

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



Objection Ref OBJ0247 - Cycling UK

Llywodraeth Cymru
Welsh Government

File Refs **WG/REB/OBJ0247-1- Professor S Cole**
 WG/REB/OBJ0247-2 - Dr S Melia
 WG/REB/OBJ0247-3 - R Geffen / H Mackay

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1. AUTHOR

- 1.1 I am Stephen Bussell. I am an Associate of Ove Arup and Partners Ltd (Arup), a multi-disciplinary consultancy. 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 is true and I confirm that the opinions expressed are my true and professional opinions.

2. SCOPE AND PURPOSE OF THIS PROOF OF EVIDENCE

- 2.1.1. 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.
- 2.1.2. 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)
- 2.1.3. My evidence will respond to the points raised in Cycling UK's evidence where it relates to the economic 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.
- 2.1.4. Aspects of my evidence interface with the evidence of other witnesses including Matthew Jones (WG1.1.1), Bryan Whittaker (1.2.1) and Ben Sibert (WG1.5.1).
- 2.1.5. I try to limit duplication of evidence given in my own Proof of Evidence (WG1.3.1) but draw on that when appropriate to address points raised by Cycling UK in their evidence.
- 2.1.6. 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. Cycling UK Rebuttal
 4. Conclusions

3. REBUTTAL – CYCLING UK

3.1. Introduction

3.1.1 Cycling UK has objected to the published Scheme on the basis that it offers poor value for money and that the expected economic benefits will not be realised. Cycling UK is promoting the Blue Route alternative. My rebuttal deals with each of these issues in turn.

3.2. Value for Money of the Welsh Government's Proposals

3.2.1. Dr Melia in his proof states that *'the Core Scenario forecasts have been overestimated because they are based on...overestimates of future GDP growth, inconsistent with the trends of recent decades'*

3.2.2. As identified by Dr Melia, GDP forecasts published in WebTAG are based on forecasts published by the Office for Budget Responsibility (OBR). The Office for Budget Responsibility was created in 2010 to provide independent and authoritative analysis of the UK's public finances.

3.2.3. In Figure 4 of his evidence, Dr Melia computes a trendline of average UK GDP growth (for the period 1950 to present) which shows a declining trend. This trendline is likely to be misleading and is not an approach used by economists when forecasting long term GDP growth. The trendline is strongly influenced by a period of very high GDP growth experienced in the 1950s and 1960s and the large contraction in GDP that occurred in aftermath of the 2008 crisis. WebTAG assumes GDP growth will be in the region of 2.4% in the long term (from 2021 onwards). The average annual growth rates in UK GDP are shown in the Table below for six 10-year periods since 1955. In only one 10-year period was GDP growth significantly lower than this trend (2005 to 2015) and this period included the largest post-war recession. Over the period 1955 to 2016, UK GDP growth has averaged 2.4%.

Period	Average Annual Real GDP Growth
1955 – 1965	3.1%
1965 – 1975	2.4%
1975 – 1985	2.3%
1985 – 1995	2.6%
1995 – 2005	3.0%
2005 – 2015	1.2%
1955 to 2016	2.4%

Source: Based on ONS GDP: chained volume measures: seasonally adjusted £m

- 3.2.4. In a similar vein, Mr Geffen and Dr Mackay in their proof state that *'Many of the assumptions in WelTAG are of doubtful reliability - for example regarding fuel prices and GDP.'*
- 3.2.5. Assumptions relating to fuel prices, GDP and other variables are dictated by transport appraisal guidance the veracity of which is not a matter for this Inquiry.
- 3.2.6. Prof. Cole states in his evidence section 12 that *'Neither the Blue nor Black Routes meets HMT minimum BCR of 2:1'*. He then asks *'Why should the BCR of 1.62:1 be seen as acceptable (presumably as the Scheme is going forward)?'*
- 3.2.7. The M4CaN Scheme is being funded and delivered by the Welsh Government, not HM Treasury or the Department for Transport. Nevertheless, there is no such thing as a 'minimum' BCR for transport Schemes funded by the UK Government or the Welsh Government.
- 3.2.8. Although the guidelines do not apply in Wales, the Department for Transport categorises its transport investments according to their value for money. The Department for Transport categorises a scheme with a BCR of less than one as being 'poor' value for money. Low value for money projects have a BCR of between 1.0 and 1.5. Medium value for money projects have a BCR of between 1.5 and 2.0. High value for money projects are those with a BCR of between 2.0 and 4.0. Schemes with a BCR of above 4.0 are classed as having very high value for money. The value for money category is determined by the Department for Transport based on the 'Adjusted BCR' for a Scheme

and therefore takes into account Wider Impacts¹. On this basis (before non-monetised costs and benefits are taken into account) the M4CaN scheme would be categorised as a high value for money project. In contrast, the Blue Route would be categorised as a low value for money Scheme.

3.2.9. Prof Cole later states *'The economic benefits of either the Blue Route or the Black Route are difficult to evaluate - to say either route would not be value for money on the basis that it improves economic performance cannot be ascertained.'*

3.2.10. In the economic analysis of the M4CaN Scheme there is a distinction between direct impacts (on GDP and welfare) and indirect impacts (or wider economic benefits). The assessment of wider economic benefits is subject to a higher degree of uncertainty than the direct benefits of the Scheme. Ultimately, wider economic benefits derive from the transport cost savings accruing directly to users and the effect of the Scheme on journey times and connectivity. It is reasonable to expect, therefore, that the Scheme options which deliver the greatest benefit to users and which offer the greatest travel time savings are also those options which will be associated with the greater wider economic benefits. On this basis, in respect of wider economic benefits, the published Scheme is preferred to the Blue Route.

3.2.11. Notwithstanding this, even if wider economic benefits were ignored and the comparison of options was undertaken only on the basis of the Initial BCR, the published Scheme (with a BCR of 1.62) would be preferred to the Blue Route (with a BCR of 0.94).

3.2.12. Dr Melia in his summary of case states that *'Other transport projects offer higher benefit to cost ratios (BCR) and that 'the BCR of*

¹ WebTAG Unit A2-1 (Wider Impacts) states (para 7.1.2): *'Wider Impacts should not be included in the Initial BCR as the evidence for estimation of these impacts is less robust than for other impacts that are included in the initial BCR. Wider Impacts should be included in the Adjusted BCR, and are taken account of in the overall assessment of Value for Money.'*

M4CaN is lower than the averages typically obtained for trunk roads and other type of transport scheme.

- 3.2.13. Dr Melia quotes average BCRs from past transport investments as evidence that the M4CaN Scheme offers 'poor' value for money. The averages given by Dr Melia are taken from evidence gathered on transport schemes delivered before 2006 to inform the Eddington Report. The BCRs for the sample of schemes showed that road projects tended to exhibit higher BCRs than rail schemes and local public transport schemes.
- 3.2.14. Caution should be applied when comparing the BCR for the schemes with road schemes appraised in the past. Appraisal guidance is updated regularly and changes in methodology or data can have a substantial effect on the BCR.
- 3.2.15. Dr Melia cites evidence from cycling schemes funded by the Department for Transport to suggest that investment in cycle infrastructure can provide better value for money. If one were to consider the benefits of investing circa £1bn in the M4CaN scheme or a similar amount in cycling infrastructure, the issue of diminishing returns would need to be taken into account. Cycling interventions tend to be relatively small scale investments. The cycling schemes considered in the Department for Transport paper comprised 12 separate cycling schemes across England which comprised £150m of investment in total. If an exercise were undertaken in Wales to identify the highest priority cycling investments, it would be reasonable to expect that a number of schemes could be identified which offer a relatively high rate of return. However, once these initial investments had been delivered, it is inevitable that the rates of return would begin to fall. Therefore, whilst there may be cycling projects with high rates of return this does not prove that the best way of spending £1bn on transport is to invest in cycling and not roads. The issue of diminishing returns also applies to investment in smaller scale improvements to the road network. For this reason, amongst others, transport investment in

Wales is prioritised based on the needs of the transport network as a whole, considering all parts of Wales and all transport modes.

3.2.16. Issues of comparison aside, it should be noted that the purpose of the economic appraisal is to consider the costs and benefits of options that address the Scheme objectives. It is not the purpose of the economic appraisal to consider the value for money of policies which meet some other objective but do not address the issues identified with the M4 around Newport.

3.2.17. Dr Melia refers to the Eddington Report saying that *‘[Eddington] presented some convincing evidence, accepted by the UK Government at the time, that smaller transport projects tend to offer better value for money than mega-projects and that more public investment should be directed towards the former.’*

3.2.18. The Eddington Report supports the case for investment in transport in general terms. Eddington states in paragraph 1 on page 5:

3.2.19. *‘This Study demonstrates that the performance of the UK’s transport networks will be a crucial enabler of sustained productivity and competitiveness: a 5 per cent reduction in travel time for all business travel on the roads could generate around £2.5 billion of cost savings – some 0.2 per cent of GDP. Good transport systems support the productivity of urban areas, supporting deep and productive labour markets, and allowing businesses to reap the benefits of agglomeration. Transport corridors are the arteries of domestic and international trade, boosting the competitiveness of the UK economy.’*

3.2.20. Above all, the Eddington Report (paragraphs 9 and 10 on page 6) recommends a targeted approach to transport investment.

3.2.21. *‘To meet its economic goals for transport, Government should prioritise action on those parts of the system where networks are critical in supporting economic growth, and there are clear signals that these networks are not performing. On this basis, the strategic economic priorities for long-term transport policy should be growing*

and congested urban areas and their catchments; and the key inter-urban corridors and the key international gateways that are showing signs of increasing congestion and unreliability.'

3.2.22. Investing in the M4CaN Scheme is in step with this approach.

3.2.23. Dr Melia states that *'The appraisal (and WebTAG) makes no allowance for the 'deadweight loss' of finance through taxation; this means that BCRs need to be considerably higher than 1:1 in order to justify a decision to proceed.'*

3.2.24. Neither WebTAG guidance, nor the overarching guidance on public policy appraisal in the UK – The Green Book – suggest that appraisers take into account the deadweight loss of taxation. Deadweight loss only becomes relevant if the perspective is taken that any investment in transport results in an equivalent increase in general taxation. WebTAG takes the alternative perspective that the level of taxation in the economy is predetermined and that the economic appraisal considers the merits of investing public funds in a particular transport project. For this reason, I consider that there is an important distinction between a transport investment with a BCR significantly below 1 and a transport investment with a BCR significantly above 1. Dr Melia's argument contravenes the Bushell principle.

3.2.25. Prof Melia in his evidence states that *'If the argument relies on the non-monetised benefits, then similar consideration should be given to the non-monetised costs, particularly the environmental damage this scheme would cause.'*

3.2.26. The BCR for the Scheme is a measure of value for money which takes account of those costs and benefits that can be feasibly quantified and monetised. Because the economic appraisal is a quantitative assessment the analysis is focussed on, but not limited to, impacts on the economic efficiency of the transport sector. In respect of the efficiency of the transport network, the economic appraisal is likely to underestimate the true benefits of the Scheme because it does not

take into account the improved reliability and resilience that the new motorway would offer.

3.2.27. I have clearly stated in my proof of evidence that the economic appraisal is only one aspect of the overall case for investment and needs to be balanced against other environmental and social impacts that cannot be monetised. Such impacts have not been disregarded by the Welsh Government and are assessed in detail in the Environmental Statement for the Scheme.

3.3. Secondary Evidence of the Economic Impact of Road Investment

3.3.1. Dr Melia in his proof states that *'No evidence has ever proven that transport infrastructure investment causes higher national GDP.* Geffen and Mackay in their proof state [referring to SACTRA 1999] *'The Committee was far from convinced that public investment in road construction had any worthwhile impact on economic performance.'*

3.3.2. In 2014, the Department for Transport commissioned a major academic review of the relationship between transport investment and economic performance (the 'TIEP Review')². The Review addresses the evidence on the link between transport and GDP at both a micro-economic level (in relation to user benefits and productivity effects for example) and a macro-economic level. The review states on page 14 that, *'At the macro- level there are numerous studies establishing the relationship between measures of transport infrastructure and GDP. Estimates suggest that a 10% higher infrastructure stock is associated with around 1% higher income (given levels of other productive inputs). One way to interpret this is that if all inputs (including transport infrastructure) were to increase by 10% then GDP might be expected to also increase by 10%: but if transport infrastructure were to remain constant, then GDP would increase by only 9%.'*

² Venables, Laird and Overman, 2014. Transport Investment and Economic Performance: Implications for Project Appraisal

- 3.3.3. Evidence is also available in respect of the relationship between road building specifically and GDP. Dr Melia cites an international meta-analysis undertaken in 2013 (by Melo, Graham, and Brage-Ardao)³ as evidence that there are wide variations in the reported relationships between transport and GDP. The same research is cited in the TIEP Review as evidence of the positive relationship between transport and GDP. The meta-analysis considered the results of 33 empirical analyses. Of these, 31 found positive relationships between transport and economic output and only two found a negative relationship. The research finds an average elasticity of private output with respect to road investment of 0.088. It finds lower elasticities for investment in other modes of transport. The paper does conclude that the results of such analysis vary and in some cases are likely to overestimate the relationship between transport and GDP. At least part of the variation in findings is attributed to differences in methods and data applied across the sample of studies.
- 3.3.4. Prof. Cole cites the Welsh Government's statement that *'The existing transport network acts as a constraint to economic growth and impacts adversely on economic activity.* Prof Cole argues that *'There is considerable evidence that high quality roads do not guarantee inward investment. Several studies have been attempted re the M4 in Wales and the Severn Bridge tolls. All were inconclusive. This statement therefore appears incorrect, is not corroborated by the evidence and is misleading.'*
- 3.3.5. There is substantial evidence which suggests that transport investment can have a positive impact on economic growth. Detailed evidence on the relationship between transport and economic performance is provided in the Revised Wider Economic Impact Report and in responses to other objectors to the Scheme (notably Professor Jones and Professor Whitelegg).

³ Melo PC, Graham DJ, Brage-Ardao R, 2013. The productivity of transport infrastructure investment: A meta-analysis of empirical evidence, *Regional Science and Urban Economics*, 43,695-706

3.3.6. There is also evidence specifically addressing the link between transport and economic performance in Wales. A series of academic studies, commissioned by the Welsh Government, have sought to explain the longstanding gap in productivity between Wales and the UK average. This research has consistently found that spatial factors or accessibility – as influenced by the quality of transport provision – are significant factors in determining economic performance in Wales, once other factors (such as industrial composition and skills levels) have been taken into account. The most recently published study commissioned by the Welsh Government (Document 6.1.24) concludes at paragraph 22 on page 7 that *‘inaccessibility clearly has major impacts on levels of productivity in Wales, including possible remoteness from major markets, specialist suppliers and services, larger pools of skilled labour or contact with other business and information sources’*.

3.3.7. Professor Cole makes specific reference to evidence of the M4 in Wales and the Severn Crossings. The studies I am aware of in relation to the impact of the construction of the Severn Bridge were generally positive in their findings. Cleary, E.J. and Thomas, R.E. concluded that that the bridge had improved prospects for industry in South Wales without weakening those of industry in South-West England⁴. A second study was carried out by the Welsh Office (1980)⁵, by which time these sections of motorway were complete. Similar to above, the Welsh Office study also relied on survey work and quantifying reactions, rather than establishing the net impact on employment. The survey of firms found that:

- 47% of large manufacturing establishments, 84% of small manufacturers and 85% of distributive firms considered that easier access to markets had “helped to increase business”.

⁴ Cleary, E J and R E Thomas (1973): *The economic consequences of the Severn Bridge and its associated motorways*

⁵ Welsh Office (1980): *M4/A55 study: the effects of major road investment schemes in Wales*

- Of manufacturing firms which had opened factories since the opening of the Bridge, 79% said that access to the (English) motorway network via the M4 and Bridge had been a factor in their choice of location, and 51% said it had been a major factor – though it was thought unlikely that it had been a key factor in many cases. The availability of labour and government financial assistance were the most frequently mentioned factors.

3.3.8. A third study was carried out by Cambridge Economic Consultants in 1987, which built on previous work to produce more comprehensive estimates of the long-term employment effects of the Severn Bridge and the M4. This study found that the Severn Bridge and M4 increased economic activity and employment in South Wales by about 4%.

3.3.9. There is also evidence in the literature specifically relating to business location decisions and changes in the density of employment. McQuaid et al (2004) consider the influence of transport on business location decisions⁶. They find that transport improvements are unlikely to cause firms to move but, for firms who are looking for new premises, accessibility is one of the key factors influencing their choice of a new location. In the UK, the most comprehensive investigation of the spatial impacts of highway improvements has been undertaken by the Spatial Economic Research Centre (SERC) in 2012⁷. The SERC study finds ‘strong effects’ of transport improvements on area employment and on plant counts with a 10% improvement in accessibility leading to an approximately 3% increase in the number of business and employment. SERC conclude that increases in employment are a result of firm entry rather than an increase in the size of existing firms.

3.3.10. The economic case for the Scheme does not rely on inward investment: such effects are not quantified either in the economic appraisal or the assessment of wider economic effects. Nevertheless,

⁶ McQuaid et al (2004): *The Importance of transport in business’ location decisions*

⁷ SERC 2012): *New Road Infrastructure: the Effects on firms*

effects on business investment is one of a number important mechanism through which the Scheme is expected to benefit the economy of South Wales and it is expected that the Scheme will have a positive impact on the scale of inward investment and the quality of jobs that may be attracted to South Wales in the future.

3.3.11. Broadly speaking, I am in agreement with Professor Cole when he says that transport may be ‘a necessary (pre requirement) but not sufficient (guarantor) for improving economic performance’. In his textbook ‘Applied Transport Economics (3rd Edition)’ paragraph 3, page 427, Professor Cole takes a similar position: *‘In general therefore the conclusion has been that local conditions very much determine the effect of transport facilities on economic activity levels. Built infrastructure ‘including transport is a necessary but not sufficient condition for improving economic performance’ and it is most effective where rapid economic expansion is being held back by ‘bottlenecks’.*

3.3.12. In my opinion transport is one factor, amongst others, which determines economic performance. One has to come to a judgement on the likely economic impact of a Scheme based on the economic context and the extent to which the Scheme will improve transport conditions. In respect of the M4CaN, there are a number of reasons to suggest that the economic impacts would be significant. In summary:

- The M4 is strategically important as the most heavily used transport infrastructure in Wales which acts as the primary route in and out of South Wales for the movement of goods.
- The existing M4 is highly congested which indicates that transport demand exceeds supply and that capacity constraints are imposing costs on economic activity.
- The Scheme will improve accessibility both within and between urban areas which are the primary mechanism through which transport affects productivity.

- The improvement in journey times and accessibility resulting from the proposed Scheme is substantial.
- The land use context – with a number of strategically important employment sites in close proximity of the Scheme – suggests that impacts on investment and employment are likely to be positive.

3.4. Economic Impacts and the Two-Way Road Debate

3.4.1. In his proof of evidence Professor Cole suggests that the wider economic benefits of the Scheme are uncertain in part because of the *‘two-way road where industries at present in Wales will migrate nearer to the market for economy of scale or logistical reasons’*.

3.4.2. I understand Professor Cole’s position on the two-way road debate is that there will be winners and losers from increased competition (and that, as a result, the wider economic effects the Scheme may be different to those anticipated) but that does not mean that improving the M4 would not bring economic benefits to Wales. In his textbook *‘Applied Transport Economics (3rd Edition)’* at paragraphs 1 and 2 page 430, Professor Cole states:

‘The costs of transport in terms of direct costs and costs caused by delays are important influences on business competitiveness and contribute to investment decisions. As a result, transport networks can help to make regions of Wales more competitive, especially for inward investors that are widely believed to be particularly sensitive to transport links in reaching decisions on location. Local transport links also shape the availability of labour to existing and prospective employers. In any strategy there has to be an awareness of the ‘two-way road’. It may attract new jobs but it can also lead to centralisation of production and distribution nearer to the markets.’

3.4.3. The two-way road argument has been posited by a number of objectors. The following points summarise my position on the two-way road debate:

3.4.4. Improved connectivity and competition is one of the ways in which transport improves economic performance. The competitiveness of city and regional economies is not a zero sum game. Improved connectivity increases the potential for trade. Just as for trade between countries, trade between regions brings benefits of specialisation, economies of scale and improved productivity.

3.4.5. There is no reason or evidential basis to conclude that Wales would lose out in competition with other regions. As the name suggests, the two-way road works both ways. At the level of firms there will be winners and losers from competition. However, there is no reason to assume that South Wales would lose out in competition with other regions. Examples given in SACTRA where economies have lost out as a result of the two-way road are limited to small towns and rural areas rather than large cities or regions. Venables and Rosewell (2013)⁸ consider the two way road argument in the context of High Speed rail between London and Manchester. They conclude that improving connectivity is most likely to be a force for convergence (the smaller, lower income city benefiting to a greater extent than the larger, higher income city): *'There are opposing forces at work. Initially, firms with headquarters in one city might have served the other through branch offices. These may now close as better connectivity enables each firm to supply from a single office or plant. Closures will tend to reduce employment in the smaller location (Manchester) which was deriving proportionately more of its employment from these branch offices. But pulling in the other direction, Manchester now becomes a more attractive location for headquarters; it starts off with lower wages and rents, and improved connectivity means that it will get better access to London's large market and large base of suppliers. It is therefore likely to attract headquarters and other business activity, creating new sources of employment in the city. Combining these*

⁸ Venables and Rosewell (2013): *High Speed Rail, Transport Investment and Economic Impact*; paragraph 3.2.3, page 5

forces, theory suggests that better connectivity is a force for convergence.'

- 3.4.6. **There is no reason to conclude that competition effects would offset the economic benefits of the Scheme.** The Scheme has a range of economic effects which derive both from improved intra-regional and inter-regional transport links. It is expected that the Scheme will reduce business transport costs, improve productivity and attract new investment. If we are to consider that the Scheme will drain activity away from South Wales, we would need to believe not only that South Wales would lose out in competition from other regions, but that this would offset other economic benefits of the Scheme.
- 3.4.7. **The two-way road argument disregards the perspective of consumers.** Irrespective of the effects on patterns of activity, the benefits of trade are realised in lower costs for consumers. An example given by Professor Cole is the loss of two major dairy employers in West Wales following realisation that moving bulk milk to a creamery in Wiltshire was at a lower cost than packaged milk from South Wales. Whether this was in response to an improvement in transport or not, it would presumably be the case that lower costs of milk production were reflected in the prices paid by consumers.
- 3.4.8. **The two-way road is essentially a protectionist argument. It leads us to perverse policy positions.** If we are to believe that improving the M4 will result in activity being drained away from South Wales, logically we must also believe that congestion on the M4 acts in a positive way to shelter the economy from competition. By extension, the Welsh Government should pursue a protectionist approach to economic policy and lobby for higher tolls on the Severn Crossings. Such an approach does not appear to have support either from politicians, business or economists and falls foul of the Bushell principle.
- 3.4.9. **The business community (at least those most likely to trade across the UK) do not appear to support the idea that they will**

lose business because of the two-way road. Further to the above point, if poor transport links did act to shelter Wales from competition, you would expect that the Welsh business community would be in favour of less investment in transport rather than more. Though support for the Scheme amongst the business community is not universal, business organisations representing larger firms (the CBI) and those primarily representing SMEs (the South Wales Chambers of Commerce) who are more likely to be engaged in trade across the UK are unambiguously in favour of the Scheme.

3.4.10. **The two way road is not supported in policy.** The benefits of improving connectivity between Wales and other countries is reflected in Welsh Government policy. For example, one of the five 'Strategic Priorities' identified in the Wales Transport Strategy is to 'Enhance International Connectivity'. In this respect the Strategy states that, 'Connections with the rest of the UK and internationally are vital for business and tourism'. More generally, Welsh Government policy emphasises the importance of an outward looking Wales which seeks to strengthen cross-border economic linkages. The Welsh Government's programme for government (Taking Wales Forward 2016-2021), under the theme 'United and Connected', states: 'Wales is engaged and connected to the wider world. We contribute to that world and are in turn shaped and influenced by it. The UK withdrawal from the European Union means we must work harder and more actively to give substance to our outward-looking character... 'Wales' reach goes far beyond our borders. This Government is outward facing and will help position Wales as an internationally focussed, ambitious country. We will seek investment and trade opportunities around the globe.'

3.5. Wider Impacts and the Economic Appraisal of the M4CaN

3.5.1. Dr Melia in his proof states that *'It may be reasonable to argue that building M4CaN could enable some additional development to occur alongside the motorway (which would also increase traffic and congestion) it would not be valid to assume that a new motorway would*

increase national GDP. Attempts to inflate the BCRs of road schemes by estimating 'wider impacts' are therefore based on little more than guesswork.'

- 3.5.2. The inclusion of Wider Impacts (often termed Wider Economic Benefits) is well established in transport economic appraisal in the UK. The presence of wider economic benefits was acknowledged by the Standing Advisory Committee on Trunk Road Appraisal (SACTRA) in 1999. The committee recommended that wider economic impacts be given formal consideration in transport economic appraisal. Further evidence on the scale of agglomeration effects was included in the Eddington Review in 2006. Since 2009, the assessment of wider economic benefits has been included in WebTAG guidance and incorporated into the cost benefit analysis framework.
- 3.5.3. The assessment of Wider Impacts has been undertaken in accordance with WebTAG guidance. The largest of the three Wider Impacts relates to agglomeration effects. The TIEP Review also considered the evidence on the linkages between transport, agglomeration effects and productivity. The Review identified that, whilst the scale of this effect varies, academic studies consistently find a positive and statistically significant relationship between accessibility and productivity. Such relationships have been derived by controlling for other factors that influence productivity levels (such as skills levels, occupational structure, and the presence of particular industrial sectors). The TIEP Review states: 'This is an area where the research literature provides quite robust results, indicating that increases in city size (or other measures of economic density) have significant positive effects on productivity'.
- 3.5.4. The TIEP Review also continues to endorse the view that transport improvements can deliver productivity benefits through improved accessibility. It concludes that 'The productivity effects of transport improvements are large enough and well enough grounded to merit inclusion in transport appraisal'.

- 3.5.5. The relationship between economic density (or accessibility) and productivity employed in WebTAG guidance is based on research undertaken by Professor Dan Graham whose work is cited by Dr Melia in respect of the relationship between transport investment and GDP. Whilst estimates of the size of this relationship vary, evidence provided in the TIEP report demonstrates that the parameters employed in WebTAG are in line with estimates in the literature more generally.
- 3.5.6. The assessment of Wider Impacts for the purposes of the economic appraisal does not assume or rely on changes in patterns of employment or future developments. That the M4CaN could enable some additional development alongside the new motorway may not, in itself, have any impact on GDP at a national level. However, such development is likely to have a net impact on the GDP in South Wales and it therefore relevant to the objectives of the Scheme and the policy priorities of the Welsh Government more generally. More fundamentally, however, Dr Melia does not acknowledge the positive relationship between transport infrastructure, economic mass and productivity. TIEP makes it clear that there is robust evidence for this relationship. Furthermore, the increase in productivity in the area benefiting from better transport is not at the expense of productivity elsewhere. It is likely therefore to have a positive impact on GDP at a national level.

3.6. Appraisal of the Blue Route

- 3.6.1. Prof. Cole states in his evidence *'when comparing the costs of the two routes, the significantly higher risk and optimism bias allowed by for the WG in their assessment of the Blue Route is likely to be due to the fact that the Blue Route is not a fully worked up proposal....When comparing the costs of the two routes, the significantly higher risk and optimism bias allowed by for the WG in their assessment of the Blue Route is likely to be due to the fact that the Blue Route is not a fully worked up proposal'*.

- 3.6.2. As Professor Cole identifies in his evidence, the higher Optimism Bias allowance for the Blue Route is a reflection of the fact that the Blue Route is not a fully worked up proposal and therefore there is less certainty about its costs. In effect, the Blue Route is at an earlier stage in the development process. It therefore attracts an Optimism Bias uplift equivalent to a Scheme at an early stage of development. The Welsh Government's budget for the published proposals includes allowance for risk and Optimism Bias of £141m. This represents an uplift to the construction cost (excluding Key Stage 4 costs and reclassification costs) of around 15%. For the Blue Route, a quantified risk assessment has not been undertaken and therefore there is no specific allowance for risk. Instead a 44% (£141m) uplift to Scheme costs has been applied which is the standard factor applied to projects at an early stage of development.
- 3.6.3. It would be impractical to develop the Blue Route (or other alternatives) to the same degree as the Welsh Government's proposals. The level of development of a proposal is not limited to issues of technical design. Developing the proposals to the same degree would require the Welsh Government to consult on both the proposed Scheme and alternatives to the same degree. It would require a contractor to be appointed (with a realistic prospect that the proposal would be delivered) through a competitive tender process. It would require the contractor/design team to develop a design to the same degree, consulting with landowners and statutory undertakers. It would require the Welsh Government to publish a draft Compulsory Purchase Order in order to generate realistic estimates of land and compensation costs.
- 3.6.4. These issues aside, the level of risk and optimism bias is not the pivotal factor in determining that the published route offers better value for money than the Blue Route. In his evidence, Professor Cole provides an estimate of the BCR for the Blue Route if it is assumed that the level of risk and optimism bias for the Blue Route is the same as for the Black Route. For the purposes of illustration I have undertaken the

same exercise. I have applied an uplift to the construction costs of the Blue Route of 15%. The resultant Initial BCR for the Blue Route would be 1.16 as compared with 1.62 for the published Scheme. Therefore, even under these optimistic assumptions, the published Scheme offers better value for money than the Blue Route.

3.6.5. Prof Cole in his evidence states that *'The Blue Route would avoid the complete bypassing of existing facilities such as retail parks and industrial estates, enhancing prospects for economic activity and impact.'*

3.6.6. The idea of a bypass having a negative impact is typically applied where retailers are concerned with the loss of passing trade. This is not particularly relevant to this context. The Blue Route would improve access to employment sites along its route although this would be tempered in the long term by the additional traffic along this corridor and the impact on journey times that this would have. In overall terms, the Black Route would deliver a greater improvement in access to employment sites in the South of Newport.

4. CONCLUSIONS – CYCLING UK

- 4.1.1. In summary, the economic appraisal of the Scheme has been undertaken in accordance with WebTAG guidance which covers both the assessment of user benefits and the assessment of wider economic benefits.
- 4.1.2. The economic appraisal demonstrates the Scheme offers good value for money with benefits outweighing costs at a ratio in excess of two to one. The economic appraisal is likely to underestimate the benefits of the Scheme as it fails to account for the benefits of improved reliability and resilience.
- 4.1.3. The Scheme will have a positive economic impact through a range of mechanisms. The assessment of economic impacts at a local or regional level is inevitably associated with a greater degree of uncertainty than the economic appraisal of the Scheme. However, in my opinion, Cycling UK underestimates the role of transport in the economy and the extent to which improving the M4 would benefit the economy of South Wales.
- 4.1.4. It is the view of Cycling UK that the Scheme offers poor value for money yet it promotes an option – the Blue Route – which has a substantially lower BCR than the Welsh Government’s proposal. Whatever weight is given to wider economic benefits, the Welsh Government’s proposal offers better value for money than the Blue Route.