

# The Blue Route



A cost effective solution to relieving  
M4 congestion around Newport

Stuart Cole

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# The case for the Blue Route

There is a consensus that additional capacity is required to cope with peak period traffic congestion on the M4 around Newport. There are three main reasons:

- The Brynglas Tunnels on the M4 directly to the north of Newport are an acute pinch-point, reducing a six-lane motorway to four lanes. There have been many instances when there have been closures due to traffic incidents at this spot. For instance, in July 2011 the M4 was closed for two days after a lorry caught fire in the Brynglas tunnels. Nearby structures - the Usk Bridge to the east of the Tunnels and the canal bridge to the west - accentuate the difficulty of any road-widening project.
- There were faults in the original design of the Newport northern by-pass/ northern distributor road, later linked in to the M4, including the lack of a hard shoulder for some of its length. This reduces its capacity for current traffic volumes.
- The M4 is used by local traffic as a local distributor road for short journeys within the local urban area.

The Government has put forward the following three options for overcoming these problems, but has rejected the first two and is now only considering building the last, a new motorway at a significant extra cost:

- Using the existing A48 but improving it by upgrading the present junctions on the route that impede the free flow of traffic with new bridges and underpasses - that is, building grade separated junctions. This was known as Option C and would cost **£345m**.
- Building a new dual-lane carriageway - known as the Red Route - at a cost of **£830m**.
- Building a new road to full motorway standards - known as the Black/Purple route, at a cost of **£936m**.

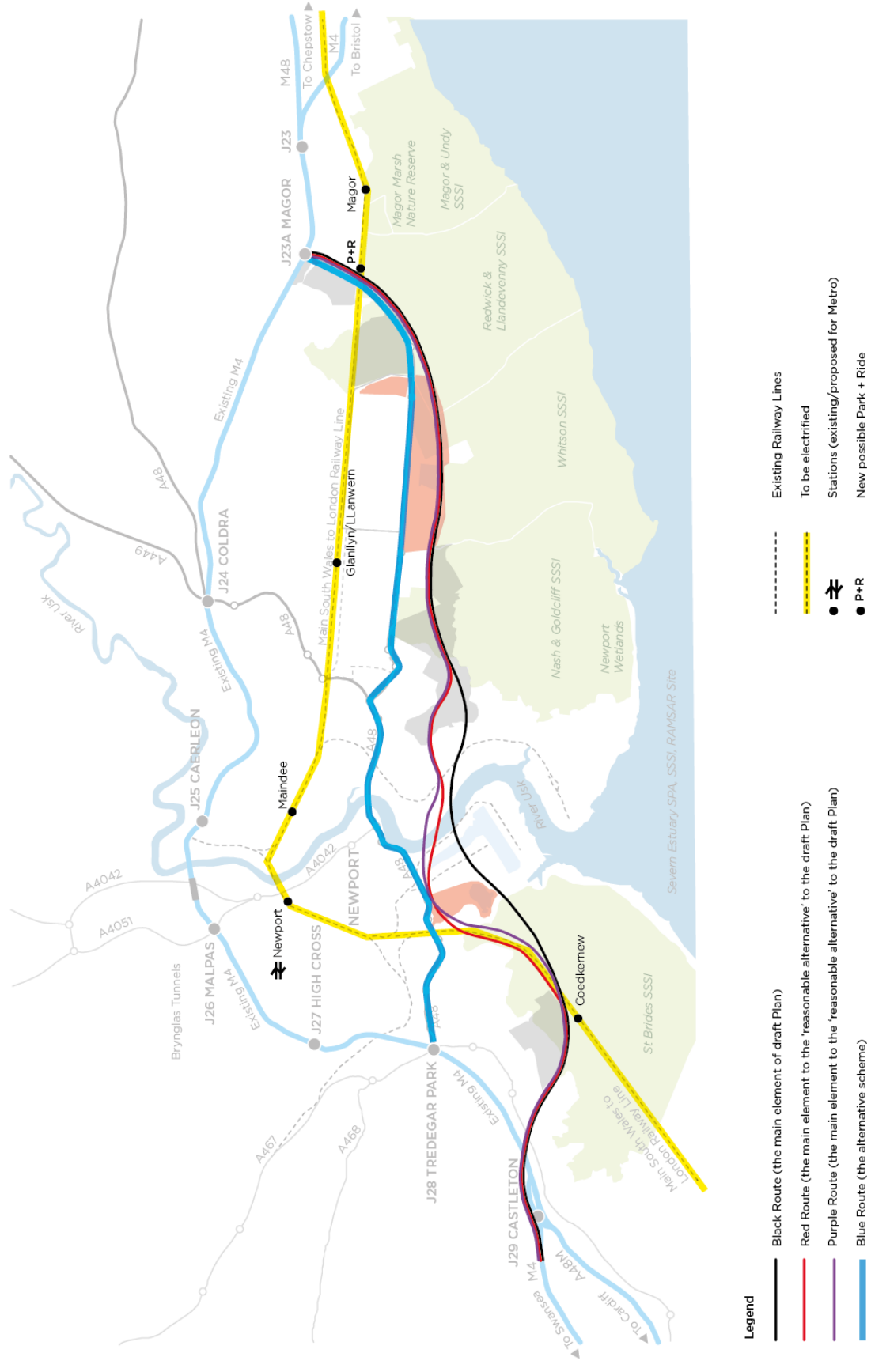
A fourth option put forward by the author, and developed from a Welsh Government plan in 2007, uses a combination of the A48 Newport Southern Distributor Road (SDR) around Newport and the former Steelworks Road to create a dual carriageway to motorway / expressway standard. Referred to as the Blue Route, it involves an upgrade of the A48 and the 'Steelworks Road' - a length of industrial roadway purchased by the Welsh Government in 2010 for building a motorway. It would run on a line to the south of Junction 23a on the east side of Newport to Junction 28 in the west. The roads would be re-constructed as a two-lane, dual carriageway at motorway standard. The land that has been acquired as Steelworks Road is sufficient for widening to a three-lane motorway at a future date if this is needed. The Blue Route would cost **£380m**.

The cost estimates for these four options are based on Welsh and UK Government figures and include costs for construction, acquisition of land and property, preparation and supervision, and traffic-related maintenance. They assume each scheme to have an opening year of 2020 to provide a comparable cost base.

Bringing forward the completion date for the Black Route initially set by the Welsh Government at 2031 is dependent on new borrowing powers but more significantly on the annual borrowing limit which HM Treasury will impose to maintain a decreasing Public Sector Borrowing requirement. A lower cost scheme will require less borrowing annually and could therefore be completed sooner while allowing other transport investment elsewhere in Wales using any surplus annual investment allowance.

The issue is whether the Welsh Government's present motorway option provides an unnecessary increase

Fig 1: Map showing alternative routes to relieve congestion on the M4 around Newport



in capacity and in consequence unnecessary expenditure. The argument is that the fourth option, the Blue Route, would be a more appropriate solution. It would deliver what is needed at a much lower cost and with significantly less impact on the environment. It would have a lower capacity than the option favoured by the government but would be sufficient to cope with the estimated need.

The present traffic flows on the A48 southern distributor route around Newport route are lower than were expected. This is a consequence of the number of intersections, which disrupt the free flow of east west traffic. Grade separated junctions, where the traffic flow is unimpeded, would give these flows greater priority.

A key question in deciding between the various upgrades is calculations about future traffic forecasts. After the recession ends, will there be a lower level of car usage in absolute terms or will the rate of increase be similar to that in the immediate pre-recession?

An additional consideration will be the Welsh Government's plans to create a Metro rail and bus system for south-east Wales, as outlined in its *Cardiff Capital Region Metro Impact Study*, published in October 2013. This is an ambitious scheme, which will take between 10 and 15 years to deliver, at an estimated cost of £1.97 billion. There is no doubt that it will have a major impact on ameliorating traffic congestion around Newport.

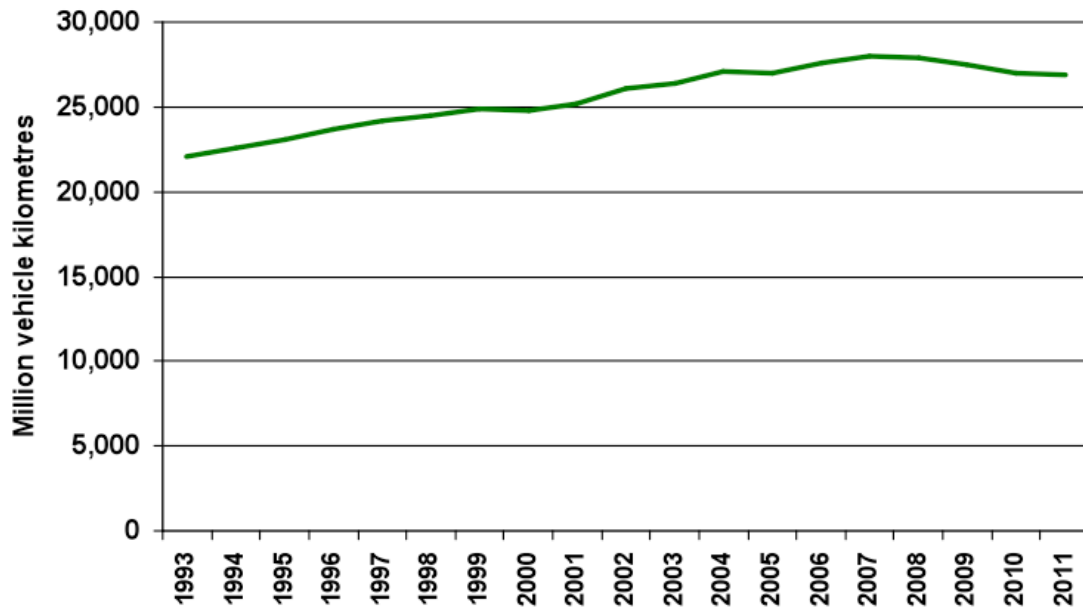
The Welsh Government's consultation paper *M4 Corridor around Newport* forecasts a need for 20 per cent more traffic capacity by 2035. It is estimated that an additional motorway (the Black/Purple Route) would divert up to 40 per cent of existing traffic away from the present M4. This is far more than necessary as a solution to current and future capacity problems.

At the same time the Government estimated that Option C was only expected to divert between 6 and 10 per cent of the traffic. This suggests that the Blue Route, which would utilise the Steelworks Road, would divert around 15 per cent. This may well be a conservative estimate. Furthermore, the consultation paper takes no account of the impact of rail electrification and specifically excludes consideration of future Metro developments along the M4 corridor despite significant modal transfer from car to rail at other similar locations.

The Blue Route could solve the congestion issue on the M4 earlier than the Black/Purple route since it could be completed sooner, by 2018. Combined with the Metro and rail electrification it would provide more than adequate relief of traffic congestion over the period to 2035.

Even with the UK Government's forecasts showing a 20 per cent growth in traffic flow between 2012 and 2030, the Blue Route would satisfy capacity requirements to 2025. However, the more likely change in car usage is a lower percentage increase, with the current plateau continuing for some time. The forecast for growth in the Welsh Government's consultation document has already been shown to be in excess of actual flows for 2012 and 2013.

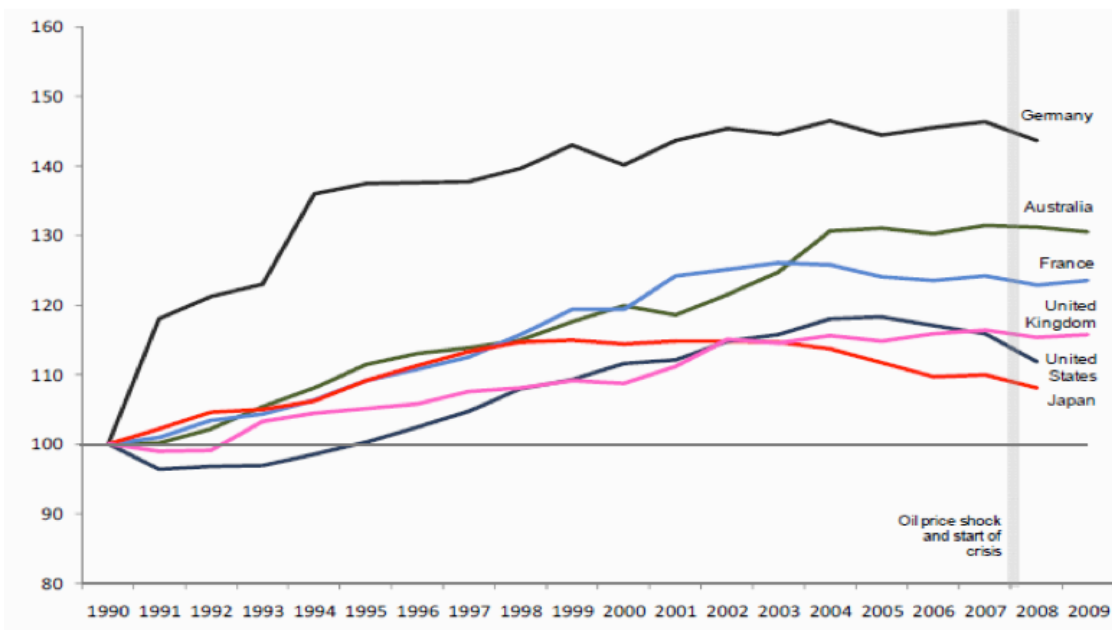
**Fig 2: Wales traffic Trends 1993 - 2011**



Source: Traffic in Wales, Statistics Wales, Welsh Government, 2012.

This plateauing of demand is not confined to Wales (Fig 2), nor to the UK as a whole. It is a pattern in other European Union countries, the United States and Japan (Fig 3). The policies now being employed from the EU to China are to prioritise investment in public transport, cycling and walking and to make improvements to existing roads rather than build new major highways. These are now seen as the way to sustainable solutions for traffic congestion and environmental pollution in growing cities.

**Fig 3: International comparison of car usage in industrialised countries**



Source: International Transport Forum statistics.



The main pressure for relieving congestion on the M4 around Newport has come from the business sector in Wales, represented by Federation of Small Businesses, the Institute of Directors, and CBI Wales. However, only the CBI supports the Welsh Government’s position. The Federation of Small Businesses supports the Blue route, while the Institute of Directors says it would welcome a scheme which solves the M4 congestion problem and is future-proofed to extend road capacity if required. The Blue Route, in conjunction with the Welsh Government’s plan for rail electrification and the Metro, will achieve that.

## The Blue route in detail

The Blue Route is a combination of the A48 Southern Distributor Road upgrade (as in Option C) together with the Steelworks road, linking together at the present Queensway Meadows junction. It would be re-constructed as a four-lane dual carriageway road at expressway standard. The land that has been acquired would be sufficient for widening to three-lanes at a future date.

The Blue Route involves an upgrade between Junctions 23a and J24 to the east of Newport to Junction 28 to the west. This would involve upgrading the current A48 Southern Distributor Road whose traffic flows are lower than were expected. That is largely a consequence of the number of intersections, which disrupt the free flow of east west traffic. Grade separated junctions, where the traffic flow is unimpeded, would give these flows greater priority.

The junctions where this should be feasible are Pont Ebbw, Maesglas West/East, Docks Entrance, Usk Way, Corporation Road, Nash Road, Queensway Meadows, Hartridge, and Beatty Road. The proposed grade-separated intersection at Queensway Meadows would link onto the A4801 Steelworks Road. There would be two links onto the M4, at Junction 24 and Junction 23a. As a result the Blue Route will be capable of attracting traffic to/from both the Severn crossings and the A449/M50 routes into Wales. This is in contrast to the Welsh Government's motorway proposal which can only divert traffic to/from the Severn crossings.

At the western end of the A48, north of the Tredegar House conservation area and entering the M4 at Junction 28, there is currently a confluence of high peak traffic flows. The present A48 becomes a single carriageway four-lane road between the Pont Ebbw junction and Junction 28 on the M4. Currently there are traffic flow constraints at peak periods. There are Government proposals for redesigning this junction.

The present four-lane single carriageway road will require dualling to be able to carry the anticipated additional traffic, particularly from the A467 and the M4. There is woodland to the north adjacent to Tredegar Park sports facilities which could be affected. To the south are UK Government and Agency offices with car parking and some recent tree plantings immediately adjacent to the highway. The National Trust property at Tredegar House is not compromised by this scheme.

The Blue Route option rebuilds, with grade-separated inter-sections, the A48 south of Newport and the Steelworks road (A 4810). The result would be to increase east-west road capacity and reduce M4 congestion. This lower cost scheme could be constructed by 2018.

The Steelworks Road was purchased at a cost of £7.7 million by the Welsh Government from Tata Steel in 2010 to provide land for a 7 kilometre long section of the M4 relief motorway from Junction 23A. It was intended to link into the A48 at Queens Meadows junction between Junction 24 and Junction 28. Both roads would then have grade-separated junctions. This is the scheme that has been developed into the Blue Route.

The line of the Steelworks Road has major advantages in traffic terms, with little environmental downside. It is inside the footprint of the existing 'road' and industrial land and requires no public inquiry prior to construction. However, as a result of decisions over the last six years the land on either side of the Steelworks Road has been developed and would have to be repurchased.

The A 4801 Steelworks Road has recently been partly upgraded. What now exists is a local county road with several at grade intersections (roundabouts or traffic lights) with development taking place on either side. However, this does not preclude it being incorporated into the proposed Blue Route.

The proposition is that a four-lane motorway/expressway standard dual carriageway will provide the required resilience of flows on the existing motorway. The grade-separated intersections link into several areas of Newport including direct access to the Docks. This compares with what would be just one intersection, at a Site of Special Scientific Interest, along the new M4. The Blue Route would also avoid the complete bypassing of existing facilities such as retail parks and industrial estates with the inconvenience and negative economic impact that would be entailed.

## The Blue Route compared with other options

### LAND TAKE

- The Blue and Purple motorway option will take considerably more greenfield land than the proposed Blue Route which concentrates construction on using the existing road footprint - that is, the former industrial land at Llanwern Steelworks with some limited areas of green-field land.

### ECONOMIC IMPACT

- The upgrade of the A48/Steelworks Road would improve journey times and reliability on the existing M4 corridor around Newport by offering an alternative route, especially in the event of major incidents on the present M4. This relief of traffic would improve the efficiency of long distance traffic, providing improved connectivity to and from England. An improved A48 passes through important retail, distribution and manufacturing areas.
- Initial traffic modelling showed that travel time on the network would be reduced, though there would be delays during construction. Delays occurred during the improvement of the M4 at Cardiff Gate but was not considered a reason for failing to proceed with construction.
- There would be economic benefits for the A48 corridor through journey time improvements, and enhanced accessibility for southern Newport, including some of the city's most disadvantaged wards.

### ENVIRONMENTAL IMPACT

- The Red and the Purple / Black Routes (that is a new M4) cross a Special Area Conservation site and a Site of Special Scientific Interest at the River Usk, plus all but one of the Sites of Special Scientific Interest in the Gwent Levels.
- The Blue Route would give by far the lowest environmental impact of any of the proposals. It is not free of adverse environmental impact since it will intrude into the Redwick and Llandeenny Site of Special Scientific Interest at Barecroft Common. However, as the new Steelworks Road has largely been constructed this would militate against any further adverse environmental consequences.

- Negative environmental impacts would also include the possibility of some minor demolition of buildings, visual adverse impacts, and some biodiversity losses associated with the River Usk Special Area of Conservation. Even so, the biodiversity rating for the scheme is more positive than the motorway - according to the Welsh Transport Planning and Appraisal Guidance analysis in March 2013.
- The grade separated junction construction would create some issues but this could coincide with the proposed construction of 4,000 houses on the adjacent land. However, the resultant more freely flowing traffic could be expected to reduce emissions and noise.
- This route would reduce traffic congestion on the M4. There will be some increase in traffic noise along the A48 / Steelworks Road. The present land use is largely industrial or commercial with some housing where amelioration measures can be taken.

## **SOCIAL IMPACT**

The comparative analysis of all four routes using the Welsh Governments format is shown in Figure 4.

- A new 4,000 housing development on 40 hectares is planned between the Steelworks Road and the Great Western Main Line to the north. The Blue Route will provide enhanced access to this development.
- At present, the access junctions are controlled by traffic lights or roundabouts. This proposal would see these changed to grade-separated junctions. They would improve accessibility to the sites and provide greater connectivity to other parts of Newport and the M4 both east bound and west bound. There would be improved access to facilities such as the steelworks, the cement works, and the Magor Brewery.
- Adverse effects on cyclist and pedestrian movements will need to be taken into account. Alternative routes can be provided so that any increased traffic volumes on the proposed corridor do not increase hazards or community severance. In the case of the Purple/Black routes this would not be possible because, as motorway options, they would preclude provision for cyclists and walkers.

**Fig 4: Comparison scores for alternative options for the M4 Corridor around Newport**

| Criteria                                     | Doing Nothing | Red Route All-Purpose Road | Purple Route Motorway | Black Route new M4 | Blue Route |
|--|---------------|----------------------------|-----------------------|--------------------|------------|
| <b>Economy</b>                               |               |                            |                       |                    |            |
| Transport Economic Efficiency (TEE)          | (---)         | (++)                       | (+++)                 | (+++)              | (++)       |
| Economic Activity and Location Impact (EALI) | (---)         | (++)                       | (++)                  | (+++)              | (++)       |
| <b>Environment</b>                           |               |                            |                       |                    |            |
| Noise  | (--)          | (0)                        | (0)                   | (+)                | (+)        |
| Local Air Quality                            | (--)          | (+)                        | (+)                   | (++)               | (+)        |
| Greenhouse Gas Emissions                     | (-)           | (0)                        | (+)                   | (+)                | (+)        |
| Landscape and Townscape                      | (0)           | (---)                      | (---)                 | (---)              | (0)        |
| Biodiversity                                 | (0)           | (---)                      | (---)                 | (---)              | (-)        |
| Heritage                                     | (0)           | (--)                       | (--)                  | (--)               | (0)        |
| Water environment                            | (0)           | (--)                       | (--)                  | (--)               | (0)        |
| Soils  | (0)           | (---)                      | (---)                 | (--)               | (0)        |
| <b>Social</b>                                |               |                            |                       |                    |            |
| Transport safety                             | (--)          | (++)                       | (+++)                 | (+++)              | (++)       |
| Personal security                            | (0)           | (+)                        | (+)                   | (+)                | (+)        |
| Permeability                                 | (-)           | (+)                        | (+)                   | (+)                | (+)        |
| Physical fitness                             | (0)           | (+)                        | (0)                   | (0)                | (+)        |
| Social inclusion                             | (-)           | (0)                        | (+)                   | (+)                | (0)        |
| Equality, Diversity and Human Rights         | (0)           | (+)                        | (+)                   | (+)                | (+)        |

Source: Welsh Transport Planning and Appraisal Guidance (WelTAG) Welsh Government / Author's application to Blue Route

# Impact of public transport initiatives

The Welsh Government's case for a new motorway, put forward in its September 2013 consultation paper M4 Corridor around Newport, takes no account of the impact of rail electrification or the Metro. The paper says it does not take account of public transport measures "because the Welsh Government has commissioned a separate study and report on proposals to develop a Metro system for south east Wales". Yet these separate proposals cannot be considered in isolation. Each will have a significant impact on the other.

Indeed, the Welsh Government's *A Cardiff Capital Region Metro Impact Study*, published in October 2013, argues that it will help address congestion on the M4. The seriousness of the Government's intentions can be gauged from the £63m it has allocated to the Metro scheme in its 2013-14 transport budget. The longer term proposal is an ambitious scheme taking 10 to 15 years to deliver, at an estimated cost of £1.97 billion. Elements of the Metro that are directly relevant to transport congestion around Newport are:

- Four new stations on the M4 corridor, including Llanwern and Caerleon.
- Rapid transit bus solutions around the M4 corridor communities.
- Rail developments such as a direct link between Newport and Ebbw Vale.

Electrification of the South Wales Main Line and the *ValleysVale/CwmFro* rail network has passed HM Treasury's procurement criteria on cost-effectiveness. Work is under way on funding, planning, procurement and some construction. Completion of the electrification of the South Wales Main Line through Newport is expected by 2018, and the Valley Lines by 2019.

Both electrification and the Metro project are within the M4 relief road construction timespan. The South East Wales Transport Alliance (Sewta) Rail Strategy Final Report (2013) proposes over 20 new stations, including at Llanwern and Coedkernew, and increased capacity on the Ebbw Valley line. The objective is to attract car commuters away from the M4, A470 and other key routes and onto the railway. As the strategy concludes:

"...several of its recommendations should be packaged to form an M4 corridor corporate strategy to provide realistic alternatives to car use in this congested corridor".

The *M4 Corridor around Newport* consultation paper forecasts a 20 per cent increase in traffic by 2035. However, it is estimated that the Black/Purple motorway proposal would divert up to 40 per cent of traffic away from the existing M4. This is in excess of the capacity required to address the problem.

The March 2013, the Welsh Transport Planning and Appraisal Guidance Report predicted that grade-separated junctions on the A 48 (Option C) would divert about 6-10 per cent traffic from the M4 around Newport through Junction 24. This suggests that the Blue Route, which would utilise the Steelworks Road from Junction 23a, would divert around 15 per cent. This may well be a conservative estimate. The diversion of traffic at Junction 23a westbound from the M4 and eastbound onto the M4 will enable traffic to avoid the M4 Coldra interchange at Junction 24. It is along this section of the M4 that capacity is insufficient at peak flow periods. This is because of the combination of the Brynglas Tunnels capacity limitations with the A449 and A48 bringing commuter traffic on to the M4.

Using state of the art technology (which measures average speeds) drivers could be advised of journey times between Junction 23a and Junction 28 on motorway screens at both junctions so giving them a choice of route.

Rail electrification coupled with the Metro will have an additional impact on relieving traffic congestion around

Newport. On the basis of the experience of the Newcastle upon Tyne Metro, completed in the 1990s, and the 2004 Bordeaux Tram network reduced peak traffic flows into those cities by over 30 per cent. A conservative assessment in south east Wales could be a transfer of between 20-30 per of traffic from road to rail at peak times.

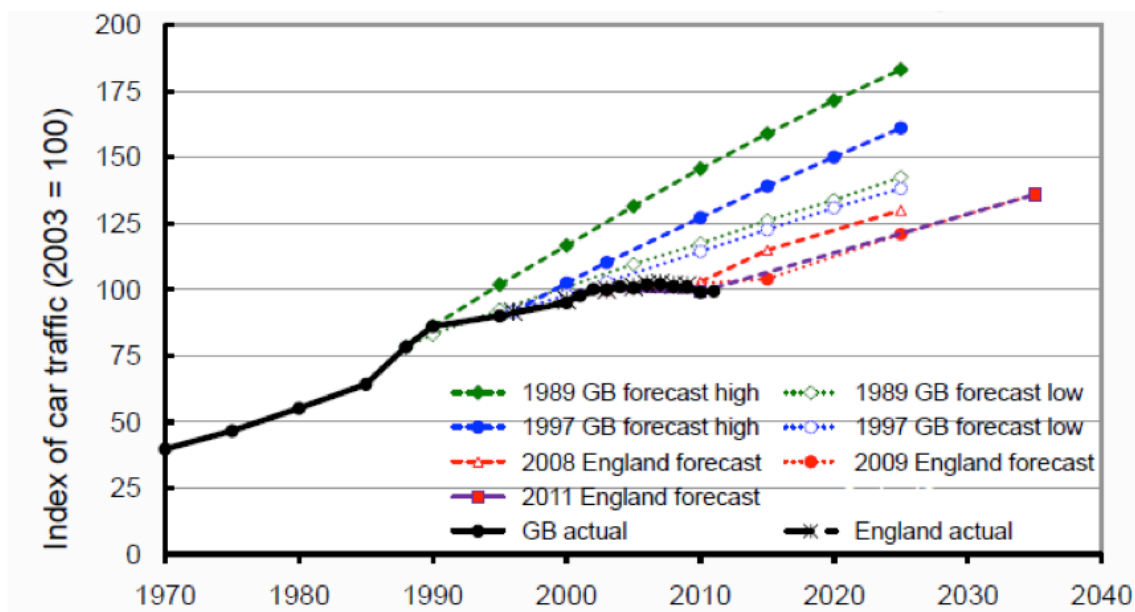
A similar impact could be expected in Newport and Cardiff. Electrification of the South Wales Mainline alone would reduce M4 peak traffic flows by up to 15 per cent. This level of modal change – the so called ‘sparks’ effect – has accompanied similar investment elsewhere in electrified track, new stations, trains / tram-trains / trams rolling stock, buses and interchange hubs.

Moreover, the Blue Route is likely to begin to solve the congestion issue on the M4 earlier than the Black/ Purple Routes because of its earlier completion date. The Blue Route combined with rail electrification would provide more than adequate relief to congestion over the period to 2035. The longer-term development of the full Metro proposals will lead to a further reduction in car use.

# Traffic forecasts for the M4

UK Government road traffic forecasts continue to show significant growth (Fig 5). However, other research shows that car usage has flattened since 2006, continues to plateau at the present time, with only slow growth predicted for the future. Traffic flows on the M4 around Newport over the period 2006-2013 have been relatively level as shown in *The M4 Corridor around Newport*. They throw into question the need for a new motorway around Newport. In fact the Welsh Government’s proposals were based on pre-recession traffic forecasts that are now being questioned.

**Fig 5: Department for Transport forecasts and actual car traffic growth**



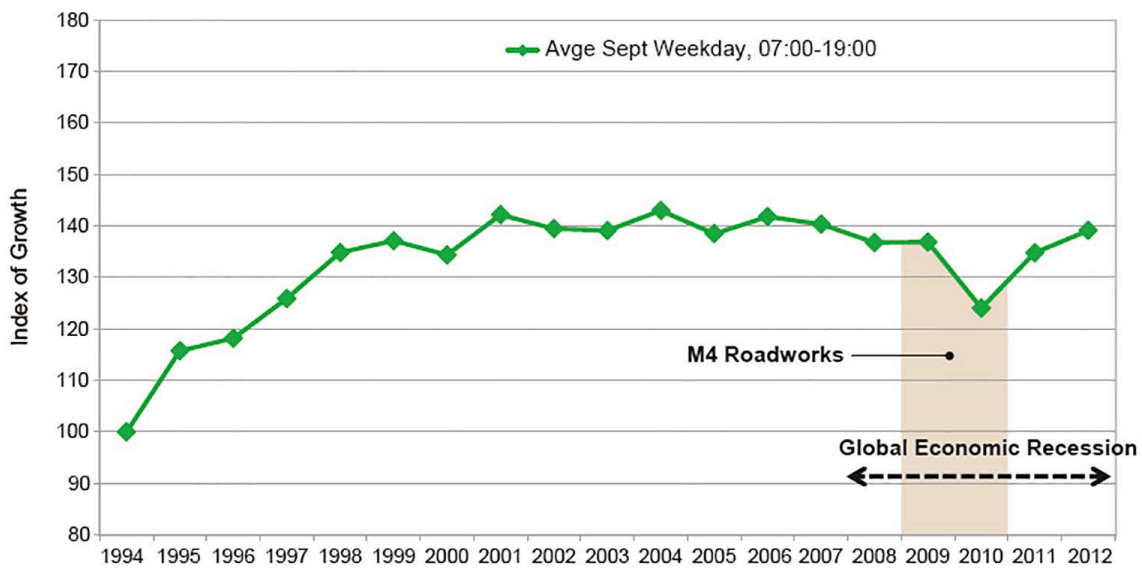
Source: Goodwin, P. and Mitchell K., *Analysis of DfT data*, Institute of Advanced Motorists, London, 2010.

Moreover, since 1985 transport planners have realised that large-scale road building does not solve urban traffic congestion because the extra capacity tends to attract more users. In his highly respected research, the late Dr Martin Mogridge has demonstrated that in some circumstances congestion actually got worse, particularly on routes to and from the new infrastructure.

The consultation document *M4 Corridor around Newport* predicts a 20 per cent increase in traffic over the period to 2035. These forecasts, developed by the Department of Transport, are based on population, household, workforce and employment projections, combined with a car ownership model. However, they exclude the impact of public transport developments on traffic flows.



**Fig 6: M4 Junction J26-J27 - Traffic Growth Index**



There was substantial growth in the late 1990s, but a levelling off from 2001 with a slight fall to 2012 (Fig 6). There is therefore limited evidence to suggest any change from the plateau in traffic flow that has occurred since 2001. The underlying trends in traffic flows over the last eight years have been affected by:

- The economic downturn, with journeys to work being reduced by unemployment and wages falling in real terms.
- Traffic congestion on strategic routes resulting in a transfer to rail.
- Improvements in rail service capacity and reliability following investment by the Government in rail services since the new franchise took effect in 2004- 05.
- The increase in petrol costs compared with rail fares has resulted in a cross price elasticity effect with a modal shift from car to rail.

Professor Peter Jones suggests a number of possible causal variables for the flattening of car usage:

- Increases in car costs.
- Income and GDP effects.
- Deterioration in road conditions.
- Improvements to the rail network.
- Spatial planning policies.
- Smarter choices.
- Improved mobile and Internet communications.
- Company car ownership and free fuel taxation regulations relating to payment in kind, have cut the number of taxpayers claiming both car and free fuel.

At the National Transport Conference in Cardiff in September 2013 Professor Brian Clarke, President of the Institution of Civil Engineers, made two key points: we are not sure if private motoring has peaked, and nor are we sure if the trend in reduced driving by young males will continue.

Professor Phil Goodwin has pointed to the following trends as explaining the plateauing of car use:

- Rise in mobile phone computing.
- Cultural and attitude changes.
- Health and environment as motivational factors to cut down on car use.
- Demographic changes – aging population; more single person households; women having children at a later age; young people and ‘empty nesters’ returning to city centre locations.
- Changing lifestyle images of travelling.
- Projected increase of Internet access and consequent growth of online shopping that will reduce work and retailing journeys.

It is noteworthy that increases in fuel excise duty had little effect on car usage until the mid-2000s and the onset of the recession. There is also potential for demand management to reduce car usage, through parking fees and road charging. Both of these could be deployed in Newport in conjunction with improvements to public transport.

It is noteworthy, too, that cities with high incomes and growing population show the greatest reduction in car use. There have also been reductions in medium sized towns and where high density new urban developments have occurred. This is the case in Cardiff and Newport.

Some evidence suggests that the cumulative effects to discourage car use and encourage alternatives - walking, cycling, or public transport - have bigger impacts on car use than income and prices. The Welsh Government’s recent Active Travel Act should have that effect.

Meanwhile, population projections for the 30 to 69 age group in Wales, the biggest car users, are fairly constant from 2010 to 2034. Between 2007 and 2011 Wales saw reductions in all modes of transport except cycling, which in relative terms, experienced a dramatic increase, as shown in the table below:

**Table 1: Change in Welsh transport modes 2007-11**

|                |       |
|----------------|-------|
| Cars           | - 4%  |
| Buses/coaches  | - 14% |
| Goods vehicles | - 16% |
| Motor cycles   | - 11% |
| Pedal cycles   | + 26% |

Source: Transport Statistics Wales 2012.

At the same time the stock of vehicles and the number of new registrations has fallen, for the following reasons:

- A modal shift to other forms of transport.
- High fuel prices coupled with static or falling incomes
- Demographic changes, including an ageing population.
- Behavioural change such as concern for the environment;
- Changing travel patterns.

Taken together these trends serve to throw doubt on the Welsh Government’s reliance on forecasts that car usage is likely to increase substantially in the coming decades. At the very least, there is great uncertainty about the traffic flow projections and whether a peak in car usage has been reached. What is likely is that, as the recession ends, there will be a lower level of car usage in absolute terms together with a lower rate of increase, than in the period before the recession.

Certainly car usage is likely to grow following economic recovery and with increased consumer confidence. However, it is likely to do so at a declining rate in the next three decades. The Welsh Government's forecast of a sharp uplift of 20 per cent between 2012 and 2030 in its consultation document M4 Corridor around Newport does not reflect recent trends. Certainly, in the period between 2012-2014 there has been a plateau.

Neither do the Welsh Government's assumptions take account of projected changes in the modal split between road and rail following electrification of the South Wales Main Line, nor the longer-term Metro investment.

The main drivers of the growth of car use – population projections, income, fuel prices, and competing public transport – all suggest that congestion on the M4 corridor north of Newport will not be as intense as the Welsh Government is assuming. In turn this points to the more cost-effective Blue Route as being a more appropriate response than constructing a new motorway.

## Views of the business sector

The business community is in no doubt of the need for a relief road for the M4 around Newport. For instance, CBI Wales says that the M4 relief road is its number one priority.

On the other hand the Federation of Small Business draws a parallel for the Government's three options with everyday retail expenditure where prices and quality are compared. The problem is that value for money is not part of the Welsh Government's consultation, since there is only one estimated published price of £936m for its preferred scheme (the Black/Purple Route).

The Institute of Directors Cymru Wales wants a solution to ease congestion on the M4 as quickly as possible. At the same time it says that any scheme has to be 'future proofed'. Not unreasonably, the business community does not want to see a repeat of the current M4 position in 20 years time. The Blue Route answers this point since, if traffic flow were to rise sharply, it could be upgraded to full motorway standard for the whole length.

The cost of the Welsh Government's preferred motorway option means that the cap that is likely to be set by HM Treasury on total Welsh Government borrowing could have a high proportion of allowed borrowing reached by just one scheme. The view of the Federation of Small Businesses is that this would deprive other parts of Wales of economically vital transport infrastructure. Accordingly, and along with the Institute of Directors, it has opted for the Blue Route at 40 per cent of the Black/Purple Route cost,

All three bodies accord with the principle of an integrated transport policy for south east Wales and question why the proposed Metro programme and electrification are not included in the Welsh Government's analysis and forecasts. By 2030 it is anticipated that improvements to public transport in southeast Wales will result in a modal split of near 30 per cent.

The Federation of Small Businesses concludes that there is "a lack of common sense" in the current consultation with the Government committing the vast majority of Wales' future borrowing capacity to a single project. This, it says, is not in the best interest of the wider Welsh economy.

# Conclusion

The primary reason for putting forward the Blue Route is the uncertainty of current traffic forecasts. These look likely to be lower than has been assumed. As a result it is questionable whether a new motorway can be justified. If it cannot then unnecessary and harmful environmental impacts could be avoided.

There is also an opportunity cost of constructing a motorway if an excessive financial allocation is made to this one scheme. This could be a direct impact on the revenue account, or on the Welsh Government's borrowing limits, thereby precluding other transport projects.

Substantial cost savings would be made as a result of opting for the Blue Route - the A48 Southern Distributor Road and the Steelworks Road - rather than a new M4 (the so-called Black / Purple Route).

Even with the Department for Transport's forecasts showing a 20 per cent growth in traffic flow between 2012 and 2030, the Blue Route could satisfy capacity requirements to 2025. However, these forecasts are being questioned as being too high a rate of growth by some of Britain's leading transport economics academics. Moreover, rail electrification and the Metro will significantly reduce congestion on the M4 around Newport.

The most likely change in car usage is a low percentage increase but with the current plateau demand pattern continuing for some time. The forecast for growth in the consultation document has already been shown to be in excess of actual flows for 2012 and 2013

The Blue route will have significantly less impact than a new motorway on environmentally sensitive sites south of Newport. The motorway option is inconsistent with the Welsh Government's sustainable development duty, climate change commitments and aspirations to halt the loss of biodiversity

Much of the argument put forward in favour of the motorway option has related to resilience, specifically for example in the event of a closure of the M4 as has happened in the recent past because of an incident at the Brynglas tunnels bottleneck. However, the Blue route combined with improved traffic management and diversionary signage would be a sufficient answer to such emergencies.

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