



A96 Dualling Project

*An appraisal of the Business Impact,
Economic Case (Fiscal and Process
Governance) and Environmental
Consequences*

*Submission to Infrastructure Commission
for Scotland*

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Contents

1	Introduction	2
2	Improper Political Influence in DMRB Process	2
3	Traffic Volumetrics	5
4	The Business/Economic Impact/Benefits	6
5	Analysis of the Business Case	10
6	Environmental Consequences	17
7	Conclusion	19
8	Recommendations	19
9	Glossary / Abbreviations	20
10	References	20

1) Introduction

Investing in major transport and telecommunications infrastructure projects is a priority for the Scottish Government and a central element of its strategy to promote economic recovery in Scotland. It has a key role in shaping strategy, policy, financing and directing expenditure to maximise Net Present Value (NPV) on capital investment programmes. Government and agencies are, however, required to operate within a defined set of governance and Official Journal of the European Union (OJEU) rules, principally to ensure that capital expenditure is fully justifiable, process compliant, auditable and represents good value for money for the Scottish taxpayer.

The authors of this document fully recognise that excellent infrastructure is a pre-requisite to a healthy and vibrant Scottish economy. In addition, there is no doubt that the rail and, in some locations, road infrastructure between Aberdeen and Inverness is inadequate to cope with peak traffic volumes and modern day safety requirements.

These specific pinch points are almost exclusively a consequence of the seemingly insatiable and indiscriminate granting of planning permission by local authorities for housing in and around provincial towns and villages. In many cases, housing schemes have been built without adequate investment in incremental supporting infrastructure with predictable outcomes. It is also apparent that Transport Scotland have failed to protect land immediately adjacent to the existing A96 corridor, making the upgrading of the existing infrastructure more difficult than it would have been if the appropriate safeguards had been put in place.

This document sets out to review the rationale behind the Scottish Government & Transport Scotland's decision to fully dual the A96 between Aberdeen and Inverness. It questions the validity of the Strategic Business Case and supporting documentation, tests the Social and Business impacts and exposes the real cost to the environment. It also calls into question The Scottish Government and Transport Scotland's compliance with the DMRB process.

It takes a good Government to generate innovation, creative and futuristic policies. It takes an even better one to change direction and react wisely in the knowledge that revisiting a policy laid out in 2011 is diligent indeed.

2) Improper Political Influence in the DMRB Process

When the Scottish Government first proposed an A96 Improvement Strategy/Project, the remit was correctly no more specific than identifying the need for the road to be improved. The appraisal, assessment, reporting and recommendations to follow due process (DMRB) and identify the most suitable solution – one that is justifiable through proper appraisal, supported by a robust Strategic Business Case, providing a balance between the critical factors (Economic, Environment, Traffic Volumes, Safety and Cost).

Timeline of Events

2009 - Strategic Transport Projects Review

“A96 between Aberdeen and Inverness – Physical works aimed at providing safer overtaking opportunities such as: 2+1 sections; climbing lanes and overtaking laybys; hard strip provision for agricultural vehicles; local realignments and junction improvements.”

2009 - National Planning Framework for Scotland

“Improvement of A96 and rail link between Aberdeen and Inverness. A96 (Aberdeen - Inverness) assessed separately. Rail element insufficiently specified. Supplementary SEA considers the environmental effects of rail enhancements between Inverness and Aberdeen. STPR commits to improvements to the rail line and A96.”

“Upgrades to the trunk road to remove pinch points. Potentially significant in improving journey time reliability and realising growth potential. Limited planning input. See previous assessment. Environmental issues considered in the supplementary SEA. STPR commits to improving A96 trunk road and a link between A9 and A96.”

2011 - Infrastructure Investment Plan

“We will invest in new roads.....upgrading to dual carriageway of the A96 between Inverness and Aberdeen”

In 2011 the Scottish Government took the highly irregular step of pre-emptively and publicly announcing a very specific technical standard of carriageway improvements. This announcement was made prior to the production of a Business Case and the due diligence a project of this magnitude demands. Such a decision should unquestionably be made as a result of following the process detailed in the DMRB. It must be questioned why government ministers and politicians felt they were best placed and best informed to make this critical decision?

This creates a very significant issue and constitutes a serious breach of recognised protocol. Before the design process has even begun, unqualified statements made by senior politicians unequivocally constrain all future process around the appraisal, assessment, reporting and recommendations to a pre-determined outcome – that of the Full Dualling of the A96 being the only acceptable improvement strategy.

It can be likened to an Education Minister, without any prior consultation or basis, stating the Government is committed to building 150 new secondary schools to solve problems with the national standard of education, then embarking on a consultation process where the outcome or recommendation is only allowed to be that the national standard of education will be improved by building new schools, and they must be secondary schools, and there has to be 150 of them.

By adopting this approach, the Scottish Government effectively threw down the gauntlet to Transport Scotland and consultants analogous to “Here is the answer, now go and produce a Strategic Business Case to underpin the political requirement”.

The Strategic Business Case is examined in Section 5 of this document. It is worth noting at this stage that the economic case for full dualling selected by Scottish Government and Transport Scotland (as a result of the work undertaken by Jacobs and David Simmonds Consultancy in 2014) completely lacks the quantitative benefits required for a project of this scale to proceed.

At this stage, serious doubt must be cast over the financial rigour and governance of the whole programme.

The proposal for a full dualling scheme should have been stopped at this stage.

As recently as 2017 Transport Scotland published A96 Dualling East of Huntly to Aberdeen Multi-Disciplinary Support Services Contract - Supplementary Information Document and in Section 2.6.9 it states:

“Preliminary work already undertaken by Transport Scotland suggests that the quantifiable/monetised benefits for the Dualling will not outweigh the capital cost and that the Environmental Impact may be high”

It is evident that Transport Scotland are aware that the project is not good value for money and will be hugely environmentally damaging.

The document goes on to say:

“Transport Scotland has undertaken early collaborative work with key agencies to try and capture the unquantified benefits from the Route and each Consultant will be expected to support Transport Scotland in continuing that work as it develops through the design process for each Section”

It is of significant concern that a project that appears to be no more than the unsubstantiated aspiration of politicians can proceed to the point where commitments are being made and work commencing. Proper process appears to have been subject to political constraint and influence to such a degree that it has undermined the integrity of said process. In doing so, it opens the door to accusations that the project is nothing more than a vanity project or is being used as a vehicle for party political reasons.

It is unclear if this project has been subjected to sufficient critical analysis and scrutiny, as it appears to be proceeding unchallenged without adequate justification.

3) Traffic Volumetrics

The table below illustrates the Traffic Volumes as detailed in the A96 Dualling Inverness to Aberdeen DMRB Stage 1 Assessment Report (2015)

Section Name	2008	2009	2010	2011	2012	Miles
Inverness to West Seafield	31,800	33,300	29,600	29,700	29,000	1.00
West Seafield to Nairn	14,800	14,800	14,100	14,000	14,200	14.10
Nairn	10,900	11,000	10,700	10,300	10,500	2.40
Nairn to Forres	10,600	10,900	10,100	10,000	9,900	8.20
Forres	11,500	11,600	11,200	11,000	11,100	1.80
Forres to Elgin	13,100	11,900	13,100	12,900	13,000	9.60
Elgin	19,300	19,100	18,000	18,300	18,300	3.00
Elgin to Fochabers	15,600	15,200	15,000	13,000	8,200	7.30
Fochabers to Keith	6,300	6,300	6,000	5,800	6,400	7.10
Keith	6,600	6,600	6,300	6,200	6,600	1.50
Keith to Huntly	6,900	6,900	6,500	6,600	6,800	9.10
Huntly	8,100	8,200	7,700	8,000	8,100	1.80
Huntly to Inverurie	8,200	8,300	7,900	8,100	8,400	20.30
Inverurie	22,200	22,300	21,500	22,200	22,700	1.60
Inverurie to Kintore	26,900	27,100	26,200	27,000	27,300	4.30
Kintore	22,500	21,700	22,400	22,700	22,800	1.90
Kintore to Bucksburn	24,300	23,900	22,900	23,900	23,800	7.30
Bucksburn to Aberdeen	34,000	33,200	36,200	33,000	No data	1.40

The Bandings for Traffic Volumes as per DMRB Volume 5 Section 1 Part 3 is appended below

Carriageway Standard	Opening Year AADT		Comment
	Minimum	Maximum	
S2	Upto	13000	2-way Single Lane
WS2	6000	21000	2-way Wide Single Lane
D2AP	11000	39000	All Purpose Dual carriageway (2-lane)
D3AP	23000	54000	All Purpose Dual carriageway (3-lane)

The A96 measures approximately 88 miles between Inverurie and Inverness. For approximately 60 miles of that distance, the traffic volumes are no higher than 55% of the capacity required for a WS2 (2-way Wide Single Lane) category road. The volume of vehicles do not even reach the minimum volumes for consideration for D2AP (All Purpose Dual carriageway). It should be noted that the **road** from Inverurie/Port Elphinstone to Aberdeen is already a dual carriageway.

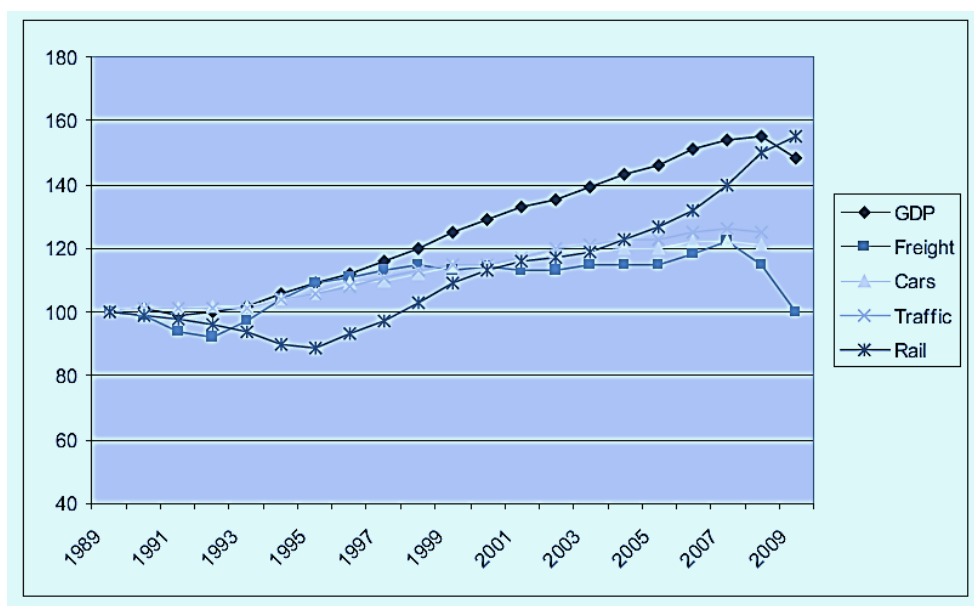
Of the 14 traffic count sections between Inverurie and Inverness, 10 show either static or declining traffic volumes.

Based on traffic volumes there simply is not a case for the full dualling of the A96. The most recent traffic measurements taken in and around Inverurie in 2017, coincide with a period when many traffic diversions were in place to facilitate the construction of the Aberdeen Western Peripheral Route (AWPR). Other key data-points such as the traffic measurements on the B9170, the B9001 and key routes in and around Inverurie are missing.

4) The Business/Economic Impact/Benefits

The link between transport and economic activity has been extensively questioned.

Data presented to the House of Commons Transport Committee (2011) suggest that the relationship between Gross Domestic Product (GDP) and traffic levels is not well correlated. Whereas in contrast, the increased use of rail from the millennium to 2009 shows a clear positive relationship to GDP (illustration of transport modes and GDP below).



Transport and Economic growth Indexed to 1989.

Excerpt from House of Commons - Transport Committee - 2011 Written Evidence. Data from: Transport Statistics Great Britain 2009,

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/tsgb/2009edition/>

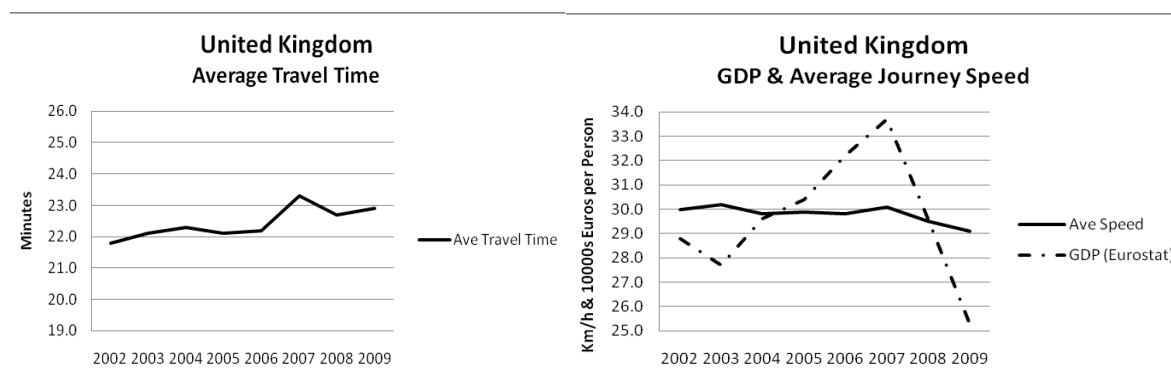
A recent presentation at the SCOTS Annual Conference in 2017 by Tom Rye, Professor and Director, Transport Research Institute Edinburgh Napier University, and Nina Plevnik, considered the relationship between transport and economic growth. He states:

“Considering developed countries like Scotland with developed transport networks:

There is no high-quality empirical evidence that transport infrastructure investment will boost economic growth of a country overall.”

Evidence from the SACTRA report (1999) looking at transport and the economy suggests *“Empirical evidence of the scale and significance of such linkages is weak and disputed.”* In addition, Sir Rod Eddington’s report to Government (2006) suggests that bottlenecks should be relieved rather than providing entire new lengths of infrastructure.

Evidence offered by Rye (2017) suggests that the putative links between GDP and journey time are not substantiated by data. Any link between journey times, time spent travelling and economic growth is extremely weak. Indeed, in general (except for Germany) economic growth rates show no correlation with changes in average speed and in the UK average speed has remained constant over several years, while GDP has not (see below).



Taken from Rye, SCOTS Annual Conference 2017

It is therefore not appropriate to put an economic cost on ‘driver frustration’ without providing robust objective economic data in support.

These comments and many other similar statements from global experts in the field, raise a significant challenge to the assertion from Scottish Government and Transport Scotland of economic benefits. There is a need for these organisations to demonstrate through high quality, robust evidence that these assertions are indeed valid. To date, no such data has been presented in support of the A96 project.

Moreover, Wenban-Smith (2011) questions the current appraisal framework, suggesting that it has several weaknesses particularly in relation to the value of time-savings, the intrinsic value of which he regards as contestable. He points out that *“The intrinsic value of the time-savings is an assumption, and the proportion that is converted to other more tangible forms of economic impact is not known”*.

He also points out that *“the wider economic benefits are assumed to be additional, but they are not always positive and that other key issues are the low discount rate and the long appraisal period, which inflate the effect of assumptions about events far beyond reliable projections”*.

It is therefore not appropriate to put an economic cost on ‘Travel time’ without providing robust objective economic data in support.

With regards to the consideration of the BCR Sir Rod Eddington’s report to Government (The Eddington Transport Study The case for action: Sir Rod Eddington’s advice to Government 2006) looks at the return on investment for road schemes and points out that:

“the best schemes offer returns in the region of £5-10 for each pound invested. Smaller projects which unblock pinch-points, variable infrastructure schemes to support public transport in urban areas and international gateway surface access projects are likely to offer the very highest returns, sometimes higher than £10 for every pound spent.”

This analysis should be applied to the proposed option 6 for the new road to ensure value for money for Scottish tax payers.

Furthermore, the Eddington report states:

“Getting the prices right means making a comprehensive assessment of the full range of economic, environmental and social impacts of transport policies, including climate change. Not only does this ensure that full account is taken of environmental and social impacts but as these impacts have economic consequences, it also ensures that the economic assessment is sound. To meet the changing needs of the UK economy, Government should focus policy and sustained investment on improving the performance of existing transport networks, in those places that are important for the UK’s economic success”

Despite the devolved nature of transport in Scotland, this advice is pertinent.

The estimation of benefits and costs is generally not sufficiently accurate. A meta-analysis by Highways Agency (2009) shows that the forecasting of economic benefits is not sufficiently accurate and there appears to be a tendency to overestimate benefits. The report shows that only 38% of schemes have predicted time benefits and only 29% of schemes have predicted accident benefits within 15% of the outturn. Costs tended to be over budget with only 42% of predicted scheme costs are within 15% of the outturn.

This raises a major concern as to the accuracy of any predictions for economic benefits and costs proposed by Transport Scotland, and there is a need for the organisation to provide an analysis of previous work to provide confidence in best value procedures for the Scottish taxpayer.

Evidence from studies across the world suggests that the business benefits from road building are unclear, and that the current methods of assessing the impact and potential benefits are not satisfactory. (Elgar 2007)

In general, studies show both positive and negative business impacts of bypassing urban conurbations. Most studies also agree that there are several key determinants of successful post bypass recovery (Sivaramakrishnan and Kockelman 2002; Parolin 2011).

One key factor is the distance of the bypass from the town, the further distance from town the less likely bypassing traffic will be to stop. A second key factor is the pre bypass economic strength (such as the number of empty business properties) of a town may determine its fate post bypass. A third factor is the size of the community, smaller communities will inevitably be harder hit. Finally, the distance of the bypassed town from a large city will influence whether traffic stops to visit the bypassed town or simply continues the journey onto the city to trade and shop.

Studies of 42 cities (23 bypassed and 19 non bypassed) in Texas over a 9 year period (Srinivasan and Kockelman 2002) show that although bypassing a community may lead to a beneficial reduction in congestion in the town, there can also be negative impacts on the local economy. The data suggest that bypasses could cause a loss in retail sales, service sales and sales at petrol stations if more than half the original traffic flow was diverted. Overall the authors indicate that for bypassed cities the impacts on the economics are not always positive and a significant separation between a bypass and the original route can be associated with negative impacts.

This type of effect has been noted in both Kintore and Huntly where bypassing has not provided major benefits to the Central Business District as traffic either uses peripheral services or continues past to larger centres. The latter concept is supported by an Australian study (Parolin 2011) suggesting that the distance to a larger centre could be detrimental to post bypass recovery, as motorists could use the bypass to quickly access the larger centre. For rural businesses dependant on passing trade, most of the available data suggests that bypassing has a major detrimental effect and post-bypass recovery may be difficult.

Will dualling the A96 deliver business benefits? - Both Transport Scotland and Aberdeenshire Council have publicly made numerous references to the 'economic benefits' of the proposed new road. However, as shown below in the analysis of the Business Case, quantitation of the Benefit Cost Ratio does not in any way support this assertion.

To date very limited data relating to economic and business benefits has been identified. The Scottish Council for Development and Industry Report – Connecting Scotland's Cities – Businesses Survey on Dualling the A9 & A96 2013 has an inadequate sample size to be credible and robust.

A full and appropriate analysis of the potential impact on the business aspects of communities both in Inverurie and in the areas affected by the proposed routes, is urgently required to ensure that any option selected offers not only best value for the Scottish tax payer, but also does not damage the business attributes of the area with attendant costs to Government.

5) Analysis of the Business Case

Below is a reproduction of the summary table produced in the A96 Economics – Technical Note (Jacobs 2014), which summarised the findings of the A96 Wider Business Case Support Calculations (David Simmonds Consultancy 2014).

It is this table that is referenced (but not reproduced) in the A96 Dualling Inverness to Aberdeen Strategic Business Case (2014) and summarises the economic case for the Study Options. Only information pertaining to Option 5 and Option 6 have been reproduced.

Option 5 is “Dual carriageway bypasses and dualling of heavily trafficked sections of the A96 plus targeted trunk road improvements”

Option 6 is “Full dualling plus targeted trunk road improvements”

	Option 5	Option 6 - Full Dual
ENVIRONMENT		
Global Air Quality (CO2)	(19,559)	(29,785)
Physical Fitness	0	0
SAFETY		
Total Discounted Saving	125,121	213,503
ECONOMY		
Travel Time	751,407	1,006,660
User Charges	2,590	4,373
Vehicle Operating Costs	(46,916)	(76,500)
Private Sector	0	0
Investment Costs	0	0
Operating & Maintenance Costs	0	0
Revenues	(20,537)	(27,382)
Grant/Subsidy Payments	20,537	27,382
ECONOMY (WEBS)		
Agglomeration economies - WB1	206,478	346,662
Increased Output - WB3	36,867	51,024
Wider Benefits from improved labour supply - WB4		
Cost to Public Sector		
Public Sector Investment costs	749,816	1,344,364
Public Sector Operating & Maintenance Costs	64,528	123,714
Grant/Subsidy Payments	20,537	27,382
Revenues		
Taxation Impact	(35,875)	(53,924)
Cost to Funding Agency	0	0
Present Value Benefits (PVB)	848,518	1,172,175
Present Value Cost to Government (PVC)	834,701	1,495,460
Net Present Value (NPV)	13,817	(323,286)
Benefit Cost Ratio to Government (BCR)	1.02	0.78
BCR (inc WEBS)	1.31	1.05
Driver Frustration	75,500	150,999
PVB (WEBS + Driver Frustration)	1,167,362	1,720,860
BCR (WEBS + Driver Frustration)	1.40	1.15

This table allowed for a period of **60 years** to recognise potential monetised benefits.

In the Strategic Business Case, Transport Scotland write in conclusion to analysis of the economic factors:

“Option 5 : With a BCR of 1.25-1.5, this option is forecast to deliver the greatest value for money of all options. In addition, by dualling approximately 50% of the route, which are the most heavily trafficked sections, it provides significant wider economic and driver frustration benefits. It does not, however, entirely achieve the ambitions set out by the Scottish Ministers of connecting Scottish Cities by dual carriageway”

“Option 6 : With a BCR of 1.0-1.25, in value for money terms, it shows a similar return to Option 2 and 4, but as a result of dualling the entire route it provides the highest Present Value of Benefit (PVB), the highest levels of wider economic and driver frustration benefits, and positive impacts on population and employment in the corridor. This option also achieves the ambitions set out by the Scottish Ministers of connecting Scottish Cities by dual carriageway.”

Even avoiding direct comparison, the strongest point that Transport Scotland can make in support Option 6 over Option 5 is that it “achieves the ambitions set out by the Scottish Ministers of connecting Scottish Cities by dual carriageway”.

But we should be very clear on this - it is not the job of politicians to decide on a specific technical standard of carriageway improvements. That is supposed to be a product or outcome of following process detailed in DMRB (which Transport Scotland have repeatedly said is the process they are adhering to).

In order to properly understand the comparison between Option 5 and Option 6 the data should be shown side-by-side and not selectively highlighted as occurred when TS drew conclusions in the Strategic Business Case.

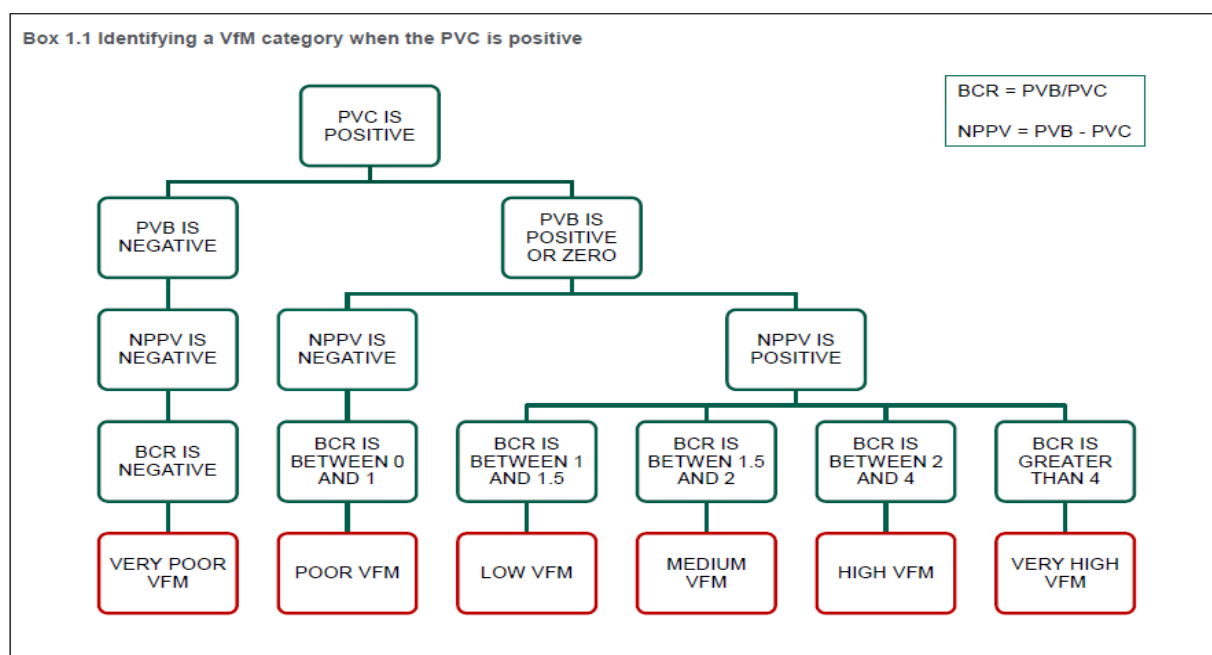
Present Value Benefit (PVB) versus Present Value Cost (PVC)

Benefit Cost Ratio to Government (BCR) is the ratio of PVB over PVC

Net Present Value (NPV) is PCB minus PVC

Wider Economic Benefits (WEBS)

The relationship between PVB, PVC, NPV and BCR in terms of Value for Money (VfM) is shown below.



Department for Transport – Value for Money (Supplementary Guidance on Categories)

Option 5 : Benefit (£848m) exceeds Cost (£835m) . It is marginal, but it is at least a measurable benefit. The Net Present Value (NPV) is **£13m**

Option 6 : Cost (£1,495m) far exceeds Benefit (£1,172m). The Net Present Value (NPV) is **-£323m**.

	PVB v PVC	
	Option 5	Option 6 - Full Dual
Present Value Benefits (PVB)	848,518	1,172,175
Present Value Cost to Government (PVC)	834,701	1,495,460
Net Present Value (NPV)	13,817	(323,286)
Benefit Cost Ratio (BCR)	1.02	0.78

Present Value Benefit (inc Wider Economic Benefits - WEBS) versus Present Value Cost (PVC)

	PVB v PVC (inc WEBS)	
	Option 5	Option 6 - Full Dual
PVB (inc WEBS)	1,091,863	1,569,861
Present Value Cost to Government (PVC)	834,701	1,495,460
Net Present Value (NPV)	257,162	74,401
Benefit Cost Ratio (BCR)	1.31	1.05

It isn't until the inclusion of the highly questionable monetisation of "Driver Frustration" that Option 6 shows any potential for generating Benefit that would exceed Present Value Cost, but even then, it underperforms Option 5 by a significant margin.

As discussed at length in Section 4 - **It is not appropriate to put an economic cost on 'driver frustration' without providing robust objective economic data in support.**

The explanation of the monetisation of Driver Frustration is as follows:

"The analysis indicated approximately £1bn of travel time savings through the dualling of the entire route, over the 60 year period. Based on an assumption that driver frustration benefits would equate to approximately fifteen per cent additional travel time savings, a further £150,000,000 of savings has been accrued in Option 6. As Option 5 includes approximately half the length of dualling as Option 6, the additional benefits from reduced driver frustration have been calculated as approximately £75,000,000"

This is at best a finger in the air estimate but massively consequential to the business case and certainly no basis on which to make a go/no go decision.

Also, highly questionable – for Option 6 it is 15% of Travel time monetisation, but for some reason for Option 5 it is only 10% of Travel time monetisation. It seems somewhat selective, and not at all consistent. Clearly this is not a substantive or satisfactory means of valuation. It should not be allowed as a contributing factor in the valuation of economic benefit. The information has been tabulated below for completeness, but we strongly disagree with its inclusion in the valuation of economic benefits.

Present Value Benefit (inc Wider Economic Benefits + Driver Frustration) versus Present Value Cost (PVC)

	PVB v PVC (inc WEBS + Driver Frustration)	
	Option 5	Option 6 - Full Dual
PVB (inc WEBS + Driver Frustration)	1,167,362	1,720,860
Present Value Cost to Government (PVC)	834,701	1,495,460
Net Present Value (NPV)	332,661	225,400
Benefit Cost Ratio (BCR)	1.40	1.15

In all 3 of the above scenarios Option 5 delivers significantly higher Net Present Value (NPV) and significantly greater Benefit Cost Ratio (BCR). It is clearly and demonstrably the better of the two

options. However, it should be noted a BCR of between 1 and 1.5 is considered as low value for money (Department for Transport Value for Money Supplementary Guidance on Categories 2017).

Cost Model / Funding

One cost factor not given any consideration in the Business Case calculations is how the Scottish Government intends to fund payment of the project. On a project of this scale and value it is **the most significant single cost element**.

The Scottish Government’s preferred means of securing funding is the Non-Profit Distributing (NPD) model.

There are two Transport projects funded under the current tranche of NPD borrowing - *M8, M73 & M74 Motorway Improvements*, and *AWPR*.

Total of NPD funding / borrowing in respect of these two projects is **£779 million**

Total to be repaid to private sector lenders in respect of these two projects is **£2.868 billion**

The average annual payment is **£92.5 million**, and payments will be over a period of **31 years**.

There are two facets to this:

a) As a component of Present Value Cost.

Using the above figures as guidance, PVC will more than triple, having a catastrophic impact on NPV, BCR, and therefore the appraisal of the economic case for dualling the A96.

Present Value Benefit (PVB) versus Present Value Cost (PVC)

	PVB v PVC	
	Option 5	Option 6 - Full Dual
Present Value Benefits (PVB)	848,518	1,172,175
Present Value Cost to Government (PVC)	2,504,103	4,486,380
Net Present Value (NPV)	(1,655,585)	(3,314,205)
Benefit Cost Ratio (BCR)	0.34	0.26

Present Value Benefit (inc Wider Economic Benefits) versus Present Value Cost (PVC)

	PVB v PVC (inc WEBS)	
	Option 5	Option 6 - Full Dual
PVB (inc WEBS)	1,091,863	1,569,861
Present Value Cost to Government (PVC)	2,504,103	4,486,380
Net Present Value (NPV)	(1,412,240)	(2,916,519)
Benefit Cost Ratio (BCR)	0.44	0.35

Present Value Benefit (inc Wider Economic Benefits + Driver Frustration) versus Present Value Cost (PVC)

	PVB v PVC (inc WEBS + Driver Frustration)	
	Option 5	Option 6 - Full Dual
PVB (inc WEBS + Driver Frustration)	1,167,362	1,720,860
Present Value Cost to Government (PVC)	2,504,103	4,486,380
Net Present Value (NPV)	(1,336,741)	(2,765,520)
Benefit Cost Ratio (BCR)	0.47	0.38

BCR ratios less than 1, as in the examples above, represent poor value for money (Department for Transport Value for Money Supplementary Guidance on Categories 2017).

This is in stark contrast to other large infrastructure projects for example Digital Scotland Superfast Broadband (DSSB) which is delivering a BCR of 11.6.

b) Its impact on national budgets and committed expenditure over the next 30 years.

The 2019 – 2020 Scottish Government Budget allocation for Motorways & Trunk Roads is £833 million, meaning that 11% of annual budget for Motorways & Trunk Roads is already ring fenced for debt repayments to private sector lenders in respect of *M8, M73 & M74 Motorway Improvements* and *AWPR*.

Early cost estimates for *A9 Dualling* and *A96 Dualling* projects are £3 billion and £3-4 billion respectively. If the Scottish Government secures funding under NPD for these projects (with an early estimated value approximately ten times that of existing NPD borrowing), then it will potentially be committing to annual debt repayments that exceeds the entire current annual budget for Motorways & Trunk Roads.

Both the scale of funding and the NPD model in particular are likely to lead to large negative outcomes and financial legacies for future generations that are unacceptable.

We strongly dispute the conclusions reached in the Strategic Business Case – Recommendations. It states:

“The appraisal demonstrates that Option 6, full dualling of the A96, would deliver significant wider economic and accessibility benefits. While the alternative Option 5 does offer slightly better value for money, it does not provide the consistency of carriageway standard and therefore does not deliver the best solution to meet the future needs of the corridor. Dualling the entire route provides the highest Present Value of Benefit (PVB) and the highest levels of wider economic and driver frustration benefits.”

So, in summary, the outcome of the Strategic Business Case and its recommendation for full dualling rests entirely on the following 4 justifications:

- *“provide the consistency of carriageway standard”*
- *“provides the highest Present Value of Benefit (PVB)”*
- *“provides the highest.....levels of wider economic benefits.”*
- *“provides the highestlevels of driver frustration benefits.”*

In response to these points:

“provide the consistency of carriageway standard” is not an acceptable justification for full dualling of the A96, and directly contradicts DMRB. - DMRB Volume 5 Section 1 Part 3 (TA 46/97) Chapter 3 Section 3.11 states:

“Sustaining a particular carriageway standard along an entire route is not normally acceptable if this is at the expense of foregone economic or environmental benefits”

“provides the highest Present Value of Benefit (PVB)” - Though the monetary value of PVB for Option 6 may be **£323m** higher than Option 5, it comes at an increase in PVC of **£661m**.

We surely cannot be promoting an economic case where every pound of Benefit is to be pursued regardless of Cost.

“provides the highest..... levels of wider economic benefits.” - Similarly, the monetary value of Wider Economic Benefits is higher for Option 6, but it again comes at a disproportionate increase in PVC.

“provides the highestlevels of driver frustration benefits.” - The monetisation and inclusion of “Driver Frustration” in the valuation of economic benefits is NOT acceptable.

It is of significant concern that the Scottish Government and Transport Scotland accepted or endorsed any of the above justifications, but particularly when they are framed as the substantive and critical components of a business case for a £3-4 billion infrastructure project.

6) Environmental Consequences

The Scottish Government's (SG) objectives for transport infrastructure improvement are stated as:-

- 1) Improving journey times and connections, to tackle congestion and lack of integration and communication in transport that impact potential for economic growth.
- 2) Reducing emissions to tackle the issue of climate change, air quality and health.
- 3) Improving quality, accessibility and affordability, to give people a choice of public transport, where availability means better quality services and value for money or an alternative to the car.

The plans to dual the A96 between Inverness and Aberdeen as presented by Transport Scotland have excluded a "Do Nothing" or "Do Minimum" option. This means that all of the proposed routes do not use any of the existing A96 infrastructure and hence require a completely new road to be built on green fields through pristine landscapes and some of the best agricultural land in Scotland.

The total land take for the road area for Option B, as detailed in the Tier 2 Strategic Environmental Assessment (SEA), is approximately 2,688 ha for the entire 115 km road. One third of this is class 2 or 3.1 land, the rest is woodland, pasture and natural habitat. This report also estimates that over 30,000 ha of land will be impacted with 6,000 ha being the best Scottish farm land. In addition, there will be fields that are divided, and further land rendered marginal on over 100 farms. It is estimated that for 1ha lost, 6ha will be rendered marginal for modern farming techniques and machinery.

Just these 6,000 ha of directly affected land represent a loss to Scottish farmers of more than £3.6 million pounds a year and the loss of feedstock, required to make 24.5 million bottles of malt whisky per annum. (worth half a billion pounds to the Scottish Economy). In addition, the rest of the impacted land is a natural habitat and woodland, with quite a large number of protected habitats for Scottish wildlife and the road will bisect many migration corridors.

In most sections, the new road will impinge on flood plains and cross several rivers at risk from flooding. These are categorized as red for impact in the Tier 2 SEA report for most sections and will require extensive mitigation and complex bridgework.

The Tier 2 SEA report also estimates that over 7,578 properties housing 18,200 people will be affected by noise and pollution from the new build road. Many of these properties were formally derelict farmhouses and steadings that have in the last 30 years been converted to desirable country homes, by people seeking to live in a tranquil countryside setting. Clearly this represents a large inward investment into the area and on-going source of revenue for the local economy that otherwise would not exist. The impact of the noise, light and traffic pollution from a dual carriageway (that they can no longer easily access), will certainly reduce the desirability of these properties and will likely lead to an exodus of an economically active demographic from the area.

The current A96 goes through some of the most diverse and beautiful scenery in Scotland and passes through and past many sites of historical significance, some of which are exploited but many are not. For the people living along the corridor and the many travellers on the road, it has a very strong sense of place, important socially, culturally, and psychologically, which will be lost if a brand new dual carriageway is built through it.

To build the new dual carriageway through the countryside and not use the existing infrastructure will cost more than 5.5 million tons of CO_{2e} over the 30 years of operation in embedded construction carbon, soil carbon loss and the forgone photosynthesis of the area of construction. In comparison if a

do minimum option was adopted then only 15k m of road would have to be dualled and that would cost only 0.5 million tons of CO_{2e}. To put this construction cost into perspective if all new cars in Scotland are electric (EV) from 2032 and all conventionally fuelled cars are phased out by 2050, the total annual GHG saving by 2050 is 2.5million tons CO_{2e}. The electrification of the entire Scottish car fleet will have saved a cumulative 29 million tons CO_{2e} by 2050. One has to question the efficacy of this infrastructure project to save GHG emissions as per SG Objective 2, due to the high infrastructure cost and with the fact that the new road will increase traffic speeds and use more energy, thus increasing traffic emissions (including electricity emissions).

As it is also planned to upgrade the train line between Inverness and Aberdeen, which follows the A96 corridor, with a more frequent service and faster travel times, this should reduce the traffic on the A96 so that in line with SG Objective 3, the train should become more convenient and accessible. Reducing A96 traffic will negate the need for increased road capacity and at the same time will reduce emissions as an efficient hydrogen or electric train will have lower emissions than multiple EV trips. In addition, the zones which today have high traffic densities, Inverurie to Aberdeen and West Dalcross to Inverness, are planned to have commuter frequency trains and this will really encourage people from their cars and onto public transport in line with SG Objective 3. In addition, due to the faster and more frequent trains, this service will fulfil SG Objective 1.

The upgrading of the railway is ongoing and will have little impact on the countryside as the Victorians in their wisdom initially designed this route to be dual track and the infrastructure changes and land grab will be minimal fulfilling SG Objective 2.

The upgraded railways' potential impact on reducing traffic on the A96 will reduce the ability of a completely new dual carriageway from Inverness to Aberdeen to reduce journey times and will become less attractive. In addition, as the new road will not follow the existing A96 corridor, it will not reduce congestion in Nairn, Elgin or Inverurie but in the latter case the train will have a large impact. In summary, a new dualled A96 will not fulfil any of the 3 SG Objectives.

The design process for 3 of the 4 route sections have progressed to the point where it can now be understood the improvement strategy being adopted for each :

- Inverness to Hardmuir has progressed to the point of 'breaking ground' and **is entirely greenfield development, making no use of existing infrastructure.**
- Hardmuir to Fochabers has progressed to DMRB Stage 3 and selected/preferred route option **is entirely greenfield development, making no use of existing infrastructure.**
- Huntly to Inverurie has progressed to DMRB Stage 2 and although no route option has yet been selected all those under consideration are **entirely greenfield development, making no use of existing infrastructure.**

The Scottish Government and Transport Scotland have demonstrated a blatant disregard for the critical importance of protecting and preserving our environment and the Climate Change crisis, and have selected route options that maximise environmental damage, at variance with many SG planning and environmental policies. In addition, the strategy of building an entirely new road does not fulfil any of the SG transport infrastructure objectives. It seems that in synergy with the rail improvements a "Do Minimum" option should be adopted to achieve the SG Objectives by selectively improving critical sections of the existing A96.

7) Conclusion

The Scottish Government and Transport Scotland have attempted to create a case for the dualling of the A96, but in doing so they have:

- Disregarded the need to maximise the use of existing infrastructure.
- Created proposals that do not deliver value for public money.
- Ignored the insufficient Traffic volumes and missing data points.
- Selectively interpreted and misconstrued Economic factors.
- Completely dismissed the importance of Environmental factors and Climate Change policies.

8) Recommendations

- The A96 Dualling project is cancelled / suspended forthwith.
- Due to the cost, duration and unacceptable value for public money, there must be a mandatory public enquiry.
- A new project is created with the broad non-specific remit to upgrade the A96, making it 'fit for purpose' for current and future traffic demands.
- There is to be no-overarching political statements or instructions which constrain or influence the appraisal, reporting, recommendation and design process.
- Proper process as per Design Manual for Roads and Bridges (DMRB) should be implemented and followed.
- The sub division of Route Sections should be more granular and reflect the very different traffic demands of rural and urban sections of the road. High traffic volumes that are a result localised or 'rush hour' congestion should be recognised as such, and the design solutions should be considerate of this.
- Environmental and Climate change factors, Economic factors and cost should be given proper consideration.
- An external independent body should be appointed with oversight on process, recommendations and decisions.

9) GLOSSARY / ABBREVIATIONS

BCR : Benefit Cost Ratio
DMRB : Design Manual for Roads and Bridges
GHG : Green House Gas
NPV : Net Present Value
NPD : Non Profit Distributing
PVB : Present Value Benefit
PVC : Present Value Cost
SG : Scottish Government
TS : Transport Scotland
WEB : Wider Economic Benefit

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