

A4440 Worcester Southern Link Road Improvements Phase 4

1.0 Transport Benefits

1.1 Accessibility

An assessment was undertaken to illustrate the accessibility to the Strategic Road Network (SRN) from Worcestershire. Figure 1 appended to this note illustrates the peak journey times into Worcestershire from the Strategic Highway Network and highlights the constraining nature of the A4440 Worcester SLR between the Ketch and Powick Hams junctions during peak times. The accessibility from the SRN to West of Worcester is notably worse in congested peak conditions, and remains constrained during the inter-peak.

The connectivity assessment shows the location of current employment sites (dark purple triangles), and proposed employment sites (light purple triangles). The connectivity to the SRN from the west is notably poorer in the peak periods, in the Worcester area, due to congestion. This has meant that employment development to the West of Worcester is not attractive. There has been a case where a site allocated for employment use has been developed for residential use due to lack of market interest in employment development to the West of Worcester. Feedback from the business community has shown this is due to connectivity, particularly lack of certainty of travel times to the SRN.

The completion of the dualling of the A4440 SLR also supports the Worcestershire Parkway scheme by improving access from west of Worcester to the location of the new station.

The scheme is the final phase of the four phase programme which upgrades the A4440 SLR to dual carriageway standard. Failure to deliver the SLR4 will adversely impact realisation of benefits of the earlier investment in Phases 1-3. This final phase ensures the route attracts trips currently using the City centre infrastructure to bypass Worcester. It completes a major upgrade to the A4440 SLR, which reinforces the role of the SLR as a strategic East West route, as well as a bypass to the City centre.

1.2 Journey time benefits

In order to understand the impact of the scheme to the vehicles using the A4440 Worcester SLR, journey times from the Worcester Transport Model have also been considered.

The modelled time taken to travel from A44/A4103 Roundabout in the west to Whittington Roundabout (1.2 miles) in the east during the AM peak 2031 Do Minimum forecast year scenario is 12.8 minutes. Under the 2031 Do Something scenario the modelled time taken to travel the same route is 8 minutes, thereby showing a journey time saving of 4.8 minutes (a 38% decrease) compared to the 2031 Do Minimum scenario.

The modelled time taken to travel from Whittington to A44/A4103 Roundabout during the AM peak 2031 Do Minimum forecast year scenario is 17.2 minutes. Under the 2031 Do Something scenario the modelled time taken to travel the same route is 10.5 minutes, thereby showing a journey time saving of 6.7 minutes (a 39% decrease) compared to the 2031 Do Minimum scenario.

Travel times between A44/A4103 and Whittington junction in the PM peak under the Do Something scenario provide similar savings in the PM peak in both directions. Travel times in the eastbound direction drop from 16.3 minutes in the Do Minimum to 10.9 minutes (a 33% decrease) in the Do Something scenario. Similarly, in the westbound direction, they drop from 17.5 minutes in the Do Minimum to 9.7 minutes (a 45% decrease) in the Do Something scenario.

In all cases it is significant that the forecast journey times in 2031 are all lower than the respective base year observed journey times in 2014 thus representing a major improvement in overall journey

time, a reduction in variability and a significant increase in reliability despite the growth in traffic demand of up to 16.3% across the model network.

The modelling work shows the additional highway capacity on the A4440 Worcester SLR in the Do Something scenarios results in additional trips routing via the scheme compared to the Do Minimum scenario.

The A4440 Worcester SLR Improvements Phase 4 scheme, and the additional vehicle trips it attracts, results in a re-distribution of trips compared to the Do Minimum scenario. Therefore, the re-distribution of trips results in a decrease in the number of trips on the radial routes through Worcester city centre and an increase in trips on the SLR.

Due to the significant increase in overall trip growth expected within Worcester and Worcestershire, traffic on the A4440 Worcester SLR with the Phase 4 scheme in place will increase by 60-70%. However, the increase in capacity (nearly double) at the same time is estimated to be more than sufficient to cater to meet the additional traffic.

Dualling the A4440 Worcester SLR between Powick and Ketch and improving the roundabouts at each end will reduce travel times, especially during peak hours, thus commuters will value the savings derived from this road improvement scheme. The benefit is measured as a change in the road user cost due to the time savings for the users pre and post dualling. On a broader scale, the dualling of the A4440 Worcester SLR between Powick and Ketch will impact a wider consumer group through reduced congestion and improved traffic operations. The detailed modelling and analysis work has estimated that the scheme presents "**Very High Value for Money**".

2.0 Economic Development

2.1 Growth Opportunity and related constraint

The Strategic Economic Plan (SEP) for Worcestershire aims to grow the local economy by one third (£2.9bn GVA) creating an extra 25,000 jobs and 21,500 new homes to 2025. The SEP recognises that pinch points to the strategic transport networks are constraining economic growth and that investment in Worcestershire's transport infrastructure and services is essential to provide businesses with improved access to markets and employees and to encourage economic growth.

Worcestershire LEP, in conjunction with Worcestershire County Council, has identified four strategic investment or 'Gamechanger' sites. The work on the Game Changer programme with key sites at Malvern Science and Technology Park, Worcester 6 in the south of the County and Redditch Eastern Gateway and the Kidderminster Enterprise Park to the North is expected to underpin up to 16,000 new jobs over time. The SLR scheme removes barriers to investment in the South of the County, supporting the delivery of related Game Changer sites, and enabling Worcester City to realise its potential and contribute to the sustainable growth of the economy. Emerging plans for the City could see it contributing significant additional jobs over time.

2.2 Wider economic impacts

The Wider Economic Impact assessment work shows that the

- Agglomeration impacts¹) were estimated for 2021 and 2031, profiled across the appraisal period between 2021 and 2081, and then discounted to 2010 prices and values. Overall the agglomeration impacts are estimated to be £49.4m (benefits).
- The value of imperfect competition² impact is estimated at £19.5m (benefits).
- The value of the tax revenues from labour supply effects impact was estimated at £3.4m.

The total wider impacts of the A4440 SLR Phase 4 scheme is forecast to be £72.3m (benefits), which are large.

2.3 Benefits to Worcester City

Worcester is a Cathedral City with real opportunity for additional and exciting growth including significant new employment and potential for additional City centre living. The constraints on the SLR result in trips routing through the City, rather than use the SLR. Worcester's high levels of congestion constrains business growth and regeneration opportunities.

The completion of the dualling of the A4440 SLR will enable the SLR to fulfil its purpose as a strategic by-pass to Worcester City. In turn, this will provide an opportunity to address air quality issues and enhance the environment. The enhanced environment will allow greater priority to be given to pedestrians and cyclists, with the consequential health benefits. The opportunity to reduce the impact of vehicles in the City centre will result in economic and environmental benefits. It will create a more attractive environment for visitors to the City centre which in turn will help encourage growth and maintain the vitality of the City centre.

The delivery of SLR directly releases an additional 15 ha of employment land associated with the road, while the certainty of timely access to the SRN opens up the wider employment land

¹ Agglomeration – By reducing journey times, the relative agglomeration of business in this area will increase. This will have a direct impact on the productivity and GDP of the UK and is a central element to the estimation of Wider Impacts.

² Output change in imperfectly competitive markets – A reduction in the costs of transport allows businesses to operate more efficiently, improves their output and intensity of business practices, and hence allows for benefits

allocations in Malvern and west of Worcester to the National and International Inward Investments markets, potential that is currently frustrated, a principle demonstrated by the number of employment sites outside the 20 minute isochrones in Figure 1. These sites include for example 9ha at Newlands in Malvern, 6ha at West of Worcester and 6ha at University Park Worcester. In addition the scheme also overcomes constraints on existing businesses, for example Joy Mining PLC, Malvern Instruments and Morgan Cars, who as market leaders in respective sector are significant exporters to world markets and who suffer the frustration of absolute and variation in journey times for customers and goods to and from the SRN.

2.4 Network resilience from flooding

Worcester Bridge located within the centre of Worcester on the A44 corridor carries a significant volume of traffic both to and from and through the centre of Worcester. This strategic link is constrained at the point it crosses the River Severn, with its approach/exit roads (Hylton Road, New Road and North Parade) within the flood plain of the River Severn. Hylton Road, New Road and North Parade have been flooded and were impassable during floods in 2003, 2007, 2012 and 2014.

Comprehensive work undertaken by the Worcestershire Partnership on the 2004 flood events in Worcestershire concluded that the economic impact (adverse) on the County was estimated to be **£6.4 million per week**. Completion of the A4440 Worcester SLR programme will give real and perceived benefits to the flood resilience of Worcester City and the County in mitigating the impact of future severe weather events.

In each of these flood events one or all of the roads has had to be closed due to the river levels being high enough to make the roads impassable to traffic. This has the effect of traffic being forced to use one of the two remaining bridges, either the already congested Carrington Bridge located approximately 3 miles to the south of the City resulting in a detour of approximately 6 miles and significant delays, or via the Holt Fleet bridge located 7 miles to the north and a detour of approximately 15 miles.

The closer proximity of the Carrington Bridge and the SLR means that the bulk of the traffic chooses to use the Carrington Bridge, which creates a much higher demand than normal conditions, or alternatively people do not travel into the City centre overall.

Whilst the impact of the flooding tends to be short term and typically only lasts one or two weeks, the long term impact on the Worcester economy is much greater.

3.0 Housing Delivery

The need for housing in Worcestershire, and to the west, results in further pressure on the already constrained infrastructure. The South Worcestershire Development Plan (SWDP), adopted in February 2016, covers the administrative areas of Malvern Hills District Council, Wychavon District Council and Worcester City Council and over the plan period 2006 to 2030 the SWDP makes provision for 28,400 dwellings.

The Hereford Local Plan Core Strategy, adopted in October 2015, covers the plan period 2011 to 2031. Over the period 2011 to 2031 Herefordshire aims to deliver a minimum of 16,500 homes. Hereford is the focus for new housing development to support its role as the main centre in the county. Outside Hereford, new housing development will take place in the market towns of Bromyard, Kington, Ledbury, Leominster and Ross on Wye, on existing or new allocations to enhance their roles as multi-functional centres for their surrounding rural areas. It is notable that Bromyard, Kington and Leominster are on the A44 which directly connects to the A4440 Worcester SLR.

To meet the allocations in these plans, development sites will need to be attractive to secure investment from developers. The poor connectivity is a known issue; this may discourage investment in these areas.

Specifically, the scheme will make development sites, such as Worcester West urban extension and North-East Malvern, more attractive future users. This will ensure the full plan allocations are realised (3,000 dwellings and 15 Hectares of employment land).

Further benefits of the scheme come from two sources. Firstly the unlocking of residential and commercial land around south Worcester. Secondly improving the links between Worcester and Herefordshire.

Aligning with the Worcestershire Strategic Economic Plan (SEP), the completion of the dualling of the A4440 Worcester SLR between M5 and Powick roundabout is to address pinch points on the Worcester SLR which will allow for the early delivery of housing and employment sites, as well as improving links with the wider road network, enhancing user experience by decreasing travel times and increasing reliability.

The number of dwellings required to be built under the SWDP has been confirmed at 28,370, to which this scheme will contribute in unlocking. Specifically A4440 Worcester SLR Improvements Phase 4 will aid to unlock up to half of the SWDP allocation, for example The Worcester West Urban extension - 2,150 dwellings, 5Ha of employment land and a range of supporting services and facilities including a neighbourhood centre (Policy SWDP45/2 Temple Laugherne).

This is in addition to Policy SWDP45/1 Broomhall Community and Norton Barracks Community (Worcester South urban extension) which allocates 2,600 dwellings and 20 Ha employment together with supporting services and facilities will be developed. For the next stage (December 2016) in the business case development, it is possible to estimate the loss in GVA to Worcester if the A4440 Worcester SLR Improvements Phase 4 was not to go ahead and thus the lost opportunity of growth and development. This will be calculated through the lost employment and output from further development and could be included as a monetary benefit for the scheme.

Looking at a wider geography, the SEP outlines a priority to improve the routes linking with Herefordshire in order to create better access and enhance strategic links between the two geographical areas. This aspect is mainly important for businesses trading and/or supplying other businesses or customers within the local geographic area. With enhanced links, trading and deliveries can be made more easily and more reliably. Given the strategic importance of the A4440 Worcester SLR linking Worcester, Worcestershire and Herefordshire with the M5, the benefits would span the West Midlands and beyond.

Appendix

Figure 1: Peak Journey times by car

