BREAKING NEW GROUND: THE CASE FOR INVESTMENT FOR THE A9 DUALLING PROGRAMME - SCOTLAND'S LONGEST RURAL TRUNK ROAD

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1 INTRODUCTION

This paper reports on planning for the A9 Dualling Programme by Transport Scotland. The paper focuses on the transport planning and appraisal elements of the Programme with particular reference to planning and assessment relevant to rural trunk roads. This paper is intended to provide an overview of the significant amount of work that has been undertaken. Transport Scotland/AECOM would like to note the contribution of consultants TRL for its work on Driver Frustration, Jacobs and Professor John Lennon for the Tourism Baseline study and Connected Economics/Optimal Economics for the Assessment on Wider Economic Benefits. This paper provides an overview of the various elements of work which have contributed to planning for this key rural trunk road.

2 BACKGROUND

The A9 is the major trunk road between the Central Belt and the Highlands and, at 273 miles from Dunblane to Thurso, is the longest trunk road in Scotland. The Scottish Government intends to dual the section of this road between Perth and Inverness. The Programme to dual the remaining 80 miles of single carriageway between Perth and Inverness will be one of the biggest investments in transport infrastructure in Scotland's history. Figure 1 presents the A9 Dualling Programme graphically.

Figure 1 – The A9 Dualling Programme

The scale and complexity of the dualling mean that it will be 2025 before the work can be completed. Historically the route has been perceived as unsafe with a higher than average accident severity problem. To improve the safety of the route, and everyone using it in the intervening period, the Scottish Government set up the A9 Safety Group in 2012. The Group was tasked specifically with improving driver behaviour and so improving safety 'before and during' the Dualling Programme. To achieve this, the Group has developed and is delivering an interim safety plan, details of which are available on the Group's website www.A9road.info.

The plan includes the provision of new lining, signing and surfacing schemes, targeted vegetation clearance, education campaigns and the introduction of average speed cameras alongside a 50mph HGV pilot on selected sections of single and dual carriageway between Dunblane and Inverness. It will continue to be developed as part of Transport Scotland's wider safety programmes and will focus on the themes of education, engineering and enforcement, which collectively have been shown to be effective in improving safety across the wider trunk road network.

The A9 between Perth and Inverness is 177km long of which 48 km (approximately 25%) is of dual carriageway standard. The road provides an important connection between Inverness and the Central Belt. The road carries over 40,000[1] vehicles per day (over 65,000 people) along the Perth to Inverness section. The A9 is important to the economy of Scotland with a higher than average rate of business trips, a large number of tourists during summer months and a higher than average number of freight trips.

The A9 connects Inverness and the Highlands to Perth and onwards to the Central Belt. It serves settlements within the corridor providing access to local services, employment and tourism. The A9 is also a commuter route for people who work in Perth and Inverness. Traffic levels vary along the corridor from between around 6,000 Annual Average Daily Traffic (AADT) on the more rural sections to 24,000 AADT on approaches to Perth and Inverness (Figure 2). Traffic volumes on the A9 also vary significantly according to the season, with approximately 50% more traffic in summer months due to high volumes of tourist traffic. Depending on the time of year and location, heavy goods vehicles (HGVs) can account for between 10% and 40% of total daily traffic with many HGVs undertaking long journeys along the corridor.

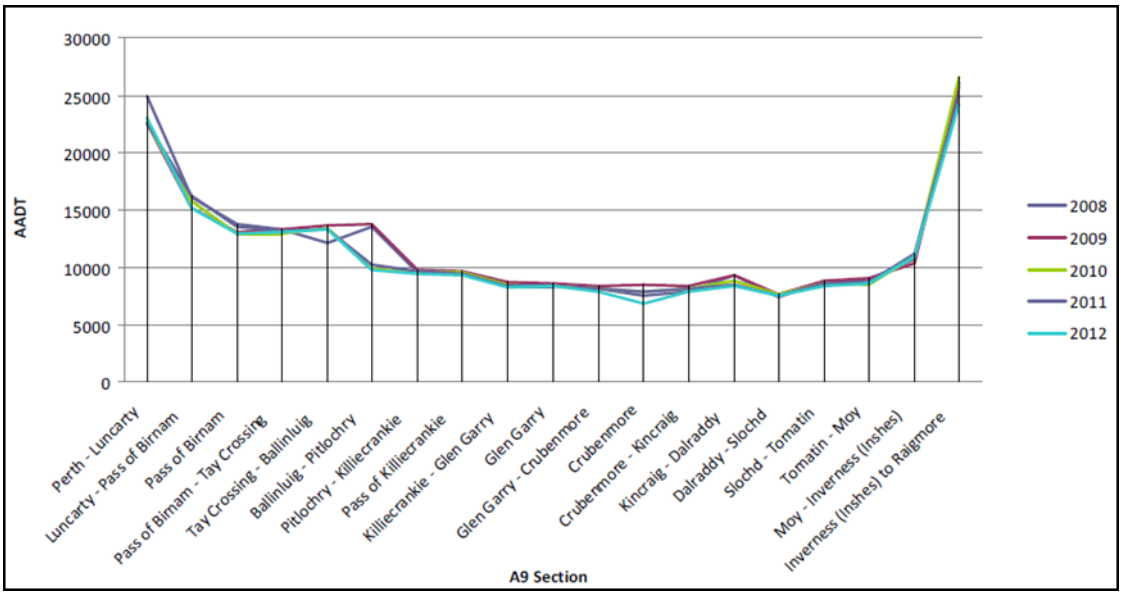

Figure 2 – Annual Average Daily Traffic along the A9 (Perth to Inverness) between 2008 and 2012

[1] Based on September 2012 Roadside Interview Data and Annual Average Daily Traffic data

The project is forecast to reduce journey times between Perth and Inverness by up to 30 minutes in 2027 for the full route between Perth and Inverness.

The route is predominantly a rural trunk road which traverses mountainous upland terrain in sections, with approximately 50% passing through the Cairngorms National Park. The road passes through areas of outstanding natural beauty and environmental importance including Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites (internationally important wetland sites) and National Scenic Areas.

The A9 Dualling Programme will deliver a high quality dual carriageway road with no gaps in the central reserve to prevent right turns across carriageways. There will be grade separation and junctions will be provided with all A and B class roads unless junction locations can be combined. The number of junctions with C class roads, unclassified roads and accesses will decrease and, unless there are specific considerations which demonstrate the need for direct access, an alternative connection will be provided. Crossings for pedestrians, cyclists and equestrians will be via overpasses or underpasses. In general the road will be dualled adjacent to the alignment of the existing road. However, consideration will be given to off-line options where appropriate. Construction work has commenced at the first section to be dualled between Kincraig and Dalraddy (due to open in Summer 2017) and the remainder of the Programme is scheduled to be completed by 2025.

3 THE POLICY CONTEXT

The intention to dual the section of the A9 between Perth and Inverness was first announced in 2008 as part of the Scottish Government's blueprint for transport investment priorities over two decades, the Strategic Transport Projects Review (STPR). The STPR was a comprehensive, multi-modal assessment of the transport network across Scotland, taking into account current and future problems and opportunities.

Figure 3 – The A9 Dualling Programme within the policy framework

The A9 Dualling Programme is currently included as an identified measure within the Scottish Government's Infrastructure Investment Plan (IIP). The IIP highlights transport infrastructure improvements as enablers to enhance productivity and deliver sustainable economic growth. The IIP and subsequent updates set out the Scottish Government's commitment to dualling the A9 between Perth and Inverness by 2025, with a phased programme of schemes delivered from 2015/16 onwards[2]. The IIP also reiterates the Scottish Government's commitment to rail infrastructure investment on the Highland Mainline within a similar timeframe. To complement the Agenda for Cities, the IIP contains a commitment to complete the dual carriageway network between all Scotland's cities by 2030.

Scotland's Economic Strategy (2015) sets out an overarching framework for a more competitive and fairer Scotland. It identifies four broad priority areas. One of the priority areas is infrastructure. Scotland's Economic Strategy recognises that investment in infrastructure stimulates economic activity and deepens access to the labour market. The A9 Dualling Programme is included within the Strategy as a measure which will improve connectivity and help Scottish towns and regions to drive growth and compete internationally. With the Strategic Case completed and a strong commitment from Scottish Ministers to progress the A9 Dualling Programme Transport Scotland required to develop an approach to plan for this major programme of work in an environmentally sensitive area.

4 STRATEGIC BUSINESS CASE

The STPR was an objective-led appraisal looking across modes and assessing options at the corridor level. The STPR formed the Strategic Business Case for the Programme. From the STPR the A9 Dualling Programme emerged together with the Upgrade to the Highland Mainline also between Perth and Inverness. Work has been ongoing to progress both the A9 Dualling Programme and the Upgrade to the Highland Mainline. Progressing both projects has the aim of providing a step-change in connectivity between the north of Scotland and the Central Belt. This paper discusses the roads Programme. The Upgrade to the railway has been included in on-going analysis.

5 THE CASE FOR INVESTMENT

Having established the Strategic Business Case for the Programme, it was thereafter necessary to develop the Investment Case and Socio-Economic Case elements of the Outline Business Case, hereafter referred to as the Case for Investment. To undertake this work Transport Scotland appointed consultants AECOM. The work was undertaken in line with Transport Scotland's procedures for developing business cases. The Investment Case element of the work involved revisiting the Strategic Business Case to check whether the problems identified still exist and looking again at whether the emerging option met the policy objectives.

The next stage was to consider how the transport planning should be undertaken for the Outline Business Case. It was clear that the A9 Dualling Programme was a unique project and the rural nature of the scheme presented some challenges in developing the business case.
The Case for Investment required to consider that there has historically been a higher than average fatality rate on the route with a lot of risky overtaking manoeuvres. Early data suggests that since the introduction of average speed cameras and other safety improvements on the route there has been a reduction in the number of fatalities, although data has not been collected for a long enough duration to draw any firm conclusions.

The traffic is highly seasonal in nature with a lot of tourist trips in the summer. There are a lot of slower moving vehicles on the route which leads to platooning and driver frustration. Due to the remote nature of the route when incidents occur there are a lack of detour routes which can lead to long delays. Because many drivers are undertaking long trips there are also issues around driver fatigue.

[2] Source: Infrastructure Investment Plan 2011 - Updated Programme Pipeline, January 2015

Traffic flow is greater to the north and the south of the route and drops in the centre. Traffic levels along the corridor vary between around 6,000 Annual Average Daily Traffic (AADT) on the more rural sections to 24,000 AADT on approach to Perth and Inverness. The flows are therefore relatively low in some locations.

Overall it is clear that under a standard Transport Economic Efficiency (TEE) assessment the economic benefits would not have reflected the wider issues which demonstrate a need to upgrade the route. Transport Scotland therefore took the approach in line with Scottish Transport Appraisal Guidance (STAG) that the business case should be based on the five STAG (Scottish Transport Appraisal Guidance) criteria (Environment, Safety, Economy, Accessibility and Social Inclusion and Integration), of which economy is just one element. This is to recognise that it is not possible to monetise all benefits. Whilst following the STAG approach Transport Scotland also pursued innovative approaches to monetise non-standard benefits. This was specified in the brief distributed to consultants. Transport Scotland subsequently commissioned work to monetise the benefits of relieving driver frustration.

6 WIDER BENEFITS TO THE ECONOMY

Wider Economic Benefits (WEBs) are monetised economic impacts of transport changes that occur in the wider economy rather than to transport users. These are additional to the other monetised impacts (such as time savings) and non-users (such as safety and decongestion impacts) which are included in the economic case. WEBs arise because of imperfect markets in the business sectors that use the transport system.

Early work to investigate possible sources of WEBs was undertaken by Optimal Economics through Jacobs Consultancy. This study investigated the possible economic benefits on key growth sectors identified by the Scottish Government as a result of the Dualling Programme. The sectors included in the study were food and drink manufacturing, tourism, energy including renewables, life sciences and forestry. The study covered the socio-economic context, population density and land effects from the Transport Economic Model of Scotland (TELMoS), employment and average earnings.

The early findings by Optimal Economics were progressed further by AECOM and Connected Economics. A study on the impact of the A9 Dualling Programme on the Growth Sectors and calculating the Wider Economic Benefits (WEBs) of the Programme. The Wider Economics study used the TELMoS model and found that the greatest source of wider benefits was agglomeration (c. £150m). Agglomeration considers improving patterns of accessibility; transport investment can effectively bring businesses closer together and support specialisation of labour within supply chains and the diffusion of best practice. In total there is an estimated £210m of Wider Economic Benefits from the Dualling Programme. At the time of writing, STAG guidance treats WEBs as a sensitivity test and therefore the benefits associated with STAG are not included in the Core economic case.

Planning for the Programme also looked more widely at the effects of the scheme on the local and wider economy in terms of the impact from the construction of the Programme and also the impact on tourism. Both these studies are emerging pieces of work and still progressing.

7 MONETISATION OF DRIVER FRUSTRATION

As part of the development of the Case for Investment, primary research was undertaken to enable driver frustration to be monetised. Transport Scotland appointed TRL to undertake some experimental research on factors associated with driver frustration and overtaking intentions[3]. AECOM undertook associated stated preference studies which aligned with the primary research undertaken by TRL.

[3] *Factors associated with driver frustration and overtaking intentions, TRL, January 2014*

Various papers have been published by TRL and AECOM which explain the methodology and outputs in greater detail.

The approach which was developed by AECOM and TRL in conjunction with Transport Scotland was to attempt to quantify the value that drivers place on frustration in order to provide relative values of time with reference to the A9 Dualling Programme and potentially other routes. The value that drivers place on travel time is influenced by travel conditions and the value that drivers placed on time spent travelling was taken as a proxy for the levels of driver frustration. An S-Paramics microsimulation model was used to calculate the benefits related to driver frustration assigned to each individual traveller.

Care was taken to ensure that there was no double counting of benefits through the commissioning of independent research into the methods undertaken to quantify the Values of Time, quantifying and removing the proportion of the Value of Time that is due to congested time.

The value of benefits derived by the A9 Dualling Programme in relation to Driver Frustration is itemised separately from the Transport Economic Efficiency (TEE) analysis. The analysis indicates that the A9 Dualling Programme will provide a significant benefit (£430 million) to road users by reducing conditions related to frustrating driving environments. The work was subsequently peer-reviewed. As a result of this research Transport Scotland updated its appraisal guidance to include a methodology to monetise the benefits of driver frustration

8 TOURISM IMPACTS

Like in many rural areas tourism is a major industry and therefore Transport Scotland initiated work commissioned through consultants Jacobs to create a baseline of the economic contribution of tourism in the A9 corridor. The work, undertaken by Prof John Lennon developed a set of tourism baseline indicators of economic and operational performance in order to measure impact before, during and after the construction period of the A9 dualling project

Tourism in the A9 corridor was valued at £174.5m in terms of total output (direct, indirect and induced impact). This area generates tourism GDP of £63.3m and is responsible for direct employment of 6,869 FTEs and total employment (direct, indirect and induced) of 8,893 FTE jobs (Prf. J Lennon, 2015). The calculations used in this report are based upon the generation of output and employment from a wide range of accommodation, food, beverage, visitor attractions, activity centres and retail that is predominantly purchased by tourist consumers.

Transport Scotland is continuing to work with the national tourism board, Visit Scotland, the Cairngorms National Park Authority, Professor Lennon and appointed consultants to develop a methodology to include the benefits to the tourism industry within the socio-economic case for the A9 Dualling Programme, which will continue to be updated as the Programme progresses.

9 WIDER CONSTRUCTION IMPACTS

Transport Scotland has also investigated the potential economic impact of the A9 Dualling Programme during the construction phase. Transport Scotland and AECOM have undertaken some intial assessment into the wider construction impacts as a result of the Programme with the aim of understanding the potential positive and negative impacts of the dualling. This study was based on some assumptions that were developed in terms of indicative traffic management and speed restrictions which will be subject to review as the Programme progresses

10 AVERAGE SPEED CAMERAS AND 50MPH HGV PILOT

Average speed cameras became operational on the single carriageway sections of the A9 between Perth and Inverness and on the dual carriageway sections between Perth and Dunblane on October 28th 2014. The new system is an interim safety measure until the entire A9 is upgraded to dual

carriageway. At the same time, the speed limit for heavy goods vehicles (HGVs) on the A9 was raised from 40mph to 50mph. The speed limit pilot project will operate alongside safe driving campaigns involving both speeding and overtaking. The speed limits for all other categories of vehicles remain the same on the A9.
Extensive data collection, monitoring and evaluation is on-going along the A9 corridor to establish the impacts of the cameras and the HGV pilot. This data and associated analysis will be incorporated into the next update of the A9 Dualling Programme case for investment and built into the models and tools adopted for the assessment.

11 CONCLUSIONS AND FUTURE WORK

This work has provided an overview of the diverse and innovative work that has been undertaken by Transport Scotland and its consultants in planning for the A9 Dualling Programme. The work will continue as the Programme develops.

12 References

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