

**Note on the material submitted in support of
the South Devon Link Road (SDLR)
Best and Final Bid (BAFB)**

MTRU

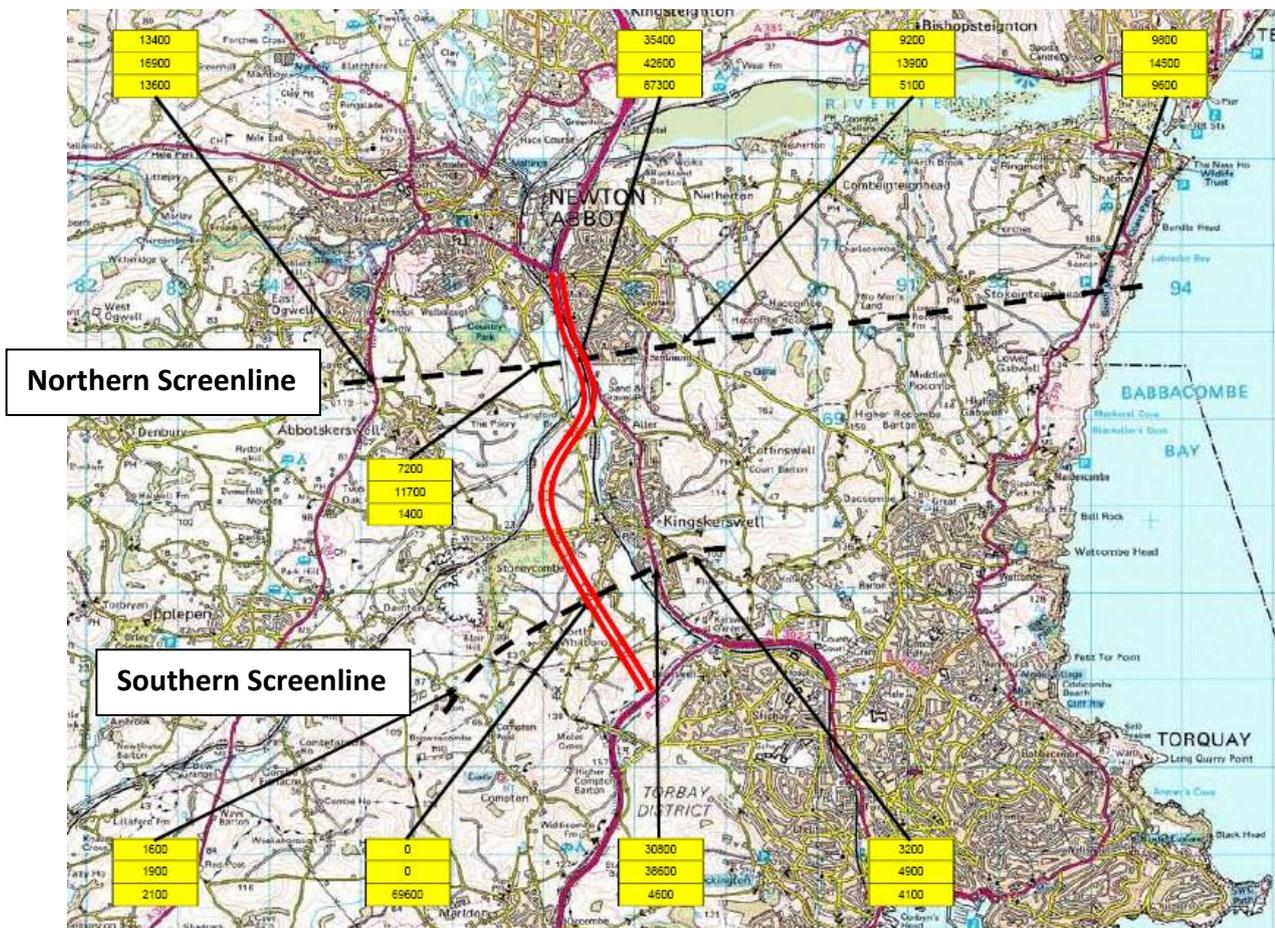
November 2011

Does the SDLR generate traffic?

There is little direct comment on this in the BAFB reports, but it is clear that locally there is a very significant level of traffic generation (whether new trips or changed destinations) predicted if this scheme were to go ahead. There is a further detailed modelling issue over whether traffic queues clear within the modelled hour, and thus two sets of figures are given by the consultants: **“demand”** which assumes all am peak traffic, for example, is able to get through the network in the relevant hour, and **“actual”** which allows for the fact that some traffic is still stuck in queues.

Using the data supplied it is possible to assess what the impact is locally of the traffic generated. The SDLR consultants used two screenlines which are shown below:

SDLR Screenlines



The SDLR traffic data allows comparisons to be made between the forecast flows without the SDLR (Do Minimum) and with it in place.

Table 1
Demand flows across screenlines from the model

2031 AADT	Northern	Southern
Do Minimum	99,600	45,400
With SDLR BAFB	117,000	80,400
Change	+18%	+77%

Source: Figure 28b, Forecasting Report, Figures Part 2

The comparable table for the actual predicted flows in the model are set out in Table 2.

Table 2
Actual flows across screenlines from the model

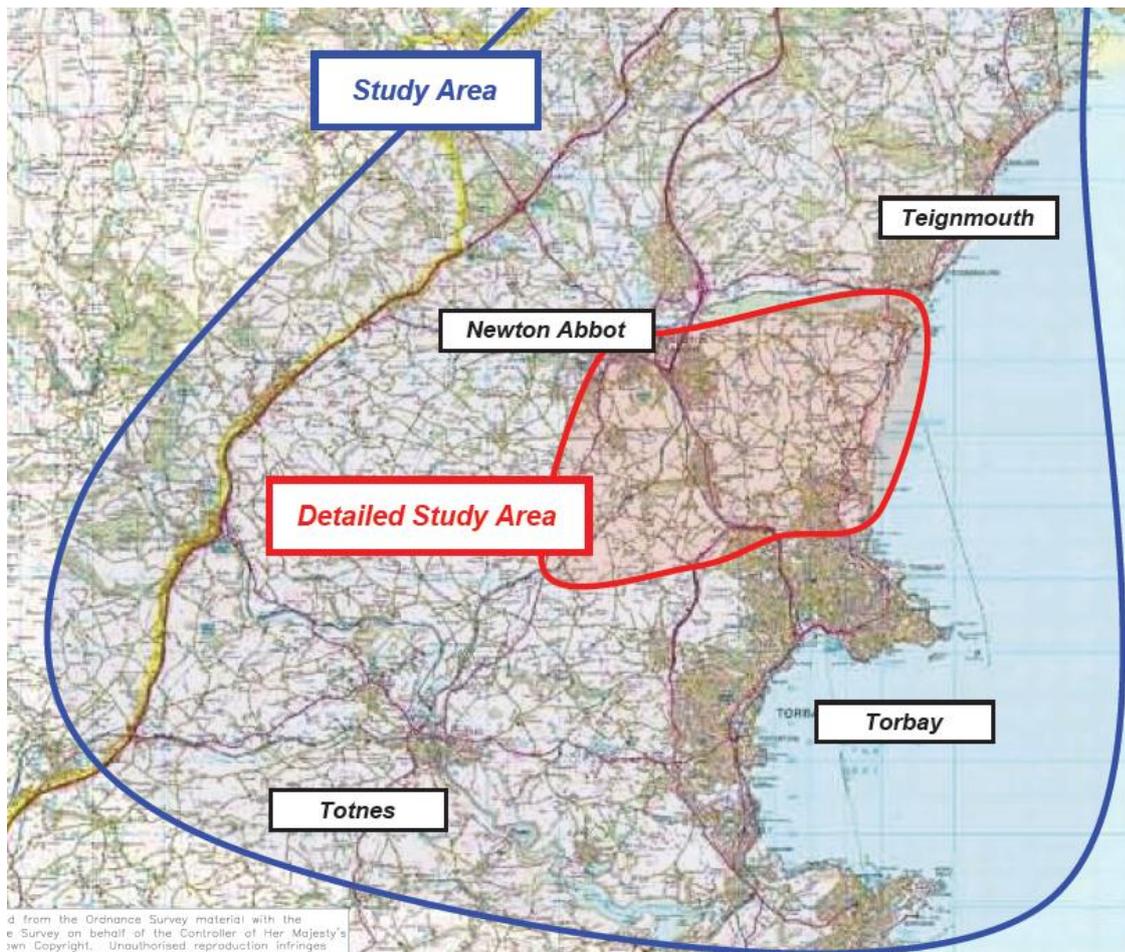
2031 AADT	Northern	Southern
Do Minimum	88,600	37,000
With SDLR BAFB	113,200	78,500
Change	+28%	+112%

Source: Figure 28a, Forecasting Report, Figures Part 2

The Southern screenline chosen by the consultants does not include the reduction in traffic predicted for the A379 coast road, at about 5,000 vehicles. Even allowing for this, which in itself appear somewhat unlikely, there would still be huge increases in flow North of Torbay (over 30,000 vehicles a day) causing serious congestion. This does not appear to be at all reflected in the Economics Report. Possible reasons for this are set out in the next section.

Low level of detail in the SDLR model

Area modelled



From: Figure 1, Economic Assessment Report

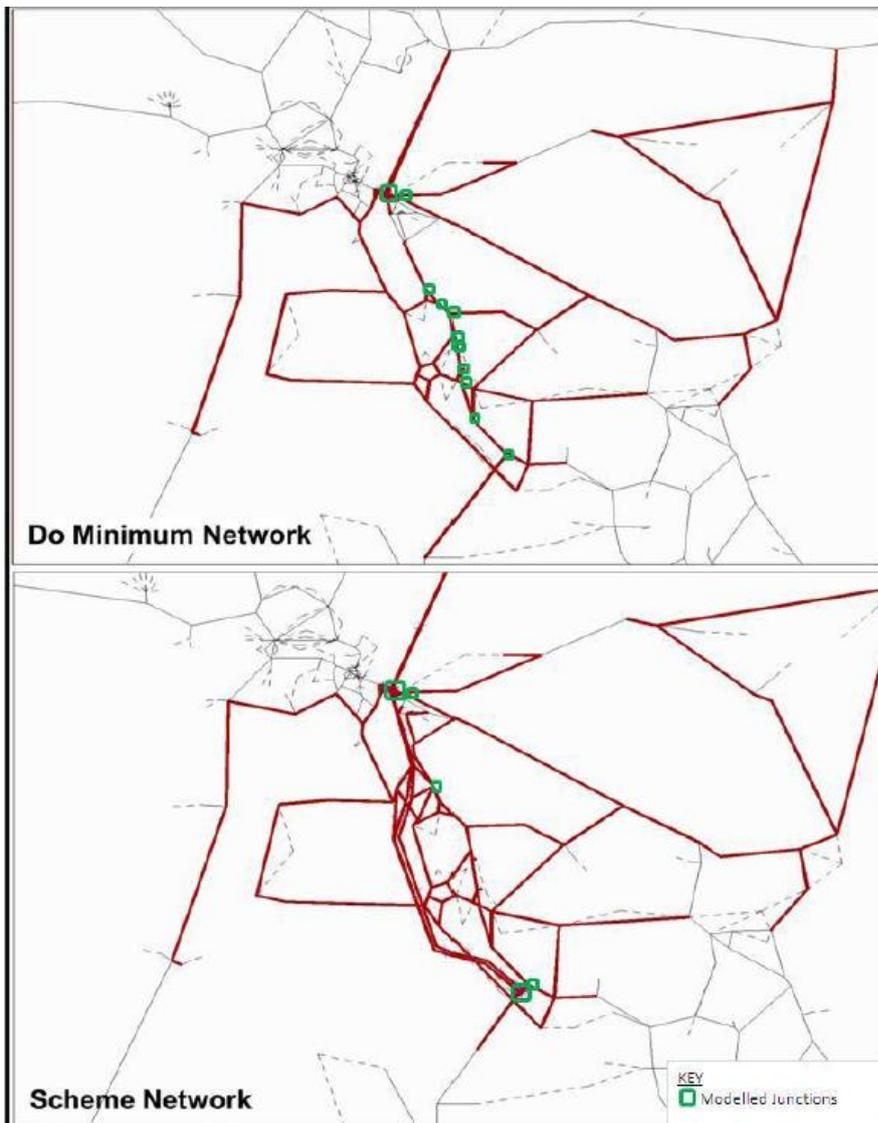
This figure shows that the area which is modelled in detail excluded the whole Torbay area, where much of the generated traffic would begin or end its journey. This is important, because none of the

junctions outside that area were included in the model, only speed flow curves were used. These will tend to underestimate congestion, in particular where there are a series of congested junctions (which there would be in this case). This is why junctions are modelled in most schemes which affect urban areas.

If there had been no impact on traffic levels in the Torbay area from the construction of the scheme, leaving out the junctions might have been justified. Given the massive increases in flow, this is a major omission. The result would be to grossly exaggerate the time saving benefits of the scheme.

To give an accurate picture of the time costs as well as benefits, the full simulation area (links and junctions) would have to be extended to include the whole Torbay area, and all relevant junctions would have to be modelled.

Even within the study area, junction modelling is limited, and, apparently, inconsistent between the Do Something and Do Minimum. This inconsistency needs to be confirmed and if it is the case, might also overestimate the benefits of the scheme. Because the residual flows are low, this latter effect is considered minor compared to the overall lack of junction modelling. The absence of junction modelling is shown in the diagram below.



From Figure 3, Economic Assessment Report

Alternatives and public transport assumptions

One further issue which is related to the lack of detail in the modelling is the assumptions made about public transport. Walking and cycling are not included in the model at all.

For the purposes of the BAFB, public transport is divided into users who have the choice of using a car, and those who do not. The latter are considered “captives” but are predicted to reduce in number as car ownership grows. Growth in car ownership is included in the BAFB forecasting.

When it comes to those who do have a choice, the modelling is very clear that public transport is a complete failure, at least as modelled in this case. The Forecasting Report states:

“5.8.10 The forecast car-available public transport trips total is approximately 1,500 in the 12 hour period 07:00 to 19:00. Of these, the great majority of bus trips take advantage of the concessionary bus pass, while the rail trips include long distance trips to London and elsewhere. The number of other trips (local or regional) choosing public transport is otherwise quite small, and negligible compared to the traffic flow on the A380. As a result of the relatively very small flows forecast for car-available public transport trips, no sensitivity tests (on trip rates and planning scenarios) were undertaken for public transport.”

Later in the report it goes on to say

“6.13.1 The VDM includes a mode choice model between car and public transport. It has already been noted that public transport currently carries relatively few car-available trips, and the same is forecast for the future reference case (Section 5.8.10).

6.13.2 The VDM choice model forecasts a negligible change in public transport trips due to the BaFFB Scheme. As an example, for The BaFFB Scheme in 2031, the VDM forecasts that the number of 12-hour adult passenger trips would change from 1,213 to 1,083.”

The question must be asked why public transport is predicted to be so low (less than now), given the public commitment to improve sustainable modes of transportⁱ. To put this in perspective, the study area as a whole has over half a million trips in total – people who choose public transport in the VDM are less than half a percentⁱⁱ. It also means that an attempt to increase rail use, for example by creating a new station, is bound to show up very badly in terms of a BCR because hardly anyone is forecast to use it. This may be one of the reasons the alternative package tested has such a low BCR.

The model appears to have a strong local sensitivity to generating, redistributing, and reassigning car travel if travel time changes, but has an extremely low sensitivity to changes which affect public transport. In this sense it is not truly multi-modal, although it is fair to say that this is clearly not its main purpose. Without such a model, however, testing an alternative fairly is pretty much impossible. It is worth remembering what Webtag says on the subject:

“1.4.3 In all cases, however, the process of identifying solutions should be broadly similar and:

- be easily comprehensible, to those commissioning, steering and undertaking the work; and where possible to a wider public;*
- avoid leading to a particular outcome simply by virtue of the method or process adopted;*
- enable a wide range of solutions and the synergy between combinations of components to be investigated in a cost-effective manner;*
- enable a preferred solution to be developed which addresses the objectives and problems at which it is aimed; and*
- provide a means by which the acceptability of the solution to the public can be tested and taken into account.”*

In this case the guidance above has not been followed, and the second and third bullets in particular have not been complied with.

The alternative package

There has been a test conducted for a package of measures said to be agreed with local objectors' consultants and the proposers of the SDLR. This is claimed to have a far lower BCR than the SDLR. Interestingly, the major capital item (about half the total), a major rebuilding of the Penn Inn roundabout, does not appear to bring many benefits. Details of how this has been modelled, or why there is so little benefit, is not clear in the BAFB material. However, the modelling weaknesses described above suggest that this may be the cause, for example the junctions through Kingkerswell are modelled in the Do Minimum and the Alternatives Package, but not with the SDLR in place.

In essence, the congestion which is modelled in the alternatives package and Do Minimum is moved down the road to Torbay, but goes missing in the BCR because it is outside the simulation area.

In any case, if one element of the alternatives package does not perform well, it should be removed, and the package should be revised to create the best performing alternative. This is at the heart of the Green Book process. The BAFB itself describes a whole range of alternatives which were considered (34 – see page 10). Given this, it is very surprising that the best performing alternative was not identified properly and then chosen for appraisal and comparison with the SDLR.

This is in complete contrast to the statements in the BAFB form as submitted. This has three objectives for the scheme, one of which is **“Promoting Sustainable Travel”** (pages 7 and 8). It is completely clear from the modelling that this objective is not met at all. Yet the form appears to say that the scheme would result in public transport becoming more attractive. This section of the form is therefore not consistent with the modelled results.

Page 11 of the BAFB describes public transport and demand management options in more detail, and the “corridor study” which underpins the SDLR scheme. It is quoted as follows:

“The study also concluded that the bypass should be only one element of a package that set out short, medium and long term measures over the period 2001 – 2016. These measures are designed to: encourage people to move from car travel to other forms of transport; to improve public transport; to provide traffic restraint in sensitive areas; and to improve safety.”

It is clear the rest of a package which might achieve such objectives has not been fully tested and the bid is therefore not compliant with the recommendations of the study of alternatives on which it relies. However, an LSTF funded scheme is referred to in the BAFB. It does not appear to have an impact in the SDLR model implied by the LSTF scheme.

This is very unsatisfactory, especially given the emphasis in the DfT guidance on the need to set out alternatives and explain why they were not being pursued, both to DfT and to the wider public.

Of course, if the detailed model had included the whole Torbay area, the picture would have changed anyway. Increases in congestion would have altered travel behaviour very substantially.

Modelling alternatives

It has not been possible within the time available to complete an audit of the modelling, but some results are provided for a “Plan C” in the Forecasting report. This is assumed to be the alternatives package set out, although it is not clear if it is the same as that used for economic appraisal. There is

also a set of results for Plan C with the road. Since the road will directly compete with some of the alternatives, it is not clear why the reduction in flow caused by sustainable measures is greater with the road than if the road is not built. This is a seriously counter-intuitive result and may result from the model structure itself.

What is clear is that the increase in congestion on the roads in to Torbay caused by the SDLR occurs even with the sustainable measures. This shows that the idea of a package including a road has been shown by the current modelling to create huge problems in the Torbay area. We cannot be more precise because the area at risk is not fully modelled. For reference, the table below shows the screenline flows with “Plan C” in place, with and without the road. The screenlines are the same as those used earlier.

Table 3
Actual flows across screenlines from the model with Plan C

2031 AADT	Northern	Southern
Do Minimum + Plan C	80,600	33,000
With SDLR BAFB	96,000	65,600
Change	+19%	+99%

Source: Figures 31a and 32a, Forecasting Report, Figures Part 2

Conclusions

Overall the modelling cannot accurately assess the level of congestion caused outside the simulation area, and in particular this area is far too small to pick up the effects of the SDLR at its southern end.

While there are very significant increases in traffic into Torbay (in some cases a doubling), caused by the scheme, the effect of this is not properly included in the model, and thus in all the economic and environmental assessments which depend upon it.

Because of this tightly drawn detailed model area, there are very likely to be additional, unknown, and widespread traffic effects predicted by the model beyond Torbay (for example in the Exeter area) whose impact is unknown.

The underestimation of congestion caused by the scheme has seriously exaggerated the benefits of the SDLR.

The model does not include walking or cycling at all, and does not represent public transport in a full and fair manner which reflects either local policy or assessments.

The best performing non-road alternative was not prepared for the appraisal, and thus the BAFB does not comply with Webtag guidance, or the specific guidance for the BAFB processⁱⁱⁱ.

It is also clear from the assessment that the scheme increases carbon emissions, even without modelling the congestion in Torbay. It therefore makes no contribution to achieving the DfT’s sector reduction target.

Notes

ⁱ This is clear in the BAFB documentation and earlier public consultation, for example see pages 7 and 8 of the BAFB and page 69 of the BAFB Annex 5.1, Appendix C on the consultation process.

ⁱⁱ The LMVR shows PT modelling is limited to services close to the scheme. Even in this case, in the am peak, Service 12 – the “flagship” Torbay service, is chosen by only 1% of its riders with a car available.

ⁱⁱⁱ For example, see para 23 of the BAFB Guidance Note, or the DfT slides from the BAFB workshop.