Adran yr Economi a'r Seilwaith
Department for Economy and Infrastructure

Llywodraeth Cymru
Welsh Government

Objection Ref OBJ0247 - Cycling UK

File Refs WG/REB/OBJ0247- BW Traffic

Response to Objector's Evidence: Dr Steve Melia and Mr Roger Geffen & Mr Hugh Mackay

1. AUTHOR

1.1 I am Bryan Whittaker. I am a Director of WSP|PB, a multi-disciplinary consultancy. I was previously an Associate Director of Ove Arup and Partners Ltd (Arup). My professional qualifications are set out in my main proof of evidence and are not repeated here.

1.2 The evidence which I have prepared and provide in this proof of evidence has been prepared and is given in accordance with the guidance of my professional institution and I confirm that the opinions expressed are my true and professional opinions.

2. SCOPE AND PURPOSE OF THIS PROOF OF EVIDENCE

2.1 Cycling UK have submitted Statements of Evidence in relation to the draft statutory Orders associated with the Welsh Government's proposals for the M4 Corridor around Newport (the Scheme), which has been received via the Programme Officer.

2.2 The evidence of Cycling UK is provided in three proofs of evidence from different witnesses as follows:

i. Professor Stuart Cole (OBJ0247)

ii. Dr Steve Melia (OBJ0247)

iii. Mr Roger Geffen & Mr Hugh Mackay (OBJ0247)

2.3 This part of my evidence will respond to the points raised in Cycling UK's evidence from Dr Steve Melia and Mr Roger Geffen & Mr Hugh Mackay where it relates to the traffic aspects of the Scheme: the M4 Corridor around Newport (hereafter referred to as the Scheme), comprising a proposed new dual three lane motorway to the south of Newport and complementary measures.

2.4 My evidence is presented in the following structure, with a detailed contents provided at the start of the document.

1. Author

2. Scope and Purpose of this Proof of evidence

3. Response to Dr Steve Melia

4. Response to Roger Griffin and Mr Hugh Mackay

3. REBUTTAL – DR STEVE MELIA

3.1 The Proof of Evidence submitted by Dr Steve Melia contains a number of key points that are detailed below and which I address in turn.

> Demonstrates that the forecasts have overestimated the likely growth of traffic under the Do-Minimum scenario and underestimated the additional traffic would be induced by the scheme.

3.2 National Traffic and Car Ownership

3.2.1 The Reference Case demand growth over time for car drivers and passengers was derived from the National Trip End Model (NTEM) dataset V7.2 through the TEMPRO7.2 software that presents the NTEM dataset. The NTEM datasets are long term forecasts – they represent the Department's estimate of the long term response to demographic and economic trends, they are factors based on predicted demographic changes and they do not take account of changes in the generalised cost of travel in the future or in the disutility that individuals attached to different elements of generalised cost.

3.2.2 The M4CaN transport model is an 'incremental' or 'pivot point' model that uses cost changes to estimate the changes in the number of trips from a base year. The base year conditions (costs) and the Reference Case trip pattern (derived from the base year matrix assuming no changes in travel costs) are direct inputs to the forecasting approach.

3.2.3 The transport model has been developed in accordance with WebTAG guidance which states that future year forecasts should be based on NTEM growth in demand, thereby allowing transport models to be developed on a fully consistent basis. The NTEM7.2 was published on the 1st March 2017 following a systematic review of the key drivers of road demand prompted by criticism of the previous versions of the Departments forecasts. The review concluded that the factors that are customarily highlighted as being key drivers of road demand- incomes, costs and population remain important drivers of recent trends in traffic

growth, but there are other factors that have needed to be considered and reflected.

3.2.4 These other factors include such issues as the increasing concentrations of people living in urban areas, increased costs such as company car taxation and insurance, capacity constraints and technological developments which allow for homeworking and online shopping. Whilst there is currently little evidence on the impact that certain issues, such as online shopping, may be having on travel decisions, it is known that most of the recent fall in per car mileage has risen through the decline in the number of trips people are making.

3.2.5 The National Travel Survey (NTS) data has shown that the average number of trips have been falling and that there has been a downward trend in trip rates. The two most common journey purposes (shopping and commuting) exhibit a statistically downward trend with reductions of 6% and 10% respectively between 2003 and 2010. The recent decline may also be partly due to economic conditions, and as these are forecast to improve in the future, the Department is of the view that there is reason to believe the decline will not continue at its current rate in the long terms and this view is reflected in the NTEM forecasts. The NTEM central growth scenario therefore is based on the latest trip rate data collected in the trip rate review and assumes a declining trend in trip rates between its base of 2011 and 2016 and then constant rates thereafter.

3.2.6 Whilst NTEM7.2 assumes continual growth in car ownership which in itself is a product of an increasing population, a weakening of linkage between GDP and Car Ownership is also reflected.

3.3 Induced Traffic and Spatial Impact

3.3.1 Dr Melia recognises that the M4CaN Traffic Forecasting Report acknowledges the issue of induced traffic, which states the induced traffic is accounted for through the use of a Variable Demand Model.

When individuals move house or change jobs, they do so partly through changes in accessibility to the journeys they believe that they are going to make. Induced traffic has been accounted for both in the Do-Minimum situation arising from the reduction in Toll Charge across the Severn Crossing and the additional induced traffic arising from the construction of the proposed scheme in the Do-Something. As would be expected the induced response is significantly higher as a result of the reduction in the toll charge than the induced effect of the proposed scheme.

3.3.2 I accept that new roads and additional road capacity can in some instances influence the location of both employment and residential development. Land Use changes, which are of course subject to planning policy can lead to both faster traffic growth on the high speed network in the absence of any road improvement and faster growth rates in response to improvements. Trips generated by specific development sites in the Local Development Plans for Newport, Monmouthshire and Cardiff were taken into account and applied at the corresponding model zone level. Information regarding the detailed proposals and planning status of future developments was obtained from the adopted LDP's. This approach ensured that 'near certain' and 'more than likely' land uses were included which is consistent with the principles of WebTAG. The Local Authorities were specifically asked whether any dependent development had been considered in the planning process i.e., that which would be contingent on the scheme proposal, none was identified. Dependent development refers to a specific of land, which requires a complementary transport investment in order for a residential or non-residential development to proceed; in the absence of a transport scheme, the transport network would not provide a 'reasonable level' of service to new and/or existing users. To assume such development would therefore have been speculative and as such should not be taken into consideration within the bounds of WebTAG.

3.3.3 It is agreed that some scheme appraisals have used Land Use Transportation Interaction Models (whilst at the Highways Agency now Highways England) I was the Project Manager for three of the limited numbers of LUTI models developed). I would agree that that the models are complex, difficult to calibrate, difficult to validate because of issues in backcasting and are generally open to interpretation.

4. REBUTTAL – DR ROGER GEFFEN AND HUGH MACKAY

4.1 The Local Nature of Congestion on the M4

4.1.1 Thorough traffic travelling between east of J23 and west of J29 comprises of 52% of the traffic through Brynglas Tunnels. However, that does not translate to 48% of trips through the Tunnels are not being through traffic. Traffic travelling through the Brynglas Tunnels from west of J29 joining or leaving at J24 (Coldra) or J23a comprises of 24%, a significant proportion of which will be through traffic which is joining the M4 at Coldra.

4.2 Induced Traffic

4.2.1 It is recognised that transport schemes that impact on journey times and cost will in principle influence the level of demand for traffic. SACTRA in their 1994 report concluded that induced traffic can and does occur, though its size and significance is likely to vary widely in different circumstances. In particular, the opening of a new road can elicit a number of changes in trip making behaviour.

4.2.2 I accept that new road capacity relieves congestion which, in turn reduces travel costs which therefore can and in the main does result in more traffic. Some of the additional traffic will be reassignment from other roads so relieving them, whilst there will be some additional or induced traffic. However, this does not simply take up or fill up the additional available capacity, but rather a new balance between supply and demand is formed in which there is more traffic than before, but less congestion and thereby making journeys quicker, safer and more reliable. Therefore, induced traffic should not necessarily be interpreted as a negative effect, as users will still benefit from easier access and journeys.

4.2.3 Given the major change in the transport network resulting from the proposed scheme and the re-classification of the existing M4, the M4CaN model has been developed in such a way that it can capture a

range of behavioural responses to these changes which include reassignment, the switching of trips between highways and public transport and changes in trip destination. The effects of induced traffic in the Do-Minimum resulting from the reduction in toll charges and the effects of the proposed scheme in addition to the effects of the reductions in toll have been fully accounted for. The M4CaN model is an 'incremental' or 'pivot' point model that uses cost changes to estimate the changes in the number of trips from a base year, as recommended by WebTAG. This method retains all the details of the base year observations. The base year conditions (costs) and the Reference Case trip patterns (derived from the base year matrix by application of NTEM factors assuming no change in travel costs) are direct inputs to the forecasting process. The Reference Case is pivoted off the Base Year to produce the Do-Minimum forecasts and the Do-Something is pivoted off the D-Minimum to generate the Do-Something forecasts.

4.2.4 The Table attached to the rebuttal shows the induced effect of the proposed scheme across a screenline of the River Usk in the design year of 2037. Across the River Usk screenline in the AM Peak Period, there is an increase of traffic of 5%. However where we would expect the greatest increases i.e. on the prosed scheme and the existing M4, these increases are 10.4% and 7.5%. Despite the increases in traffic due to the induced effect, average journey times experience a sustained improvement which persist even with the effect of induced traffic that is shown in Table 10.1 of my main proof of evidence (WG 1.2.1).

4.2.5 It is stated in the Proof of Evidence of Roger Geffen and Hugh Mackay that SACTRA estimated that cutting travel times through a new road, could increase traffic by 5 to 10 per cent. The induced effects of the proposed scheme that are forecast by the M4CaN model are entirely consistent with the estimates of SACTRA.

4.3 WelTAG and Modelling Assumptions.

4.3.1 The M4CaN transport model has been developed in accordance with current knowledge and best practice and within the guidelines as set out in the Department for Transport WebTag. I do not accept that the modelling that has been undertaken is limited.

4.4 Inadequate Assessment of Alternatives

4.4.1 It is incorrect to state that the traffic forecasting takes no account of the electrification of the rail network and the South Wales Metro System. This point has been covered in detail in Paragraphs 3.1.0-3.1.12 of the rebuttal in respect of Professor Stuart Cole. The decline in levels of car use since 2006 have been taken into account and further detail is provided in Paragraph 4.1.7 of the rebuttal to Dr Steve Melia's proof of evidence.

4.4.2 I do not accept that congestion on the M4 around Newport is primarily a local transport problem, nor do I accept that only 15% of traffic would be need to be transferred to other modes of travel to eliminate congestion on the M4 for around 3.5 hours of the day. However, I cannot provide further detail without seeing the workings of such an assumption, which can only be an assumption since I do not believe a sufficient evidence base can be found to support it. It is also suggested that the local congestion problem could be addressed more cost effectively by a sustainable transport solution involving the promotion of active travel. The two-way NTS table for Main Mode of Travel for England 2015 states that the bicycle main mode share across all ages is 1.9% and that the biggest mode share lies with the 1-2 mile trip length. However if the total bicycle mode share could somehow be doubled in combination with the trip distributions shown below and trip distances for origin – destination pairs corresponding to trips through Brynglas Tunnels in the AM Peak base year traffic would reduce by only 0.3%.

Figure 1 - Two-way NTS table for Main Mode of Travel for England 2015

trip length	[A] cycle mode share (NTS)	[B] impact if cycling were doubled = [A]/(1-[A])	[C] trip length distribution Brynglas tunnels	=[C] x [B]
Under 1 mile	1.72%	1.75%	0%	0.00%
1 to under 2 miles	2.70%	2.78%	0%	0.00%
2 to under 5 miles	2.45%	2.51%	1.1%	0.03%
5 to under 10 miles	1.42%	1.44%	6.8%	0.10%
10 to under 25 miles	0.85%	0.86%	16.3%	0.14%
25 to under 50 miles	0.08%	0.08%	22.1%	0.02%
more than 50 miles	0.02%	0.02%	53.7%	0.01%
			100%	**0.30%**

Figure 2 Usk ScreenLine Reduced Traffic

Induced Traffic across Usk Screenline

Location	Assignment	2037 AM Peak				2037 PM Peak				2037 AADT			
		E/B	W/B	2-way	Induced	E/B	W/B	2-way	Induced	E/B	W/B	2-way	Induced
Malpas Slips	VDM Responsive	1,361	1,577	2,938	-1.0%	1,548	1,442	2,990	-1.3%	15,380	16,553	31,933	-1.0%
	Fixed	1,373	1,595	2,968		1,585	1,444	3,029		15,548	16,716	32,264	
M4 J26-J25a	VDM Responsive	2,820	2,435	5,255	7.5%	2,298	2,298	4,596	8.2%	32,052	28,672	60,724	6.8%
	Fixed	2,612	2,278	4,890		2,112	2,135	4,247		29,746	27,131	56,877	
Newport Bridge	VDM Responsive	874	969	1,843	1.7%	1,027	756	1,783	0.6%	11,949	11,514	23,463	0.8%
	Fixed	854	959	1,813		1,003	769	1,772		11,764	11,510	23,274	
George Street Bridge	VDM Responsive	716	1,223	1,939	0.8%	979	900	1,879	0.1%	9,165	10,630	19,795	0.9%
	Fixed	714	1,210	1,924		977	900	1,877		9,141	10,477	19,618	
SDR Bridge	VDM Responsive	1,586	1,563	3,149	2.6%	1,598	1,706	3,304	2.3%	18,840	19,014	37,854	1.7%
	Fixed	1,538	1,532	3,070		1,574	1,655	3,229		18,557	18,673	37,230	
New M4 Usk Crossing	VDM Responsive	2,869	2,925	5,794	10.4%	2,667	3,133	5,800	10.1%	35,266	34,355	69,621	8.3%
	Fixed	2,546	2,704	5,250		2,479	2,787	5,266		32,638	31,628	64,266	
Usk Screenline Total	VDM Responsive	10,226	10,692	20,918	5.0%	10,117	10,235	20,352	4.8%	122,652	120,738	243,390	4.2%
	Fixed	9,637	10,278	19,915		9,730	9,690	19,420		117,394	116,135	233,529	