

PLANNING FOR TRANSPORT CAPACITY TO DELIVER THE WEST MIDLANDS REGIONAL ECONOMIC STRATEGY

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0 ABSTRACT

The nine Regional Development Agencies (RDAs) across England are each tasked by the Government to develop and deliver a Regional Economic Strategy (RES). The purpose of the RES is to guide sustainable economic growth for the region. In 2007, Advantage West Midlands (AWM), the West Midlands RDA, commissioned Mott MacDonald, in association with GVA Grimley, to investigate and provide a strategic overview of the capacity of the region's transport networks to support an identified 50 key employment development sites. We were required to highlight any major areas of concern arising from future plans.

The project involved reviewing the programme of major employment developments in the West Midlands, including their location, activity, size, and job numbers. The deliverability and phasing of such development sites was also considered. Regional employment growth forecasts, based on the most current revision of the Regional Spatial Strategy (RSS), were then compared with national projections data to ascertain a reliable data of where growth would be distributed throughout the region. All of these details were then fed through PRISM the West Midlands strategic transport model (www.prism-wm.com) for assessment of various transport impacts. A long term time horizon was used (up 2021) in the assessment of impacts, to permit longitudinal analysis.

In this paper we present the key elements of this study covering:

- Spatial assessment of the development sites;
- Phasing and deliverability of the developments;
- Compatibility of the development forecasts of employment growth with national forecasts for the West Midlands region; and
- Forecasted impacts of the employment developments on transport capacity in the West Midlands region, with particular focus on the impacts on the most congested parts of the West Midlands road network.

In discussing the results of the study we also try to identify some general lessons about the inter-relation of transport, employment development, housing and demographic trends on economically and socially disadvantaged areas within the region. Possible short and long term alleviation measures are also discussed.

1 Introduction

Advantage West Midlands (AWM) is the Regional Development Agency (RDA) for the West Midlands. As an RDA, the headline focus of AWM is to close the gap between the economic performance of the west Midlands and that of the UK as a whole. In this endeavour it does not work unilaterally, but co-ordinates its efforts with those of the wide range of public, private and voluntary partners in the West Midlands. This ensures an inclusive and integrated approach to maximise the region's strengths and address its unique challenges.

The West Midlands has undergone significant economic changes over the last three decades. With the services sector replacing manufacturing as the principal source of employment, it has become the UK's largest business and professional services sector outside of London. Despite these recent improvements, however, the region still underperforms relative to its national and international competitors. Economic productivity remains below regional aspirations, with GVA per head around 11% less than the UK average, albeit comparable with other regions outside London and the South-East.

In the revised West Midlands Economic Strategy (WMES) a £10 billion output gap is recorded, much of which (80%) is due to the predominance of low productivity sectors and limited rates of innovation. The region also has a weak record on skills, performing poorly in terms of workforce qualifications, graduate retention and works based training; it ranks in the bottom quartile of regions on most skills indicators.

Similarly to all regions, the West Midlands' economic development growth is also subject to global influences and pressures, such as climate change, continued globalisation, demographic change and accelerating technological advances. These wider factors are highly pertinent to the region's strategy for growth; they are key considerations.

The WMES is designed to address the variety of challenges that the region faces.

Fulfilling its responsibility for supporting the economic growth of the West Midlands AWM, commissioned Mott MacDonald, in association with GVA Grimley, to investigate and provide a strategic overview of the capacity of the region's transport networks to support selected key employment development sites¹ and highlight any major areas of concern arising from future plans. It was intended that the study would be used to inform the review of the WMES, the WMES Delivery Plan and Corporate Plan, the partial review of the RSS, together with the transport prioritisation and funding process.

¹ Those expected to generate more than 1000 jobs.

1.1 Summary of the Objectives

The main objectives of the study were as follows:

- To assess whether the region's transport networks and current/proposed transport investment programmes provide sufficient capacity to support the delivery of the identified programme of current and proposed investment projects.
- To consider the timing and phasing of the identified programme of proposed developments alongside current capacity on both local and strategic transport networks. This was required to include proposed timings and phasing of the following:
 - Regional Funding Allocation (RFA) priorities
 - Highways Agency (HA) national investment programme
 - Congestion Transport Innovation Fund (TIF) investment programmes included in the West Midlands Integrated Transport Strategy
 - Shrewsbury TIF bid
 - Productivity TIF funding
 - Network Rail 2007 Business Plan
- To identify any other transport related issues relevant to ensuring the timely delivery of the proposed development sites included in the identified programme, e.g. the use of planning powers, the contribution of green transport plans etc.

2 Employment data assumptions

For the purposes of this assessment the decision was taken to use the regional AWM dataset for employment forecasts rather than national projections. Relevant constraints, however, were applied to ensure some consistency with national forecasts. Essentially this involved retention of the Government's overall figure for employment growth in the West Midlands, but altering the distribution of new jobs within the region so as to accord with AWM's investment plans.

This approach enabled an assessment based on the identified development programme, but also demonstrated adherence to recent instruction from the Department for Transport (DfT), which states that regional land-use forecasts should be controlled to levels considered realistic by central government.

3 Methodology

The study was divided into distinct work streams, which are summarised below:

- Literature and data review
- Spatial assessment of the key development sites
- Assessment of development sites' impact on transport and network capacity

Further detail on these work streams is provided in the sections below:

3.1 Literature and data review

The initial task was to undertake a review of available literature and data sources in order to obtain a clear picture of planned transport and economic infrastructure developments, including housing number projections, employment quotas and funding allocations. These factors have fundamental impacts on transport demand and network capacity and, therefore, were essential to consider.

Details of AWM's land portfolio, proposed development sites and Zone and Technology Corridor Plans were provided by AWM for analysis. In addition, a review was conducted of the key findings of previous relevant studies commissioned by AWM, the West Midlands Regional Assembly or the Highways Agency.

The key figures from these various data sources were synthesised for input into a projection model (PRISM - see below) so that their impact on transport demand and the future transport implications could be measured.

3.2 Assessment of key employment sites

The second work stream included a review of AWM's land portfolio and programme of proposed developments, including their location, activity, size, job numbers and development timescale. The task involved:

- Assessing available employment information to establish the largest employment sites out of the identified development projects within the West Midlands region;
- Identifying the spatial location of all key employment sites expected to generate in excess of 1000 jobs ;
- Assessing the composition of the key employment sites; and

- Assessing the timescales in which these key sites will become operational and will be occupied.

Data sources used to populate the list of sites included:

- Development Plans - Local Plans and Urban Development Plans (UDP);
- Development specific websites; and
- EGI – Planning Database.

3.3 Assessment of transport and capacity impacts

Finally, in order to provide the actual transport and capacity impact assessment of the AWM portfolio, employment data and results from the literature review and employment site assessment were fed into the Policy Responsive Integrated Strategy Model (PRISM). This is a strategic transport modelling tool, developed by Mott MacDonald and RAND Europe, on behalf of the West Midlands Authorities and the Highways Agency. The model covers the whole of the West Midlands region with a particular focus on the metropolitan area and a 25 km buffer area surrounding it.

3.3.1 What is PRISM and what does it do?

PRISM should be viewed as a model system, rather than simply a transport model. The system consists of a number of components that interact with each other. These components are:

- **Network Model:** Detail representation of the highway and public transport networks in the West Midlands study area;
- **Demand or Response Model:** Detailed representation of the travel behavioural responses of individuals in the West Midlands as a result of various transport interventions and transport policies. Individual responses are dependent not only on the external stimuli (policy interventions), but also on their own socio-economic characteristics which are derived from the land use inputs provided in the model;
- **Control Shell:** Programming set-up which executes and controls the model “runs” by calling different elements of the model when a particular intervention or policy is to be tested; and
- **Output and Analysis Modules:** Spreadsheet and GIS based analysis tools that have been developed to assess the outputs of the model runs in line with Government guidance.

As a transport model PRISM requires certain inputs to be fed into it to generate impact assessments for development sites. The primary inputs are:

- Location
- Demand inputs (the size and type of travel demand generators e.g. housing, employment, land use projections)
- Supply inputs (the extent of existing networks and capacity of transport infrastructure)

By matching the demand for travel to the available network supply, PRISM is able to produce geographically detailed outputs on topics such as traffic and trip flows, congestion levels and link road saturation. Clearly, a change in any of the inputs leads to different travel patterns and hence different locations and severity of hot spots².

The model output is a series of trip matrices that contain the demand for travel between discrete spatial segments, known as **PRISM zones**, for the different modes and different time periods modelled. The entire West Midlands region is segmented into finer spatial segments which are referred to as 'zones'. Due to the detailed nature of PRISM zoning system (about 860 zones covering the West Midlands region) the development in each PRISM zone can be linked to its impact on the transport network.

4 Emerging findings

Below we outline the key findings from the study. It concludes by advising on the extent to which future transport plans and programmes will provide the necessary capacity to support the economic development programme and delivery of the RES.

4.1 Assessment of employment growth and employment sites

- There are 50 key development sites in the West Midlands that are each expected to generate in excess of 1000 jobs by 2021. The majority of these – 29 out of the 50 – will be situated in the West Midlands Metropolitan area.
- AWM data forecasts show that total employment in the zones in which the key development sites are located, will stand at 696,884 by 2021. This represents a 60% increase on 2001 figures.
- The projected number of *additional* jobs that will be created, by 2021, as result of the 50 key development sites is nearly 265,000. Particular growth in employment can be seen in several districts. Warwickshire is projected to have the highest number of additional jobs (79,600), followed by Coventry (57,100) and then Birmingham (52,400).

² It is worth noting that there are often second order impacts associated with a change in demand, which influence wider travel patterns, hence the need for a sophisticated model.

- In some areas there may be a risk that the anticipated redistribution of jobs around new employment sites, will impact negatively on employment growth, and related economic development, elsewhere.
- The planned phasing of developments indicates that in each of the years 2010, 2011, 2012 and 2021, over 30,000 new jobs will become available. Particularly high numbers of newly created employment opportunities are expected in 2010 and 2021 (over 60,000 in both years.) 2021 job creation are particularly high due to the assumption that all development sites will be completed and occupied. However, it is unlikely that this will be the case, especially in parts of Coventry, the Black Country and Warwickshire.

RECOMMENDATION

AWM would be well advised to develop a staged implementation plan, based on the likely completion of employment sites and existing planned infrastructure in order to minimise transport capacity impacts and avoid incurring costs for up-front infrastructure long before sites become viable.

4.2 Assessment of the impact of employment sites on transport demand and capacity

- The number of daily trips made across the West Midlands is expected to rise by approximately 20% by 2021 to 8,754,440. These 20% increases will be evident for both car and public transport. This increase is not all attributable to the identified employment sites. However, it does represent demand on the transport system which must be addressed in some way if economic growth is to be sustained.
- Each of the metropolitan boroughs within the West Midlands metropolitan area will be the destination of over 15% more car trips and over 10% more public transport trips by 2021. Trips to Coventry and Solihull, by both car and public transport, are expected to see particularly high levels of growth – well above the metropolitan area averages.
- By 2021, when it is forecast that all key development sites will be completed, congestion hotspots, in which network capacity will be stretched, were identified on a number of sections of the regional Motorway Network and other strategic roads.

4.3 Do the region's transport networks and current/proposed transport investment programmes provide sufficient capacity to

support the delivery of the Agency's programme of current and proposed investment projects?

At the strategic/regional level this study did not expose any serious issues with the future capacity of the West Midlands transport network to accommodate the planned programme of economic development. However, some pressure points on a number of motorway sections were identified and will need to be considered when phasing developments.

At a more local level, the study revealed several congestion hotspots, where the network capacity will be put under strain. Unsurprisingly, these pinch points were largely concentrated around Coventry, Birmingham, Wolverhampton and Warwick where most substantial development is planned. The link roads to these city centres are expected to witness most stress. Development sites in areas where congestion is anticipated are, therefore, at risk of being impacted by future lack of network capacity. Other off-centre sites located in close proximity to congested motorway and trunk road corridors would also be affected by the congestion on the highway network.

Some of the above problems may be partially alleviated by schemes that have been proposed, but to which funding has not been committed and therefore were not included in the modelling for this study. This aside, the study concluded that addressing public transport issues, for sites around the city centres could help to alleviate some of the future adverse impacts. Most of the City Centres already benefit from high frequency public transport services. However, to further decrease saturation of the road network, investment in improving the quality of bus services, through expansion of the showcase bus route network would help to provide sustainable access to such development sites.

RECOMMENDATION

AWM needs to maintain involvement in regional transport planning initiatives, and to urge a pan-regional approach to lobbying for funding for transport improvements.

4.4 Can phasing of the Agency's programme of proposed developments reduce stress on both local and strategic transport networks?

There is already stress on the transport network surrounding the main city centres, with Birmingham city centre and the M6 corridor near Walsall suffering the worst congestion in the West Midlands. As such, the study advised prioritising the development of economic sites, which are situated in areas where capacity is not already saturated and where the existing network could absorb extra traffic. In addition, the staggering of development will permit opportunities to work towards addressing localised congestion issues.

In addition, the study noted that sites located in urban centres, already benefit from high quality public transport connections and can help to reduce car dependency; those in out of town locations, on the other hand, often depend on highway access. Clearly, the former will be more readily developable in transport terms. Prioritisation of these sites will help AWM to unlock value from the portfolio through quick wins, which may in turn release capital to support the development of more challenging sites.

Further it was noted that DfT scheme appraisals now take into account wider economic issues such as the unlocking of employment land, access to employment and, for major schemes, issues such as agglomeration. Therefore, confirmation that a particular proposal will support a new employment opportunities, combined with financial support such as Section 106 funding, will help to advance scheme programme entry.³

The Highways Agency and other Highway Authorities will also be keen to see upfront funding of infrastructure through contributions from developers. In order to maximise the scope for economic development it was recommended that AWM would be well advised to prepare alternative Transport Assessments for sites to agree planning consent for defined levels of car parking early on with minimal developer contributions, and planning consent for full development to be achieved subsequently, after initial land sales offset the requirement for developer contributions. Such an approach might result in modest increases in cost at the planning stage, but should help to delay expenditure until income is achieved, and also enable partial development at an earlier opening date.

³ The lead-in time from this may still be two years or more.

RECOMMENDATION

Phasing the proposed development programme may help to reduce some stress on network capacity and could help AWM minimise the level of upfront investment. Those sites that are already served by effective public transport links should, where possible, be prioritised and scheduling of other sites should, again where possible, be consistent with the programme of planned transport interventions.

4.5 Future prospects to manage transport demand in order to enhance the potential for economic development

The study did identify some future options which may help to minimise the traffic impact of individual sites. They provide examples of ways in which to secure transport infrastructure for the region and support the ambitious economic development programme and WMES delivery over the next decade and beyond as AWM develops its forward strategy. They were, however, presented as suggestions only and not regarded as either comprehensive or obligatory.

- **The Motorway Box Advanced Traffic Management (ATM)** proposals, which form part of Productivity TIF investment, will help to provide some additional capacity on the network, helping to alleviate some the congestion on the M6 and M5. However, it should be noted that not all sections of the motorway network on which significant increases in traffic are predicted, stand to benefit from an ATM scheme. This would indicate that a further expansion of the ATM scheme across the motorway box and beyond would be beneficial.
- **Demand management** – measures such as Road User Charging (RUC) may help to cut motorway traffic, due to their ability to alleviate some congestion release some non-essential road use and could generate money for future transport innovations. As such, the principle RUC would seem to be supportive of AWM's aims to sustain economic development in the region although to date no scheme has been developed to address these issues.
- **Informal transport schemes** – encouraging employers to support local transport schemes, for example minibuses, cycle and scooter loans etc. is another way in which to reduce demands on the transport network. The WorkWise scheme in Birmingham and Solihull, which was backed by AWM, brought together a range of related measures; such a model could be re-worked or developed at the future employment sites in the region. Equally, joining with employers to provide more information about travel alternatives to employees, developing travel plans and permitting flexible working

could help to ease network pressures. These types of strategies, which involve the adoption of alternative and innovative transport solutions are concurrent with the aims of the RES.

- **Site access proposals and planning agreements** – it is likely that local congestion related to specific employment sites will be partially addressed as part of the site access proposals supporting the development. AWM should encourage developers to, where possible, take a pro-active stance on travel planning. Through the use of such means, and the involvement of the Highways Agency and Highway Authorities in early site planning, less onerous Section 106/278 agreements could be secured.
- **Locational Policy:** In the Netherlands the so-called “ABC” policy seeks to allocate businesses to appropriate sites. This is summarised below:
 - A. Locations that are easily accessible to local, regional and national public transport (i.e. areas around public transport junction). Commuting by car should be under 10-20%.
 - B. Locations that are easily accessible both by local and regional public transport and car (i.e. areas where high standard public transport routes cross ring roads). Commuting by car should be under 35%.
 - C. Locations that are easily accessible by car (i.e. areas along the highways).

Following this principle, retail outlets should be in A sites, offices on A or B sites and hauliers or distribution sites on C sites. Each type of site is associated with a different level of car parking. The policy is not necessarily perfect and apocryphal evidence suggests that a desire for local competitiveness sometimes undermines parking standards, but the underlying concept is sound and could potentially help AWM to try to ensure a rational allocation of sites. The use of accessibility mapping and similar tools can help to assess labour market access and accessibility both as a tool to encourage sustainability and to ensure business success.