SEMMMS Employment and GVA modelling

Results of the 2012 update

09 November 2012

1 Introduction

1.1 Transport is one of a number of factors that affects business location decisions and the competitiveness of places. The transport network makes possible journeys to different kinds of economic opportunities and determines the ease or difficulty of accessing these opportunities.

1.2 The SEMMMS A6 to Manchester Airport Relief Road scheme will generate substantial wider economic impacts. Alternative approaches to the derivation of the scheme's wider economic impacts have been used in an effort to capture the benefits of transport connectivity that are not traditionally considered in DfT's WebTAG. This includes analysis that incorporates the benefits of improving access to international connectivity at Manchester Airport.

1.3 The core method investigates how changes in the connectivity to businesses and labour offered by different locations as transport supply changes could potentially affect Gross Value Added (GVA). GVA is essentially equal to employment multiplied by labour productivity. The approach is therefore based on estimating the impact of connectivity enhancements on:

- the change in the distribution and levels of employment within Greater Manchester and Cheshire East based on changes in access to different markets; and
- the change in productivity levels based on changes in travel costs.

1.4 The modelled employment and GVA impacts reported in this note reflect the transport modelling of the SEMMMS scheme that was undertaken in May 2012. Therefore these impacts do not incorporate the minor alterations that were made to the Do Minimum scenario later in 2012 to reflect the already committed access road to the east of the Airport, which forms part of the local contribution towards the costs of the scheme as a whole. These works are being advanced in order to safeguard high quality road access into the Airport City Enterprise Zone, which will be being built out as the remainder of the scheme is being delivered,

and to reduce total costs through synergies with the current Metrolink Airport Extension Project.

1.5 Additional transport modelling was undertaken to test the potential importance of this change. This did not show any significant impact on the scheme's generalised journey time savings, which are a key driver of the connectivity impacts of the scheme. Nor does the change affect the Do Minimum distribution of employment and population, which are the other key drivers of the overall employment and productivity impacts of the scheme. It is therefore not anticipated that the minor change to the Do Minimum scenario would have a material impact on the employment and GVA forecasts presented below.

1.6 The next section provides a brief overview of the economic modelling undertaken prior to the May 2012 update. Section 3 sets out the approach and results for the May 2012 update to this work.

2 Previous economic modelling of the SEMMMS scheme

August 2010 analysis

2.1 The results of the employment and GVA modelling reported in August 2010 reflected the SEMMMS transport modelling developed for the Greater Manchester Transport Fund (GMTF), with the model extended to include the zones in Cheshire. The results of that analysis are presented in the table below[1].

Table 1: SEMMMS GVA and employment modelling – August 2010

Mature Impacts (i.e. 10-plus years from scheme opening)	**Original analysis (covering GM only); GMTF work 2009**	**Revised analysis (covering GM & Cheshire); August 2010 work**
Employment	1,660	1,900
GVA (£m, 2006 prices)	90	99

January 2011 analysis

2.2 Further economic modelling was undertaken in January 2011. The analysis was undertaken in light of the bespoke transport modelling undertaken by MVA for the SEMMMS scheme, which reflected a revised scheme specification and the two traffic forecasting years of 2015 and 2030. It should be noted that in this

[1] Other than this change, the modelling framework is the same as that used by Greater Manchester to prioritise its Transport Fund programme and to justify the substantial proposed local contribution towards the cost of the SEMMMS scheme.

analysis, both the transport modelling framework adopted by MVA and the scheme definition changed substantially from the original GMTF work.

2.3 The results of the January 2011 economic modelling are presented in Table 2 below. The forecast impact on employment and GVA was lower in this updated assessment due to the revised scheme specification, which delivered significantly less time savings than those modelled in the original GMTF analysis.

Table 2: SEMMMS GVA and employment modelling – January 2011

Mature Impacts (i.e. 10-plus years from scheme opening)	**2015 Forecast Year (covering GM & Cheshire)**	**2030 Forecast Year (covering GM & Cheshire)**
Employment	1,050	1,490
GVA (£m, 2006 prices)	43	59

3 Results of the May 2012 update

3.1 The economic modelling has undergone a further update to reflect the transport model validation exercise undertaken by the SEMMMS project team, as well as the revision of the two traffic forecasting years to 2017 and 2032.

3.2 The revised transport modelling has looked at three forecast scenarios; Core, Optimistic and Pessimistic. The employment and GVA results discussed here relate only to the Core Scenario.

3.3 As part of the process for updating of the economic modelling, the data, assumptions and parameters that underpin the model were reviewed. As a result there have been two methodological changes to the assessment of the central case, which are discussed below.

Reflecting Airport City in the model's underlying socio-economic data

3.4 The model's underlying workplace employment data was updated to more accurately reflect the baseline economic activity planned within the Airport City Enterprise Zone.

3.5 This approach was taken in an effort to maintain consistency with the socio-economic data used in the revised transport modelling of the SEMMMS scheme.

Economic growth, congestion and feedback effects

3.6 One of the consequences of changes in economic activity is likely to be changes in levels of congestion and crowding across the transport network. This

would feed back into different travel conditions and have a second round effect which dampens the benefits of the initial connectivity change considered.

3.7 Previous work in Greater Manchester has investigated the potential scale of these negative feedback effects. That work found that every 1,000 additional jobs in Greater Manchester generated congestion externalities in the city region that effectively crowded out up to 200 jobs (i.e. dampening modelled employment impacts by around 20%).

3.8 For a highway scheme, it can be particularly important for there to also be a well established public transport network that can absorb a sufficient amount of any additional economic activity generated. However in the case of SEMMMS, a significant proportion of economic activity is generated in areas of Cheshire that do not have the equivalent levels of public transport connectivity observed in Greater Manchester.

3.9 To reflect this, the 'negative feedback effect' assumption for growth in Cheshire has been revised from 20% to 30% and applied to the model forecasts. This effectively assumes the dampening effect of congestion externalities in Cheshire is 50% greater than in Greater Manchester. A sensitivity test has also been undertaken which revises the feedback effect in Cheshire from 30% to 40%; hence assuming the dampening effect of congestion externalities is twice that in Greater Manchester.

Forecast employment and GVA impacts

3.10 The table below sets out the results of the updated economic modelling. These forecasts represent the maximum long term economic potential of the SEMMMS scheme.

3.11 The forecast impact on employment and GVA has increased significantly in this updated assessment. Overall, the scheme could potentially increase employment in Greater Manchester and Cheshire by up to 3,800 (for the 2032 traffic forecasting year), which translates into £146.5million of GVA per annum (2006 prices). This forecast is more than double the level of additional employment forecast in the 2011 economic modelling of the scheme (for the 2030 traffic forecasting year).

Table 3: SEMMMS GVA & employment modelling (May 2012 update): Central case

Mature Impacts (i.e. 10-plus years from scheme opening)	**2017 Forecast Year (covering GM & Cheshire)**	**2032 Forecast Year (covering GM & Cheshire)**
Employment	1,900	3,800
GVA (£m, 2006 prices)	62	147

3.12 The table below sets out the forecast impact on employment and GVA in the sensitivity scenario, which tests the impact of revising the 'negative feedback effect' applied to growth in Cheshire from 30% to 40%.

Table 4: SEMMMS GVA & employment modelling (May 2012 update): Sensitivity

Mature Impacts (i.e. 10-plus years from scheme opening)	**2017 Forecast Year (covering GM & Cheshire)**	**2032 Forecast Year (covering GM & Cheshire)**
Employment	1,800	3,600
GVA (£m, 2006 prices)	61	143

Increased international connectivity via Manchester Airport

3.13 The modelling and results outlined above do not treat the Manchester Airport zone in the model as a 'special case' – the airport is treated only as a business location rather than as a gateway to economic activity in the rest of the world. However the role of the airport in providing international connectivity is particularly relevant to business-to-business markets.

3.14 Given that the SEMMMS A6 to Manchester Airport Relief Road scheme substantially improves connectivity to the airport, further analysis has been undertaken to reflect the role of the airport as a gateway to international connectivity.

3.15 The last iteration of the SEMMMS economic modelling (in January 2011) included a separate assessment of the additional employment and GVA that could potentially result from businesses in Greater Manchester and Cheshire East being better connected to international markets. The methodology was based on the identification of four additional 'world zones' - Europe, Middle East, North America and Asia - along with generalised costs of travel to each of these zones and an international travel decay curve based upon ONS 2009 Travel Trends. This was then factored into the employment and GVA model.

3.16 The findings of that analysis suggest that improving access to international connectivity via the SEMMMS A6 to Manchester Airport Relief Road could potentially increase the forecast employment and GVA impacts of the scheme by 5% - 15%.

3.17 From the results of the May 2012 update, this implies that the SEMMMS scheme could potentially generate up to a further 600 additional jobs across the Greater Manchester and Cheshire areas for the 2032 traffic forecasting year, translating into a potential GVA benefit of £23million per annum (2006 prices).