nottingham and Birmingham. The city is known for a number of business areas, including aerospace. Plans for the city itself are geared towards its historical central core providing the basis for inward investment and opportunity, complemented by peripheral development within the wider urban area.

The current adopted local plan is the Gloucester Local Plan from 1983. In addition to this, two local plan documents were produced in 1996 to reflect changes to Gloucester's administrative boundaries. In 2000, consulting on a new local plan for Gloucester began and reached the Second Stage Deposit Draft in 2002. This was only adopted by the council for development control purposes. Work has now begun on a 'Development Plan' for the city that sets out how both housing and economic growth will be delivered. This emerging development plan consists of the Joint Core Strategy (Gloucester - Cheltenham - Tewkesbury) and the Gloucester City Plan. The Joint Core Strategy was submitted in November 2014 and sets out the vision and goals for the JCS area up to 2031. The Gloucester City Plan will also help to shape future development and develop an aspiration for the city alongside the JCS to 2031. The council ran a consultation for nine weeks from 13th May until 12th July 2013. Currently part 1 of the City Plan (strategic context) is awaiting a more detailed 'preferred option' plan incorporating comments from the City Plan Part 1 Consultation and previous planning documents. This will set out the preferred plan for the city.

Cheltenham

Cheltenham is a borough, originally a spa town, located approximately 9 miles North East of Gloucester and is surrounded by Tewkesbury Borough to the North and the Cotswolds to the South. Cheltenham forms one of the two key urban areas within Gloucestershire and works in tandem with Gloucester as an economic stronghold. It has a population of 115,600 (2011 Census Data). The town is situated alongside the M5 motorway and the A417 heading to Swindon. Cheltenham Spa railway station is located on the Bristol-Birmingham strategic line which services Gloucester, Bristol, London and Cardiff Central. An hourly service to London will be provided as part of the franchise agreement with First Great Western.

The Cheltenham Borough Local Plan was adopted in June 2006 and deals with development and identifying land which will need further development, as well as conserving the special environment of Cheltenham. This plan has been subject to four rounds of consultation between 2002 and 2004 when changes were made. In June 2006, Cheltenham Borough Council adopted the Cheltenham Borough Local Plan Second Review (first review, 1997). Work has begun on a new Cheltenham Plan and this will form part of Cheltenham's new 'Local Plan' which will consider more detailed local policies, non-strategic allocations, local infrastructure issues and development management policies in the area alongside the strategic planning framework the JCS provides. Following recent consultation on scoping which ended in September 2013 and a Statement of Community Involvement consultation, the vision and objectives for the plan have been released.

Tewkesbury

Tewkesbury is a town and district authority located in the north of Gloucestershire and includes Ashchurch, Bishop's Cleeve and Churchdown. The borough of Tewkesbury has a population of 82,300 (2011 Census Data) and lies north of Gloucester at the confluence of the River Severn and Avon. Tewkesbury aims to be a borough of healthy, strong, thriving and sustainable communities, both rural and urban, where people want to live, work and visit and the JCS aims to build on the vision set out in the Tewskesbury sustainable community strategy vision 2008-2028. Tewkesbury is also served by the M5 and M50 Motorways running North and South and the A38 and A46 trunk roads running East and West. Ashchurch for Tewkesbury railway station is one mile away from Tewskesbury town centre and is served by a frequent bus service, though this does not enter the station itself.

The currently adopted local plan is the Tewskesbury Borough Local Plan and this was prepared to run from 1991 to 2011 and is now being reviewed. At present a new borough plan called the Tewkesbury Borough Plan (TBP) is being prepared to cover the entire Tewkesbury borough and will aim to complement the JCS by providing locally specific policies and site allocations for new development. Housing allocations and other important local issues for the borough will be provided in the new plan. Public consultation closed in April and the Tewskesbury borough plan is currently in the draft consultation phase with pre-submission consultation to take place after the JCS examination. Final adoption is proposed to take place in summer 2016, however such dates are only indicative as the plan relies on JCS progress. Both the TBP and JCS form the development plan documents that make up the 'local plan' for Tewkesbury Borough.

Cotswold

Cotswold is the largest district in Gloucestershire covering the eastern side of the county and forms part of the wider Cotswolds region. The main town in Cotswold is Cirencester, a market town in south central Cotswold. The Cotswold district is typified by its striking landscapes and the largest Area of Outstanding Beauty in England and Wales, characterised with a population of only 83,200 (2011, Census Data). The area lies between key strategic routes between the M5, M40 and M4 motorways and the Bristol-Bath-London High Speed line in the south and the Bristol to Birmingham main line in the west.

The Cotswold Local Plan was adopted in April 2006 and sets out the council's policies and proposals for future development and land use from 2001-2011. The council are now preparing a comprehensive local plan to cover the period from 2011 to 2031 as a result of the National Planning Policy Framework and will produce a single document rather than a portfolio of documents led by a Core Strategy. The new emerging plan will guide decisions on the use and development of land in the district and will be the main planning policy document. The proposed development strategy for the District is the latest document setting out site allocations and strategic policies for housing, employment and other uses. At present, a Draft Local Plan including development management policies, delivery and monitoring framework and accompanying Sustainable Appraisal (SA) consultation is scheduled to take place before the 'Publication' (Pre-submission) Local Plan and final SA in Summer/Autumn of 2015 and submission the Secretary of State in winter 2015.

Stroud

Stroud itself is a market town situated around 11km south of Gloucester. Stroud District Council covers the town itself and the surrounding mainly rural area. The town has a population of around 13,000 and the population of the district as a whole is 113,100 (2011 Census). Stroud district includes areas designated as AONB and displays a rich historical heritage from involvement in the industrial revolution to Iron Age and Roman remnants. The market town itself is characterised by a strong community of independent shops and cafes. Stroud is linked to Gloucester in the North and Bristol to the South by the A46 and Cirencester is connected via the A419. Stroud Railway station provides frequent services to Gloucester, Cheltenham, Swindon, Reading and London via First Great Western trains. There is no direct service to Bristol.

The current Stroud District Local Plan was adopted in 2005, identifying development needs and informing decisions on land use planning affecting the area until 2011. Stroud District Council is now producing a comprehensive local plan (Stroud District Local Plan 2014) under the NPPF. Stroud District Council submitted the draft Stroud District Local Plan to the Planning Inspectorate for examination in December 2013. The emerging local plan for Stroud is currently scheduled for Stage 2 Hearing Sessions until June - August 2015 where a consultation will be held on other potential Main Modifications to the Local Plan recommended by the Inspector. Stage 1 hearings on Housing and Employment Land requirements have already been undertaken. Assuming that the local plan examination proceeds to Stage 2, autumn and winter 2015 are provisional dates scheduled to publish the Inspectors report with Stroud District Council adopting the Local Plan by the end of 2015.

Forest of Dean

The Forest of Dean is a historical and cultural region and a local government district in the west of Gloucestershire with a population of 82,200 (2011, Census Data). The county lies to the north of the River Severn and is characterised by a vast area of mixed woodland, one of the remaining ancient woodlands in the country covering 42.5 square miles of the total 203.2 square miles within the Forest of Dean. Coleford is a market town in the west of the Forest of Dean and is the administrative centre of the district being present in the historic Forest area, together with Cinderford and Lydney to the east of the district. The Forest of Dean is served by the A48 running alongside the western bank of the River Severn connecting Lydney and Cinderford and eventually approaches Gloucester. The A40 runs west from Gloucester through the Forest of Dean to Ross on Wye in the neighbouring county of Herefordshire. There is a rail station in Lydney served by direct trains to Cheltenham via Gloucester, Maesteg via Cardiff and Newport and to Birmingham and Nottingham in the mornings.

The 2005 Local Plan for the Forest of Dean has been superseded and is no longer part of the development plan for the area. The new local plan for the area consists of development plan documents which will guide future development and set out policies for use in planning applications and this will replace the old local Plan adopted in 2005. In February 2012, the Forest of Dean District Council Adopted the Core strategy and the Cinderford Northern Quarter Area Action Plan. The Site Allocations Development plan will present how the proposals in the core strategy will be implemented to replace the old 2005 Local Plan Review. Remaining site specific policies and allocations held over from the old plan are expected to be replaced by this document. Currently, the council are preparing a new plan to accompany their Core Strategy and this is being compiled in draft form in preparation for public consultation.

3.1.4 Growth and Rail Proposals

The planned growth in jobs and housing in the areas around existing and proposed stations is summarised in Table 3. Where possible, extant permissions, planned allocations and new developments since 2011 have been incorporated, though the data is not consistent between local authorities.

Table 3 - Planned Growth around Stations

Location	Local Plan Status	Planned Jobs Growth	Planned Housing Growth	Population Growth (%) 2015 to 2030
Existing Stations				
Ashchurch	Tewkesbury Borough Local Plan 1991 - 2001 currently adopted and being reviewed. New Tewskesbury Borough Plan being developed and is in draft consultation phase. JCS also applies (currently in Examination in Public)	6,237 new jobs up to 2031 (14.3 ha of employment land, excluding additional 20 ha at MOD site)	10,100 new homes in Tewkesbury District by 2031[1]	14.3%

[1] Joint Core Strategy 2015

Location	Local Plan Status	Planned Jobs Growth	Planned Housing Growth	Population Growth (%) 2015 to 2030
Cheltenham Spa	Cheltenham Borough Local Plan Second Review is currently adopted since 2006. Cheltenham Borough Council have begun work on Cheltenham Plan to form part of Cheltenham's new 'Local Plan' for which the vision and objectives have been released.	10,205 new jobs up to 2031 (NW Cheltenham 23.4 ha of Employment land)	9,100 new homes by 2031	3.1%
Gloucester	Gloucester Local Plan (1983) currently adopted. Work on new development plan has begun for Gloucester, consisting of JCS and Gloucester City Plan, Currently Part 1 of the City Plan is awaiting a more detailed 'preferred option' plan	2,900 additional jobs in the period 2009 to 2020.	11,300 new homes by 2031	8.5%
Cam & Dursley	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	1,500 new Jobs up to 2031	450 new homes in North East Cam Strategic Site by 2031[2]	6.3%
Lydney	The 2005 Local Plan for the Forest of Dean has been superseded by the new local plan. The new local plan is currently being compiled in draft form for public consultation and will accompany the core strategy and Cinderford Northern Quarter Area Action Plan (2012)	-	Approximately 1,900 dwellings by 2026[3]	9.4%
Moreton-in-Marsh	The Cotswold District Local Plan was adopted in 2006 and the council are now preparing a new local plan to cover up to 2031. The proposed development strategy is the latest document and a draft local plan is being prepared before the pre-submission local plan and final Sustainable Appraisal.	604 new jobs by from 2011 to 2031	840 dwellings are proposed over the period April 2011 to March 2031[4]	-
Stonehouse	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	Up to 3,000 new jobs by 2026 at the strategic site west of Stonehouse	Up to 1,500 new homes by 2026 at the strategic site west of Stonehouse[5]	3.4%

[2] Stroud District Local Plan: Submission Draft, December 2013

[3] Core Strategy Adopted Version 2012

[4] Local Plan Reg 18 Consultation: Development Strategy and Site Allocations 2015

[5] Stroud District Council Local Plan: Submission Draft 2013

Location	Local Plan Status	Planned Jobs Growth	Planned Housing Growth	Population Growth (%) 2015 to 2030
Stroud	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	6,200 new Jobs up to 2031 in the Stroud district	9,500 new homes up to 2031 in the Stroud district[5]	4.3%
Kemble	The Cotswold District Local Plan was adopted in 2006 and the council are now preparing a new local plan to cover up to 2031. The proposed development strategy is the latest document and a draft local plan is being prepared before the pre-submission local plan and final Sustainable Appraisal.	-	70 dwellings are proposed over the period April 2011 to March 2031. NB 23,18 in Cirencester[6] and potentially more on former airport	-
Proposed Stations				
Hunts Grove	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	-	500 - 700 additional homes (150 affordable dwellings) on top of the 1,750 new homes already permitted, up to 2,500 new homes in total in the Strategic Site up to 2031[7]	2%
Stonehouse North	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	Up to 3,000 new jobs by 2026 at the strategic site west of Stonehouse	Up to 1,500 new homes by 2026 at the strategic site west of Stonehouse	3.75%
Stonehouse Bristol Rd	Stroud District Local Plan currently adopted in 2005. Production of the new Stroud District Local Plan 2014 is in process and currently scheduled for Stage 2 Hearing Sessions and a consultation on other potential main modifications	Up to 3,000 new jobs by 2026 at the strategic site west of Stonehouse	Up to 1,500 new homes by 2026 at the strategic site west of Stonehouse	3.2%
Charfield	South Gloucestershire Local Plan 2006 will be replaced by the Policies, Sites and Places Plan (PSP) currently being prepared. The proposed PSP plan is currently in public consultation phase with additional consultation in relation to Local Green Spaces designation to begin in June 2015.	-	22,545 new homes in the South Gloucestershire Unitary District between 2013 and 2027[8]	13%

[6] Local Plan Reg 18 Consultation: Development Strategy and Site Allocations 2015

[7] Draft Housing Strategy 2014-2019

[8] South Gloucestershire Local Plan: Core Strategy adopted 2013

Location	Local Plan Status	Planned Jobs Growth	Planned Housing Growth	Population Growth (%) 2015 to 2030
Chipping Campden	The Cotswold District Local Plan was adopted in 2006 and the council are now preparing a new local plan to cover up to 2031. The proposed development strategy is the latest document and a draft local plan is being prepared before the pre-submission local plan and final Sustainable Appraisal.		208 dwellings are proposed by March 2031 including housing built to date and outstanding permissions[9]	2.2%

[9] Local Plan Reg 18 Consultation: Development Strategy and Site Allocations 2015

4 Rail network Characteristics and Forthcoming Changes

4.1 Rail Connectivity and Gloucestershire – Current Position

4.1.1 Passenger Services

Gloucestershire is at a key point on the UK rail network. This provides excellent connectivity both locally and across the UK. Table 4 summarises the main direct destinations and from which stations in Gloucestershire these can be reached.

Table 4 - Summary of Current Rail Destinations

Destinations	Stations Served & Frequency	Franchise
Swindon, Reading and London	Currently 2-hourly, with additional connections available (Cheltenham, Gloucester, Kemble Stonehouse & Stroud) Hourly Cheltenham-Gloucester-Kemble service in new franchise (from 2018)	Great Western – recently re-let to First Great Western *Runs until April 2019*
Birmingham, Bristol, Far South-West, North-West and North-East	Cheltenham Spa (2 per hour) Connections from Gloucester	Cross Country *Runs to November 2019*
South Wales	Cheltenham Spa (2 per hour) Gloucester (2 per hour) Lydney (approx. Hourly)	Arriva Trains Wales (approximately every 2 hrs) *Runs to October 2018* Cross Country (hourly and on to Birmingham/Derby/ Nottingham)
Bristol/Weymouth (stopping service)	Cheltenham Spa (2-hourly) Gloucester (hourly) Ashchurch (2-hourly) Cam and Dursley (hourly)	First Great Western 2-hourly service to/from Gloucester and further 2-hourly service to/from Worcester
Great Malvern/Worcester (stopping service)	Cheltenham Spa (2-hourly) Gloucester (2-hourly) Ashchurch (2-hourly) Cam and Dursley (2-hourly)	First Great Western 2-hourly service to/from Bristol to Great Malvern/ Worcester
Worcester Oxford	Moreton-in-Marsh (approximately hourly, with improvements from 2018)	First Great Western *Runs until April 2019*

Figure 5 (extracted from the Rail Network Map from the National Rail website) shows the rail services serving Gloucestershire in the context of the network as a whole.

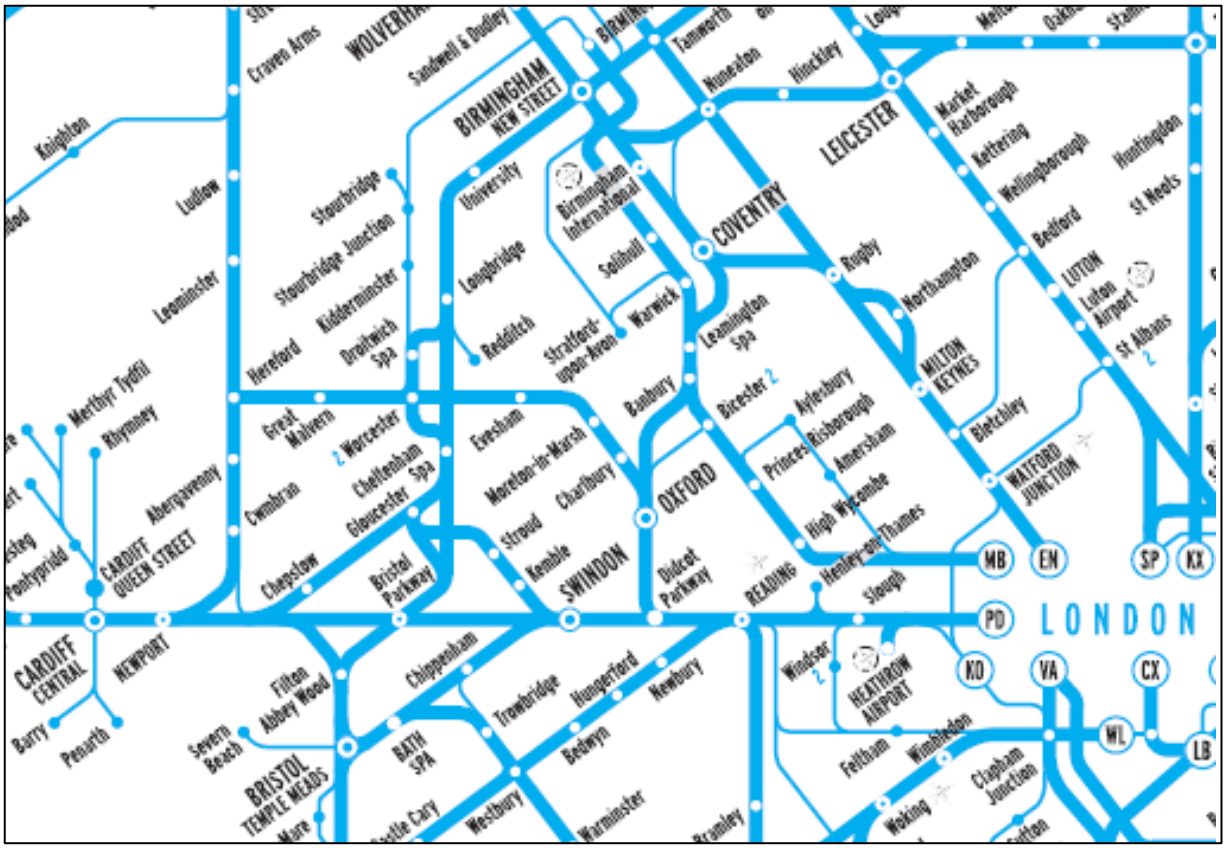

Figure 5 - Extract from Rail Network Map

4.1.2 Local Constraints

There are some local constraints which affect the ability to access the opportunities including:

- Cheltenham Spa station is located almost 2km from the centre of the town at a site which is enclosed by mature residential and other development, limiting the scope to provide additional facilities such as car parking.
- Gloucester station is not on the mainline running from Cheltenham Spa towards Bristol. Cross Country trains running to/from Bristol do not stop at Gloucester, necessitating an interchange at Cheltenham Spa. Trains from Cheltenham Spa via Gloucester need to reverse, involving a 10-12 minute time penalty.
- The environment around Gloucester Station is unattractive. The new bus station and Kings Quarter development will improve links to the town but the concourse and station buildings and the route across the ring road present a barrier. Car parking is limited and access to the area to the north (including the hospital) is very poor, involving an especially unpleasant subway.
- Lydney station is around 1.5km from the town on the far side of the A48. Car parking is limited and access for walkers and cyclists is unattractive, limiting the value of the town's rail station.

- Kemble Station is around 6km from Cirencester which is the nearest significant settlement. The current car park is full on weekdays and the proposed new car park will also probably fill up, especially in view of the new housing proposed in the area.
- Cam and Dursley and Moreton-in-Marsh stations serve relatively large rural areas and have limited parking capacity.
- Stonehouse station is enclosed by residential development, making access difficult and restricting the scope for car parking.

Figure 6 - Gloucester Station Frontage

4.1.3 Freight Services

Very little freight originates from or finishes its journey in Gloucestershire, though there are plans to reinstate freight links at Sharpness Docks, subject to feasibility. However, there is significant through traffic on the main rail routes. This affects the potential for increased passenger services and any associated stops/new stations.

4.2 Rail Connectivity – Planning Framework

Before considering the scope for additional stations or enhanced services at existing stations, it is important to understand the changes being implemented or proposed by Network Rail and the Train Operating Companies. These encompass a number of short-term commitments and a range of options extending to 2043 and beyond.

For the purposes of this study, these can be considered to fall into the following categories:

- Short-term commitments for service changes incorporated within the Train Operating Company (TOC) franchises. Examples include the recently-announced increase in frequency (from 2-hourly to hourly) on the Great Western services from Cheltenham Spa, via Gloucester, Stroud and Kemble to Reading and London (2018).

- Committed schemes being undertaken by Network Rail to improve operation, speed and capacity. Examples include the electrification of the Great Western Mainline.
- Schemes and concepts being considered by other parties, generally with involvement from the Network Rail or the TOCs. An example would be the MetroWest proposals for increased services between Bristol and Yate with the potential for extension to Gloucester.
- Schemes being actively considered by Network Rail but as yet with no commitment. Electrification of the Bristol – Birmingham route would be an example.
- Longer-term schemes and options which are under consideration and if implemented would have a direct impact on services or potential services in the Gloucestershire area. An example would be the provision of dynamic loops at various locations on the Bristol – Worcester route.
- Other long-term schemes and options which are under consideration which will have indirect (though still significant) impacts on services in the Gloucestershire area. Examples include HS2 and the arrangements for interchange in Birmingham.

To help manage these potentially complex and interrelated options and to ensure that the rail system is planned, funded and operated in a cohesive manner, Network Rail has embarked on a programme of studies. As well as providing the basis for planning within the rail industry, these processes enable stakeholders such as County Councils to understand the constraints and opportunities affecting the rail sector and how these link to their own plans for development. These include:

- The GRIP (Governance for Railway Investment Projects) process which is used to ensure the appropriateness, effectiveness, deliverability and affordability of rail projects. This is effectively a business case process akin to that set out in the Treasury Green Book and in the Transport Business Case guidance. By way of illustration, this study can be seen as equivalent to GRIP 2. The process includes the following stages:
    - GRIP 1 - Output definition
    - GRIP 2 - Feasibility
    - GRIP 3 - Option selection
    - GRIP 4 - Single option development
    - GRIP 5 - Detailed design
    - GRIP 6 - Construction test and commission
    - GRIP 7 - Scheme hand back
    - GRIP 8 - Project close out
- Control Periods, which are 5-year planning horizons, helping to link investment options with demands and to manage the finance and scheme design and implementation process. These include:
    - Control Period 5 (CP5): 2014-2019
    - Control Period 6 (CP6): 2019-2024
    - Control Period 7 (CP7): 2024-2029

- Control Period 8 (CP8): 2029-2034

- Market Studies encompassing London and South East, Long distance, Regional Urban and Freight markets. The passenger market studies identified the strategic goals for the respective market over the next 30 years, forecasted the levels of demand that may need to be accommodated, and formulated Conditional Outputs that would be needed in order to meet those strategic goals. Conditional outputs are subject to conditions of feasibility, value-for-money and affordability.
- Route Studies which take account of the Conditional Outputs and set out how these could be delivered with reference to the rail infrastructure, setting out options for change and how these could be delivered. Although shorter-term interventions are incorporated (ie within CP6) the horizon for these studies is to 2043. The Western Route Study, the principal one used in the conduct of this study is not due to be published until later in 2015. The Consultation Draft has been used, though clearly some aspects may change in the final document.

Gloucestershire County Council has been involved as a stakeholder in the Market Study and Route Study process and has responded to the recommendations put forward in the Consultation Draft of the Western Route Study. These responses have been taken into account in undertaking this study. The Consultation Draft of the Welsh Route Study was published in March 2015 and Gloucestershire County Council has yet to respond. This study will help inform the response.

4.3 Key Commitments and Proposals

There is considerable complexity in the interrelationships between the different strands of rail investment and how this could impact on the Gloucestershire. Taking account of the schemes and proposals exemplified in Section 4.2, Table 5 summarises key elements stemming from the analysis of the existing commitments and the long-term plan options set out in the Western and Welsh Route Study documents. The detail behind these can be found in Appendix A.

Table 5 - Key Rail Commitments and Proposals

Proposal	Timescale, Source & Status	Gloucestershire Impacts	Recommended Approach
Hourly Cheltenham-London service	2015-2019 FGW Franchise commitment	Improved connectivity for Cheltenham, Gloucester, Stroud, Kemble	Build on this to improve economy – better links to town centres & housing development
Intercity Express trains	Committed scheme. From 2017	New, longer trains. Bi-mode trains on Cheltenham route	
GWML Electrification	Committed scheme. Scheduled for 2016 (though reported to be late)	Improved services & longer trains	Support case for extension to Cheltenham, Gloucester and on Bristol-Birmingham route
Swindon to Kemble electrification	Under consideration – probably CP 8+ – option to meet 2043 Conditional Outputs (alternative to infrastructure changes at Swindon)	Electric trains running from Kemble to London – High peak hour supplement options	Ensure that passenger growth through development (eg Cirencester) is presented to TOC. Improve links to station.
Bristol – Birmingham electrification	Under consideration (CP6)	Improved services. Potentially better HS2 integration (long term)	Work with Bristol & other Councils/LEPs to press for scheme

Proposal	Timescale, Source & Status	Gloucestershire Impacts	Recommended Approach
MetroWest services Bristol-Yate and beyond	New trains to Yate funded through LGF, likely CP 6. Capacity improvements needed	Potential for extension to Gloucester. New Stonehouse Bristol Road and Charfield station proposals may be feasible, dependent on capacity	Work with Bristol and LEPs to develop plan for route and build funding case for trains & infrastructure improvements
Junction capacity improvements	Abbotsford Jnc (S of Worcester) and Westerleigh Jn (E of Bristol Parkway) under consideration – CP 6/7 & beyond	Will help support a range of service improvements	Work closely with the TOC and Network Rail on the options, what they would enable and how they would link into housing growth/rail growth plans
Capacity improvements – dynamic loops	Western Route Study - CP 6/7 & beyond to meet 2043 Conditional Outputs	Various alternatives for loops, including at Ashchurch & Charfield may enable more trains and more stopping trains, including new stations	
Additional train/hour to Cardiff	Welsh Route Study – CP 8 + additional train to meet Conditional Outputs. Options via Lydney or via Severn Tunnel	Gloucester-Cardiff improved with either option. Lydney route provides potential for more stopping trains but alternative provides scope for improved Lydney-Bristol access via Chepstow	
HS2 Phase 1	Completion scheduled for 2026	Little impact	
HS2 Phase 2	Completion scheduled for 2033	Significant potential changes in connectivity, dependent on arrangement in Birmingham and potential for Leeds & NW trains to run on HS2 (ie not running through Birmingham) There are risks that there will be reduction in through trains.	Work alongside Bristol and other SW councils and LEPs to gain commitment continued through services to NW, NE and Scotland (eg though 'Classic Compatible' trains

4.4 Existing Station Demand

Usage of stations and growth since 2001 can be seen in Table 6. In undertaking demand forecasting and economics, LENNON ticket data was used.

Table 6 - Station Patronage

Station Name	Entries & Exits (2001-2002)	Entries & Exits (2013-2014)[10]	Change (%)
Cheltenham Spa	821,000	1,925,000	134
Gloucester	698,000	1,315,000	88

[10] Estimates of station usage. Office of the Rail Regulator. December 2014.

Station Name	Entries & Exits (2001-2002)	Entries & Exits (2013-2014)[10]	Change (%)
Stroud	199,000	465,000	134
Kemble	175,000	341,000	95
Moreton-In-Marsh	166,000	217,000	31
Cam & Dursley	54,000	177,000	228
Lydney	69,000	172,000	149
Stonehouse	62,000	141,000	127
Ashchurch for Tewkesbury	49,000	84,000	71
Gloucestershire	**2,293,000**	**4,837,000**	**111**

4.5 Role of Rail in Gloucestershire's Development

As set out previously, Gloucestershire occupies a pivotal point in the UK rail network. Current levels of rail usage are relatively low (at 1%) compared with other parts of England (around 5%). However, this does not take into account the considerable potential for rail to enable economic growth:

- The central location of Gloucestershire and its good rail links with the key employment destinations of Birmingham, Bristol, Oxford, Swindon, Reading and London;
- The availability of housing land within the catchment areas of existing stations such as Kemble and Ashchurch;
- The established urban centres of Cheltenham and Gloucester, along with their excellent links to the key centres.

These factors are detailed further in the SWOT analysis provided in Table 7.

4.6 Journey to Work Data

Journey to work data has been used extensively within the demand modelling for proposed stations. However, it is important at a strategic level to understand the range of journey opportunities and the volumes of people accessing these.

This data provides a guide to targeting investment which will most effectively reduce car trips and reduce congestion. It also helps identify the key connectivity requirements for proposed development sites and how their impacts can be most effectively mitigated.

Figure 7 shows the journey to work movements (all transport modes) for work trips originating in Gloucestershire. This shows the importance of Bristol as a destination but also indicates how the strength of the London economy provides a draw which is especially important in relation to the rail links available.

Analysis of this data can be undertaken in relation to more people coming to live in Gloucestershire with the intention of working in these centres, along with the opportunities presented for existing residents.

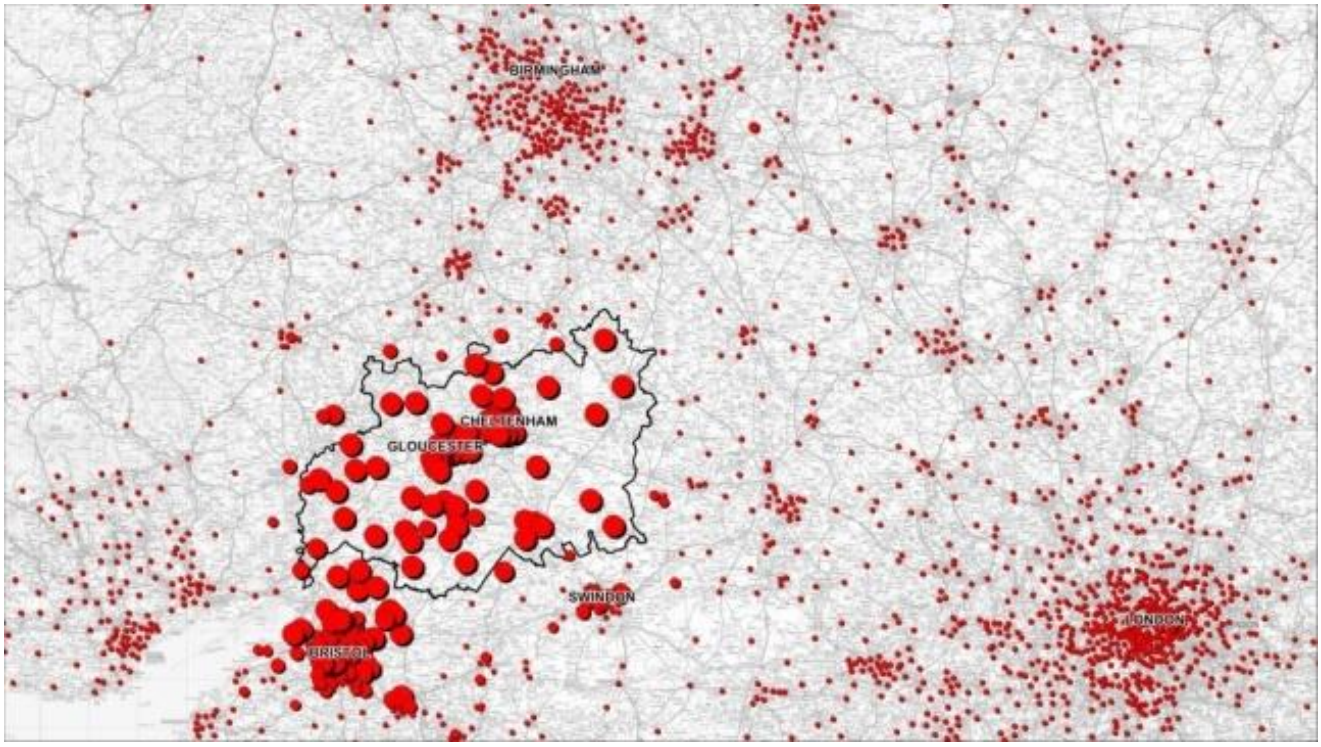

Figure 7 - Journey to Work; All Modes

4.7 SWOT Analysis

Using information from stakeholder consultation, analysis of policy and planning documents and the demand appraisal and modelling undertaken within this study, the strengths, weaknesses, opportunities and threats relating to rail provision in Gloucestershire has been prepared. This informs the conclusions of this study and the identification of future priorities for short-term and longer-term investigation.

Table 7 - SWOT Analysis

Strengths	**Weaknesses**
Frequent, fast services to Bristol, Birmingham, London & beyond from many locations – new services under GW franchise New IEP trains due from 2017 GWML electrification under way Central location of Gloucester station (though off the mainline) Patronage growth at Cheltenham Spa very strong (and at other locations such as Ashchurch for Tewkesbury, Stroud, Kemble and Cam and Dursley)	Many stations distant from nearest settlements, including Cheltenham Spa, Kemble (Cirencester), and Ashchurch (Tewkesbury) Area around Gloucester station very unattractive, and rail line severs town Lack of parking space and/or alternative connectivity at many stations Low frequencies at some stations, especially Ashchurch for Tewkesbury Poor access to Bristol from Forest of Dean and Lydney
Opportunities	**Threats**
Existing, committed and future station investments (facilities, car parks etc.) Opportunities for existing and new residents to access jobs in Oxford, Reading, London etc Significant housing growth across Gloucestershire, including Ashchurch and Cirencester Crossrail and Heathrow links (& HS2 at Old Oak Common) - improved opportunity Route Studies provide excellent opportunity to engage with rail sector MetroWest developments provide opportunity for Bristol-Gloucester services, including new stations and/or stops Additional services London-Swindon provide opportunity for improved Kemble service Devolved funding provides opportunities	Availability of rolling stock limits scope for service improvements Infrastructure limits capacity and limits scope for new stations & additional stops Failure to grasp opportunities may limit growth Large cities may set agenda and take larger share of investment opportunity HS2 connectivity in Birmingham may threaten key direct links

5 Demand Forecasting

5.1 Overall Approach to Demand Forecasting

The wider network demand has been drawn from existing work, in relation to the wider network changes detailed in the brief. No new area-wide demand modelling was undertaken. However, whilst some aspects of the background network changes are committed (eg GWR electrification), some aspects are less certain. Some interpretation has been undertaken, based on consultation with the Train Operating Companies, providing some ranges of demand under different scenarios.

Demand forecasting has been undertaken for the proposed station locations and for those existing stations where service enhancement options are under consideration. The forecasting was undertaken by Professor John Preston and Dr Simon Blainey at the University of Southampton. For existing stations, forecasts were based on the Passenger Demand Forecasting Handbook (PDFH). For the new station proposals, a specifically designed demand model has been used. This is geared to forecasting demand at small stations of the kind proposed by Gloucestershire County Council.

In addition, to support the individual station modelling, we have used the National Trip-End Model to determine the likely kinds of wider journey patterns which occupants of the existing and proposed new houses are likely to undertake. We have also applied a similar factor to the likely origins of journeys to work to the proposed employment locations, though this is far less certain since it is impossible to predict the exact type of activity likely to be undertaken at such sites.

Forecasting of total annual demand at new stations has been undertaken using a 'trip end model' methodology. These models were first developed for England and Wales in 2008 and have subsequently been updated. The models produce demand forecasts based on catchment population and employment, within distance categories around a new station, train frequencies, station car park capacities, and the distance to the nearest station in Network Rail categories A-D. The models are capable of producing a high-level forecast of the total passengers per year at a new local railway station on any site in England and Wales. The forecasts produced from this type of model are indicative, and are intended to provide a quick check of the likely viability of a station in a particular site rather than a detailed prediction of travel patterns following station opening. They allow planners to quickly assess the potential of a large number of station sites without expending large quantities of time and money on a detailed bespoke study. If the results indicate that a station on a particular site is likely to be viable then more detailed flow-level demand modelling should be carried out before a final decision on construction is taken. This more detailed work would be undertaken only at GRIP stages 3-5 as the design process for any favourable stations was taken forward.

The demand projections for the existing stations will be undertaken using the Passenger Demand Forecasting Handbook, which broadly predicts a proportionate change in passenger demand for a given proportionate change in an influencing factor, using 'elasticity' principles.

In both cases, the key factors affecting the demand projections are:

- Network demand and service provision aspects derived from existing and proposed rail services

- Existing and projected local demand based on Local Plans and other key documents relating to the areas around each station location
- Service frequency and constraints such as capacity of trains and car parking

After preparing the rail demand forecasts, suitable adjustments may be required to the station demand projections based on the rail station's local interaction with alternative travel modes and 'variable demand' processes (e.g. people changing their time of travel, trip route, or journey destination)

5.2 Proposed Station Forecasts

The proposed stations for which forecasts were undertaken are as follows, and these are mapped in Figure 8:

- Hunts Grove
- Stonehouse North
- Stonehouse Bristol Road
- Charfield
- Chipping Campden

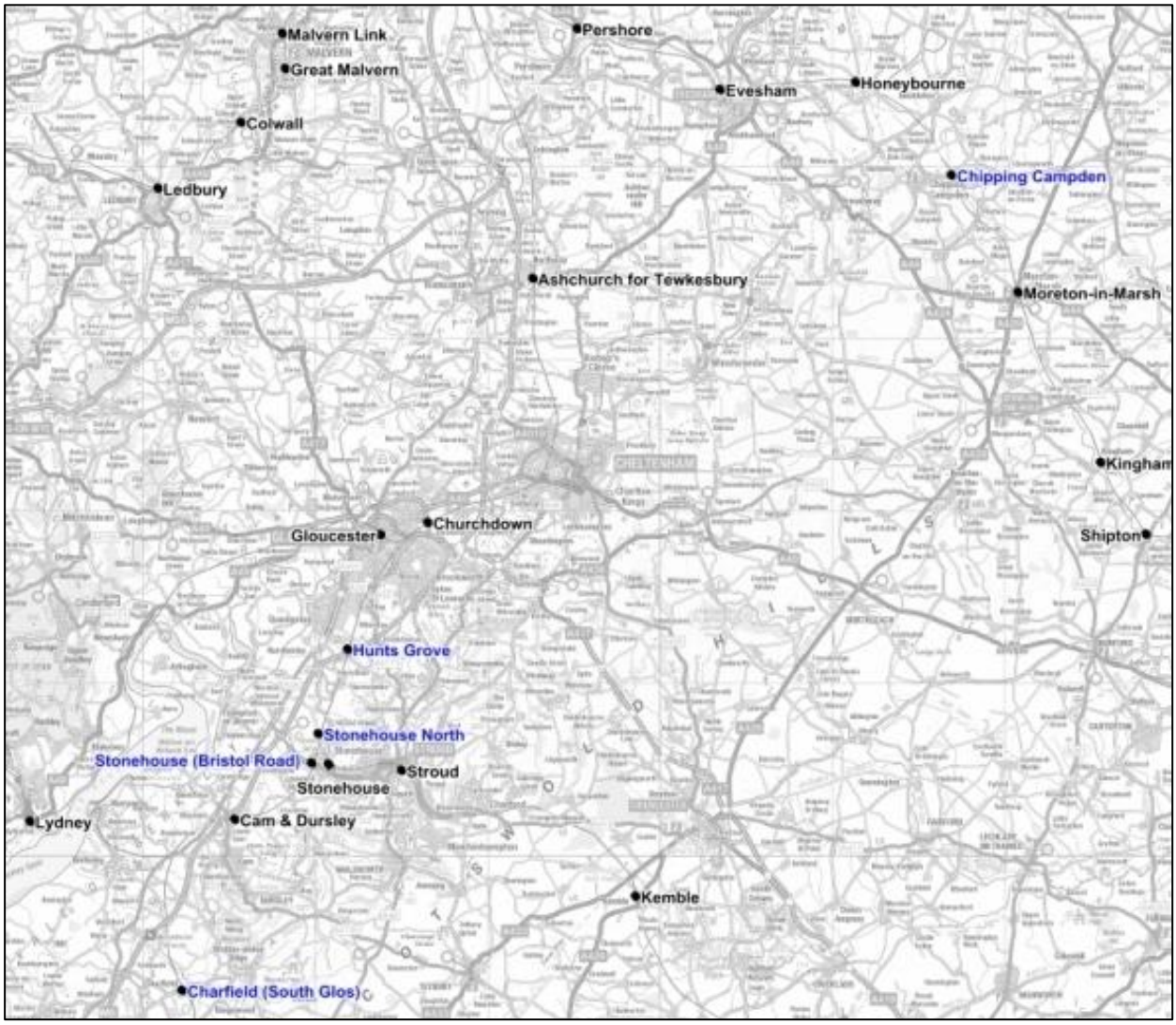

Figure 8 - Locations of Modelled New Station Proposals and Existing Stations

Details of the assumed characteristics of each station are described for each station in turn in the sections below, but there are some features which are common across all six stations:

- All stations are modelled on a mutually exclusive basis (assuming that no other new stations are opened).
- It is assumed that the typical number of trains per hour operates from 0600 to 2300 (total of 17 hours per day) when calculating service frequencies.
- Distance-weighted catchment populations for each station were first calculated based on 2011 census data at output area level. In order to provide forecasts for 2015 it was therefore necessary to scale these populations up to 2015 levels. This was done based on data supplied at TEMPRO zone level, although it should be noted that this is extremely coarse scale data, and will therefore not reflect accurately (for example) the effects of a new housing development taking place in the immediate vicinity of a station, as populations will be scaled based on the total population change within the TEMPRO zone that a given output area forms part of. Similar methods were used to estimate catchment population and employment figures for 2020, 2025 and 2030.

- Employment totals for each station catchment were also calculated based on 2011 census data at workplace zone level, and then scaled using TEMPRO data.

Once an initial forecast had been made for 2015, this forecast was then adjusted to account for growth in demand to 2020, 2025 and 2030. These forecasts were made incrementally, with the 2015 figure adjusted first to give a 2020 forecast, and then this latter figure adjusted to give a 2025 forecast (and so on). Underlying growth was accounted for using a simple multiplier, so for example if aggregate rail demand was predicted to grow by 10% between 2015 and 2020 the 2015 demand figure would be multiplied by 1.1. This demand figure was then further adjusted to account for changes in population and employment using an elasticity-based approach, as recommended in the Passenger Demand Forecasting Handbook[11]. This recommends using an elasticity of 1 for both population and employment, although it should be noted that the employment elasticity relates only to travel by season-ticket holders, with no value given for other types of travel. The change in demand as a result of a change in one of these external factors is given by Equation[12].

It was also necessary to adjust demand to account for underlying exogenous growth, with the growth rate used based on figures in Network Rail's Regional Urban Market Study. This gives demand growth into regional centres in England for 2022/23 and 2042/43 under four future scenarios, titled 'Prospering in Isolation' (scenario 1), 'Struggling in Isolation' (scenario 2), 'Prospering in Global Stability' (scenario 3) and 'Struggling in Global Turmoil' (scenario 4). It should be noted that these growth forecasts will include the effects of aggregate growth in population and employment, which raises the possibility of double counting, but as no other forecasts were available this appeared unavoidable. Interpolation was used to give growth values for the forecasting years used here (2020, 2025 and 2030), and mean values were also calculated across all four scenarios, allowing five sets of future demand forecasts to be produced for each station. These exogenous demand changes were calculated before elasticities were applied to the results to forecast the effect of changes in population and employment over each five year period, with these forecasts then used as the base for the next five year period of demand change.

[11] Association of Train Operating Companies (2013) *Passenger Demand Forecasting Handbook v5.1*, ATOC, London

[12] Network Rail (2013) *Long Term Planning Process: Regional Urban Market Study*, Network Rail, London.

$$T_y = T_{y-1}\left(\frac{F_y}{F_{y-1}}\right)^{\eta}$$

Where:

T_y is the number of trips in year y

T_{y-1} is the number of trips in year $y-1$

F_y is the value of external factor F in year y

F_{y-1} is the value of external factor F in year $y-1$

η is the elasticity of demand with respect to external factor F

The detailed characteristics of the stations and the resulting demand forecasts are summarised in the following sections of this report. Note that these forecasts are based on the provision of service which could potentially be provided but take no account of operational or financial constraints on the provision of these services. The forecasts are intended only to demonstrate the levels of patronage which might be achieved.

5.2.1 Proposed Hunts Grove Station

Assumed Service Provision

It is assumed that the NE-SW Cross Country services would not call at Hunts Grove, meaning that it would be served by the following hourly services in each direction:

- FGW Cheltenham Spa – Swindon/London
- FGW Gloucester – Bristol

Station Characteristics

Distance-weighted population	98.445
Jobs	231
Service frequency	68
Distance to nearest Category A-D station	8.198
Number of car parking spaces	200

Projected Population

Hunts Grove Population and Employment Change Year	2015	2020	2025	2030
Population	99.330	99.834	100.452	101.052
Jobs	259.853	257.233	256.302	254.663

Demand Forecasts

Hunts Grove Demand Forecasts 2015		157,032			
Scenario [13]	Mean	1	2	3	4
2020	174,834	166,876	160,869	189,799	181,790
2025	191,884	179,491	166,541	219,633	201,869
2030	205,337	193,877	172,653	242,431	212,385

[13] 'Prospering in Isolation' (scenario 1), 'Struggling in Isolation' (scenario 2), 'Prospering in Global Stability' (scenario 3) and 'Struggling in Global Turmoil' (scenario 4), as used in Network Rail's Regional Urban Market Study

5.2.2 STONEHOUSE NORTH

Assumed Service Provision

It is assumed that the NE-SW Cross Country services would not call at Stonehouse North, meaning that it would be served by the following hourly services in each direction:

- FGW Cheltenham Spa – Swindon/London
- FGW Gloucester – Bristol

Station Characterisics

Distance-weighted population	79.252
Jobs	279
Service frequency	68
Distance to nearest Category A-D station	6.574
Number of car parking spaces	200

Projected Population

Stonehouse North Population and Employment Change Year	2015	2020	2025	2030
Population	79.691	80.468	81.634	82.839
Jobs	277.543	274.074	272.566	270.359

Demand Forecasts

Stonehouse North Demand Forecasts 2015			147,984		
Scenario	Mean	1	2	3	4
2020	165,123	157,607	151,934	179,256	171,693
2025	182,374	170,595	158,287	208,748	191,864
2030	196,529	185,561	165,248	232,032	203,276

5.2.3 STONEHOUSE BRISTOL ROAD

Assumed Service Provision

It is assumed that the NE-SW Cross Country services would not call at Stonehouse Bristol Road, meaning that it would be served by the following hourly service in each direction:

- FGW Gloucester – Bristol

Station Characterisics

Distance-weighted population	244.417
Jobs	5102
Service frequency	34
Distance to nearest Category A-D station	5.465
Number of car parking spaces	200

Projected Population

Stonehouse Bristol Road Population and Employment Change Year	2015	2020	2025	2030
Population	244.806	246.691	249.673	252.803
Jobs	5078.502	5022.574	4998.251	4962.660

Demand Forecasts

Stonehouse Bristol Road Demand Forecasts 2015			93,274		
Scenario	Mean	1	2	3	4
2020	104,021	99,287	95,713	112,925	108,160
2025	114,694	107,286	99,546	131,280	120,662
2030	123,445	116,556	103,797	145,746	127,683

5.2.4 Proposed Charfield Station

Assumed Service Provision

It is assumed that the NE-SW Cross Country services would not call at Charfield, meaning that it would be served by the following hourly service in each direction:

- FGW Gloucester – Bristol

Station Characterisics

Distance-weighted population	367.972
Jobs	332
Service frequency	34
Distance to nearest Category A-D station	18.826
Number of car parking spaces	100

Projected Population

Charfield Population and Employment Change Year	2015	2020	2025	2030
Population	379.978	399.805	416.397	432.262
Jobs	320.551	330.709	338.259	344.168

Demand Forecasts

Charfield Demand Forecasts 2015			86,626		
Scenario	Mean	1	2	3	4
2020	105,227	100,438	96,822	114,234	109,414
2025	122,715	114,790	106,508	140,462	129,101
2030	138,767	131,023	116,680	163,835	143,531

5.2.5 Proposed Chipping Campden Station

Assumed Service Provision

Chipping Campden would be served by the following hourly service in each direction:

- FGW Hereford – London

Station Characterisics

Distance-weighted population	22.274
Jobs	448
Service frequency	34
Distance to nearest Category A-D station	18.960
Number of car parking spaces	100

Projected Population

Chipping Campden Population and Employment Change Year	2015	2020	2025	2030
Population	22.874	23.080	23.277	23.387
Jobs	448.718	448.619	447.229	444.265

Demand Forecasts

Chipping Campden Demand Forecasts 2015			46,678		
Scenario	Mean	1	2	3	4
2020	52,693	50,295	48,484	57,203	54,789
2025	57,997	54,251	50,337	66,384	61,015
2030	61,970	58,511	52,106	73,165	64,097

5.3 Comparisons

Much of the difference between the forecasts for different stations results from the variations in train frequencies at the station, and while this factor is to some extent pre-determined by the services already operating on the routes, for comparison purposes forecasts were produced for all station sites if only 34 trains per day were provided in all cases. This is important in view of the potential to increase frequencies on routes such as Bristol-Gloucester. These results are given in Table 20, with the values of all other explanatory variables having remained unchanged.

Table 8 - Comparative Analysis (New Stations with Consistent Frequency)

Trips Forecast In 2015 With Constant Train Frequencies	2015 Trips
Hunts Grove	64,041
Stonehouse North	60,351
Stonehouse Bristol Road	93,274
Charfield	86,626
Chipping Campden	46,678

5.4 Existing Station Forecasts – Increased Frequencies

Modelling of the existing rail stations in Gloucestershire has been undertaken using LENNON/MOIRA data (derived from ticket sales) supplied by the Train Operating Companies. The commercially sensitive data involved was obtained under non-disclosure agreements between Amey and First Great Western and Arriva Trains Wales.

Using the patronage data from LENNON/MOIRA, the demand projections for the existing stations were undertaken using the Rail Passenger Demand Forecasting Manual. This broadly predicts a proportionate change in passenger demand for a given proportionate change in an influencing factor, using 'elasticity' principles.

The demand projections were calculated to take account of:

- Network demand and service provision aspects derived from existing and proposed rail services
- Existing and projected local demand based on Local Plans and other key documents relating to the areas around each station location
- Service frequency and constraints such as capacity of trains and car parking

After preparing the rail demand forecasts, suitable adjustments were applied to the station demand projections based on the rail station's local interaction with alternative travel modes and 'variable demand' processes (e.g. people changing their time of travel, trip route, or journey destination). This was assessed on a station-by-station basis taking account of the above characteristics along with Census Journey to Work data which indicates the non-rail journey to work patterns which are likely to lead to a mode shift.

At this stage these must be considered indicative calculations consistent with this study, geared towards the GRIP 2 (feasibility) stage. More comprehensive modelling would be required to support a financial, economic and commercial case for frequency improvements in later stages of the GRIP process (see Section 4.2).

5.5 Overview of Methodology

The second section of the demand forecasting work involves predicting the change in demand at existing stations as a result of a range of service enhancements. These predictions are made using the methodology and elasticities recommended in the Passenger Demand Forecasting Handbook (PDFH), as shown in the equation referenced in Section 5.2. In PDFH service headway is treated as a component of generalised journey time (GJT), which also includes rail travel time (including interchange time but not access/egress time) and interchange penalties. Different time 'penalties' are recommended for different service headways, with the effects of a change in service frequency on GJT calculated as the change in this headway penalty. The penalties applied are different for full/season ticket and reduced fare travel, and therefore forecasts were segmented by ticket type before being combined to give predictions of total future trips. A single elasticity is then applied to estimate the demand impacts of a change in the overall GJT. Different GJT elasticities are recommended for different flow types, with the values used here ranging from -1.1 to -1.5.

In addition to base year forecasts for each flow type, we have also produced forecasts at five year periods up to 2030 taking account of changes in population and employment around the existing stations. As before, these use a population elasticity of 1 in all cases, with an employment elasticities of between 1.0 and 1.3 (depending on flow type) applied only to travel using season tickets. Long term elasticities are used where both long and short term elasticities are provided. Forecasts have also been included which incorporate Network Rail's predictions of exogenous growth, although as stated above this may include some double counting.

The base data used in the forecasting was LENNON ticket sales data supplied by First Great Western and Arriva Trains Wales, covering the top 100 destinations from each station of interest. This data was segmented by ticket type (full, reduced and season) to allow application of the PDFH recommended elasticity values. First Great Western also supplied MOIRA data on base generalised journey times, although this data was not available for a minority of the flows included in the LENNON data. In such cases base generalised journey times were estimated manually using online journey planner data and PDFH recommendations on headway and interchange penalties.

5.6 Demand Forecasts

5.6.1 Cam & Dursley

Table 9: Cam & Dursley Population and Employment Change

Year	2015	2020	2025	2030
Population	85.215	86.526	88.224	89.949
Jobs	0	0	0	0

Table 10: Cam & Dursley Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
All	Hourly	Half-hourly	-13	-6

Table 10 (above) shows the service frequency changes proposed for Cam & Dursley station, on which the demand forecasts for this station have been based. For all stations considered in this forecasting exercise, the GJT reduction is only applied on flows where the service frequency for the whole flow is as high as the frequency at the origin station. In other cases the lowest service frequency for any part of the flow is used when calculating the GJT for the whole flow. For example, for a flow from Cam & Dursley to Ebbw Vale Parkway in the new situation, the service frequency from Cam & Dursley to Cardiff Central is now at least half-hourly, but the service frequency from Cardiff Central to Ebbw Vale Parkway is still only hourly, and therefore an hourly headway penalty is used when calculating the GJT for the whole journey from Cam & Dursley to Ebbw Vale Parkway.

Table 11: Cam & Dursley Demand Forecasts

2015 base	**182,152**		**2015 enhanced**		**216,199**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	219,525	245,653	234,472	226,032	266,681	255,428
2025	223,833	274,203	256,493	237,989	313,857	288,474
2030	228,209	299,300	282,598	251,662	353,370	309,574

5.6.2 Stonehouse

Table 12: Stonehouse Population and Employment Change

Year	**2015**	**2020**	**2025**	**2030**
Population	361.402	364.288	368.986	373.953
Jobs	736.135	726.936	722.935	717.081

The situation regarding train frequency changes at Stonehouse, as shown in Table 13, is slightly more complex than for some other stations, as the services to Swindon and London will be viewed as being substitutable for passengers to many destinations. It is therefore assumed that the combined service equates to an overall frequency of three trains every two hours (40 minute headway) for stations to Swindon and connections beyond, compared to a combined frequency of one train every hour in the base case. The higher number of direct services to London is also assumed to result in a reduction in the interchange penalty applied for relevant flows.

Table 13: Stonehouse Service Frequency Change

Services	**Frequency old**	**Frequency new**	**GJT change full/season (mins)**	**GJT change reduced (mins)**
London	2 hourly	Hourly	-24	-12
Swindon	2 hourly	2 hourly (40 mins)	0 (-8)	0 (-4)

Table 14: Stonehouse Demand Forecasts

2015 base		144,806	2015 enhanced			168,420
Exogenous growth scenario	None	Mean	1	2	3	4
2020	167,243	187,148	178,630	172,200	203,168	194,595
2025	168,290	206,161	192,846	178,933	235,975	216,891
2030	168,914	221,534	209,171	186,273	261,555	229,139

5.6.3 Ashchurch for Tewkesbury

Table 15: Ashchurch Population and Employment Change

Year	2015	2020	2025	2030
Population	418.952	442.812	464.534	486.365
Jobs	5160.332	5185.731	5190.582	5166.632

Table 16: Ashchurch Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
All (option 1)	2 hourly	Hourly	-24	-12
All (option 2)	2 hourly	Half-hourly (peak)	-44	-12

As shown in Table 16, there are two service frequency enhancement options for Ashchurch station, and therefore two sets of future demand forecasts are shown in Table 17. The half-hourly peak service in Option 2 is only assumed to have an impact on GJT for full and season travellers, and not for reduced travellers, who therefore get the same GJT benefit as under Option 1.

Table 17: Ashchurch Demand Forecasts

Option 1						
2015 base		83,984	2015 enhanced			117,275
Exogenous growth scenario	None	Mean	1	2	3	4
2020	124,740	131,233	125,260	120,751	142,467	136,455
2025	131,017	150,895	141,149	130,966	172,717	158,748
2030	136,360	168,136	158,753	141,374	198,510	173,907

Option 1						
Option 2						
2015 base	83,984		2015 enhanced		144,753	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	153,968	161,981	154,609	149,043	175,847	168,427
2025	161,717	186,250	174,221	161,652	213,185	195,944
2030	168,309	207,528	195,947	174,497	245,019	214,652

5.6.4 Cheltenham Spa

Table 18: Cheltenham Spa Population and Employment Change

Year	2015	2020	2025	2030
Population	1514.724	1536.561	1550.076	1563.787
Jobs	10296.802	10116.269	9908.952	9671.094

Table 19: Cheltenham Spa Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
London	2 hourly	Hourly	-24	-12
Bristol	20-30 mins	20-30 mins	0	0
Birmingham	Half-hourly	Half-hourly	0	0
Cardiff (via Lydney)	Hourly	Half-hourly	-13	-6
Worcester (via Ashchurch)	2 hourly	Hourly	-24	-12

Table 20: Cheltenham Spa Demand Forecasts

2015 base	**1,840,320**		**2015 enhanced**		**1,933,191**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	1,918,711	2,147,076	2,049,356	1,975,581	2,330,869	2,232,516
2025	1,886,775	2,311,356	2,162,075	2,006,095	2,645,617	2,431,657
2030	1,847,301	2,422,773	2,287,569	2,037,149	2,860,454	2,505,938

5.6.5 Gloucester

Table 21: Gloucester Population and Employment Change

Year	2015	2020	2025	2030
Population	1893.481	1961.527	2005.953	2062.676
Jobs	23428.895	23362.528	23202.656	22925.251

Table 22: Gloucester Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
London	2 hourly	Hourly	-24	-12
Bristol	Hourly	Hourly	0	0
Cardiff (via Lydney)	Hourly	Half-hourly	-13	-6
Worcester (via Ashchurch)	2 hourly	Hourly	-24	-12

Table 23: Gloucester Demand Forecasts

2015 base	**1,153,416**		**2015 enhanced**		**1,241,870**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	1,282,025	1,434,611	1,369,318	1,320,024	1,557,417	1,491,700
2025	1,300,055	1,592,606	1,489,746	1,382,270	1,822,924	1,675,498
2030	1,317,225	1,727,567	1,631,160	1,425,597	2,039,658	1,786,869

5.6.6 Stroud

Table 24: Stroud Population and Employment Change

Year	2015	2020	2025	2030
Population	703.104	711.153	722.621	734.267
Jobs	8428.317	8356.317	8336.327	8292.273

The change in service provision at Stroud is similar to that at Stonehouse (see above), and is summarised in Table 25. The higher number of direct services to London is assumed to result in a reduction in the interchange penalty applied for relevant flows.

Table 25: Stroud Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
London	2 hourly	Hourly	-24	-12
Swindon	2 hourly	2 hourly (40 mins)	0 (-8)	0 (-4)

Table 26: Stroud Demand Forecasts

2015 base	**468,609**		**2015 enhanced**		**544,255**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	545,033	609,903	582,144	561,188	662,111	634,173
2025	552,285	676,566	632,869	587,212	774,409	711,780
2030	557,747	731,497	690,675	616,067	863,644	756,607

5.6.7 Lydney

Table 27: Lydney Population and Employment Change

Year	2015	2020	2025	2030
Population	47.445	48.933	50.645	52.128
Jobs	0	0	0	0

Table 28: Lydney Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
All	Hourly	Half-hourly	-13	-6

Table 29: Lydney Demand Forecasts

2015 base	**185,359**		**2015 enhanced**		**247,422**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	255,549	285,964	272,949	263,123	310,443	297,344
2025	264,489	324,008	303,081	281,216	370,864	340,871
2030	272,234	357,041	337,116	300,212	421,541	369,297

5.6.8 Kemble

Table 30: Kemble Population and Employment Change

Year	2015	2020	2025	2030
Population	96.623	97.497	98.332	98.796
Jobs	0	0	0	0

The change in service provision at Kemble is similar to that at Stonehouse and Stroud (see above), and is summarised in Table 31. The higher number of direct services to London is assumed to result in a reduction in the interchange penalty applied for relevant flows.

Table 31: Kemble Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
London	2 hourly	Hourly	-24	-12
Swindon	2 hourly	2 hourly (40 mins)	0 (-8)	0 (-4)

Table 32: Kemble Demand Forecasts

2015 base	333,485		2015 enhanced		400,900	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	404,525	452,672	432,069	416,515	491,421	470,685
2025	407,990	499,801	467,520	433,792	572,080	525,814
2030	409,916	537,613	507,611	452,043	634,734	556,067

5.6.9 Moreton-in-Marsh

Table 33: Moreton-In-Marsh Population and Employment Change

Year	2015	2020	2025	2030
Population	5.283	5.331	5.377	5.403
Jobs	0	0	0	0

Table 34: Moreton-In-Marsh Service Frequency Change

Services	Frequency old	Frequency new	GJT change full/season (mins)	GJT change reduced (mins)
All	Hourly	Half-hourly	-13	-6

Table 35: Moreton-In-Marsh Demand Forecasts

2015 base		**227,456**	**2015 enhanced**		**252,299**	
Exogenous growth scenario	None	Mean	1	2	3	4
2020	254,610	284,914	271,947	262,157	309,303	296,252
2025	256,818	314,610	294,291	273,060	360,108	330,985
2030	258,059	338,449	319,562	284,580	399,591	350,067

6 Strategic and Economic Analysis of Proposals

6.1 Overall Perspective

At this stage, with limited time and uncertainty about the merit or feasibility of many of the proposals for new stations or enhanced services, a robust but straightforward approach to the economic appraisal has been taken. This is consistent with the GRIP-2 (feasibility) stage and would form at least part of the requirements for a Strategic Outline Business Case. A more comprehensive approach would be complex and costly and should only be applied to schemes which our more straightforward approach has shown to be sound.

Consequently, although standard WebTAG approaches towards the economics have been applied, some aspects have not been considered at this stage but can be explored later when it is clear which schemes can be taken forward in the short term, which ones can be considered in the longer term and which ones do not merit consideration at this stage.

Wider elements, which can also be considered later, are detailed in Section 6.3.

6.2 Approach to Appraisal

6.2.1 Outline Summary of Economic Appraisal Approach

Table 36 gives an overview of the rail station aspects that have been considered within the economic impact appraisal for transport users. Conversely, it also indicates the rail station aspects that have not been assessed in the study.

Table 36 - Scope of Rail User Economic Impacts Assessed

Type of Rail Station User	**Aspects of Rail Improvement Assessed for User Economic Impact [✓ Included / × Excluded]**									
	Increased Train Frequency	New Station Stops for Existing Train Service	Expand Train Routes and Capacity	Improved Passenger Facilities	Transport Efficiency Savings for Rail Users	Transport Efficiency Savings for Retained Car / Bus Users	Transport User Travel Charges	Transport Provider / Operator Revenues	Capital Costs to Public Accounts	Non-Perceived Traffic Decongestion Savings
Users of New Stations	×	✓	×	×	✓	×	✓	✓	✓	✓
Users of Existing Stations	✓	×	×	×	✓	×	✓	✓	×	✓

The scope of economic appraisal identified in Table 36 enables only partial assessment of the relationship of monetised benefits to costs (BCR) and hence value for money (VfM). It can be calculated for new stations, where capital investment costs can be broadly quantified, but not for existing stations where no capital costs are available.

The two core aspects of the potential rail station initiatives, which have been assessed for economic impact, are new station stops for users of new stations and increased train frequencies for users of existing stations.

6.2.2 Factors used in the Appraisal

The economic appraisal has taken into account the following factors:

- Rail user travel time and distance cost saving for new passengers using proposed and existing stations;
- Rail user travel cost saving (i.e. avoidance of ultimate destination car park charge, or bus fare) for new passengers using proposed and existing stations;
- Rail user fare charge and car P&R cost increment for new passengers using proposed and existing stations, who would otherwise use car or bus for whole journey;
- Switch of longer-distance 'pass-by' trip O-D movements on to rail, at proposed, or improved existing, stations, originating from outside the estimated station catchment that is defined for passengers transferring from adjacent stations;
- External, non-perceived traffic decongestion benefits to wider community from transferring car trips to rail, at proposed and existing stations, which would otherwise use car for whole journey;
- Train fare revenue increment for operators at proposed and existing stations, derived from new passengers who would otherwise use car or bus for whole journey;
- Capital cost to public accounts from proposed station infrastructure investment and maintenance – (at new stations only, not existing stations);
- All costs and benefits have been calculated over 60 years, at 2010 prices and discounted to 2010 present value;
- All economic benefit and cost outcomes have been measured in terms of net change i.e. [without scheme situation] – [with-scheme situation].

6.2.3 Factors Not Taken Into Account

At this stage, the following factors have not been taken into account. Primarily this was due to information being unknown or unavailable and/or these factors only normally being addressed at later stages of the investment planning process. If a business case for any of the proposals is taken forward, these factors would be introduced during the process:

- Improved journey times and reduced perceived costs, for remaining car and bus users after rail improvements have been introduced at proposed and existing stations, which may arise from reductions in highway demand and peak traffic delays and more spare highway capacity;
- Rail user travel time cost increment for passengers on existing trains stopping at new stations – this cost per passenger will be a negligible proportion of their overall rail journey cost (e.g. 2-minute delay) and difficult to quantify across a reliable estimate of affected users, because passenger loadings are commercially sensitive data;
- Car P&R revenue increment for operators of proposed and existing stations, accrued from new passengers;
- Social/distributional/environmental impacts of proposed and existing station initiatives, such as – changes in journey reliability, safety, accessibility, noise, air quality;
- Wider impacts of proposed and existing station initiatives, e.g. in terms of economy, regeneration, enabling dependent development, coordinating with complementary schemes as a combined investment 'package', etc.;
- Combined impacts of linking more than one proposed and existing station initiative together, in a coherent rail improvement package;
- Operating cost increment to TOC and Network Rail of running proposed stations, stopping existing services at proposed stations and providing higher train frequencies at existing stations;

- Fuel tax revenue loss to Government from transfer of trips to rail that would otherwise use car;
- Bus fare and car park revenue loss for operators losing car and bus customers to proposed and existing rail stations;
- Change over time in economic parameters that control valuation of costs and benefits;
- Value for Money of each rail intervention, (i.e. [net benefit / net cost] ratio), has not been calculated, because full capital, maintenance and operating costs have not been appraised consistently for both new and existing stations;
- Outcomes with improvements in train route patterns, train capacities and passenger facilities at existing stations;
- Outcomes with improvements in train frequencies, route patterns and train capacities at proposed new stations.

6.2.4 Key Inputs

The primary data inputs to the economic appraisal are as follows:

- Passenger demand forecasts (from University of Southampton (UoS), as described in Section 5.1), for future years 2020, 2025 and 2030, used as overall ceiling no. of new passengers at stations, to constrain further segmentation of demand;
- Census 2011 Journey to Work trip origin to destination (O-D) aggregate rail-user volumes (but not patterns), within identified catchment for new stations, factored to all-trip purposes, for use with LENNON principal trip O-D proportions from selected adjacent stations, to derive no. passengers transferring from adjacent stations;
- Census 2011 Journey to Work trip origin to destination (O-D) car-user and bus-user proportions (but not volumes), within identified catchment for new and existing stations, factored to all-trip purposes, for use under constraint of LENNON principal trip O-D proportions from selected adjacent stations, to derive residual no. passengers shifting from modes that would otherwise be used, 'notionally', in an unrealistic do minimum scenario;
- NTEM6.2 / TEMPRO journey mode share and trip purpose adjustment factors;
- DfT TAG Data book values;
- LENNON 2015 ticket sales data and principal trip O-D proportions from selected existing stations, for use in deriving feasible rail journey O-D proportions for new passenger demand at new and existing stations;
- MOIRA rail trip data; and
- Rail fare tables.

6.2.5 Rail User Travel Time and Distance Calculations

To derive rail user travel time and distance cost saving for new passengers using proposed new stations, we controlled the outcomes to the UoS 'mean' passenger demand ceiling forecasts (2015/20/25/30) at proposed new stations, within identified catchments. We've quantified outcomes as follows:

- Identify sources of rail passengers for new station –
    - Passengers who would otherwise use car or bus in a 'notional', but unrealistic, 'fixed-trip' do minimum alternative scenario; (– in reality, this will be partly new generated /attracted new station demand, because these car and bus trips would not arise here without the new station, i.e. they will be 'dependent development' trips);

  - Passengers who transfer from an adjacent station;
  - Not passengers who continue to use existing trains;
- Segment newly derived demand at proposed station into trip purposes (commute/work/other), time periods (weekday AM/PM/IP/OP) and traveller types (car driver/passenger/bus passenger/rail passenger), from NTEM 6.2 (National Trip End Model, accessed through TEMPRO);
- Predict trip origin to destination (O-D) patterns for new passengers at a proposed new station, from LENNON 2015 principal rail journey O-D proportions at selected, adjacent, existing stations;
- Predict numbers and proportions of new passengers at a proposed new station, (split between transferred rail users, mode-shifted car users and mode-shifted bus users) using Census 2011 JTW data, NTEM6.2 trip segmentation and ceiling of UoS new passenger demand, within proposed station catchment; whereby the extent of the radial catchment is approximately ½ way to surrounding adjacent stations but is variable for different stations according to distribution and density of surrounding land uses; (N.B. this method includes potential new passengers who could switch from longer-distance 'pass-by' trip O-D movements by car or bus);
- Derive composite travel time and distance costs for each transport user affected by proposed station (i.e. new rail passengers, with the scheme; transferred rail users, mode-shifted car users and mode-shifted bus users, without the scheme), by applying route planner / timetable planner information to respective trip O-Ds and incorporating components of:
- With scheme –
  - Travel time to/from proposed station at origin trip end;
  - Transfer/wait time at proposed station;
  - In-vehicle train journey time to destination station;
  - Travel time to/from destination station, at ultimate destination trip end;
  - Car P&R charge and distance-related travel cost, or local bus fare, to/from proposed station, at origin trip end;
  - Rail fare at proposed station;
- Without scheme –
  - Congested travel time for origin to destination trip, by car, bus or using adjacent rail station;
  - Distance-related travel costs, car park charges, or bus/rail fares, for origin to destination trip, by car, bus or rail;
- Omit quantification of existing train users, travelling between existing rail stations, who may incur an extra rail journey time penalty from additional stop delay at proposed new stations – this omission reflects lack of reliable data with which to quantify the affected existing passengers;
- Take account of proposed station car P&R charges and train fares for shifted car users, but assume that this is not applicable, or has no net change, for shifted bus passengers, or rail passenger transfers from adjacent stations;
- Apply WebTAG economic parameters and values to calculated travel time and distance changes, to derive monetised impacts.

Similarly, to derive rail user travel time and distance cost saving for new passengers using existing stations, we've controlled the outcomes to the UoS 'mean' passenger demand ceiling forecasts (2015/20/25/30) at existing stations with improved train frequencies, within identified catchments. We've quantified outcomes as follows:

- Identify sources of new rail passengers for existing station with improved train frequencies–

  - Passengers who would otherwise use car or bus in a 'fixed-trip' do minimum alternative scenario; (– this is unlikely to be newly generated /attracted station demand, because these car and bus trips would arise here anyway without the increased train frequencies, i.e. they will not be 'dependent development' trips);
  - Not passengers who transfer from an adjacent station;
  - Not passengers who continue to use existing trains;
- Segment newly derived demand at existing station into trip purposes (commute/work/other), time periods (weekday AM/PM/IP/OP) and traveller types (car driver/passenger/bus passenger/rail passenger), from NTEM 6.2 (National Trip End Model, accessed through TEMPRO);
- Predict trip origin to destination (O-D) patterns for new passengers at existing station, from LENNON 2015 principal rail journey O-D proportions at this and selected, adjacent, existing stations;
- Predict numbers and proportions of new passengers at existing station, (split between mode-shifted car users and mode-shifted bus users) using Census 2011 JTW data, NTEM6.2 trip segmentation and ceiling of UoS new passenger demand, within proposed station catchment; whereby the extent of the radial catchment is approximately ½ way to surrounding adjacent stations but is variable for different stations according to distribution and density of surrounding land uses; (N.B. this method includes potential new passengers who could switch from longer-distance 'pass-by' trip O-D movements by car or bus);
- Derive composite travel time and distance costs for each transport user affected by existing station (i.e. new rail passengers, with the scheme; mode-shifted car users and mode-shifted bus users, without the scheme), by applying route planner / timetable planner information to respective trip O-Ds and incorporating components of:
- With scheme –
  - Travel time to/from existing station at origin trip end;
  - Transfer/wait time at existing station;
  - In-vehicle train journey time to destination station;
  - Travel time to/from destination station, at ultimate destination trip end;
  - Car P&R charge and distance-related travel cost, or local bus fare, to/from existing station, at origin trip end;
  - Rail fare at existing station;
- Without scheme –
  - Congested travel time for origin to destination trip, by car or bus;
  - Distance-related travel costs, car park charges, or bus fares, for origin to destination trip, by car or bus;
- Take account of existing station car P&R charges and train fares for shifted car users, but assume that this is not applicable, or has no net change, for shifted bus passengers;
- Apply WebTAG economic parameters and values to calculated travel time and distance changes, to derive monetised impacts.

6.2.6 External Traffic Decongestion Benefits

External traffic decongestion benefits to wider community were calculated for proposed new stations and existing stations with improved train frequencies, as follows:

- Apply WebTAG 'marginal external cost' techniques to calculate non-perceived cost savings (of congestion, infrastructure maintenance, accidents, noise, air quality,

greenhouse gases and indirect fuel tax), associated with predicted vehicle kilometre savings for new passengers who would otherwise use car;
- Apply WebTAG Data Book monetised values, by forecast year, constrained to local circumstances in South West England, to value the predicted decongestion benefits.

6.2.7 Capital Costs and Benefit/Cost Ratios

To derive capital costs to public accounts, estimates were provided by experienced engineers for the likely costs of new station construction and maintenance, without adjusting for risk or optimism bias. This enables a benefit/cost ratio (BCR) to be calculated for the proposed new stations, but not existing stations with increased train frequencies.

There is at this stage no rational basis on which to determine the costs of provision of enhanced services at existing stations. These costs could vary between almost zero (to stop an existing train) to very large if additional rolling stock or infrastructure was required.

In both cases the information is adequate to meet the requirement to judge the relative feasibility of each of the proposals, though would require considerably more work to develop a business case.

6.2.8 Commentary and Likely Shortcomings

It is possible that some of the potential rail economic benefits may be understated, because we have been unable to take fully into account all of the projected growth around stations, since we have largely relied on existing journey patterns.

New residents may make very different trips, especially if they move to an area which benefits from a newly-provided fast rail service specifically to travel to long-distance destinations such as London.

Further refinement, in conjunction with discussions with train operators, developers and local authority planners will be required to explore these aspects as part of a more comprehensive business plan development process.

6.3 Economic Appraisal of Proposed Stations

The results for the proposed rail stations are provided below:

6.3.1 Hunts Grove – Proposed Station

Table 37 - Hunts Grove Economics Summary

Summary Analysis of Monetised Costs and Benefits: Gloucestershire Rail Study

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Commuting User Benefits	Travel Time	**£4,459,769**
	Vehicle Operating Costs	**£2,447,329**
Consumer User Benefits	Travel Time	**£5,028,040**
	Vehicle Operating Costs	**£1,852,965**
Business User Benefits	Travel Time	**£848,581**
	Vehicle Operating Costs	**£474,718**
User Charges		**-£1,400,335**
Operators	Revenue	**£3,296,326**
Marginal External Costs	Infrastructure	**£135,497**
	Accident	**£1,574,609**
	Local Air Quality	**£5,645**
	Noise	**£107,637**
	Greenhouse Gases	**£673,132**
	Indirect Taxation	**-£2,463,128**
User Present Value Benefit (PVB)		**£18,678,190**
Capital Present Value Cost (PVC)		**£9,653,946**
Scheme Net Present Value (NPV) = PVB - PVC		**£9,024,244**
Scheme Initial Benefit to Cost Ratio (BCR) = PVB/PVC		**1.93**

6.3.2 Stonehouse North – Proposed Station

Table 38 - Stonehouse North Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£2,762,834**
	Vehicle Operating Costs	**£1,310,752**
Consumer User Benefits (Other)	Travel Time	**£3,061,276**
	Vehicle Operating Costs	**£992,420**
Business User Benefits	Travel Time	**£733,616**
	Vehicle Operating Costs	**£254,252**
	User Charges	**-£313,930**
Operators	Revenue	**£1,911,840**
Marginal External Costs	Infrastructure	**£72,721**
	Accident	**£844,102**
	Local Air Quality	**£2,991**
	Noise	**£57,735**
	Greenhouse Gases	**£360,940**
	Indirect Taxation	**-£1,318,196**
	User Present Value Benefit (PVB)	**£10,733,353**
	Capital Present Value Cost (PVC)	**£11,262,937**
	Scheme Net Present Value (NPV) = PVB - PVC	**-£529,584**
	Scheme Initial Benefit to Cost Ratio (BCR) = PVB/PVC	**0.95**

6.3.3 Stonehouse Bristol Road – Proposed Station

Table 39 - Stonehouse Bristol Road Economics Summary

Summary Analysis of Monetised Costs and Benefits:	**Gloucestershire Rail Study**

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£3,661,529**
	Vehicle Operating Costs	**£1,474,446**
Consumer User Benefits (Other)	Travel Time	**£3,493,213**
	Vehicle Operating Costs	**£934,618**
Business User Benefits	Travel Time	**£1,459,389**
	Vehicle Operating Costs	**£297,672**
User Charges		**-£6,674**
Operators	Revenue	**£1,586,330**
Marginal External Costs	Infrastructure	**£76,999**
	Accident	**£893,971**
	Local Air Quality	**£3,176**
	Noise	**£61,138**
	Greenhouse Gases	**£382,245**
	Indirect Taxation	**-£1,396,579**
User Present Value Benefit (PVB)		**£12,921,474**
Capital Present Value Cost (PVC)		**£9,653,946**
Scheme Net Present Value (NPV) = PVB - PVC		**£3,267,528**
Scheme Initial Benefit to Cost Ratio (BCR) = PVB/PVC		**1.34**

6.3.4 Chipping Campden – Proposed Station

Table 40 - Chipping Campden Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£2,896,747**
	Vehicle Operating Costs	**£1,741,711**
Consumer User Benefits (Other)	Travel Time	**£3,173,900**
	Vehicle Operating Costs	**£1,261,825**
Business User Benefits	Travel Time	**£3,072,532**
	Vehicle Operating Costs	**£350,499**
User Charges		**-£1,532,073**
Operators	Revenue	**£2,119,028**
Marginal External Costs	Infrastructure	**£95,276**
	Accident	**£1,106,875**
	Local Air Quality	**£3,927**
	Noise	**£75,675**
	Greenhouse Gases	**£473,158**
	Indirect Taxation	**-£1,730,161**
User Present Value Benefit (PVB)		**£13,108,921**
Capital Present Value Cost (PVC)		**£8,044,955**
Scheme Net Present Value (NPV) = PVB - PVC		**£5,063,966**
Scheme Initial Benefit to Cost Ratio (BCR) = PVB/PVC		**1.63**

6.3.5 Charfield – Proposed Station

Table 41 - Charfield Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£4,910,125**
	Vehicle Operating Costs	**£2,582,230**
Consumer User Benefits (Other)	Travel Time	**£5,394,544**
	Vehicle Operating Costs	**£1,983,320**
Business User Benefits	Travel Time	**£950,749**
	Vehicle Operating Costs	**£462,921**
	User Charges	**-£838,822**
Operators	Revenue	**£3,046,589**
Marginal External Costs	Infrastructure	**£145,473**
	Accident	**£1,672,190**
	Local Air Quality	**£5,165**
	Noise	**£114,942**
	Greenhouse Gases	**£716,270**
	Indirect Taxation	**-£2,571,561**
	User Present Value Benefit (PVB)	**£18,574,135**
	Capital Present Value Cost (PVC)	**£8,044,955**
	Scheme Net Present Value (NPV) = PVB - PVC	**£10,529,180**
	Scheme Initial Benefit to Cost Ratio (BCR) = PVB/PVC	**2.31**

6.4 Economic Appraisal of Frequency Enhancements at Existing Stations

Table 42 - Cheltenham Spa Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£5,295,328**
	Vehicle Operating Costs	**£3,448,532**
Consumer User Benefits (Other)	Travel Time	**£5,668,306**
	Vehicle Operating Costs	**£2,258,362**
Business User Benefits	Travel Time	**£654,369**
	Vehicle Operating Costs	**£637,765**
User Charges		**-£2,831,563**
Operators	Revenue	**£4,369,807**
Marginal External Costs	Infrastructure	**£178,955**
	Accident	**£2,086,855**
	Local Air Quality	**£7,729**
	Noise	**£142,402**
	Greenhouse Gases	**£891,416**
	Indirect Taxation	**-£3,280,437**
User Present Value Benefit (PVB)		**£19,527,826**
Capital Present Value Cost (PVC)		**£0**
Scheme Net Present Value (NPV) = PVB - PVC		**£19,527,826**

Table 43 - Gloucester Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)		
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum		**Present Values in 2010 market prices and values (£)**
Consumer User Benefits (Commuting)	Travel Time	**£5,229,337**
	Vehicle Operating Costs	**£3,349,164**
Consumer User Benefits (Other)	Travel Time	**£5,461,480**
	Vehicle Operating Costs	**£1,926,559**
Business User Benefits	Travel Time	**£802,229**
	Vehicle Operating Costs	**£671,101**
	User Charges	**-£3,292,309**
Operators	Revenue	**£4,110,006**
Marginal External Costs	Infrastructure	**£169,831**
	Accident	**£1,967,950**
	Local Air Quality	**£6,753**
	Noise	**£134,718**
	Greenhouse Gases	**£841,643**
	Indirect Taxation	**-£3,064,077**
	User Present Value Benefit (PVB)	**£18,314,384**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£18,314,384**

Table 44 - Stroud Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£2,995,030**
	Vehicle Operating Costs	**£2,292,028**
Consumer User Benefits (Other)	Travel Time	**£3,534,336**
	Vehicle Operating Costs	**£1,719,737**
Business User Benefits	Travel Time	**-£131,653**
	Vehicle Operating Costs	**£421,528**
	User Charges	**-£2,056,968**
Operators	Revenue	**£3,756,889**
Marginal External Costs	Infrastructure	**£126,179**
	Accident	**£1,463,581**
	Local Air Quality	**£5,140**
	Noise	**£100,142**
	Greenhouse Gases	**£625,911**
	Indirect Taxation	**-£2,283,126**
	User Present Value Benefit (PVB)	**£12,568,754**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£12,568,754**

Table 45 - Kemble Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)		
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum		**Present Values in 2010 market prices and values (£)**
Consumer User Benefits (Commuting)	Travel Time	**£7,246,553**
	Vehicle Operating Costs	**£5,361,673**
Consumer User Benefits (Other)	Travel Time	**£8,221,823**
	Vehicle Operating Costs	**£3,884,397**
Business User Benefits	Travel Time	**£25,302**
	Vehicle Operating Costs	**£1,078,975**
	User Charges	**-£4,712,802**
Operators	Revenue	**£7,692,263**
Marginal External Costs	Infrastructure	**£293,759**
	Accident	**£3,409,676**
	Local Air Quality	**£12,005**
	Noise	**£233,219**
	Greenhouse Gases	**£1,457,868**
	Indirect Taxation	**-£5,323,224**
	User Present Value Benefit (PVB)	**£28,881,486**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£28,881,486**

Table 46 - Moreton-in-Marsh Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£4,946,417**
	Vehicle Operating Costs	**£3,584,786**
Consumer User Benefits (Other)	Travel Time	**£5,444,980**
	Vehicle Operating Costs	**£1,998,057**
Business User Benefits	Travel Time	**£419,975**
	Vehicle Operating Costs	**£875,099**
User Charges		**-£2,216,827**
Operators	Revenue	**£4,180,961**
Marginal External Costs	Infrastructure	**£184,201**
	Accident	**£2,137,988**
	Local Air Quality	**£7,526**
	Noise	**£146,238**
	Greenhouse Gases	**£914,139**
	Indirect Taxation	**-£3,337,748**
User Present Value Benefit (PVB)		**£19,285,790**
Capital Present Value Cost (PVC)		**£0**
Scheme Net Present Value (NPV) = PVB - PVC		**£19,285,790**

Table 47 - Cam and Dursley Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£2,446,842**
	Vehicle Operating Costs	**£1,568,885**
Consumer User Benefits (Other)	Travel Time	**£2,757,170**
	Vehicle Operating Costs	**£1,187,862**
Business User Benefits	Travel Time	**£226,264**
	Vehicle Operating Costs	**£304,323**
	User Charges	**£274,361**
Operators	Revenue	**£1,531,896**
Marginal External Costs	Infrastructure	**£87,414**
	Accident	**£1,012,271**
	Local Air Quality	**£3,480**
	Noise	**£69,319**
	Greenhouse Gases	**£433,037**
	Indirect Taxation	**-£1,575,129**
	User Present Value Benefit (PVB)	**£10,327,995**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£10,327,995**

Table 48 - Lydney Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)		
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum		**Present Values in 2010 market prices and values (£)**
Commuting User Benefits	Travel Time	**£3,635,090**
	Vehicle Operating Costs	**£2,483,319**
Consumer User Benefits	Travel Time	**£4,063,620**
	Vehicle Operating Costs	**£1,802,540**
Business User Benefits	Travel Time	**£222,301**
	Vehicle Operating Costs	**£423,693**
User Charges		**-£51,991**
Operators	Revenue	**£2,708,255**
Marginal External Costs	Infrastructure	**£134,932**
	Accident	**£1,559,095**
	Local Air Quality	**£5,197**
	Noise	**£106,886**
	Greenhouse Gases	**£667,215**
	Indirect Taxation	**-£2,417,504**
User Present Value Benefit (PVB)		**£15,342,648**
Capital Present Value Cost (PVC)		**£0**
Scheme Net Present Value (NPV) = PVB - PVC		**£15,342,648**

Table 49 - Stonehouse Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£1,022,588**
	Vehicle Operating Costs	**£612,900**
Consumer User Benefits (Other)	Travel Time	**£1,079,335**
	Vehicle Operating Costs	**£388,503**
Business User Benefits	Travel Time	**£184,715**
	Vehicle Operating Costs	**£123,737**
	User Charges	**-£278,908**
Operators	Revenue	**£855,918**
Marginal External Costs	Infrastructure	**£31,989**
	Accident	**£371,514**
	Local Air Quality	**£1,326**
	Noise	**£25,404**
	Greenhouse Gases	**£158,845**
	Indirect Taxation	**-£580,663**
	User Present Value Benefit (PVB)	**£3,997,202**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£3,997,202**

Table 50 - Ashchurch for Tewkesbury Economics Summary

Scheme Summary Analysis of Monetised Costs and Benefits (2010 present values and prices)	
Net Outcome for: Do-Something Preferred Scheme minus Do Minimum	**Present Values in 2010 market prices and values (£)**

Consumer User Benefits (Commuting)	Travel Time	**£2,157,690**
	Vehicle Operating Costs	**£1,554,902**
Consumer User Benefits (Other)	Travel Time	**£2,216,496**
	Vehicle Operating Costs	**£639,053**
Business User Benefits	Travel Time	**£286,922**
	Vehicle Operating Costs	**£315,060**
	User Charges	**£252,441**
Operators	Revenue	**£1,765,272**
Marginal External Costs	Infrastructure	**£72,256**
	Accident	**£833,722**
	Local Air Quality	**£2,781**
	Noise	**£57,199**
	Greenhouse Gases	**£356,977**
	Indirect Taxation	**-£1,290,841**
	User Present Value Benefit (PVB)	**£9,219,931**
	Capital Present Value Cost (PVC)	**£0**
	Scheme Net Present Value (NPV) = PVB - PVC	**£9,219,931**

6.5 Wider Economic Considerations

As described above, the approach to economic appraisal does not take into account some of the wider economic implications of rail investment, especially where fast, long-distance services are involved.

In relation to the presentation of the Economic Case, the wider economic benefits would be presented alongside the user and non-user benefits normally appraised as part of a transport scheme. In particular, these calculations are likely to inform the selection of specific options once the overall case for an investment is broadly accepted.

Another benefit, beyond the conventional transport economic appraisal is known as 'dependent development'. This is development which would not otherwise take place at all without the transport scheme. A wholly new road to land not served at all would be an example. Whilst this might require some consideration, it is unlikely that 'dependent development' benefits would be a factor in most of the rail investments considered here. The exception is Ashchurch were made contingent on rail improvements, on the basis that otherwise the impact of the proposed developments on A46 and M5 Junction 9 would be unacceptable.

Care must be taken to appraise against the most appropriate benefits. At all costs double-counting must be avoided as the business case will be seriously undermined if this is detected when a Business Case is evaluated. For example, some elements of wider economic benefits are already incorporated into the conventional appraisal process. Clarity in understanding the impacts and how these transfer into monetised and non-monetised benefits is crucial. Causal chains and logic diagrams can help with this, especially in terms of gaining stakeholder understanding of the scheme rationale and associated appraisal results.

The wider economic benefits which can be appraised within an Economic Case are:

- The overall economic impact, generally expressed as Gross Value Added (GVA) and made up of a range of constituents, most notably those detailed below;
- Agglomeration benefits gained from bringing suppliers, customers and workers together, in turn made up of:
    - Firms and workers in their existing location will be closer to each other and the location more accessible;
    - Firms and workers may relocate in response to the change in transport costs and thereby have further effects on density;
- Increased competition (and therefore efficiency) as a result of improved connectivity;
- Economic welfare benefits arising from improved labour supply, primarily due to the attraction of quick and easy travel to a wide range of employment opportunities.

In the current study the relationship with the main centres of London and the South-East, Bristol and Cardiff has been clear and is reflected in the economic benefit calculations. The impact of Birmingham is less than expected, though still important. However, these impacts are almost certainly understated. For example, though the benefits of increased frequency at Stroud and Kemble are clear, there will be a significant additional impact which will show itself in the house prices in the area. Further analysis of these wider elements will assist in building a business case and in obtaining LGF and developer funding.

There are some aspects of wider economic benefits which are difficult to quantify and monetise. The appraisal toolkit does contain a number of ways to address this but it still remains difficult to quantify quality issues relating to a transformational scheme which will totally change perceptions of an area. The most effective way to deal with this is through comparisons with other areas using case studies and analysis of the outcomes which stemmed from these. For example, the rise in land values achieved through a major regeneration project or the presence of a well-connected rail station can be used as a part of the appraisal of a similar scheme elsewhere. Even with these tools it can be difficult to appraise scheme options, some of which are likely to lead to a greater perception of quality than others, with different associated costs. The involvement of stakeholders in the appraisal process, including the use of qualitative parameters is essential in dealing with issues of this sort.

What is important is that the Economic Case required to support a rail investment can be significantly different to a conventional scheme appraisal, even though many of the same tools are used. As the case develops it can be presented more in the context of the wider economic benefits enabled by the scheme, supported by the detailed analysis of transport and non-transport elements. The proposal is more about the economic transformation of the area and less about the efficiency of the transport network – though clearly there is a strong relationship between the two.

6.6 Commentary on New Station Proposals

In recommending appropriate approaches to the new station proposals, it is necessary to review a number of elements. A more comprehensive approach, using the UK Treasury recommended 5-Case Model would be required to take forward a Business Case for these but at this stage, it is sufficient to assess the following:

- Strategic fit, especially in terms of supporting key policies such as economic growth (especially housing or employment growth), enabling excluded groups to access jobs and services or to achieve transport or other goals such as reducing congestion or improving air quality;
- Value for money in terms of the economic benefits versus the costs of delivery and operation of the service and;
- Deliverability in terms of the practical and financial barriers which would need to be overcome to put the scheme into action and the timescale involved. This effectively amalgamates issues which would normally be part of the Financial, Commercial and Management Cases under the 5-Case Model.

Taking account of the stakeholder consultation, analysis of local growth potential, projected It is possible to provide an analysis of these factors in relation to each proposed station. This has been used to develop the recommendations in Section 8.1.

6.6.1 *Hunts Grove Station*

Strategic

The stakeholder discussions demonstrate limited support for this proposed station. The location just to the south of Gloucester would involve an additional stop for trains on a section of track used by fast trains but with limited scope for passing. In the short term this is likely to be a source of delay and unreliability affecting both existing long-distance and local rail users. Since this will affect the strategically important Cheltenham-Gloucester-Kemble-Reading-London and Cheltenham/Gloucester-Bristol axes, the provision of this station could only be delivered through the implementation of additional line capacity (eg active loops).

Modest housing growth is planned for the area. The proposed site is close to M5 Junction 12. The patronage projections involve some transfer from bus. 36% of patronage is abstracted from existing rail stations, though this is the lowest level of any of the proposed stations.

It is assumed that some London trains would stop, providing a direct link which contributes to the positive BCR.

Economic

The economic analysis summarised in Table 37 shows a BCR of 1.93 and a User Present Value Benefit (PVB) of £18.7m. The graph below shows the split of benefits which contribute to the BCR.

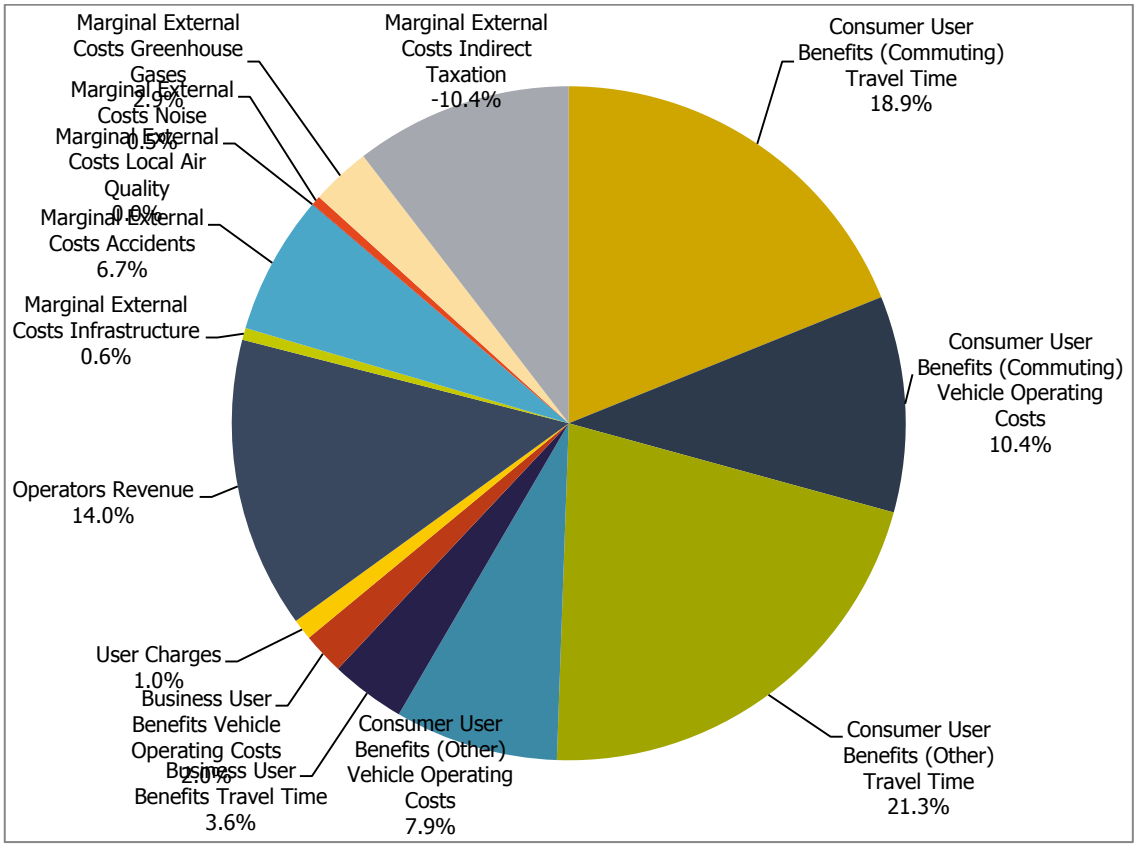

Figure 9 - Hunts Grove Benefit Proportions

Deliverability

As detailed above, the rail sector would not countenance the development of a station at this location until track capacity and passing loops are provided. This will occur only through the long-term proposals set out in the Western Route Study, involving the provision of dynamic loops at a number of potential locations and the possible of resignalling and electrification, with timescales as long as 2043+.

In the shorter term, the availability and cost of rolling stock affect the potential for any additional stops on this route, whether at existing and proposed stations. If the proposed half-hourly extension of local services from Bristol-Yate were achieved, it may be possible to introduce an additional stop at Hunts Grove. A timescale of 2019+ may be achievable but it is likely that a more realistic timescale would be Control Period 8 (2029-2034) since before this the above line capacity constraints would be pre-eminent.

In engineering terms the delivery of a station at this location would be relatively straightforward (with a cost of £5-6m).

Conclusion

Since it is unlikely that a station could be provided before 2029, the short-term focus should be on the development of Gloucester station for longer-distance trips, coupled with investment in improved bus services to encourage mode shift for short-distance trips (and integration with longer-distance rail services). Cycle routes and cycle storage facilities at Gloucester station may also provide cost-effective short term approaches.

In the longer term, with the provision of increased line capacity (active loops) and the provision of an enhanced Bristol-Yate-Gloucester service (possibly extended to Worcester) it may be possible to explore further the potential to provide a station, though this must be seen in the context of wider transport provision rather than in isolation.

6.6.2 Stonehouse North Station

Strategic

The obvious attraction of this station is through its location on the both the Bristol and Swindon-London routes. This would provide a choice of destination from a single station. However, the location is distant from the town and would involve driving for most users.

57% of additional trips would be abstracted either from users of other stations. This could affect the viability of Cam and Dursley. If a station was placed at Stonehouse North, it is assumed that Stonehouse Station would close. A proportion of local existing users of Stonehouse Station would probably switch to car, either for the whole journey or to travel to the new station. This is counter to LTP strategy.

A more comprehensive review of station locations could be undertaken, potentially strengthening a case for a station at Stonehouse North, though this would imply the potential closure of other stations which was not part of the study brief.

Some housing growth is planned within the catchment area, though not enough to justify a new station in its own right.

There is little stakeholder support for a new station at this location, with the same issues of capacity being raised by the rail sector in relation to Hunts Grove.

Economic

The economic analysis, taking account of the cost of provision of the station and its maintenance shows a BCR of 0.95 and a User Present Value Benefit (PVB) of £10.7m. As with Hunts Grove, the BCR is boosted by the connection to London and the long-distance journeys which this enables. However, much of the patronage generated will be abstracted from existing stations (specifically Cam and Dursley and Stonehouse). Assumptions made in the methodology may overstate the number of short-distance trips (primarily into Gloucester) which are likely to transfer to rail. The graph below shows the split of benefits which contribute to the BCR, with an overwhelming proportion from decongestion benefits derived from these mode-shifted trips.

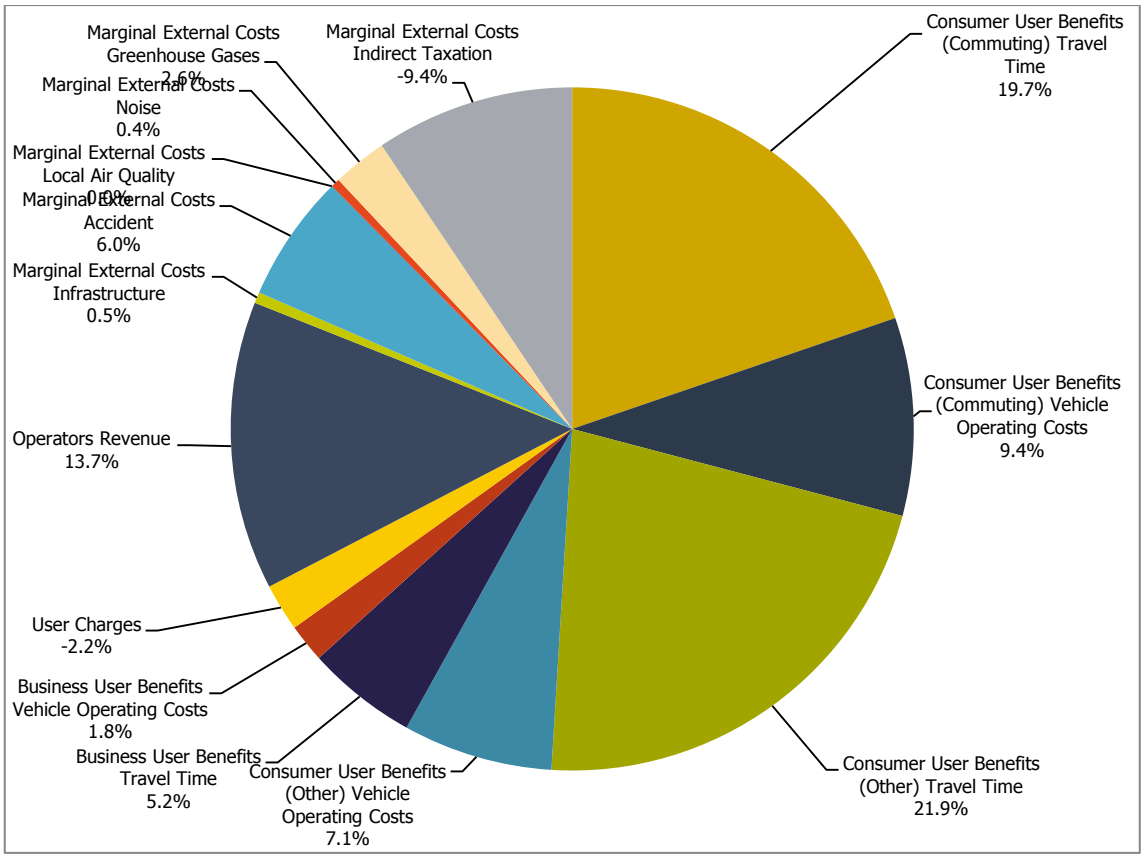

Figure 10 - Stonehouse North Benefit Proportions

The parking and access constraints at the existing Stonehouse station undoubtedly point to the realistic achievement of some of the projected benefits. However, the need to drive to Stonehouse North (if the existing Stonehouse station were to be replaced by Stonehouse North) may lead some Gloucester trips to shift to car since someone currently able to walk to Stonehouse would probably drive all the way.

Deliverability

As with Hunts Grove, the delivery of a station at Stonehouse North would be very long-term. Even if the existing Stonehouse Station were replaced, the capacity/signalling constraints and line configuration (this is a 4-track section) would not enable this station to open without significant investment.

Deliverability of a station on the 4-track section may be more complex, with a scheme cost of up to £7m. However, the capacity constraints and lack of strategic fit do not favour taking this forward for a more comprehensive engineering feasibility.

Conclusion

Since it is unlikely that a station could be provided before 2029 (Control Period 8), the focus should be on the development of Cam and Dursley station and the existing Stonehouse station. This should include car parking provision, cycle access and bus service integration as well as the rail station facilities. The committed hourly London service within the new First Great Western franchise provides an opportunity at Stonehouse and the potential Bristol-Yate-Gloucester service provides a similar opportunity to build patronage at Cam and Dursley.

In the longer term, with the provision of increased line capacity (active loops) and the provision of an enhanced Bristol-Yate-Gloucester service (possibly extended to Worcester) it may be possible to develop a case for a station. However, the strategic and economic cases are weak and the provision of a station here is not recommended at present.

6.6.3 Stonehouse Bristol Road Station

Strategic

This proposed station is located close to both the residential and employment areas of Stonehouse. It lies only slightly more than 1km from the existing station, providing links towards Bristol which would complement the Swindon-London trains available at the existing Stonehouse station. Trains serving Cheltenham/Gloucester would be split between the stations.

As well as supporting the housing growth in the area, the attraction would be in enabling users to walk or cycle to/from the station. However, 56% of users likely to switch to the station would be abstracted, primarily from Cam and Dursley station. Stonehouse is approximately 15mins drive from Cam and Dursley station on uncongested minor roads.

The development of a station at this site is favoured by some stakeholders outside of the rail sector.

The views of the rail sector are identical to those relating to Hunts Grove and Stonehouse North. With current capacity constraints, the introduction of an additional stop on this section would not be favoured. However, if capacity was increased in line with the options within the Western Route Study, this could be reconsidered if sufficient housing growth (and therefore patronage) could be demonstrated. This would be more feasible if a half-hourly Gloucester service were to be developed as an addition to the Bristol-Yate service funded through MetroWest.

Economic

The economic analysis, taking account of the cost of provision of the station and its maintenance shows a BCR of 1.34 and a User Present Value Benefit (PVB) of £12.9m.

In addition, the analysis was undertaken on the basis of 34 trains/day. The potential half-hourly service to Gloucester would increase this to 68. However, since this additional frequency would presumably also be available at Cam and Dursley, this would not change the overall outcome in relation to a decision as to whether to invest in the existing Cam and Dursley station or to provide a new station at Stonehouse Bristol Road (less than 3km from Cam and Dursley). Stopping trains at both stations is unlikely to be favoured by rail operators. The calculated economic benefits are shown in Figure 11 below.

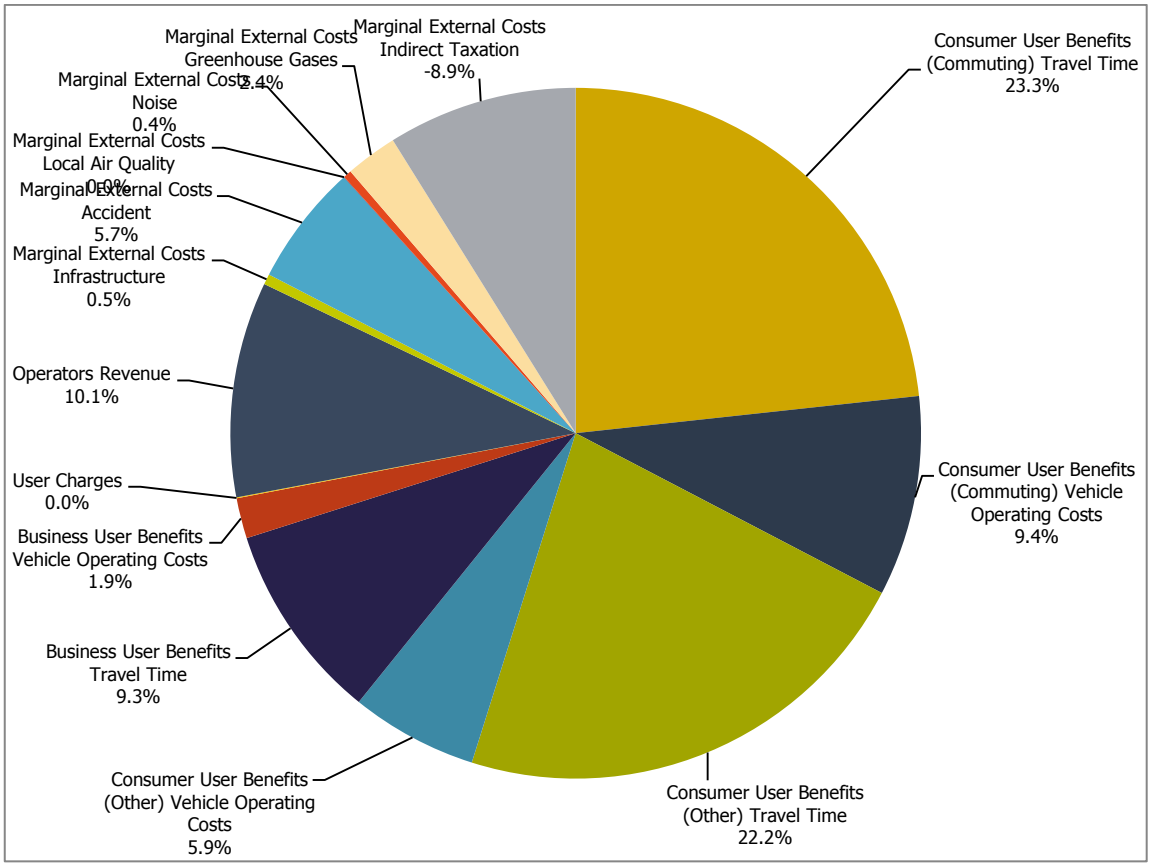

Figure 11 - Stonehouse Bristol Road Benefit Proportions

It is unlikely that a value for money case for this station could be made even with very significant additional housing growth unless the existing rail station at Cam and Dursley were to be replaced by one at Stonehouse Bristol Road. A more comprehensive economic appraisal incorporating the existing Stonehouse and Cam and Dursley stations could be undertaken to establish the most appropriate locations but this would be costly and would only be worthwhile if there was a realistic possibility of implementing decisions which might involve the closure of existing stations. This is beyond the scope of this study.

Deliverability

As with other stations on the Gloucester-Bristol route, the delivery of a station at Stonehouse Bristol Road would be long-term. The capacity/signalling constraints and the potential schemes to alleviate these set out in the Western Route Study would need to be included within a business case for a new station at this location. Delivery of a station here would involve a scheme cost of around £5-6m.

Conclusion

The case for delivery of a station at this location is weak, despite some stakeholder support for the proposal. In the short term it would be more advantageous to invest in the existing stations. In the longer term a comprehensive business case could be developed, linked to the longer-term development of the area and of the Gloucester-Bristol route, which would consider the most appropriate locations for rail stations in the Stonehouse area.

6.6.4 Chipping Campden Station

Strategic

There is limited stakeholder support for this station proposal. It would abstract 76% of its traffic from the existing stations (including Moreton-in-Marsh) and there is insufficient housing growth proposed in the area to support the development of a station here.

Although there are opportunities created through the development of the line (and its potential electrification) nothing points to these justifying the opening of a station at Chipping Campden.

Economic

The calculated BCR is 1.63 with a negative User Present Value Benefit (PVB) of 13.1m. However, this is linked to the lowest level of patronage of any of the proposed stations and stems from the long-distance London trips along with the incorporation of rail industry growth figures (based on the Market Studies) which are unrealistic at this location.

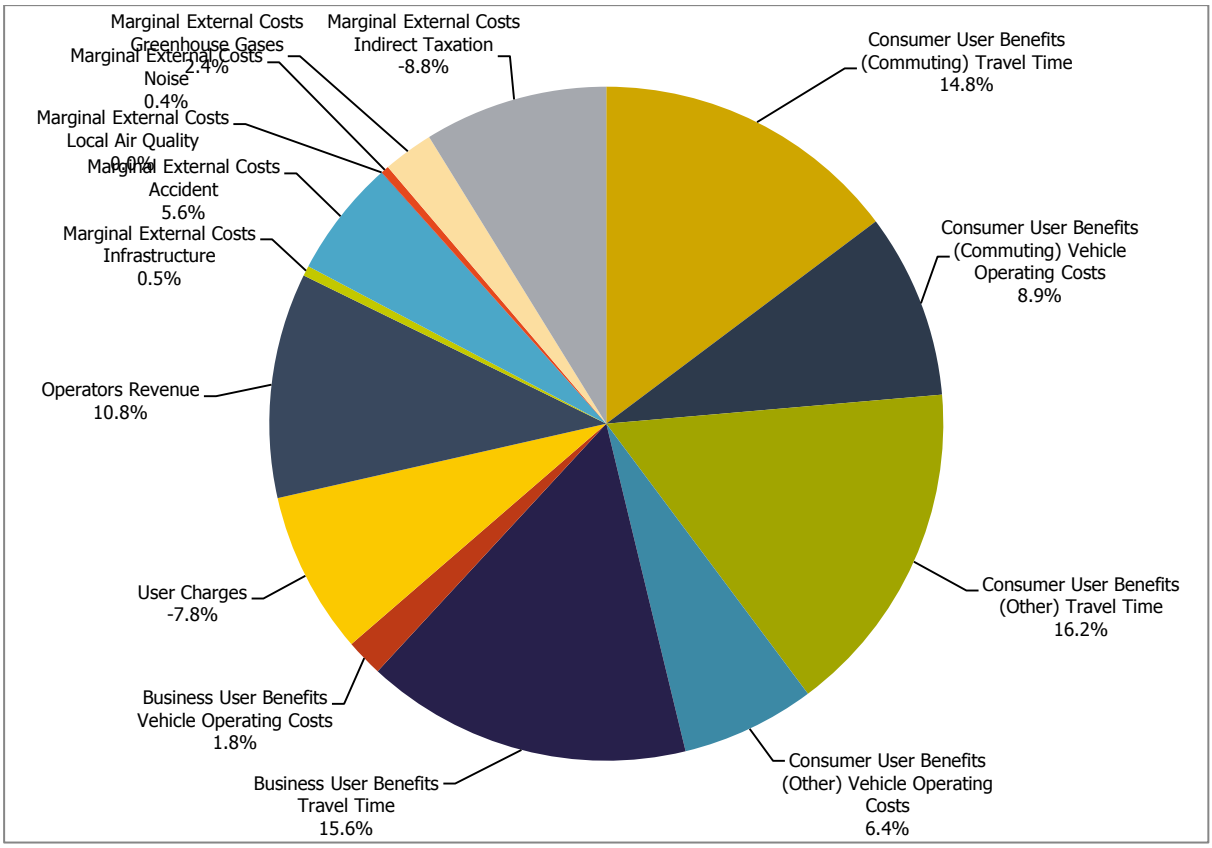

Figure 12 - Chipping Campden Benefit Proportions

Deliverability

The line capacity constraints affecting other proposed stations would not be as critical. This suggests that a 2019+ delivery timetable could be possible if the case were to have merit.

Delivery of the station itself would be relatively straightforward, with an estimated cost of £5m.

Conclusion

Whilst the scheme is probably the most 'deliverable' of the five proposed stations, the lack of any real merit in the case means that this proposal cannot be recommended.

6.6.5 Charfield Station

Strategic

The significant housing growth in the area provides a strategic case in the same way that the growth at Yate has contributed to the case for funding of the Bristol-Yate service which could form the basis for an extension to Gloucester.

Whilst the same constraints affect the line, if the capacity issues could be resolved in the long term, the level of patronage achievable may enable a case for a station at Charfield to receive support from the rail sector.

However, since this proposed station is in South Gloucestershire, it would be the responsibility of this unitary authority to progress a strategic case for this proposed station.

Economic

The calculated BCR for this station is 2.31 with a User Present Value Benefit of £18.6m. If a higher frequency were achieved through the proposed extension of the Bristol-Yate service to Gloucester (ie half-hourly trains), this BCR is likely to be higher, though this would need to be considered in the context of a business case for the rail service extension scheme as a whole as well as the individual stations (or proposed stations) to be served.

Figure 13 below shows how the calculated benefits can be split by type.

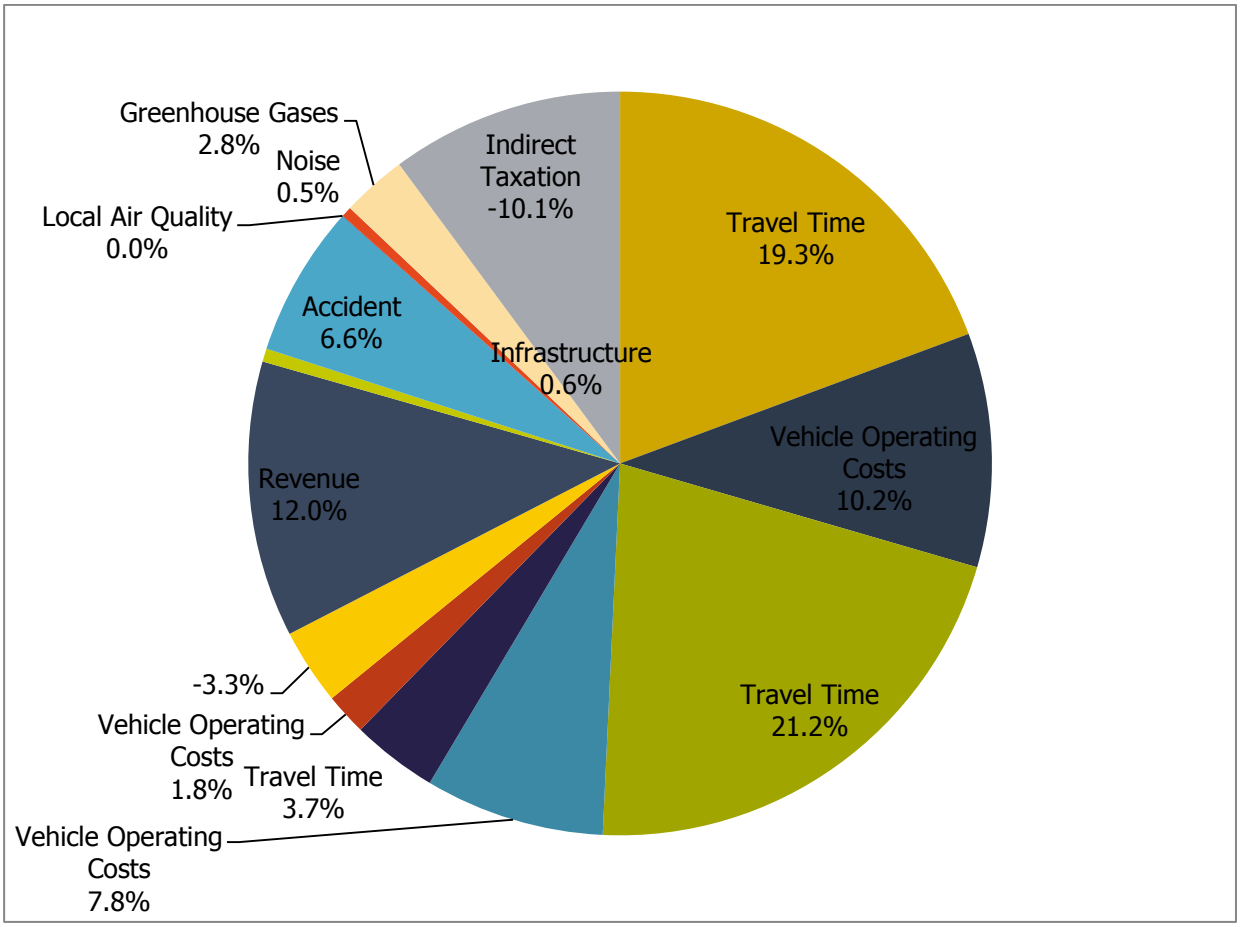

Figure 13 - Charfield Benefit Proportions

An economic case for delivery of a station here could be developed in relation to housing growth in the area, with the potential for developer contributions and in the context of reducing car trips to limit the impact of the new housing.

Deliverability

Aside from the track capacity issues which would put this proposal into the long-term, its delivery in relation to construction is relatively straightforward, with an estimated cost of £5m.

Conclusion

If South Gloucestershire Council were to see merit in the case, it may be possible to present a positive transport business case for long-term delivery, linked to LGF and developer funding.

6.7 Commentary on Potential for Service Enhancement at Existing Stations

As with the proposed new stations, the following approach has been taken:

- Strategic fit, especially in terms of supporting key policies such as economic growth (especially housing or employment growth), enabling excluded groups to access jobs and services or to achieve transport or other goals such as reducing congestion or improving air quality;

- Value for money in terms of the economic benefits versus the costs of delivery and operation of the service. Note that for existing stations, no additional costs have been assumed for the purposes of this study and;
- Deliverability in terms of the practical and financial barriers which would need to be overcome to put the scheme into action and the timescale involved. This effectively amalgamates issues which would normally be part of the Financial, Commercial and Management Cases under the 5-Case Model.

6.7.1 Cheltenham Spa Station

Strategic

This is the gateway to one of Gloucestershire's two main urban centres and essential to the economic growth of the county. This rail station provides connectivity to the wider regional and UK economy, as well as local links. Cheltenham Spa station is peripheral from the town and has physical constraints on its development. There is a strategic imperative to address the issues and capitalise on the opportunities which this stations provides.

A significant strength stems from the excellent connectivity to Bristol, Birmingham, Cardiff and London. This will be complemented by the forthcoming hourly London service through the Great Western franchise, with new trains due from 2017.

There is a high level of stakeholder support across the board for investment in this station, including the three main rail operators, the local and county councils.

In both cases, an overarching plan to address issues and capitalise on opportunities would provide the framework for a phased improvement programme and associated funding.

Economic

Significant economic benefits can be derived from the development of this station in the context of its wider environment and connection to the surrounding areas. Alongside the 'transport' benefits calculated through the transport appraisal process, the wider economic benefits of investment would be a key element in developing and presenting a case. Linking Cheltenham and Gloucestershire as a whole to the economies of the West Midlands, Cardiff, Bristol, Reading, London and the wider South-East, effectively makes Cheltenham a part of these growing economies.

Investment in the station will help capitalise on this connectivity, enabling sustained economic growth for the urban centre and its surroundings - and Gloucestershire as a whole.

A virtuous economic circle is achievable, whereby the innate connectivity and attractiveness will generate additional patronage which will engender increased services to key destinations. Examples include the potential for a half-hourly Bristol-Gloucester service and the higher-frequency London and Cardiff services mooted in the Western Route Study.

No attempt has been made in this study to quantify the transport economic benefits or wider economic benefits from the development or either station. This would be undertaken, as appropriate, in supporting future business cases or funding bids.

In relation to the modelling undertaken based on frequency increases on key routes, a doubling of frequency provides a total discounted benefit (PVB) of £19.5m. Patronage growth is predicted as 5% (2015) and 32% (2030). Benefits are split as in the figure below:

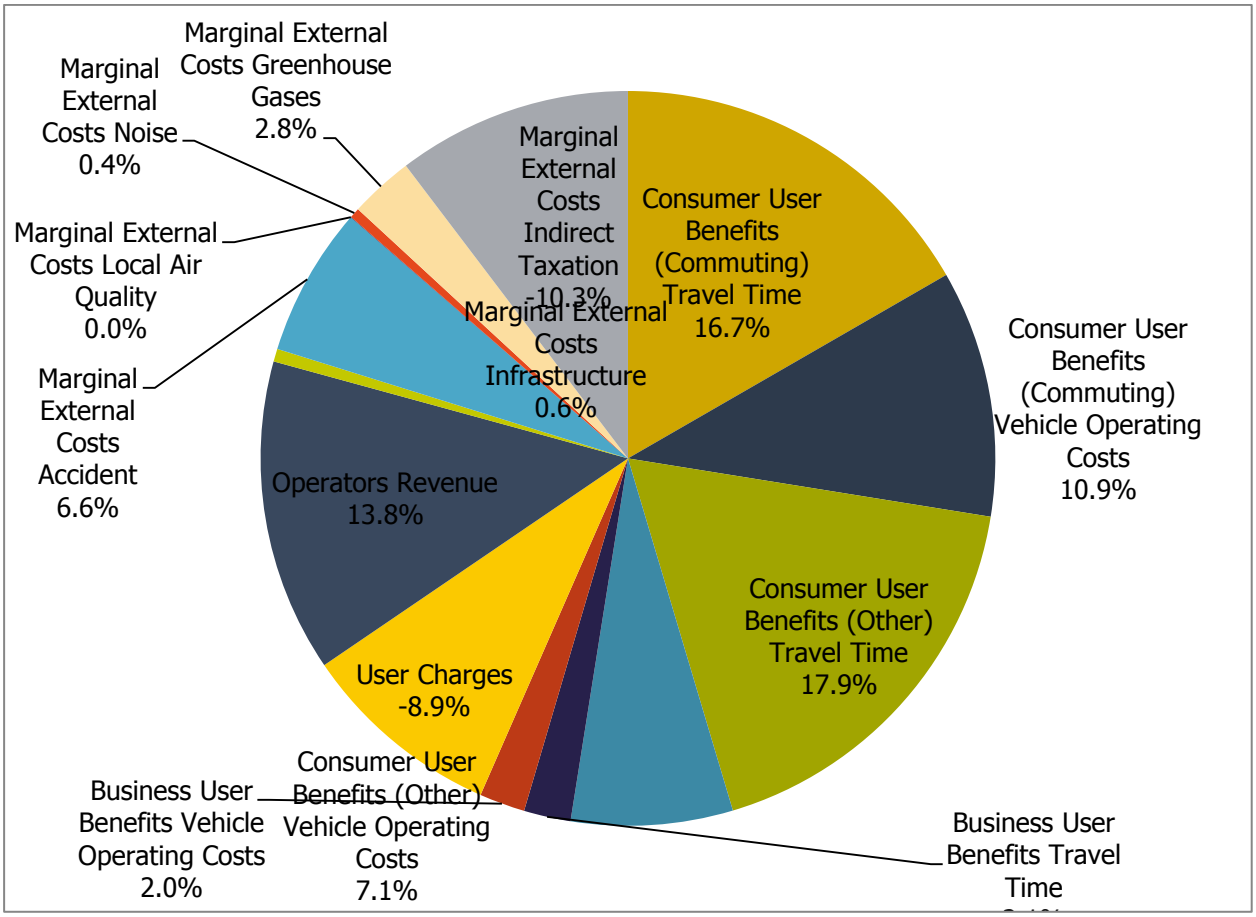

Figure 14 - Cheltenham Spa Benefit Proportions

Deliverability

In the short term, there are a number of improvements taking place for which funding is committed through the Great Western franchise. This includes the hourly London service. Other short-term improvements are possible through the National Station Improvement Programme, Access for All and other sources.

Short-term improvements are being actively planned for Cheltenham Station, including car parking, station forecourt and bus access. These can all be achieved, given adequate funding, in the relatively short term.

Longer-term aspects include enhanced rail services to Birmingham, Bristol, Cardiff and London. The potential requirements for infrastructure/capacity interventions (including proposals for bay platforms for terminating services) to enable these will involve phased planning with timescales to 2043 and beyond.

Conclusion

As a gateway to one of two main urban centres, Cheltenham Spa is a priority for sustained investment. The increase in the London service, a key element of the economic benefit projections, is already committed. To complement this, investment in the station facilities and in the connectivity with the town should be improved. In the longer term, by working with the rail industry it will be possible to agree and implement plans for service enhancements and further station facilities.

6.7.2 Gloucester Station

Strategic

Gloucester is the County Town and (alongside Cheltenham) one of the two urban centres. Its success is essential to the growth of the county. The rail station is a key gateway, providing connectivity to the wider regional and UK economy, as well as local links. Gloucester station has a central location marred by poor access and an unattractive environment. This affects the overall attractiveness of the town and the value of surrounding land. There is a strategic imperative to address the issues and capitalise on the opportunities. This would link to the committed redevelopment of the bus station and Kings Quarter.

Although Gloucester station is 'off-line' in relation to the primary Birmingham-Bristol route, its central location is a strength which would be lost if a parkway-style station were provided. Even if this were done, it is far from clear that mainline operators would agree to stop trains at such a station, in addition to the existing Cheltenham Spa stop.

A significant strength stems from the connectivity to Bristol, Birmingham, Cardiff and London. This will be complemented by the committed hourly London service, with new trains due from 2017.

There is a high level of stakeholder support across the board for investment in this station, including the three main rail operators, the local and county councils.

An ambitious plan to address negative issues and capitalise on opportunities is required. Potentially this could free up valuable land for development. This could attract a major 'head office' location, especially in view of the connectivity with London and other centres.

The potential to improve Bristol services through a MetroWest extension would be a key goal.

Economic

Significant economic benefits can be derived from the development of Gloucester Station, with good evidence that a transformational approach would significantly increase land values in the area and act as a focus for prestigious development. Alongside the 'transport' benefits calculated through the transport appraisal process, the wider economic benefits would be a key element in developing and presenting a case. Linking Gloucester to the economies of the West Midlands, Cardiff, Bristol, Reading, London and the wider South-East, effectively makes the two centres a part of these growing economies.

However, no attempt has been made in this study to quantify the transport economic benefits or wider economic benefits from the development of the station. This would be undertaken, as appropriate, in supporting future business cases or funding bids.

The patronage and economic analysis of frequency increases at Gloucester indicates that a total discounted benefit (PVB) of £18.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 7.6% (2015) and 50% (2030). Benefits are split as in the figure below:

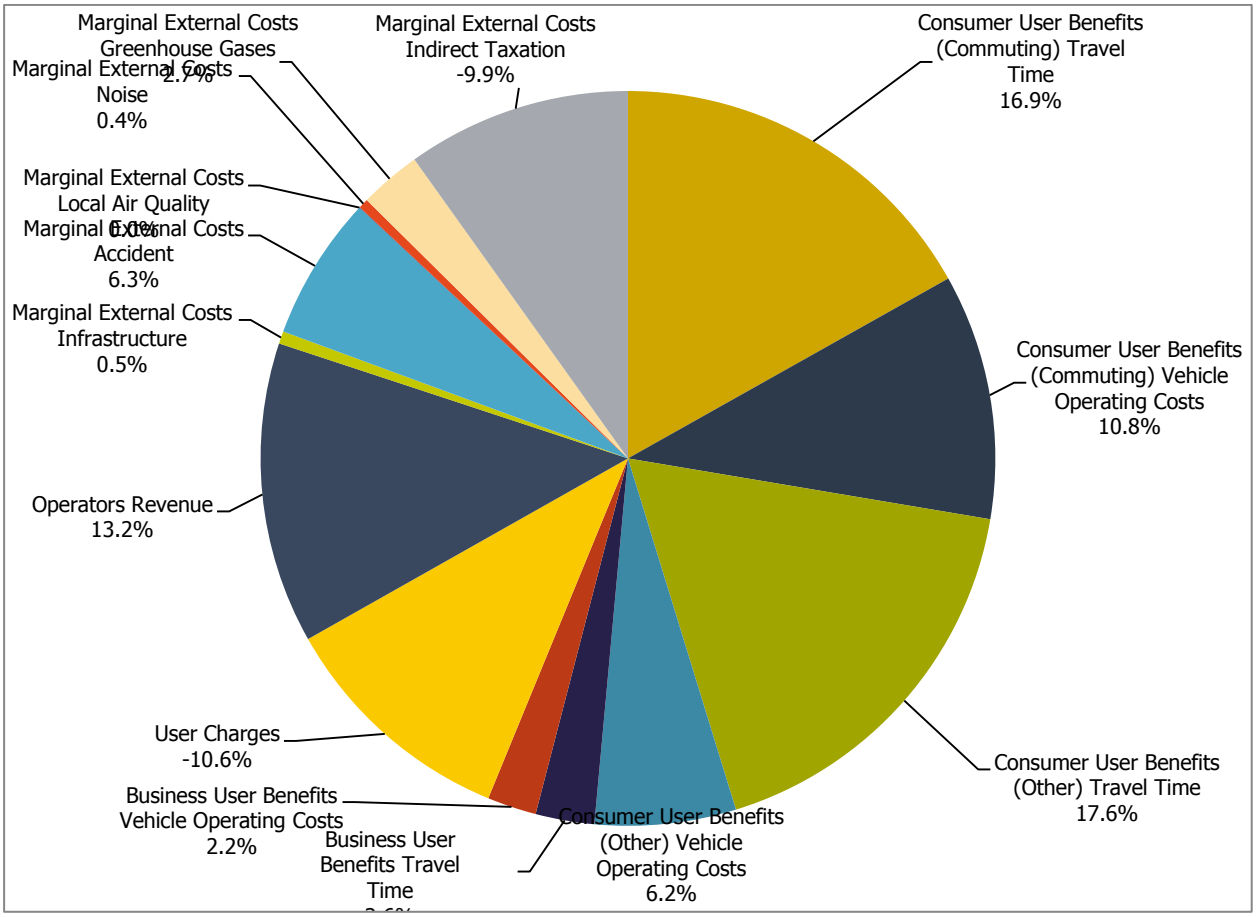

Figure 15 - Gloucester Benefit Proportions

Deliverability

In the short term, there are a number of improvements taking place for which funding is committed through the Great Western franchise. This includes a new car park to the north of the station. Other short-term improvements are possible through the National Station Improvement Programme, Access for All and other sources.

There is as yet no funding for highway modifications to enable access to the new car park. Once funding is in place, the new car park could be developed and put into use quickly.

The development of the new bus station and Kings Quarter retail redevelopment will improve at least part of the route between the rail station and the City Centre.

The remaining issues, in terms of the station building, the forecourt, the route across Bruton Way and the unattractive subway under the rail line remain unfunded. This would require an integrated plan linked to appropriate funding bids. Delivery could be relatively short-term, though more ambitious schemes could be developed with a longer timescale.

Longer-term aspects include enhanced rail services to Birmingham, Bristol, Cardiff and London. In particular there is potential to provide a half-hourly Bristol-Gloucester service, possibly extended further to Worcester. The potential requirements for infrastructure/capacity interventions to enable these will involve phased planning with timescales to 2043 and beyond.

Conclusion

As a gateway to one of two main urban centres, Gloucester is a priority for sustained investment. The increase in the London service, a key element of the economic benefit projections, is already committed. To complement this, investment in the station facilities and in the environment and connectivity with the town should be improved. In the longer term, by working with the rail industry it will be possible to agree and implement plans for service enhancements and further station facilities. This could include ambitions high-value developments in the area surrounding the station.

6.7.3 Stroud Station

Strategic

Stroud Station serves the town itself and has roughly hourly services from/to Gloucester/Cheltenham, mostly to London but with some running to Swindon only.

As a small town with a tightly constrained station, this limits its role to a local gateway with little strategic importance beyond the connectivity of the town itself. That said the rail links are important to the economic success and future development of the town.

Making the best use of this requires access improvements to the bridge across the line and to the pedestrian, cycle and bus access to the station. Without major redevelopment of the area around the station, significant additional car parking (currently 150 spaces) could not be provided. Any increased frequency of service would probably occur only as a result of growth elsewhere on the line, possibly enabling more trains to stop at Stroud.

Economic

As detailed above, the rail station is important to the town but this is a primarily a local issue. An economic/commercial case for stopping more trains (in the event of increased Cheltenham/Gloucester- Swindon/London services) would hinge on journey quality benefits, the user benefits from the increased frequency and the associated revenue increase from additional users.

This would be supplemented by the increased agglomeration benefit from the connection with the South-Eastern economy. This may show itself through an increase in house price in Stroud.

The patronage and economic analysis of frequency increases at Stroud indicates that a total discounted benefit (PVB) of £12.6m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 56% (2030). Benefits are split as in the figure below:

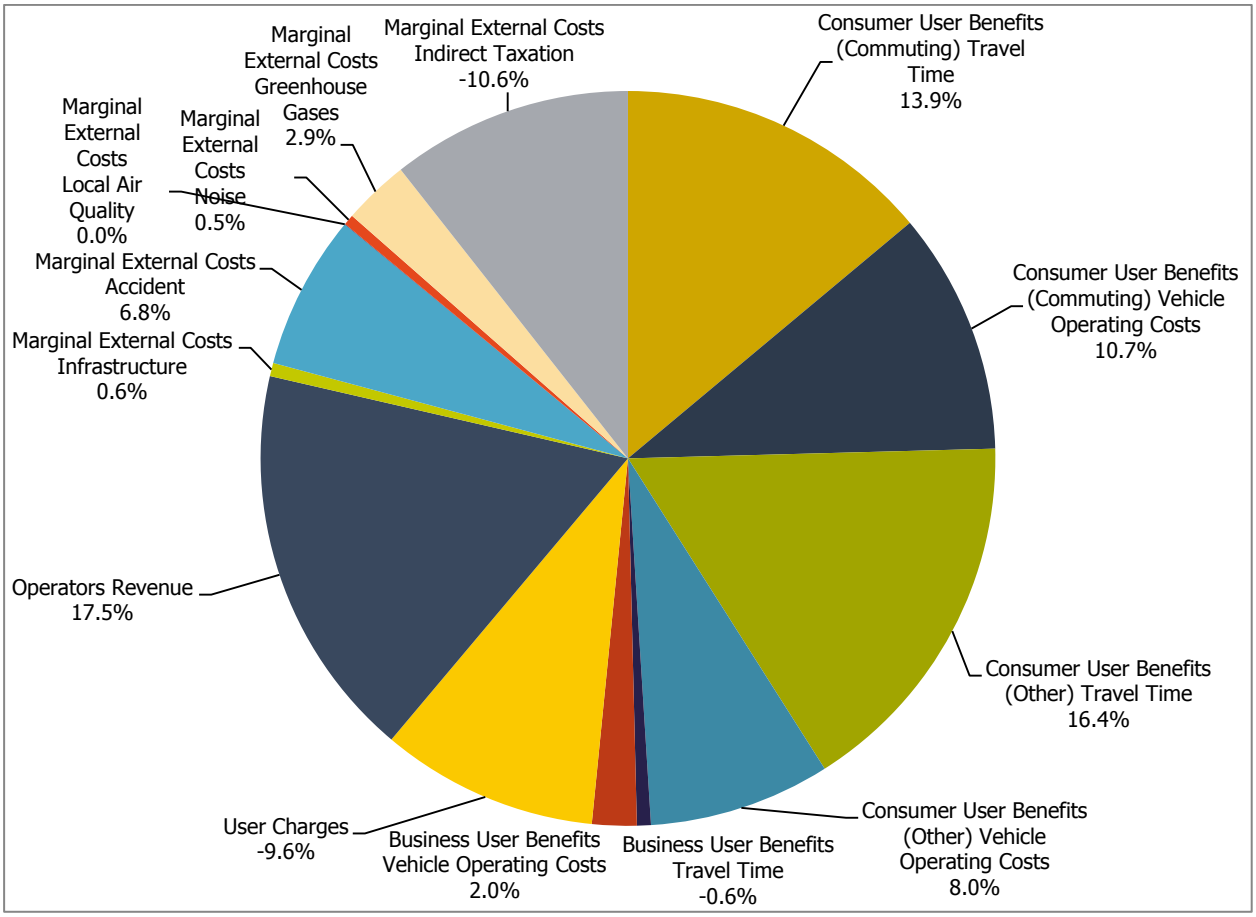

Figure 16 - Stroud Benefit Proportions

Deliverability

Improvements to local walk, cycle and public transport access could be delivered quickly if funding was available. The footbridge should be upgraded to one which meets modern needs, especially in terms of the comfort, safety and accessibility of people with impaired mobility. No funding is allocated to this but subject to a suitable design it should be deliverable quickly.

The increased London frequency is already committed. Any further increased frequency of service is likely to be long-term (up to 2043) and linked to the wider development of the Golden Valley Line. Note that electrification of the line beyond Kemble is not indicated as a possibility within the Western Route Study.

Conclusion

Although providing mainly a local facility, Stroud station is important to the town. The increased London service will make the town more attractive for commuters and is likely to lead to an increase in house prices and an improvement in the economy of the town. Investment in the station facilities and access to the town should be programmed and funded to facilitate these improvements.

6.7.4 Ashchurch for Tewkesbury Station

Strategic

This station occupies a strategic location in terms of housing and employment growth in the Joint Core Strategy. It is likely to be a key element of the development mitigation strategy. However, the current 2-hourly service will not be adequate to engender a significant switch from car to rail, with even rail users preferring to drive to stations with better connections and more frequent services.

The corollary to this is that if a more frequent service can be delivered, it is likely that the developer will be able to sell houses at a higher price, especially if good connections are available onto trains serving Bristol, Birmingham and London.

The key barrier to the provision of additional stopping services is likely to be rolling stock availability. Beyond an hourly service it is likely that infrastructure capacity will be a barrier to further improvements.

The strategic importance would be enhanced though better local walk, cycle and bus connectivity. This will increase the scope for a reduction in car trips and congestion.

Economic

The preparation of a Major Scheme Business Case for interventions to mitigate the planned developments will be a significant exercise. The potential for rail services to reduce car trips will be part of this. This study cannot address all aspect of this since it is based on existing journey patterns and ticket sales. New residents may have entirely different travel horizons, which will in themselves be influenced by the connections available at Ashchurch for Tewkesbury station. This study will assist in developing the wider business case but a more comprehensive approach will be required to take account of the types of property and occupants of new houses and other factors such as the number of local (non-rail) trips which could be switched to improved bus services.

The patronage and economic analysis of frequency increases at Ashchurch for Tewkesbury indicates that a total discounted benefit (PVB) of £9.2m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 39% (2015) and 100% (2030). If frequencies were increased further (ie to half-hourly), the patronage growth would be 72% (2015) and 147% (2030), though this is from a very low base. The projections are based on existing journey patterns, with a relatively high level of local trips. The developments at Ashchurch may attract people with longer-distance travel horizons, leading to a significant increase in net benefit. Benefits are split as in the figure below:

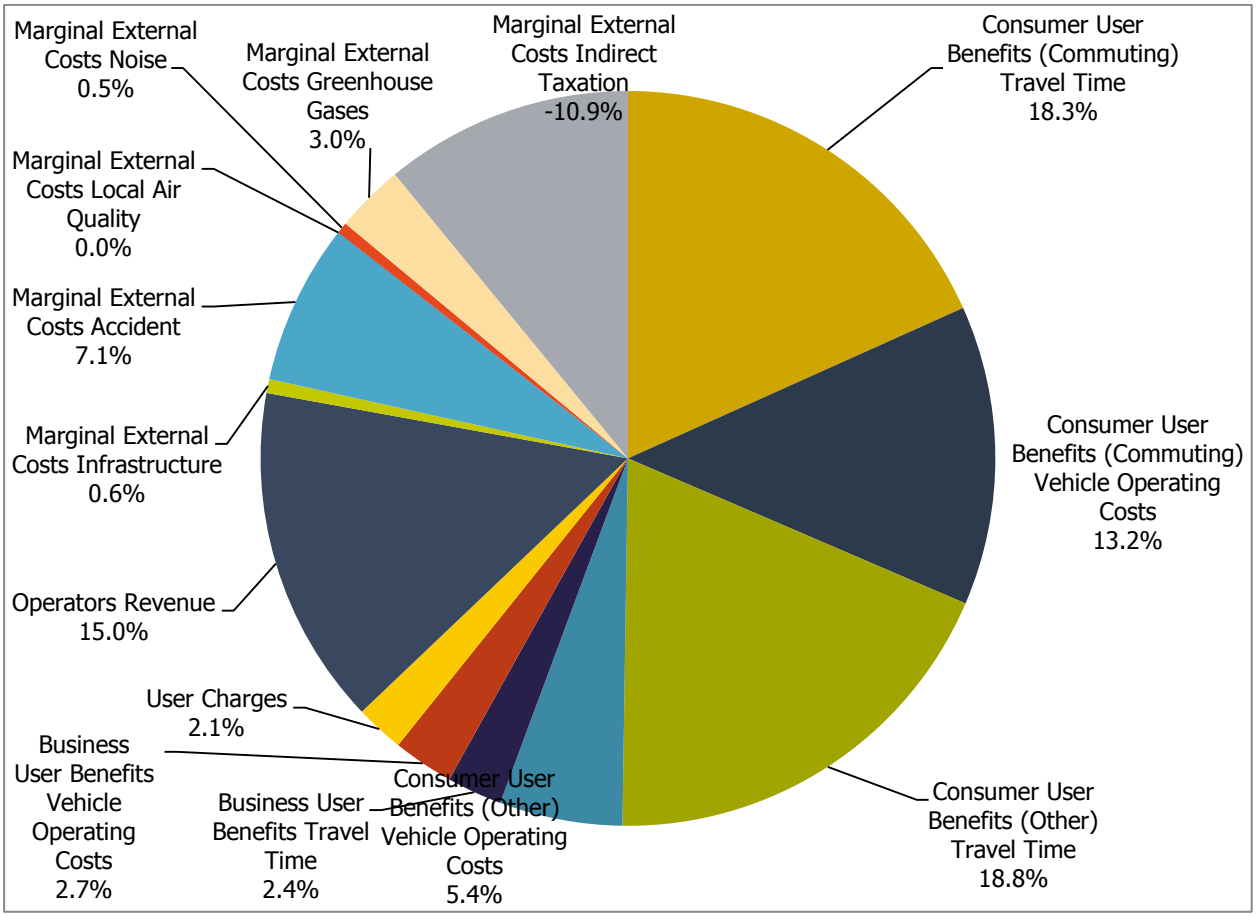

Figure 17 - Ashchurch for Tewkesbury Benefit Proportions

Deliverability

Short-term improvements can be introduced through small schemes funded through the National Station Improvement Programme, Access for All and similar. This should be an ongoing programme to make the station more attractive to users.

It is likely that an hourly service, subject to funding for rolling stock being available, could be implemented by around 2019.

Further improvements, such as a half-hourly service and/or stopping Cardiff services, may involve infrastructure changes of the sort detailed in the Western Route Study. It is likely that such enhancements are bound up in longer-term train service alterations such as the extension of the potential half-hourly Bristol-Gloucester service to Worcester.

Improvements to bus, cycle and walk links are likely to be introduced as the Ashchurch MOD site is developed.

Conclusion

Investment in services and facilities at Ashchurch for Tewkesbury station is a priority in relation to the developments taking place in the area, especially on the MOD site at Ashchurch. This should be linked to improvements to the connectivity of the station to Tewkesbury, in terms of car parking, bus services and walk and cycle routes. These should be developed as part of the Major Scheme Business Case for Junction 9 M5.

6.7.5 Lydney Station

Strategic

Lydney is a small town (population just under 9,000) which serves as a gateway to the southern section of the Forest of Dean. It is seen as a significant housing growth area with proposals for new housing both within the town and the harbour. Around 1,900 new homes are planned to 2026.

The availability of a rail service is a significant asset, both in terms of existing residents and to assist in attracting new people. However, at present there are gaps in the service which is roughly hourly. This limits the scope for both direct trips (eg to Gloucester or Cardiff) and for connections (eg to Bristol). Increasing the frequency and the convenience of connections would be a boost to the town and its future.

The relative remoteness of the station is a barrier to attracting users, exacerbated by a shortage of car parking and poor bus integration. Routes for walking and cycling are poor, though improvements are planned.

Alongside wider support such as improving education, providing jobs and improving the local environment, improving rail connectivity provides a key element of the town's development.

Economic

An economic appraisal of an enhanced service frequency would be linked to the timescale of the planned housing and employment developments. This would be in turn linked to commercial elements (eg rail fares) and funding, including developer contributions.

The economic case has already been made for the connectivity improvements intended to improve the quality of the journey for car drivers, pedestrians and cyclists, as well as increasing car parking. This is part of a wider transport strategy.

The patronage and economic analysis of frequency increases at Lydney indicates that a total discounted benefit (PVB) of £15.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 33% (2015) and 93% (2030). Benefits are split as in the figure below:

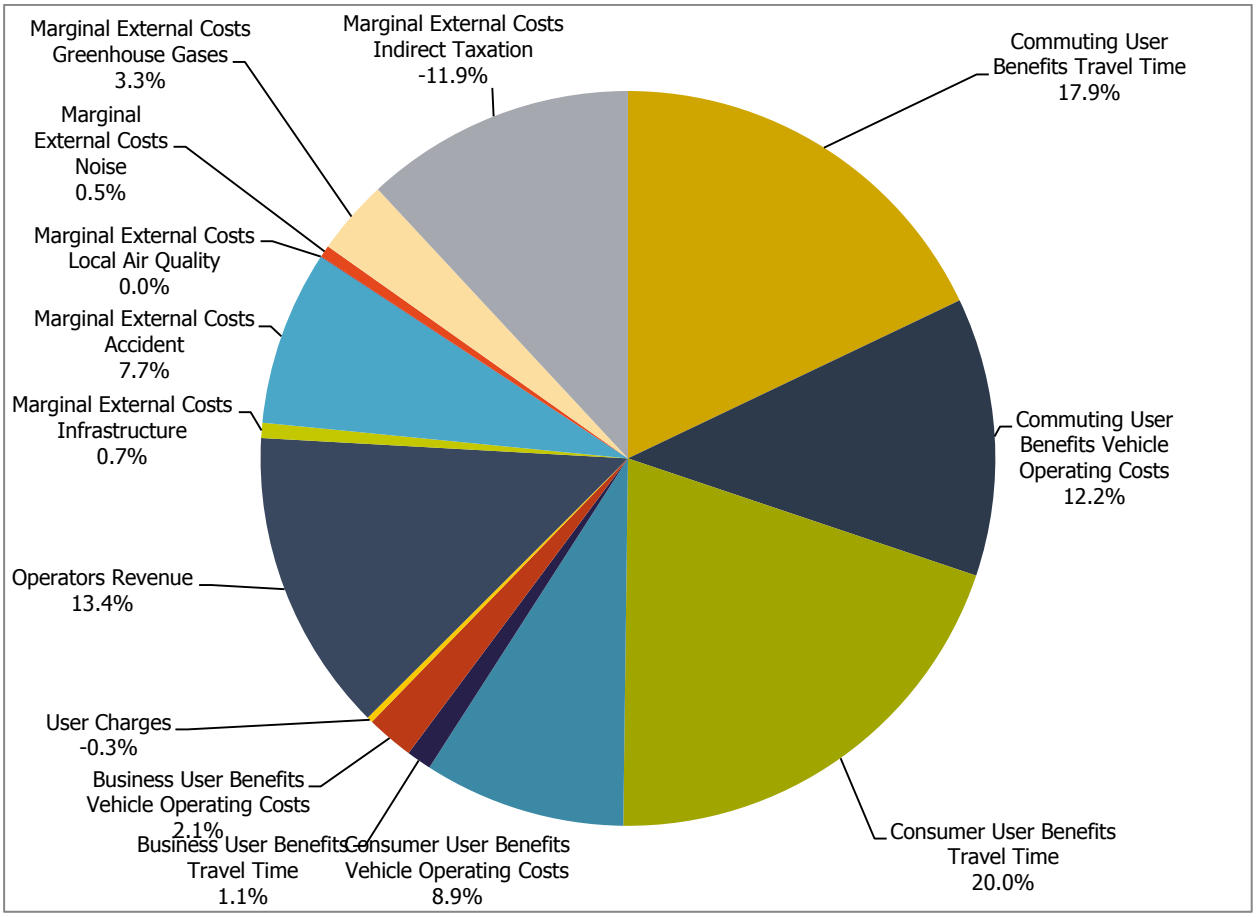

Figure 18 - Lydney Benefit Proportions

Deliverability

The short-term access improvements to the station access are currently being designed, with the intention of implementing them shortly. Further improvements, as the Lydney Transport Strategy develops, can be designed and implemented once funds are successfully applied for.

Frequency enhancements could be achievable post 2019 (if funding can be sourced), though the rail operators indicate an need for additional since rolling stock provision.

Further improvements, including perhaps improved connections to Bristol, may be longer term, dependent on the wider rail services development.

Conclusion

Lydney is relatively isolated and its long-term viability as a community depends in part on bringing in new residents, dependent in turn on adequate connectivity. At present there are problems with access to the station & car parking. Connections at Severn Tunnel Junction (for access to Bristol) are not good. These should be addressed through implementation of the Lydney Transport Strategy and through the development with the rail sector of longer-term plans for train services.

6.7.6 Kemble Station

Strategic

Kemble is located on the Golden Valley Line and under the newly-awarded franchise will have an hourly service to Reading and London (and Gloucester/Cheltenham in the opposite direction), plus additional local trains.

The station is distant from Cirencester where much of the housing development is to take place (2,300 homes to 2031) though it could be considered as *Cirencester Parkway*. For most users this involves travel by car and a constraint on patronage due to parking availability.

The difficulty is compounded by highway constraints, especially queuing at the A429/A433 junction, a rather complex and irregular bus service and poor cycle links.

However the opportunity exists to present Kemble as a gateway station to a large growth area with fast access to Reading and London and the wider South-East via Crossrail. The potential for development of the airport site augments this potential further, especially since this site is much closer to the station.

The potential exists for provision of a half-hourly service terminating at Kemble and running via Swindon to London. This would involve the extension of the predicted additional London-Swindon service through the electrification of the section to Kemble. A strategic case for the additional investment would need to be matched through a solid economic and commercial case adequate to cover the additional investment required.

Whilst there have been proposals to re-open the former spur to Cirencester, the costs of provision will be prohibitive and the commercial case will be weak (relative to building up traffic at Kemble). There is no possibility that a case for this could ever be successful.

Economic

In the short term, the development of an economic case would focus on the delivery of local access improvements (highway, cycle and bus) to enable the station to meet the needs of existing and predicted users.

The economic case for the longer-term opportunities would involve analysis of demand from new housing coupled with the additional costs of infrastructure (including electrification) versus the alternative option to invest in additional capacity at Swindon Station.

The patronage and economic analysis of frequency increases at Kemble indicates that a total discounted benefit (PVB) of £28.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 20% (2015) and 61% (2030). The methodology used does not take full account of all housing growth in Cirencester and does not include the potential housing on the former airport. With this additional growth, the commercial and economic case for Kemble station will be improved further.

Benefits are split as in the figure below:

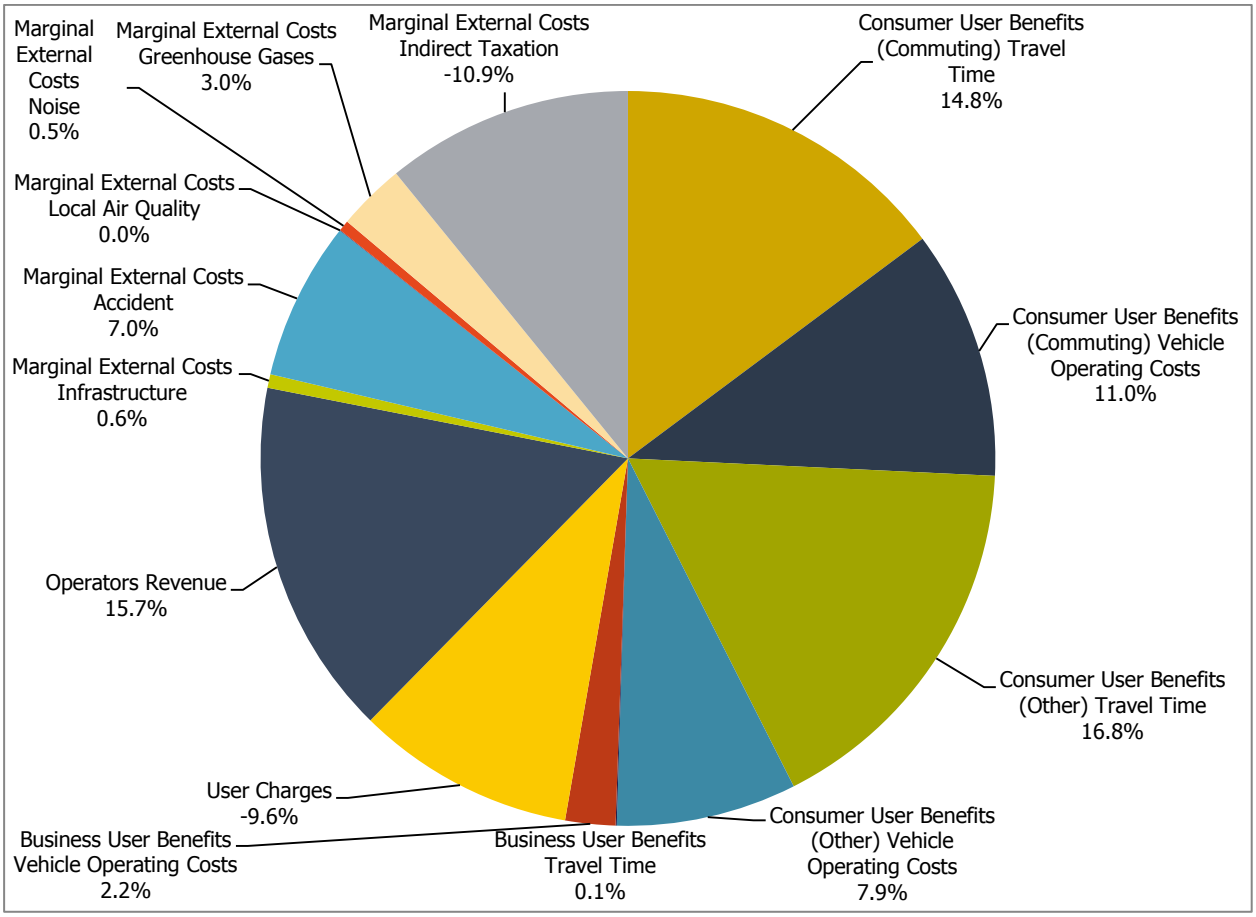

Figure 19 - Kemble Benefit Proportions

Deliverability

The current proposal to extend the car park is currently awaiting planning permission and will be delivered shortly after this is granted. The feasibility of further car park expansion has not been explored but may generate local opposition.

The costs of delivery of all the required highway, public transport and cycle access improvements are likely to be considerable in relation to the likely availability of developer funding. Potentially this places some elements in the medium-long term.

The extension of electrification to Kemble and the provision of a half-hourly service is a long-term project linked to the development of Swindon Station and the Great Western Route as a whole.

Conclusion

The development of Kemble station as a gateway to Cirencester is a key priority. It will enable the development of significant new housing in the area which is effectively within the journey to work area of London and the South-East. The commercial and economic cases are likely to be overwhelming, though practical issues in relation to access and car parking must be resolved.

6.7.7 Cam and Dursley Station

Strategic

Cam and Dursley Station serves Stonehouse and perhaps Stroud in relation to a Bristol service, with car journey times of 15 and 21 mins respectively, on local and relatively uncongested roads. It also serves the surrounding rural area, including the villages of Cam and Dursley.

The main constraint on the development of the station is the limited car parking available, as well as poor bus or cycle links.

Undoubtedly the station is co-dependent with the proposed stations at Stonehouse Bristol Road and Stonehouse North. Much of the predicted usage of Cam and Dursley may switch to a new station and this would need to be considered as a part of any business case.

As with other stations on the Cheltenham-Bristol line, the potential for additional stopping services is limited by line capacity. This would be linked with the long-term capacity improvements detailed in the Western Route Strategy as well as the proposed MetroWest extension of the Bristol-Yate service, providing a half-hourly service between Bristol and Gloucester.

Economic

The patronage and economic analysis of frequency increases at Cam and Dursley indicates that a total discounted benefit (PVB) of £10.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 18% (2015) and 64% (2030).

Benefits are split as in the figure below:

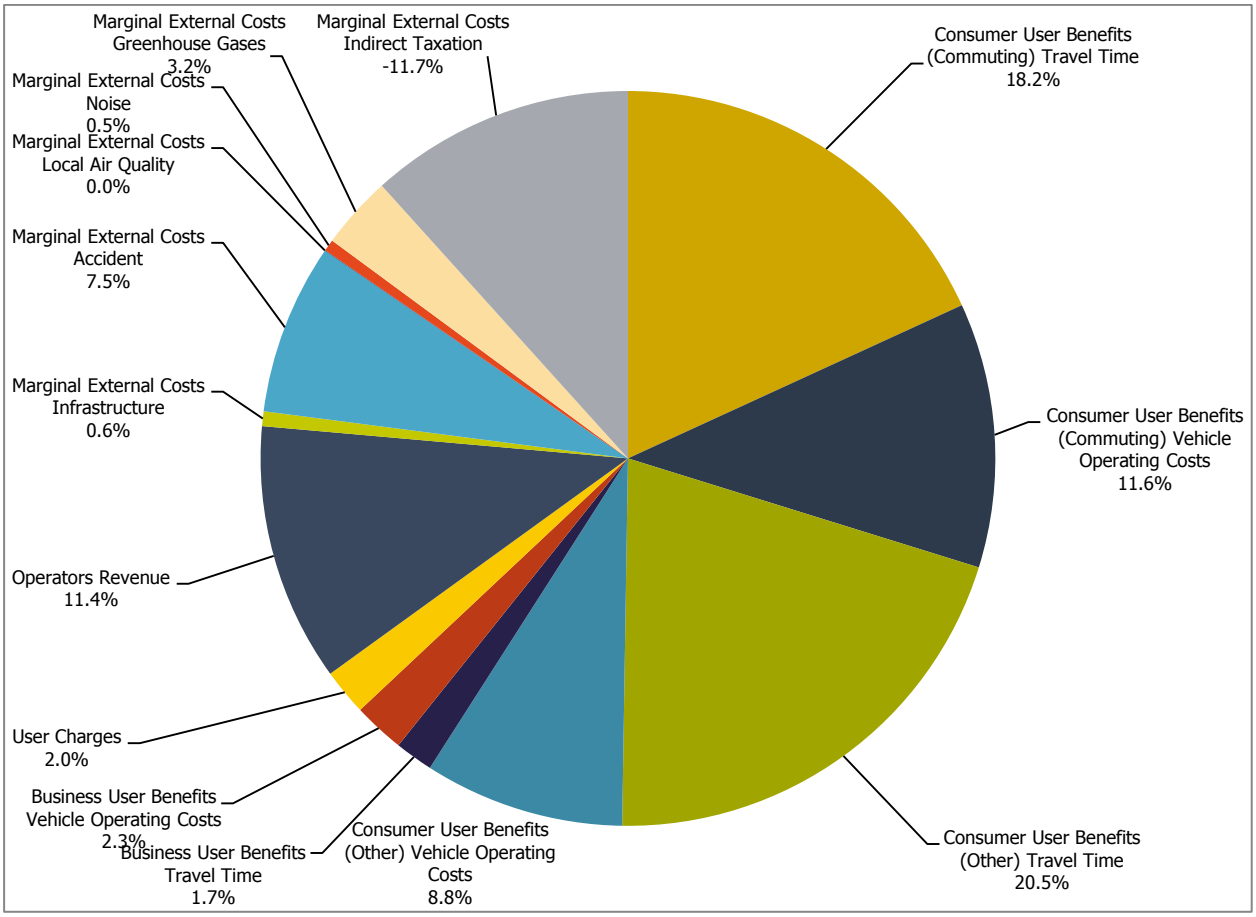

Figure 20 - Cam and Dursley Benefit Proportions

Deliverability

Small-scale improvements to the station could be introduced in the short term. Additional car parking would require land acquisition and may be a longer-term issue.

Changes to the train frequency would be relatively long-term, ranging from 2019 to 2043+

Conclusion

The continued development of this station should be planned and delivered alongside the growth of the surrounding communities, including Stonehouse.

6.7.8 Stonehouse Station

Strategic

Stonehouse station will benefit from an hourly service to London. Travel to Bristol requires driving to Cam and Dursley, though this is a relatively short journey.

Moderate housing growth is planned for the area. The station is in a very constrained location, making access difficult and limiting car parking. Cycle storage at the station is very poor.

Economic

The patronage and economic analysis of frequency increases at Stonehouse indicates that a total discounted benefit (PVB) of £3.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 31% (2030).

Benefits are split as in the figure below:

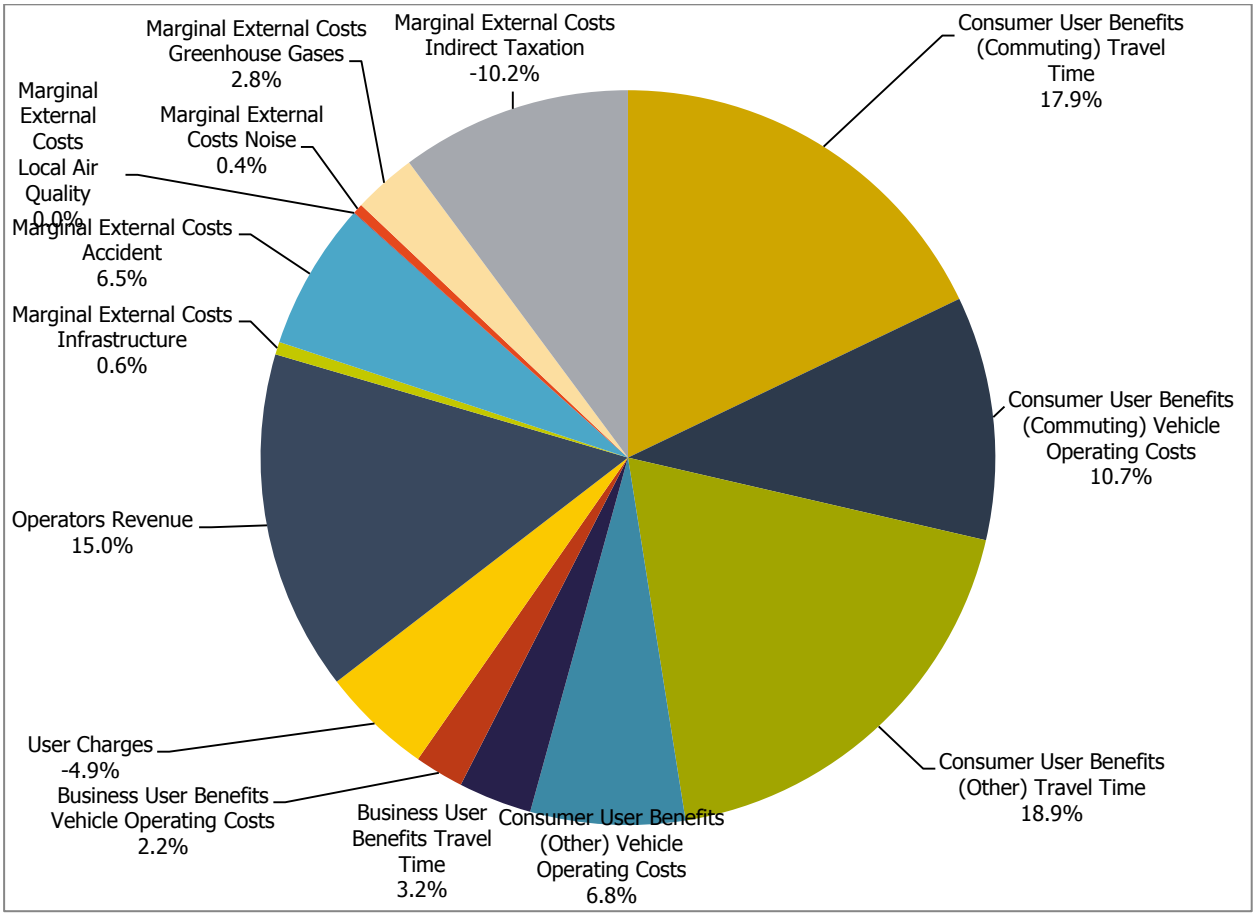

Figure 21 - Stonehouse Benefit Proportions

Deliverability

The hourly London service is committed.

Plans for improvements to the station have not been developed and some aspects would be challenging (eg car park provision). Cycle access and storage could be quickly improved and this is likely to prove a more effective approach.

Conclusion

This station will benefit from the hourly London service. Access and facilities should be improved to meet the customer need and the increased patronage which will stem from service improvements. Walk and cycle access improvements are likely to be more deliverable than increased car parking.

6.7.9 Morton-in-Marsh Station

Strategic

Morton-in-Marsh station benefits from a frequent and fast service to London (as well as Worcester) and this is reflected in its relatively high patronage for a station serving a rural area.

Limited housing growth is planned for the area (approximately 800 homes to 2031). This is an Area of Outstanding Natural Beauty and development potential is very limited. The station serves a large rural area, including settlements such as Chipping Campden. Much of the patronage predicted for a proposed station at Chipping Campden would be abstracted from Moreton-in-Marsh.

Economic

There are no short-term proposals for increased frequencies, though electrification of the line is being considered in the long term. The economic appraisal of this would be the responsibility of the rail sector, though indications are that the proposal is not being taken forward. Similarly, proposals for redoubling the remainder of the route have recently been rejected by Government.

Further economic evidence may be required to support short-term improvements.

The patronage and economic analysis of frequency increases at Moreton-in-Marsh indicates that a total discounted benefit (PVB) of £19.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 11% (2015) and 48% (2030), partly based on rail growth predicted through the Rail Market Studies which may overestimate growth potential in such a constrained area. Benefits are split as in the figure below:

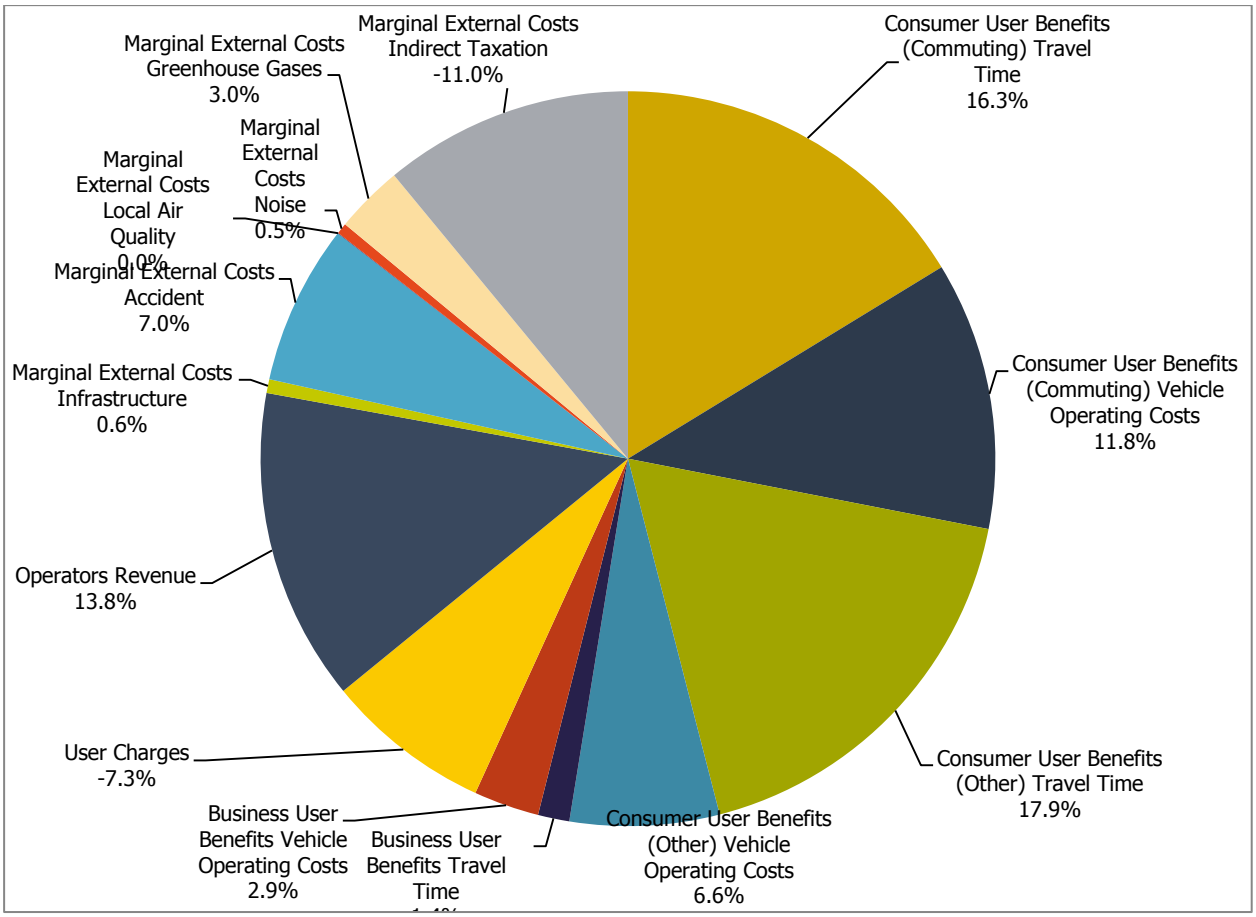

Figure 22 - Moreton-in-Marsh Benefit Proportions

Deliverability

Deliverability of the rail electrification is entirely the responsibility of the rail sector.

Short-term improvements would be subject to feasibility work and funding.

Conclusion

This station provides a gateway for a number of Cotswold communities. However, given the location in an AONB, growth is likely to be low. Station facilities and access should be improved to meet customer requirements. Further changes should only be considered alongside the long-term planning for the route as detailed in the Western Route Study.

7 Prioritisation and Long-Term Opportunities

It is very clear from the stakeholder consultation, study of the rail industry planning documents, Gloucestershire policy documents and the demand modelling that rail investment is likely to generate overall economic benefit. The local benefits of schemes may be valuable if schemes can be implemented quickly and at minimal cost. The difficulty in Gloucestershire is that the local services are bound up with the fast long-distance services which are the very aspect which gives the county its connectivity advantages.

This means that many of the local schemes would require considerable infrastructure investment in order to deliver them. Whilst in some cases (eg additional services at Kemble) such investment synergises with long-term planning within the rail sector, the relationships are far from clear at other locations. This is especially so in relation to the new station proposals.

In view of this, it is clear that an overall prioritisation can be applied to the development of rail facilities:

- Investment in the integration of Cheltenham Spa and Gloucester stations with their surroundings, making them attractive, effective gateways to the county's two urban centres;
- Contribute to and influence the debates surrounding medium to long-term developments such as MetroWest and HS2, as set out in Table 5. Work with GFirst in identifying Gloucestershire's needs and priorities and ensuring that these, along with the contribution made by Gloucestershire, are expressed. For example, extending the Bristol-Gloucester service to half-hourly will make marginal further improvements possible (eg extension to Worcester via Ashchurch or the provision of additional stations on the route). Look holistically at opportunities and how to exploit them in terms of broader connectivity to London (ie Kemble, Cheltenham & Gloucester), Bristol and Birmingham.
- Work with partners (including the developer) to improve the service at Ashchurch, aiming initially at an hourly service and then working alongside the wider rail industry towards higher frequency services in the long term;
- Undertake a similar approach at Lydney, working with Arriva Trains Wales and prospective developers to deliver a more frequent service alongside the access and parking improvements being implemented through the Lydney Transport Strategy. In parallel, work with GFirst and the rail industry to define and agree long-term options for the provision of enhanced Birmingham-Gloucester-Cardiff services, either via Lydney or Bristol Parkway;
- Clarify the housing development plans around Cirencester and Kemble and develop, with First Great Western and Network Rail, an approach to meeting the growing demand in the short and long term. This may include improvements to the station facilities, further provision of car parking, greater integration of highway, bus and cycle and, in the longer term, frequency improvements linked to the long-term GWML development;
- Explore with FGW and Network Rail the infrastructure changes and costs required to achieve new stations at Hunts Grove and Charfield and how much additional development would have to take place in the area for a station to be commercially viable;

- Consider other station proposals (new and existing) as long-term aspirations until the wider rail plans (ie as set out in Appendix A) are clearer and local plans to meet housing demand are more fixed. Use the demand forecasts developed within this Rail Study as a platform to assist in the development of suitable business cases for those schemes shown to have merit. See Section 8.1for prioritisation on the basis of economic benefits;
- Implement the complementary actions set out in the GLTB Rail Strategy and Local Transport Plan, including access and passenger facility improvements, integration of bus services, improved cycle facilities, information and ticketing facilities and travel plans for surrounding housing and employment locations.

8 Conclusions and Recommendations

8.1 Stations and Proposed Stations

8.1.1 Cheltenham Spa

Table 51 - Cheltenham Spa Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Key gateway to one of two main urban centres Excellent connectivity across UK, including London Rail Interchange point Distant from town Poor passenger facilities Lack of parking Long-term train capacity issues	Investment in facilities Increase car parking (including short-term use of area for potential bay platforms Improve concourse Improve bus interchange Improve cycle access & facilities	Review train capacity requirements and potential need for bay platforms (terminating trains) Review overall service patterns as part of wider planning

The patronage and economic analysis of frequency increases at Cheltenham Spa indicates that a total discounted benefit (PVB) of £19.5m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 5% (2015) and 32% (2030).

8.1.2 Gloucester

Table 52 - Gloucester Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Key gateway to one of two main urban centres Excellent connectivity across UK, including London (some with interchange at Cheltenham Spa) Central location provides focus for development of Gloucester City Poor environment around station Poor access to town centre Very poor access to north side, including hospital Limited car parking	Develop car park on north side New pedestrian entrance to north side (car park and hospital) Improve highway access to north-side car park Improve north-south access (improve subway) Integrate station with town centre, via Kings Quarter and new bus station Improve forecourt and station buildings Develop land to north of station – good connectivity	Work with GFirst, Bristol and West of England LEP to fund & deliver half-hourly Bristol-Gloucester service Work within rail industry long-term planning to increase Gloucester-London frequency

The patronage and economic analysis of frequency increases at Gloucester indicates that a total discounted benefit (PVB) of £18.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 7.6% (2015) and 50% (2030).

8.1.3 Stroud

Table 53 - Stroud Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Market town station Hourly services to London and to Swindon (from Cheltenham via Gloucester) Central location and attractive environment Limited car parking Good cycle access but limited cycle parking Poor access across tracks (footbridge not Equality Act compliant)	Improve station facilities and access (eg footbridge) Increase and improve cycle parking	Work with rail industry on long-term increase in frequency (eg half-hourly to London)

The patronage and economic analysis of frequency increases at Stroud indicates that a total discounted benefit (PVB) of £12.6m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 56% (2030).

8.1.4 Kemble

Table 54 - Kemble Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves Cirencester and surrounding rural area Fast hourly service to London (from Cheltenham/Gloucester) – excellent scope for growth Significant housing growth at Cirencester and possibly at airport Station lies 6km from Cirencester Car park full – awaiting planning permission for larger new one Car parking always likely to be constraint Poor highway access (queuing at A433/A429 junction) Poor cycle access from Cirencester Irregular and complex bus links, not timed to trains	Deliver new car park and plan further provision to meet growth Improve highway, bus and cycle links (developer contributions) Work collaboratively with Cotswold District Council, GFirst and the rail operator on plans to develop the station, based on housing growth in the area	Work within rail long-term planning to advocate London-Swindon additional service runs to Kemble Electrification to Kemble to enable the above

The patronage and economic analysis of frequency increases at Kemble indicates that a total discounted benefit (PVB) of £28.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 20% (2015) and 61% (2030). The methodology used does not take full account of all housing growth in Cirencester and does not include the potential housing on the former airport. With this additional growth, the commercial and economic case for Kemble station will be improved further.

8.1.5 Moreton-In-Marsh

Table 55 - Moreton-in-Marsh Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves village and surrounding rural area Good links to London (from Worcester) via Oxford Low growth in patronage (2001-2012) Relatively low housing growth planned	Improve station facilities and car parking Respond to Electrification Route Study Consultation, advocating electrification of the route	Work within rail long-term planning system to explore potential for redoubling of track and electrification potential

The patronage and economic analysis of frequency increases at Moreton-in-Marsh indicates that a total discounted benefit (PVB) of £19.2m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 11% (2015) and 48% (2030).

8.1.6 Cam & Dursley

Table 56 - Cam and Dursley Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves rural area and is distant from settlements Recently extended car park is full Bus links are provided but infrequent Relatively quiet roads for cycling	Improve station facilities and car parking	Work with GFirst, Bristol and West of England LEP to fund & deliver half-hourly Bristol-Gloucester service

The patronage and economic analysis of frequency increases at Cam and Dursley indicates that a total discounted benefit (PVB) of £10.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 18% (2015) and 64% (2030).

8.1.7 Lydney

Table 57 - Lydney Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Station serves Lydney and wider Forest of Dean Trains stop roughly hourly (irregular) Distant from town, with poor access Limited parking available Significant planned housing growth in area, with more possible at harbour. Availability of rolling stock constrains additional stopping services Longer-term plans include extra Cardiff train, which may go via Lydney or Bristol Parkway	Implement Lydney Transport Strategy to improve access Enlarge car park and develop plans for more parking Work with GFirst, developers and neighbouring areas to fund rolling stock/staffing for additional stopping services	Work within the long-term planning system to develop most effective approach to Lydney connectivity, taking account of access to Cardiff, Bristol and Gloucester/ Cheltenham

The patronage and economic analysis of frequency increases at Lydney indicates that a total discounted benefit (PVB) of £15.3m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 33% (2015) and 93% (2030).

8.1.8 Stonehouse

Table 58 - Stonehouse Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
2-hourly service to London (hourly with change at Swindon) Basic station facilities Very constrained location, making access and parking difficult Cycling to station from surrounding area quite feasible Poor cycle storage (unsuitable location, poor security)	Improve station facilities, including cycle storage Promote walk and cycle access	Work within rail long-term planning process to enhance frequencies to hourly

The patronage and economic analysis of frequency increases at Stonehouse indicates that a total discounted benefit (PVB) of £3.9m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 16% (2015) and 31% (2030).

8.1.9 Ashchurch for Tewkesbury

Table 59 - Ashchurch for Tewkesbury Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Infrequent (2-hourly) service Significant housing growth planned Poor connections to Tewkesbury by bus, rail Very basic station facilities Rolling stock/staffing constrains additional stopping services	Seek funding to improve station facilities, including parking Work with GFirst, FGW and developer to fund hourly service	Seek further improvements in service through engagement with long-term planning process, especially in terms of Bristol-Birmingham electrification and most effective approach to line capacity improvements Develop business case to extend Bristol-Gloucester services to Worcester, via Ashchurch

The patronage and economic analysis of frequency increases at Ashchurch for Tewkesbury indicates that a total discounted benefit (PVB) of £9.2m could be achieved. With a doubling of frequency on key routes, patronage growth is predicted as 39% (2015) and 100% (2030). If frequencies were increased further (ie to half-hourly), the patronage growth would be 72% (2015) and 147% (2030), though this is from a very low base. The projections are based on existing journey patterns, with a relatively high level of local trips. The developments at Ashchurch may attract people with longer-distance travel horizons, leading to a significant increase in net benefit.

8.1.10 Stonehouse Bristol Road (Proposed)

Table 60 - Stonehouse Bristol Road Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Location on Bristol-Gloucester route Close to existing Cam and Dursley station and very close to Stonehouse (different line) Some housing growth in area Location close to existing employment Low BCR and PVB Some stakeholder support Additional stop not favoured by Cross-Country or FGW due to capacity constraints	Not recommended to take forward	Reconsider only if in the long-term there was very high housing growth planned in the area (3000+ homes). This would be in the context of a review of station locations in the area, including Cam and Dursley, Stonehouse and Stonehouse North (proposed)

The patronage and economic analysis of Stonehouse Bristol Road indicates that a new station at this location would generate a total discounted benefit (PVB) of £12.9m and a BCR of +1.34. This is insufficient to justify a station at this location, especially taking into account that 56% of users would be abstracted from existing stations.

8.1.11 Charfield (Proposed)

Table 61 - Charfield Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Also located on Bristol-Gloucester route Significant housing growth in area Moderate patronage (second highest on basis of comparable frequencies) Moderate abstraction (37%) from existing stations	Continue dialogue with FGW and Network Rail on feasibility Safeguard site Work with South Gloucestershire Council and FGW on the development of a Transport Business Case at initial (SOC) stage, including initial feasibility. This would be based in large part on housing growth	Engage with rail long-term planning to ensure that line capacity changes enable station to be provided Develop business case for delivery of new station

The patronage and economic analysis of Charfield indicates that a new station at this location would generate a total discounted benefit (PVB) of £18.6m and a BCR of +2.31. The high level of housing growth in the area may enable a sound case to be developed for a station at this location. This would need to encompass adequate commercial revenue (versus abstracted trips).

8.1.12 Hunts Grove (Proposed)

Table 62 - Hunts Grove Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Located on Bristol-Gloucester and Gloucester-Swindon-London routes, with the potential to stop London trains Potential for housing growth in area, with considerable development already in place High patronage projections, with 36% abstracted Limited stakeholder support High PVB and positive BCR	Continue dialogue with FGW and Network Rail on feasibility Safeguard site Advocate housing development as means to provide adequate patronage Develop a Transport Business Case at initial (SOC) stage, including initial feasibility	Engage with rail long-term planning to ensure that line capacity changes enable station to be provided Develop business case for delivery of new station

The patronage and economic analysis of Hunts Grove indicates that a new station at this location would generate a total discounted benefit (PVB) of £18.7m and a BCR of +1.93. This suggests that a business case for the construction of a station at this location could be made, though the predicted BCR is slightly below the 2.0 threshold normally applied to LGF funding. The TEMPRO-based growth forecasts used in the demand modelling probably does not take account of all potential housing developments. The case must demonstrate adequate commercial revenue from new trips (as opposed to those abstracted from other stations).

8.1.13 Stonehouse North (Proposed)

Table 63 - Stonehouse North Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Would be possible to stop both London and Bristol services 57% of projected patronage abstracted from existing stations Low housing growth in immediate area Not likely to be feasible with either Stonehouse (existing) or Stonehouse Bristol Road. Likely to be mutually incompatible with Hunts Grove. Low patronage projections	Not recommended to take forward	Reconsider only if in the long-term there was very high housing growth planned in the area (3000+ homes). This would be in the context of a review of station locations in the area, including Cam and Dursley, Stonehouse and Stonehouse Bristol Road (proposed)

The patronage and economic analysis of Stonehouse North indicates that a new station at this location would generate a total discounted benefit (PVB) of £10.7m and a BCR of +0.95. However, since 57% of the users would be abstracted from existing stations (primarily Cam and Dursley and Stonehouse) this indicates that a sound business case could not be made for this proposed station.

8.1.14 Chipping Campden (Proposed)

Table 64 - Chipping Campden Conclusions

Findings	Short-Term Recommendations (2019)	Medium to Long-Term Recommendations (2019-2029+)
Would be served by Worcester-Oxford-London Probably mutually exclusive with Moreton-in-Marsh Low housing growth in area Very low patronage projections High level of abstraction (76%) from existing stations	Not recommended to take forward	It is unlikely that a case could be made even with frequency increases and electrification. Investment in existing stations, including car parking and better connectivity is likely to offer better value for money

The patronage and economic analysis of Chipping Campden indicates that a new station at this location would generate a total discounted benefit (PVB) of 13.1m and a BCR of 1.63. However, this is based on very few users and growth projections stemming from overarching Rail Market Study predictions which will overstate the true growth in this area. This is reflected in very low growth at Moreton in Marsh station (only 31% between 2001 and 2014, the lowest in Gloucestershire). 76% of the users would be abstracted from existing stations, primarily Moreton in Marsh and Honeybourne. This strongly indicates that a sound business case could not be made for this proposed station.

8.2 Improved Bristol-Gloucester Links and Rail Line Capacity Issues

As well as improving the links between Gloucester and Bristol, achieving a half-hourly service via Bristol Parkway and Yate will provide a platform for further improvements.

Developing a Business Case for this, in conjunction with GFirst, the West of England LEP, South Gloucestershire Council and Bristol City Council, should be a priority.

Further improvements possible following the provision of this enhancement could include the provision of additional stops at Stonehouse Bristol Road and/or Charfield. Both would be subject to the preparation of Transport Business Cases linked to developments in the area. The 2043 projections indicate that line capacity will be an issue on the route between Cheltenham Spa and Bristol Parkway, with a number of proposals for dynamic loops to enable trains to pass. By engaging with the long-term planning process, expressing the requirements for additional stops at Ashfield and possibly Stonehouse Bristol Road and/or Charfield, it will be possible to influence the most suitable locations for capacity improvements which help deliver Gloucestershire's requirements.

8.3 Electrification

It is clearly important that Gloucestershire and GFirst support the electrification of the Bristol-Birmingham route. This in itself may support wider plans for additional services, stations and stops, as well as providing enhanced services and speeds and potentially complementing the case for 'Classic Compatible' trains running through Birmingham onto HS2.

In addition, as detailed in Section 4.3**Error! Reference source not found.**, the ossibility to extend electrification from Swindon to Kemble would enable an additional train per hour to start at Kemble, running via Swindon to London. By presenting a coherent case for housing development in the area, along with improved station access and facilities, it will be possible to influence the planning to favour this option over the alternative of infrastructure investment at Swindon. Bi-mode or battery powered rolling stock would be an alternative. This latter option would involve the additional London service terminating at Swindon.

The proposal to electrify the North Cotswold Line (along with redualling) would provide significant opportunities in the future for growth on this corridor. Collaborative working is recommended with Worcestershire and the Worcestershire LEP to advance this proposal, though it must be noted that in April 2015 Government ruled out the upgrade.

8.4 Vision for Gloucestershire Rail Routes

There are four main rail axes which provide both local and longer-distance connectivity for Gloucestershire and its individual communities. Using the key findings from this study and the rail industry's long-term planning considerations, the following table summarises the key recommendations relating to each of these.

Table 65 - Bristol-Gloucester-Cheltenham Route Vision

<table>
<tr><th colspan="4">Bristol-Gloucester-Cheltenham Spa-Ashchurch</th></tr>
<tr><td colspan="4">Including connectivity to Worcester, Birmingham, the South-West, North-West and North East</td></tr>
<tr><td rowspan="2"></td><td>Short-term (2015-2019)</td><td>Medium-term (2019-2029)</td><td>Long-term (2029+)</td></tr>
<tr><td>Control period 5</td><td>Control Periods 6 & 7</td><td>Control period 8+</td></tr>
<tr><td>Route as a whole</td><td rowspan="2">Develop case for extension of Metrowest Bristol-Yate service expansion to Gloucester and potentially Worcester.
Work with TOC & Network rail to plan additional stopping service at Ashchurch
Support electrification of route</td><td>Provide additional stopping service at Ashchurch
Work with rail industry on most appropriate locations for active loops to enable additional stopping services</td><td rowspan="2">Provide a comprehensive Bristol-Worcester service to complement fast Bristol-Birmingham with co-ordination of stops & interchange to enable increase journey choice.</td></tr>
<tr><td>Service frequencies</td><td>Deliver Metrowest extension</td></tr>
</table>

Bristol-Gloucester-Cheltenham Spa-Ashchurch			
Stations	Improve car parking and station facilities at Gloucester, Cheltenham Spa, Cam & Dursley, Ashchurch	Continued development of main stations. Link Develop business case for additional stops, favouring Hunts Grove & Charfield	Deliver new stations with co-ordinated timetables (dependent on sound business case)
Wider connectivity	Work with neighbouring areas to plan & commit good HS2 connectivity in Birmingham		Deliver seamless links to HS2 (Classic Compatible trains)

Table 66 - Cheltenham Spa-Gloucester-London Route Vision

Cheltenham Spa/Gloucester-Kemble-Swindon-Reading-London (Golden Valley)			
Including connectivity to Crossrail (2018+) and Heathrow Western Link (2021)			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole Service frequencies	Hourly London service - committed	Plan most appropriate approach to extension of some Swindon services	Extend additional peak services from Swindon to Kemble
Stations	Improve station facilities at Cheltenham Spa, Gloucester, Stroud & Stonehouse Improve connectivity & facilities at Kemble	Develop business case for additional station at Hunts Grove	Deliver new station at Hunts Grove (with some London trains stopping)
Wider connectivity	Integration with Crossrail at Reading	Further integration with Heathrow Western Link	

Table 67 - North Cotswold Line Route Vision

Worcester-Moreton-in-Marsh-Oxford-London (North Cotswold Line)			
Including connectivity to Crossrail (2018+) and Heathrow Western Link (2021)			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole Service frequencies		Develop case for redoubling track on full route and electrification. Increase frequency of service (as set out in Western Route Study)	
Stations	Improve facilities and integration with bus at stations Work with neighbouring authorities on case for Worcestershire Parkway		
Wider connectivity	Integration with Crossrail at Reading	Further integration with Heathrow Western Link	Consider re-opening Honeybourne

Table 68 - Cheltenham Spa-Gloucester-Lydney-Cardiff Route Vision

Cheltenham Spa-Gloucester-Lydney-Cardiff			
Including connectivity to Birmingham, Midlands, North-West and North East			
	Short-term (2015-2019)	*Medium-term (2019-2029)*	*Long-term (2029+)*
	Control period 5	*Control Periods 6 & 7*	*Control period 8+*
Route as a whole		Develop most appropriate approach towards additional hourly service, taking account of route and connections	Deliver service frequency improvements, with appropriate stopping patterns and connections
Service frequencies	Engage with Crosscountry on additional stopping services at Ashchurch		
Stations	Improve facilities and access at Lydney	Continue to improve station and local connectivity as new housing is developed	
Wider connectivity		Improve connections at Severn Tunnel Junction to improve Bristol links	

8.5 Wider Connectivity Issues

There are significant issues, as identified in the Gloucestershire Transport Strategy, to provide better integration at a local level with the built environment, with the highway, with cycle provision and with bus services. This should be coupled with active marketing (eg travel plans) and information provision.

Each station should have a clear plan for its development in the short, medium and long-term, linked to development proposals in the area and the wider rail-side opportunities.

In the case of Cheltenham Spa and Gloucester stations these issues are critical. Better integration of the centres with the stations will support economic growth.

However, the 'devolution' agenda makes it essential that Gloucestershire and its LEP engage with the City Region developments in the West Midlands, Bristol and Cardiff (and the Great Western Cities). This will help to achieve the connectivity goals of Gloucestershire (eg improved Bristol-Gloucester links) and will strengthen Gloucestershire's contribution to the economic development of the South West.

Finally, the opportunity for enhanced connectivity through HS2 should be pursued. Active engagement is required, setting out the case for enhanced regional services running on existing lines complemented by 'Classic Compatible' running through Birmingham onto HS2 towards Leeds and Manchester. Failure to address this may leave the economy of the South West at a significant disadvantage.

8.6 Further Work

This study was designed to provide overall strategic guidance and recommendations on the individual station proposals, geared to the GRIP 2 (feasibility) planning stage. Some consideration of abstraction from existing stations from the provision of proposed new stations has been taken into account. However, in the main the proposals are considered in isolation. Developing these proposals further would require a more comprehensive approach best exemplified through the use of the 5-Case Model which addresses strategic, economic, financial, commercial and management aspects.

In order to develop a strong economic case for investment through Local Growth Fund, developer contributions and from the rail sector, it is recommended that transport business cases are prepared for those proposals shown to have merit. This will require more accurate demand forecasts using area-wide analysis of journey patterns and more focus on the commercial elements. Consideration of the approach to implementation and the costs likely to be involved would be required. Where this is likely to involve rolling stock or infrastructure provision, a robust approach involving Network Rail and the rail operators will be required, in addition to engagement of neighbouring local authorities and LEPs.

In view of this, it is recommended that alongside the strategic and long-term engagement above that the following is undertaken:

- **Bristol-Gloucester Frequency Enhancement** – Preparation of a comprehensive business case for the extension of the MetroWest Bristol-Yate service to Gloucester and potentially to Worcester. This would require a collaborative programme of work agreed between the local authorities, the LEPs, the train operators (primarily FGW but also CrossCountry) and Network Rail.
- **Ashchurch** - Preparation of a Transport Business Case, as part of the wider approach to Junction 9 M5, for the delivery of an enhanced rail service. This would incorporate a strong Commercial Case in relation to rail patronage/revenue alongside the Strategic, Economic and Financial Cases which would incorporate the potential for developer contributions.
- **Kemble** – Preparation of a Transport Business Case akin to that proposed for Ashchurch which takes account of planned developments in the area, improved integration with the surrounding area and the opportunities presented by the existing and potential Swindon and London services. This would enable effective engagement with the rail industry in selecting the most appropriate approach to enabling additional Swindon-London services, including the potential for electrification to Kemble. Wider economic benefits are likely to be a key component of the business case.
- **Lydney** – A Transport Business Case geared towards local connectivity (Lydney Transport Strategy) is already in preparation. This could be extended to take into account the long-term opportunities presented by the rail station in the context of planned developments in the town and harbour area and the potential for additional services or connections in the medium to long term.

- **Hunts Grove** – Preparation of a Transport Business Case which takes account of the proposed station and its relationship with existing stations. More sophisticated demand modelling would be used along with train service level options including a half-hourly Bristol-Gloucester frequency. The scheme options developed as part of the business case would enable the selection of the most effective approach to developing the stations serving this area, including car parking strategy, bus, walk and cycle access. The potential for new development, leading to new trips (rather than abstracted ones) is likely to be the key element in developing a successful commercial and economic case.
- **Charfield** - A similar Transport Business Case could be prepared for Charfield. However, since this proposed station is in South Gloucestershire, any further work would need to be commissioned by this neighbouring local authority. A station at Charfield and the revenue it may generate could support the overall business case for the extension of the forthcoming half-hourly Bristol-Yate service to Gloucester.

Appendix A Route Study Details

8.7 Western Route Study

The Western Route Study is due for publication in 2015, following a period of consultation, to which Gloucestershire County Council responded. The analysis of the Consultation document has been undertaken with regard to its implications for Gloucestershire, though this inevitably involves a significant amount of interpretation of what are quite strategic, long-term issues.

The study is part of the rail industry's long-term planning process and has a horizon of 30 years to 2043, with a 2019 base year. It includes in this baseline committed schemes (eg GWML electrification) and those with a commitment to development (including HS2).

Governance of the planning process is vested in the Route Study Board. Gloucestershire County Council has been involved in West of England Working Group.

As a precursor to the route studies, a number of Market Studies have been undertaken, as set out in Section 4.2 of the main report. This set out for each of the market areas a set of Conditional Outputs (eg frequency of trains serving specific routes) which are subject to feasibility, affordability and value for money. In effect the Route Studies set out the options to meet these Conditional Outputs in terms of investment in the infrastructure. One of the primary purposes is to inform potential funding bodies (including central government, local government and local enterprise partnerships) of these options and the 'conditions' which must be met in order to bring them forward as real investment proposals rather than options.

It is important to recognise that many of these 'options' are alternative solutions. For example, there are proposals to provide additional capacity at Swindon in order to increase the level of service between Swindon and London to meet the capacity requirements set out in the Market Study. However, an alternative proposal, involving electrification of the route to Kemble, would provide a doubling of service at Kemble, which is close to the housing growth area at Cirencester. The decision on which option to choose could be influenced by significant housing growth and the fare revenue this would generate. By presenting well-developed plans to build homes, involve developers, obtain developer contributions and provide improved access and parking, it is quite possible that the Kemble option could be favoured over the cheaper Swindon one.

8.7.1 System-wide Issues

There are a number of 'system wide' elements which are taken into account in the Route Study. These include:

- Electrification in terms of the committed schemes and the proposals currently under consideration. This has bearing on the capacity of lines as well as the types of train since generally electric trains can accelerate more quickly than current rolling stock.

- Signalling, especially in relation to the replacement of conventional signalling with European Rail Traffic Management System (ERTM) and European Train Control System (ETCS) which will enable much higher-speed operation and potentially greater capacity. Investment in these systems (which have various sub-categories involving increasing levels of functionality) will be undertaken on a case-by-case basis taking account of the demands, opportunities and constraints on specific routes. ETCS (2019 capability) is 'medium' (15 trains/hour) in the Gloucester area and low (7tph) on Worcester to Oxford (North Cotswold Line). Resignalling is scheduled for 2021 for the Gloucester area, 2016 for Bristol (with Kemble/Swindon completed, linked to the now-completed re-dualling).
- HS2 and Crossrail are both included within the Route Study baseline, though in the case of HS2 this is complicated by the different connectivity options within the Birmingham area.

8.7.2 Key Issues in Relation to Gloucestershire

There are a number of key issues raised in the Route Study which have bearing on the plans for rail connectivity in Gloucestershire, including:

- Plans for increased track capacity between Cheltenham Spa and Bristol/Taunton to meet the Conditional Outputs beyond 2043. Options including dynamic loops to allow trains to pass. These are considered in more detail in the sections dealing with specific routes.
- Junction capacity issues, including considerations surrounding Abbotswood Junction (SE of Worcester), Westerleigh Junction (E of Bristol Parkway) and the area around the Severn Tunnel. The value for money of these proposals would need to be explored and would likely be considered alongside the case for electrification of the Birmingham-Bristol route.
- Electrification of the line between Swindon and Kemble will enable additional peak services to be extended to Kemble (as exemplified above).
- Electrification of the Birmingham-Bristol route is not committed but is under consideration.
- Provision of 'mainline' platforms at Gloucester, accompanied by narrative regarding the high cost and the difficulty of connecting these with the existing platforms and the city centre.
- The baseline contains the committed LGF funding for trains to Yate (MetroWest Phase 2 - 2021) but not for the possible extension to Gloucester
- Worcestershire Parkway station is mentioned in the baseline section but only as a proposal under development. It is far from clear how this proposal will progress.
- Funding through Access for All and National Station Improvement Programme (NSIP) is included in the baseline section and this is reinforced in relation to the commitments made by First Great Western in relation to station investment.
- None of the new stations proposed by Gloucestershire County Council are considered under the 'baseline' section nor are they encompassed within the substantive Route Section Analysis
- Freight is detailed in the baseline but is not detailed since it will be the subject of a separate Route Study. However, given the impact on capacity, overall freight traffic growth projections have been incorporated. Freight growth predicted as 2.9% PA (vs 2.5% to current)

- Passenger load factors are relatively low (less than 70%) in the Gloucestershire area, even with 2043 demand applied to 2019 capacity.
- The predictions for Greater Bristol are much higher, with predicted increases to 2023 of 47% and 111% 2043, taking account only of background growth. Predictions are higher still when taking account of committed schemes and with 17 trains/hour arriving from Gloucester/Bristol Parkway, predictions are for loading to increase to 85% on local services and 100% on long-distance (with 2043 demand and 2019 capacity).

8.7.3 Cross-Boundary Issues

These issues have been analysed in the Route Study, taking account of the Conditional Outputs, including the Cross-boundary Indicative Train Service Specification (ITSS) which covers passenger services crossing study boundaries. In the case of Gloucestershire, this is especially important in relation to the Cross Country route and the Welsh routes, including the Gloucester-Cardiff link.

In summary, the key issues potentially requiring infrastructure improvements include:

- More regional passenger trains between Cardiff, Cheltenham Spa, Birmingham and Nottingham (in relation to capacity at Gloucester West Junction).
- More trains from South Wales & Swindon to Worcester, the West Midlands and beyond (in relation to capacity at Abbotswood Junction). The assumption is a further train/hour Cardiff-Birmingham but probably via Bristol Parkway and the Severn Tunnel, not via Lydney. This is linked with options for capacity improvements at a number of junctions. This is also considered in the Welsh Route Study. Since this would not serve Lydney, this might at first look like a drawback. However, the potential would exist for enhanced connections between Lydney and Bristol.
- An additional train/hour from Bristol to Birmingham, plus increases in speed, leading to the development of options for junction improvements and active loops to enable faster trains to overtake. These proposals (and where they are located) would have bearing on the potential for additional stops in Gloucestershire.
- Proposals to run 2 trains/hour Birmingham-Cardiff via Bristol Parkway along with the existing 2 trains/hour Bristol-Birmingham (plus one to Cardiff via Chepstow). There are a number of relatively complex options for infrastructure changes and/ or route choices involved in these proposals. By engaging co-operatively with other affected councils and LEPs (including Great Western Cities) it will be possible to express connectivity requirements in such a way that the rail industry will be able to make more informed choices.

8.7.4 Crossrail and HS2

With the completion of Crossrail and improvements to service frequencies on the GWML (along with the renewal of Reading Station), the connectivity between the South-West and the economy of London and the South-East will be significantly improved. Links to Heathrow Airport will also be enhanced.

A further long-term issue relates to the implementation of HS2, especially within Birmingham. The proposed station at Old Oak Common will provide a link between HS2 and the GWML, complementing the link to Crossrail at Reading. However, in relation to Birmingham, no firm decisions appear to have been made regarding the linkage of the new line with existing infrastructure and the integration of services at this important hub. Whilst it is clear that a high level of integration will be provided onto the West Coast Mainline, the arrangements for trains or passengers travelling through Birmingham on the Cross Country route are far from clear. There is a clear anticipation that many existing Birmingham-Leeds and Birmingham-Manchester services will use the HS2 route.

In the 'best case', some or all of the South-West to Manchester and Leeds services would run as 'Classic Compatible' services through Birmingham and on to HS2. This would still not serve intermediate locations such as Lichfield, Burton or Derby but these links could be maintained through regional services such as an enhanced Cardiff-Nottingham service. It is also not clear what would happen in relation to Plymouth since it is far less likely that 'Classic Compatible' trains would run beyond Bristol. However, relatively easy interchange would be possible at a number of points, enabling travellers from the far South-West to transfer to through trains, avoiding a change of station.

In the 'worst case' services will terminate at New Street and passengers will need to transfer (under the Bullring) to the new Curzon Street station for HS2 trains; or use slower regional services. This could have significant negative impact on the South-West economy.

Since the plans for HS2 at the time of writing do not indicate commitment to 'Classic Compatible' services to the South-West, it is essential that the local authorities and LEPs in the South-West collaborate to express their needs for sustained and improved connectivity in the event that HS2 is built.

The options for connections in Birmingham and the delivery of 'Classic Compatible' lines are extremely complex, especially in the light of the potential for electrification of Birmingham-Bristol). Rather than engaging in the detailed consideration of the various technical and engineering options, a focus on need and a very high level of political involvement would have the most impact, hopefully leading to a prioritisation of the needs of the South-West.

It is possible that further commentary on these issues will be included in the final version of the Western Route Study when it is published in June 2015.

8.7.5 Route Section Analysis

Route Section H – Oxford to Worcester, via Moreton-in-Marsh (with station proposal at Chipping Campden):

The long-term Conditional Outputs for this route are based on one of two trains/hour London-Worcester (with the other going via Cheltenham Spa), plus 2 local trains/hour Worcester-Oxford.

Train lengthening, some additional peak-time services and extension of the platform at Hanborough are the only proposals put forward to meet 2019 demands, unless local factors cause growth to exceed forecast. The implication of this is that significant growth through housing development would lead to reconsideration of the options, potentially strengthening and bringing forward the longer-term proposals.

This would open up the possibility for enhanced services (exemplified as a Charlbury/Hanborough starting service, using the existing turn-backs, including the one at Moreton-in-Marsh).

At present, the demand modelling shows no significant case for the new station at Chipping Campden and only limited growth at Moreton-in-Marsh. If further housing growth in the area were proposed, the potential for rail service improvements could be considered further.

Currently the Route Study puts forward options for track dualling, junction improvements and potentially electrification. Some aspects of this are driven by rail operational issues. However, by expressing the potential demand offered through housing growth, Gloucestershire and its neighbouring local authorities and LEPs have a role in influencing the planning process.

Route Section M – Greater Bristol Area

This route section is critical to many of the services in Gloucestershire, including the Bristol-Birmingham and Westbury-Gloucester routes. The longer-term proposals for the Cardiff-Bristol Parkway-Gloucester route are also partially bound into this section.

Route Section N – Worcester – Bristol Parkway & Gloucester – Swindon

The short-term (CP6) proposals contain train lengthening on the Cross Country trains (linked to the Intercity Express Programme) and junction improvements to increase capacity and speed. The primary drivers for the train lengthening lie in more crowded parts of the Cross Country route. A significant driver for change in the South West is the MetroWest programme along with significant improvements at Bristol Temple Meads.

The MetroWest programme itself is outside of the scope of this study and has not been considered in detail. However, of particular significance is the proposal for local trains between Weston-super-Mare and Bristol Parkway to be extended to/from Yate. This is likely to be implemented in 2021 as part of Phase 2 and LGF funds have been allocated by the West of England Local Enterprise Partnership, linked to housing growth. Although not committed, there is potential to extend these services to Gloucester. Engagement with Bristol City Council and its partners (and the rail industry) and presentation of housing and economic growth plans for Gloucestershire will influence decision-making. However, it is likely that funding through LGF or similar would be needed to fund the additional rolling stock required. Whilst clearly discussions on this would involve First Great Western, the implementation would take place beyond the current franchise.

One of the most critical long-term proposals are the proposed provision of dynamic loops to enable trains to pass at Ashfield-Eckington and/or Charfield and/or Standish and Haresfield. Discussions should be held with Network Rail on how these alternative proposals could assist in enabling additional services to call at Ashchurch, for the Yate-Gloucester extension and for further stops to be introduced, including new stations.

Other long-term considerations include proposals for 'mainline' platforms to serve Gloucester. Whilst this would enable mainline trains to serve Gloucester and remove the time penalty from Cheltenham-London trains, the platforms would be distant from the City Centre and would negate one of Gloucester's main advantages in having a centrally-located rail station. Interchange at Cheltenham Spa is straightforward and the London service runs via Gloucester Station. It would be disadvantageous to Gloucester if these trains ran 'direct'.

Capacity increases between Gloucester and Cheltenham are also put forward by extending the existing 4-track section, partly as an alternative to the dynamic loops detailed above.

To complement the above considerations regarding infrastructure options, the Route Study goes on to consider in more detail the options for service frequencies and train

capacity. However, since these elements directly reiterate the above issues, they have not been reproduced in detail. In summary, the following are relevant:

Route	Additional Frequency Proposals to 2043	Comments
Bristol-Gloucester	1 train/hour	Linked to MetroWest Yate service
Cardiff-Bristol Parkway-Birmingham (& beyond)	2 trains/hour	Routing some via Lydney would be an advantage, or co-ordinating the timetable to improve Lydney-Bristol connectivity
London-Cheltenham	1 train/hour	Consider extension to Ashchurch and Worcester or improving connections & additional stopping services
London-Gloucester	1 train/hour	
Swindon-NW England via Birmingham	1 train/hour	

8.8 Welsh Route Study

The Welsh Route Study has only been analysed in relation to:

- The Gloucester-Cardiff/Maesteg services and;
- The potential for additional Cardiff-Bristol Parkway-Gloucester services.

However, it is encouraging from the point of view of Lydney that the Route Study does recognise the poor connections between Lydney (and Chepstow) and Bristol. A requirement to improve commuter connectivity (in terms of frequency, journey time and convenience) is incorporated. This includes the following:

- This output is focused on the role of commuter rail in providing access to employment, education and leisure around these areas. This is important in relation to the Lydney Transport Strategy and supporting the anticipated housing growth in the area.
- The market is currently constrained by uncompetitive generalised journey times compared to car, resulting from the low frequency of service and the need to change trains at Severn Tunnel Junction.
- The 2043 ITSS proposes service frequency enhancements between Severn Tunnel Junction and Gloucester, and on the South Wales Main Line which would provide for improved generalised journey time between these locations. However, as detailed in the section on the Western Route Study, it is not clear which route additional services between Gloucester and Cardiff will use.

Much of the further consideration of this is in terms of detailed routing options. Fundamentally it's about whether to put additional trains through the Severn Tunnel and via Bristol Parkway – or via Lydney (and in both cases on to Birmingham). There are capacity constraints at the junctions surrounding the tunnel which make it far from clear-cut how best to deliver the requirement. Severn Tunnel Junction is likely to drive service trade-offs or require an infrastructure intervention before the anticipated level of service required in 2043 is reached. This is an issue which should be raised, in the context of the wider discussions with the rail industry.