

---

Proof of Evidence by  
PROFESSOR CALVIN JONES

---

On Behalf of  
Gwent Wildlife Trust

In the matter of:  
Public Local Inquiry into the M4 relief road around Newport: Economic Case

February 2017

## **INTRODUCTION**

### **Witness Expertise and Experience**

1. I am currently Professor of Economics at Cardiff Business School. I have 25 years' experience examining issues related to the development of the South Wales economy, and the broader Welsh economy, in both the public sector and academia.
2. I have been involved in numerous economic advisory committees for the UK and Welsh Governments, various third sector organisations and others. I sit on the Institute of Directors' Wales Policy Committee, and the Institute for Welsh Affairs Re-Energising Wales steering group. I have worked on an extensive range of projects for and with a variety of firm, from large multinationals such as Tata to SMEs and social enterprises. I am widely published in several languages, and I have particular expertise in energy economics, sustainable development, tourism, major sports events and the impact of the digital economy.
3. My brief evidence here relates specifically to the likely economic impact of a new M4 Relief Road, both directly and indirectly.

### **Scope of Evidence**

4. The scope of my evidence relates to the economic models put forward for the Welsh Government<sup>1</sup> as the basis for their economic forecasting in respect of the proposed M4 motorway development.

### **The Proposed M4 Relief Road will not improve South Wales' Economic Prospects**

5. I have seen zero substantiated evidence that a problem with road connectivity is a significant downward pressure on economic or employment growth in the region. There is little evidence that such a relationship is discernible anywhere in Europe, especially when reasonable provision already exists (Vickerman et al, 1999). The issue of intangible benefits from increased connectivity, as well as 'access to markets' is often cited as an important element. However, as the First Minister has noted on a number of

---

<sup>1</sup> Welsh Government M4 Corridor around Newport Economic Appraisal Report - M4CaN-DJV-GEN-ZG-GEN-RP-TR-0001 March 2016.

occasions, Wales has in recent years enjoyed its best ever performance in Inward Investment<sup>2</sup> including investment in south Wales by car manufacturers<sup>34</sup>, an activity that a priori would be more susceptible to connectivity issues. It is difficult to imagine an even greater step change in performance would follow road investment.

6. The main reasons behind the economic problems of South Wales are long-standing (d since Marquand in 1936) and have repeatedly been identified<sup>5</sup> as:
  - lack of economic variety and headquartered firms;
  - low levels of entrepreneurship;
  - limited aspirations; and
  - poor skills and qualifications.
7. Globalisation, reduced demand for lower-skilled workers and the fragmentation of work have, since 1991, exacerbated these issues. The work of Cooke and Morgan (1998), Richard Florida et al (2008), Castells (2011) and many others make it clear that it is internal economic structures, relationships, exploitation of the knowledge economy and skills and attitudes that create successful regions. A new M4 motorway addresses none of these issues. It is notable that the Basque Country, in many ways similar to Wales but with (arguably) even worse hard-connectivity, is the richest part of Spain with a distinctive economy built on well-functioning internal networks, good education, skills and governance and admirable innovation and knowledge transfer (Navarro et al 2014).
8. South Wales is currently a dysfunctional economy for a variety of reasons. With a new motorway it will simply be a dysfunctional economy with a high quality new road.

---

<sup>2</sup> BBC (2014) Inward investment in Wales 'highest for nearly 25 years' <http://www.bbc.co.uk/news/uk-wales-28392774>

<sup>3</sup> TVR to create 150 sports car jobs in Ebbw Vale <http://www.bbc.co.uk/news/uk-wales-35775158>

<sup>4</sup> Aston Martin creates 750 jobs in St Athan <http://www.bbc.co.uk/news/uk-wales-35640339>

<sup>5</sup> Bryan & Jones, 2000 for an overview; <https://www.bevanfoundation.org/commentary/shape-wales-come/>

## The Development of the Black Route disrupts Wales' Economic Development Narrative

9. The focus on a new relief road, and on the Black Route specifically, is at odds with Welsh Government Policies that seek to build a distinctive economic development narrative for Wales. Specifically there are tensions with:
- The Wellbeing of Future Generations (Wales) Act 2015 which requires Public Sector agencies to work towards low-carbon and holistic measures of progress and development<sup>6</sup>;
  - The new Cardiff City Deal that has inclusive growth as a target<sup>7</sup>; and
  - A desired modal shift away from private transport for both leisure and work<sup>8</sup> and the development of the South Wales Metro.
10. Whilst these tensions might be manageable in a narrow sense – for example in the Welsh Government's attempt to show the Black Route meets the precepts of the Future Generations Act – they will significantly damage the broader Welsh Government narrative that Wales is a sustainable, green country with abundant and well-managed natural resources within which to do business.<sup>9</sup> This is particularly worrisome given the increasing importance of green energy and policy in the eyes of key global business players.<sup>10</sup>
11. Moreover, the M4 proposal is particularly problematic because of the limited support for the Black Route outside of large businesses and hauliers (and only certain sections of Welsh Government itself), the outright hostility of many parts of civic society,<sup>11</sup> business<sup>12</sup> and the political classes<sup>13,14</sup>, and the perception that the decision making process has been narrow, non-transparent and lacked evidence, a

---

<sup>6</sup> <http://gov.wales/topics/people-and-communities/people/future-generations-act/?lang=en>

<sup>7</sup> <http://cardiffcapitalregioncitydeal.wales/seeking-regional-voices-support-findings.html>

<sup>8</sup> e.g. via the Active Travel Act <http://www.senedd.assembly.wales/mglIssueHistoryHome.aspx?lId=5750>

<sup>9</sup> <http://gov.wales/newsroom/businessandconomy/2016/160303-green-growth-forum/?lang=en>

<sup>10</sup> See for just one example Google <https://www.google.com/green/energy/#investments>

<sup>11</sup> Federation of Small Business's <http://www.walesonline.co.uk/business/business-news/m4-decision-billion-pound-mistake-7438438>

<sup>12</sup> Wildlife Conservation organisations <http://www.wtwales.org/wildlife/m4-road-proposals>

<sup>13</sup> Environment and Sustainability Committee, Welsh Assembly, Inquiry into the Welsh Government Proposals for the M4 around Newport (July 2014) <http://senedd.assembly.wales/documents/s29494/Report%20-%20July%202014.pdf>

<sup>14</sup> [http://www.southwalesargus.co.uk/news/11700003.Former\\_minister\\_John\\_Griffiths\\_opposes\\_any\\_new\\_M4\\_route/](http://www.southwalesargus.co.uk/news/11700003.Former_minister_John_Griffiths_opposes_any_new_M4_route/)

rigorous Cost-Benefit study or any integrating overview with wider policy. In many ways, whether this is a *bad* decision is a separate issue to whether it is a *badly made* decision, but both have resonance with wider business and other audiences.

### **Black Route Investment may exacerbate Intra-regional and Social Disparities**

12. A key issue at hand is not whether an M4 Relief Road is a good investment taken in isolation but rather whether it is the best use of scarce (and borrowed) development finance. A number of elements suggest not.
13. Firstly the areas that the M4 would most directly affect (Cardiff/Vale of Glamorgan and Monmouthshire/Newport) are respectively the 1<sup>st</sup> and 3<sup>rd</sup> richest NUTS3 areas of Wales in terms of GVA per head.<sup>15</sup> Allocating the bulk (or all?) of Wales' borrowing ability to improving connectivity here would be extremely divisive. Moreover, the arguments in favour of such concentration – around 'economic agglomeration' – are on detailed inquiry far less strong than usually assumed, not relevant to the case at hand and being supplanted by notions that a place-based inclusive approach is required (Barca et al, 2012).
14. Secondly, across the region between 25-30% of households do not own a car,<sup>16</sup> with car ownership correlated strongly with other poverty and income measures. Poorer people in the area would therefore rarely use the road themselves which means the most direct benefits would be enjoyed by those regional residents who are already more affluent. Investments in public transport have a far greater impact on the poorer (Lucas et al 2016).

### **The Proposed M4 Relief Road brings Limited Socio-economic or Environmental Co-benefits**

15. Constraints on public resources means that investments must demonstrate, where possible, a big 'bang for the buck' and indeed, where possible, different kinds of 'bangs'. Investments aimed at improving

---

<sup>15</sup> <https://statswales.gov.wales/Catalogue/Business-Economy-and-Labour-Market/Regional-Accounts/Gross-Value-Added-GDP/gva-by-welshnuts3areas-year>

<sup>16</sup>

[http://www.racfoundation.org/assets/rac\\_foundation/content/downloadables/car%20ownership%20rates%20by%20local%20authority%20-%20december%202012.pdf](http://www.racfoundation.org/assets/rac_foundation/content/downloadables/car%20ownership%20rates%20by%20local%20authority%20-%20december%202012.pdf)

economic performance or socio-spatial functioning can have a number of co-benefits, for example investment in cycling and green infrastructure can improve access to work but also health outcomes, access to other services, and environmental quality and use whilst reducing climate emissions (Mulley et al 2013). The development of renewable energy may, where novel technologies are involved, lead to new discoveries and a strong export industry (Waters & Aggidis 2016). Meanwhile non-economic investment can have positive socio-economic consequences, especially when spread geographically and temporally – think for example of climate- or fuel poverty-related domestic retrofit that creates jobs where people live, and engages and upskills local SMEs.<sup>17</sup>

16. The provision of a new motorway will *a priori* generate very limited co-benefits.

#### **Cost are likely to be Far More than Anticipated will Largely ‘Leak’ from Wales**

17. The work of Brent Flyvbjerg and colleagues over many years<sup>18</sup> demonstrates a number of points:

- Mega projects – especially those over \$1bn - almost always exceed their expected budgets;
- This is true across a long time period and all continents: ‘good’ governments do no better;
- Poor accountability increases risk;
- On average, road projects go over budget by 20%;
- Transportation project leaders typically overstate demand for the proposed infrastructure; and
- The only interpretation of the evidence is that mega-project proponents – including politicians, firms and the media – systematically misinform parliaments and the public about likely costs and project risks.

18. This evidence is worrisome for Wales where accountability on the proposed M4 Relief Road has been poor, and care should be taken that those supporting the most expensive are doing so on the basis of genuine regional rather than private/organisational/political returns (Jones, 2001). Additionally of concern is the impact any cost-overruns might have on Welsh Government budgets, particularly in light of Brexit (and the withdrawal of potentially supportive EU funds across a number of areas), and the concurrent funding of the South Wales Metro.

<sup>17</sup> <http://gov.wales/topics/environmentcountryside/energy/efficiency/arbed/?lang=en>

<sup>18</sup> [https://scholar.google.co.uk/scholar?q=FLYVBjERG+mega+projects+cost&btnG=&hl=en&as\\_sdt=1%2C5](https://scholar.google.co.uk/scholar?q=FLYVBjERG+mega+projects+cost&btnG=&hl=en&as_sdt=1%2C5)

19. It is also worth noting that the benefits from procurement will likely leak in large part from the region.

Wales has a paucity of large ‘Tier 1’ contractors who are able to bid for the largest construction or design lots, despite many years of policy concern in this area, and this will be the case even if Brexit provides more scope for local contracting. The geographic location of the project raises the prospect that much of the labour and plant will be sourced from across the border in England, which might be less the case for a project located deeper into Wales.

### **The Proposed M4 Relief Road is Not a Future-Oriented Investment**

20. Human society, in the West at least, appears on the cusp of radical change in productive, distributive and consumption systems due to the impact of digital technology, even leaving aside the key ecological and energy challenges that will change the way we live.
21. Most relevant here are the huge strides being made in the development of connected and autonomous vehicles, with new technology entrants<sup>19</sup> reinforcing the safety-related work of car manufacturers, and with autonomous freight vehicles to be tested on UK roads imminently.<sup>20</sup> The roll out of such vehicles raises the prospect of far higher nose-to-tail traffic flows, with a very significant decrease in the sort of accidents that are an issue for the existing M4.
22. Whilst the technology is proceeding apace, regulations (and the rate of fleet turnover) mean we cannot know how long it will take for such technology to become ubiquitous (Brett, 2016). However, over the lifetime of a new road there is a substantive risk that capacity relevant to current trend-based projections will constitute a massive over-build in the light of autonomous passenger and freight travel. Combine this with modal shift, and potentially an aggregate reduction in demand for work travel as automation proceeds apace, and it is clear that a ‘now based’ assessment of the worth of a new road ignores key, quickening and irreversible socio-technical trends.

---

<sup>19</sup> See <https://www.google.com/selfdrivingcar/> and Tesla’s Autopilot for example.

<sup>20</sup> <http://www.autocar.co.uk/car-news/industry/autonomous-lorries-be-tested-uk-motorways-year>

## Deep Place Study

23. An in-depth study<sup>21</sup> by Dr Mark Lang of Cardiff University's Sustainable Places Research Institute stated that:

*"Some of the key economic priorities that have emerged in Wales, notably the proposed construction of an M4 relief road around Newport, appear to offer little to the well-being of future generations. They also appear to offer very little to the people and town of Pontypool, who like other communities have not been engaged in the conversation around setting the economic policy agenda."*

24. The Ellen MacArthur Foundation<sup>22</sup> argues that the values of the Circular Economy - extending the use cycle length of an asset; increasing the utilization of an asset or resource; looping or cascading an asset through additional use cycles; regenerating natural capital – can be supported by intelligent assets. This entails using the growing 'internet of things', the knowledge of location, condition and availability of assets, to significantly increase global GDP whilst also reducing global carbon emissions. In short, you do not need to solve a 21<sup>st</sup> century problem with a 1960s solution.

## Economic Appraisal Report (EAR)

25. I have not had sufficient time to fully analysis the Revised Economic Appraisal Report but hope to be more familiar with it by the time I give evidence to the Inquiry. In summary, however, managing large-scale transportation infrastructure projects is difficult due to frequent misinformation about the costs which results in large cost overruns that often threaten overall project viability.<sup>23</sup> In this case, the EAR fails to include some significant costs or dis-benefits that are likely to make the scheme poor or low value for money (VfM).

- a) The following Benefit: Cost Ratios (BCRs) are associated with the following VfM categories:<sup>24</sup>
- BCR of less than 1 = poor value for money
  - BCR between 1 and 1.5 = low value for money

---

<sup>21</sup> Dr Mark Lang - All Around Us The Pontypool Deep Place Study

[http://www.cardiff.ac.uk/\\_data/assets/pdf\\_file/0004/490450/Pontypool-Deep-Place-Study-2016.pdf](http://www.cardiff.ac.uk/_data/assets/pdf_file/0004/490450/Pontypool-Deep-Place-Study-2016.pdf)

<sup>22</sup> Ellen MacArthur Foundation (2016). Intelligent Assets: Unlocking the Circular Economy Potential.

<sup>23</sup> Cantarelli, C. et al 2010. "Cost Overruns in Large-Scale Transportation Infrastructure Projects: Explanations and Their Theoretical Embeddedness," European Journal of Transport and Infrastructure Research, 10 (1): 518. Link to published article: <https://arxiv.org/ftp/arxiv/papers/1307/1307.2176.pdf>

<sup>24</sup> Highways Agency Specification 2013-14 Technical Note

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/361412/PS\\_2013-15\\_-\\_4.19\\_The\\_Percentage\\_of\\_Major\\_Project\\_Spend\\_which\\_is\\_Assessed\\_as\\_Good\\_or\\_Very\\_Good.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/361412/PS_2013-15_-_4.19_The_Percentage_of_Major_Project_Spend_which_is_Assessed_as_Good_or_Very_Good.pdf)

- BCR between 1.5 and 2 = medium value for money
- BCR between 2 and 4 = high value for money
- BCR above 4 = very high value for money

The UK Government specifications also state that following a basic VfM assessment: *“Non-monetised impacts are then considered to ascertain whether those impacts are great enough to shift a scheme into a different category. The final VfM category is then assigned.”* However, the significant ecological (and ecosystem services<sup>25</sup>) impacts do not appear to be considered in the BCR. This is inconsistent with the new legislation in Wales e.g. the Environment (Wales) Act 2016.

- b) The EAR states (section 4.1.4) **investment costs** (i.e. capital costs) are “Excluding VAT and Inflation”. However:

- construction inflation is running at approximately 8-10% per annum (Prof Stuart Cole) which is highly important as the scheme is unlikely to finish until the mid-2020s; and
- VAT remains at 20%

Thus, excluding VAT and inflation is likely to mean a significant under-estimate of the cost which in turn could significantly affect the BCR.

- c) The EAR (section 4.2.6) also estimates 60-Year **Maintenance Costs** (£530.3m) and greenhouse Gas Benefits (£5.7m). However, maintenance costs do not appear to be included in the BCR calculations. Also, Professor Anderson has highlighted this scheme will likely increase greenhouse gas emissions nor reduce them.<sup>26</sup>

- d) Out of the 16 Local Authority Areas to gain the calculated wider economic benefits Bristol, North Somerset and South Gloucestershire rank 3, 4 and 5 respectively (section 6.2.4). Therefore, much of the benefit actually accrues to English areas on the other side of the Severn. However, it is

---

<sup>25</sup> The UK National Ecosystem Assessment (UK NEA) was the first analysis of the UK’s natural environment in terms of the benefits it provides to society and continuing economic prosperity. <http://uknea.unep-wcmc.org/>

<sup>26</sup> Dr Glynn & Prof. Kevin Anderson (2015) - The potential impact of the proposed M4 relief road on greenhouse gas emission [http://www.wtwales.org/sites/default/files/tyndall\\_centre\\_-\\_the\\_potential\\_impact\\_of\\_the\\_proposed\\_m4\\_relief\\_road\\_on\\_greenhouse\\_gas\\_emissions.pdf](http://www.wtwales.org/sites/default/files/tyndall_centre_-_the_potential_impact_of_the_proposed_m4_relief_road_on_greenhouse_gas_emissions.pdf)

unclear if the English 'benefits' affect the BCR for an M4 relief road whose cost is being picked up by the Welsh taxpayer.

- e) To help show a more positive VfM the Government have agglomerated all the benefits over 60 year period, adding £500m to other benefits (section 6.2.6). However, again they have not included 60 years' worth of maintenance costs or VAT.

f) The Sensitivity Analysis

- Section 7.3.2 highlights that *"under a low traffic growth scenario, the benefits of the scheme are reduced such that the initial BCR for the scheme falls slightly below one to 0.94"* (this BCR still does not take account of VAT, maintenance and inflation). This projection of low growth is a real possibility considering the significant economic uncertainty around Brexit.<sup>27</sup>
- Section 7.4.2 states *"in the scenario that tolls are removed, the Initial BCR for the scheme increases to 1.83"* because it states that toll removal is *"the publicly stated position of many Welsh Assembly members who consider the tolls to be a tax on the Welsh economy"*.  
  
However, considering the economic uncertainty around Brexit, with the risk of current and future reductions to the Welsh Government's block grant, it is equally possible that the tolls remain at the present value or go up. However, that scenario was not modelled.

26. The Environment and Sustainability Committee of the last Welsh Assembly (2011 – 2016) held an inquiry into the M4. The Report makes for good reading, in particular it highlighted that, *"Given the lack of clarity on the assessment of alternative options, wider public transport measures, the Metro proposals and the potential impacts of electrification it is difficult to conclude on the basis of current information that a convincing case for the long-term value for money of this potential investment has yet been made"*. I believe that this statement still holds true.

---

<sup>27</sup> <http://www.independent.co.uk/news/uk/politics/brexit-latest-uk-economy-reports-future-uncertain-a7321071.html>

## Conclusion

27. It is my considered opinion that if the rationale for an M4 Relief Road is one of economic development it is misguided, being based on no substantive evidence base. Whilst there is certainly a problem with existing M4 provision, the costs of congestion (which are suffered to a similar or often worse degree by other UK conurbations) do not justify the very significant investment in the Black Route. Neither is there any evidence of the 'catalytic' effects on mobile investment that are often held to emerge from better connectivity – indeed we are already outperforming in this area. I also consider that for the reasons outlined above, the Black Route is a very poor use of Wales' new (but limited) capacity to borrow, and evidence suggests the project is very unlikely to come in at budget. In summary, a rigorous 'blank sheet of paper' approach to the developmental use of any new borrowing powers would be very unlikely to place a £1bn+ road at the top of the list.

## References

- Barca, F., McCann, P., & Rodríguez-Pose, A. (2012). [The case for regional development intervention: place-based versus place-neutral approaches](#). *Journal of regional science*, 52(1), 134-152.
- Brett, J. A. (2016). [Thinking Local about Self-Driving Cars: A Local Framework for Autonomous Vehicle Development in the United States](#) (Doctoral dissertation, University of Washington).
- Bryan, J., & Jones, C. (Eds.). (2000). [Wales in the 21st century: an economic future](#). Springer.
- Castells, M. (2011). [The rise of the network society: The information age: Economy, society, and culture](#) (Vol. 1) John Wiley & Sons.
- Florida, R., Mellander, C., & Stolarick, K. (2008). [Inside the black box of regional development—human capital, the creative class and tolerance](#). *Journal of economic geography*, 8(5), 615-649.
- Lucas, K., Bates, J., Moore, J., & Carrasco, J. A. (2016). [Modelling the relationship between travel behaviours and social disadvantage](#). *Transportation Research Part A: Policy and Practice*, 85, 157-173.
- Jones, C. (2001). [Mega-events and host-region impacts: determining the true worth of the 1999 Rugby World Cup](#). *International Journal of Tourism Research*, 3(3), 241-251.
- Morgan, K., & Cooke, P. (1998). [The associational economy: firms, regions, and innovation](#). *University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship*.

- Mulley, C., Tyson, R., McCue, P., Rissel, C., & Munro, C. (2013). [Valuing active travel: Including the health benefits of sustainable transport in transportation appraisal frameworks](#). *Research in Transportation Business & Management*, 7, 27-34.
- Navarro, M., Valdaliso, J. M., Aranguren, M. J., & Magro, E. (2014). [A holistic approach to regional strategies: The case of the Basque Country](#). *Science and Public Policy*, 41(4), 532-547.
- Prof Stuart Cole *pers comm*
- Vickerman, R., Spiekermann, K., & Wegener, M. (1999). [Accessibility and economic development in Europe](#). *Regional studies*, 33(1), 1-15.
- Waters, S., & Aggidis, G. (2016). [A world first: Swansea Bay Tidal lagoon in review](#). *Renewable and Sustainable Energy Reviews*, 56, 916-921.