



## 11.0 VEHICLE TRAVELLERS

### 11.1 INTRODUCTION

11.1.1 This chapter describes the assessment undertaken to determine the potential impacts of the scheme on the quality of driving conditions for vehicle travellers. Two subject areas are assessed to give an indication of impact on vehicle travellers, these are; views from the road and driver stress.

11.1.2 In accordance with Volume 11 of the Design Manual for Roads and Bridges (DMRB) Section 3, Part 9: Vehicle Travellers<sup>1</sup> 'views from the road' are defined as the extent to which travellers, including drivers, are exposed to different types and quality of scenery that they may pass along the route. A number of aspects are included in the assessment of the view from the road. Aspects to be considered are the types of scenery or the landscape character as described and assessed for the baseline studies, the extent to which travellers may be able to view the scene, the quality of the landscape as assessed for the baseline studies and any features of particular interest or prominence in the view.

11.1.3 In accordance with DMRB<sup>1</sup> 'driver stress' can be defined as the adverse mental and physiological effects experienced by a driver traversing a road network. The levels of stress vehicle travellers will experience can vary depending on the road layout, surface riding characteristics, junction frequency and speed and flow per lane. Taken together, these factors can induce in drivers the feelings of discomfort, annoyance, frustration or fear culminating in physical and emotional tension that detracts from the value and safety of a journey. Stress levels can also vary due to variations of a driver's skills, experience, temperament, knowledge of the route and the health of the individual. Driver stress has three main components:

- Frustration,
- Fear of potential accidents, and
- Uncertainty relating to the route being followed.

11.1.4 Frustration can be felt when a driver is restricted to driving at a speed which is not consistent with his or her own wishes in relation to the quality of the road. Congestion can lead to frustration as a driver may wish to arrive at a destination by a particular time but is delayed due to traffic and unable to predict when they will arrive.

11.1.5 Fear can be felt by vehicle travellers due to the presence of other vehicles, inadequate sight distances and the possibility of pedestrians stepping into the road. In addition, other factors which contribute to fear included, inadequate lighting, narrow roads, road works and poorly maintained road surfaces.

11.1.6 Uncertainty relating to the route is primarily caused by inadequate signage. Route uncertainty is caused primarily by signing that is inadequate for the individual's purposes. Good design and layout of signs can assist in eliminating route uncertainty stress on new road schemes.

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<sup>1</sup> Design Manual for Roads and Bridges (DMRB) (1993), Vol 11, Section 3, Part 9 Vehicle Travellers:  
<http://www.standardsforhighways.co.uk/dmrb/vol11/section3/11s3p09.pdf> [Accessed]



## 11.2 METHODOLOGY

### Determination of Baseline Conditions

- 11.2.1 This assessment was carried out in accordance with the Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 9: June 1993 – Vehicle Travellers.
- 11.2.2 Information regarding the existing baseline conditions was gathered through a desk-based review of available data, OS maps and a site visit. Assessment of the quality and character of the landscape, Chapter 7: Landscape Effects has been considered as part of the assessment of views from the road.

### Planning Policy, Legislative Context and Standards

#### Planning policy

- 11.2.3 PAN 75 Planning for Transport: Provides linkage between transport and planning.
- 11.2.4 South Ayrshire Local Plan (2007): Sets out the proposals and policies for the management of transport and traffic.

#### Standards

- 11.2.5 Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 9: June 1993 – Vehicle Travellers

### Driver Stress

- 11.2.6 The existing driver stress levels on this section of the A737 is assessed as a combination of average journey speed and average peak hourly flow, as presented in Table 11.1 below. The magnitude of impact on driver stress is assessed in accordance with Table 11.3.

**Table 11.1 Driver Stress**

Average peak hourly flow per lane, in flow Units/ 1 hour	Average Journey Speed Km/hr.		
	Under 50	50-70	Over 70
Under 600	High	Moderate	Low
600-800	High	Moderate	Moderate
Over 800	High	High	High

### View from the Road

- 11.2.7 The sensitivity of views from the road is assessed in Table 11.2 below. The magnitude of impact of any change in views from the road is presented in Table 11.3.



**Table 11.2: Criteria for Assessing Sensitivity of Views from the Road**

Sensitivity	Views from the Road
Very High	The traveller experiences extensive views of high quality unique landscape. The area is of international importance. eg Area of Outstanding Natural Beauty
High	The traveller experiences extensive views of high quality landscape, area of unique landscape or prominent features of particular interest.
Medium	The traveller is exposed to partial/intermittent views of a high quality landscape (or extensive views of a moderate quality landscape), area of unique/distinctive landscape character or features of interest.
Low	The traveller is exposed to views of an area of low quality landscape/unremarkable or degraded landscape character or heavily restricted views/no view of the surrounding landscape regardless of quality.
Negligible	The traveller exposed to views of no particular importance at a local level. Alteration to such views would not be noticeable.

**Table 11.3: Criteria for Assessing Magnitude of Impact on Vehicle Travellers**

Magnitude	Views from the Road and Driver Stress
Major	A major alteration in views from the road or in driver stress such that the driver experience is completely altered either adversely or beneficially.
Moderate	An alteration in views from the road or in driver stress such that the driving experience would be diminished or enhanced to a noticeable degree.
Minor	Small changes in views from the road or in driver stress but these are not considered to have any noticeable effect on the driving experience.
Negligible	Very little appreciable change in views from the road or in driver stress and not considered to have any noticeable effect on the driving experience.
No Change	No alteration in views from the road or in driver stress such that the driver won't be affected.

### Determination of Impact Significance

11.2.8

The impact significance of both driver stress and views from the road is assessed using a combination of sensitivity and magnitude of impact. These values are combined using Table 2.4 to give an overall significance of impact.

## 11.3 BASELINE CONDITIONS

### Study Area

#### View from the Road

##### LANDSCAPE QUALITY

11.3.1 The Scottish Natural Heritage Landscape Character Assessment for Ayrshire has classified the location of the proposed location as 'broad valley lowland'. The landscape does not have any formal designations which protect it and is not within a Regional (RSA) or National Scenic Area (NSA).

11.3.2 Broad Valley Lowlands in the region are predominantly pastoral in nature. The region is characterised by rolling hills and the patchwork effect of small fields interspersed with copses and narrow shelterbelts, predominately of native deciduous species. The rural landscape is relatively densely settled with a number of minor roads serving the population. Views are enclosed by topography and strips of woodland with often extensive views across the Garnock valley and beyond. Older buildings are generally constructed in stone and slate with newer structures being rendered and painted white or cream.

##### ROUTE CORRIDOR

11.3.3 At the start of the scheme the road has views of rolling countryside and the Renfrewshire Hills. The peak of Burnt Hill (330 feet) is visible to the North. Photograph 11.1 below shows the view toward the Renfrewshire Hills.



Photograph 11.1 Views looking North from the scheme toward the Renfrewshire Hills.

11.3.4 Heading North West toward Beith the scheme enters a sharp right bend with hedgerows obscuring vision in both directions. The road then enters a tight left hand bend before straightening out toward the small settlement of The



Den. Views here are obscured by hedges and trees and the road itself feels enclosed, with no open views of the countryside available.



Photograph 11.2: Showing right bend in the distance at the start of the scheme.



Photograph 11.3: View of the left hand bend (looking south toward the start point of the scheme).

- 11.3.5 The road itself is relatively straight through the settlement, with no open views of the countryside. There are gentle slopes down to the road together with mixed plantation woodland which prevent views of the landscape. The trees and proximity of the properties to the road are presented on Photograph 11.4 below.



Photograph 11.4: View through the settlement of The Den

- 11.3.6 As the road continues north it enters a blind right hand bend, which is again enclosed, by trees to the west and hedges to the east. This vegetation prevents open views of the countryside. The approach to the right hand bend is shown in Photograph 11.5 below.



Photograph 11.5 View looking toward the northern most point of the existing road, blind right bend in the distance.

- 11.3.7 Given that the landscape is not formally designated and the views from the road are generally restrictive and enclosed the sensitivity is assigned a value of low in accordance with Table 11.2.

### Driver Stress

#### TRAFFIC

- 11.3.8 The current traffic flows for 2011 on this section of the A737 is 9031 (AADT). The figure provided is for a 24hr period on a weekday in a neutral month (i.e. does not reflect peak season flows). The existing base journey speed is 45mph (72kph).

#### ACCIDENT DATA

- 11.3.9 Accident analysis for this stretch of the A737, undertaken on behalf of the Scottish Government is summarised below.
- Fatal - 2
  - Serious - 5
  - Slight - 31
  - Total Accidents -38
- 11.3.10 Driver frustration is caused by a driver's inability to drive at a speed consistent with their own wishes. It is increased when speed falls and may be due to difficulties in overtaking slower moving traffic.
- 11.3.11 Factors that increase driver fear include inadequate sightlines, narrow roads and the likelihood of pedestrians on the road.



11.3.12 Given the hourly traffic flow (376) and average journey speed, and poor sightlines, driver stress is assessed as moderate in accordance with Table 11.1.

## 11.4 IMPACT ASSESSMENT

### During Construction

#### View from the Road

11.4.1 Vehicle Travellers will experience a change in their view from the road during the construction phase. This will be as a result of the presence of traffic management, consisting of cones, lanterns and additional signage.

11.4.2 The magnitude of impact on views from the road is assessed as minor in accordance with Table 11.3. This results in a significance of slight in accordance with Table 2.4.

#### Driver Stress

11.4.3 It is predicted that drivers will experience minor delays due to traffic management being in place during the construction phase of the works. Driver stress is anticipated to remain moderate during construction as much of the works will be constructed off line. Further disruption will be anticipated when tie-works at each end of the scheme are being undertaken.

**Table 11.4 Vehicle Travellers Impact Significance during Construction**

Principal Receptors	Sensitivity	Magnitude	Significance
View From The Road	Low	Minor	Slight
Driver Stress	N/A	N/A	Moderate

### Post Construction

#### View from the Road

11.4.4 The proposed scheme will open up views of the surrounding countryside through taking the road away from the trees which align the existing route corridor. The new road will also be positioned to the top of a gentle embankment at both the western and eastern ends of the scheme. This will provide an enhanced view for vehicle travellers. The road then enters a cutting which gradually increases to a depth of 4.7m. As a result of the proposed alteration in road alignment a magnitude of impact of negligible is envisaged in accordance with Table 11.3. This is because the driver experience will remain similar due to the enclosed feeling which the gradual cutting provides. This is similar to the current view from the existing alignment. The overall significance of impact is thus assessed as neutral in accordance with Table 2.4.





**Driver Stress**

11.4.5 The proposed road improvement is predicted to have a positive impact on driver stress by providing an enhanced road alignment, compliant with DMRB standards. Sight lines will be improved and therefore driver fear reduced. Table 11.5 – Traffic Information shows the predicted traffic flows and speeds with and without the scheme.

**Table 11.5 - Traffic Information**

	2011		2014	
	Do- Minimum	Do- Something	Do- Minimum	Do- Something
Traffic Flow (AADT)	9031	9031	9167	9167
Traffic Speed (kph)	72	80	72	80

11.4.6 The hourly traffic flow once the scheme is operational is predicted to be approximately 381 vehicles. Due to the improved realignment the traffic is anticipated to be able to travel at speeds of 80kph.

11.4.7 In accordance with Table 11.1, driver stress is assessed as low.

**Table 11.6 Vehicle Travellers Post Construction Impact Significance**

Principal Receptors	Sensitivity	Magnitude	Significance
View From The Road	Low	Negligible	Neutral
Driver Stress	N/A	N/A	Low

**11.5 MITIGATION**

**During Construction**

**View from the Road**

11.5.1 Site supervision will be in place to ensure the site is kept tidy; however the traffic management and the presence of construction plant cannot be avoided. As a result the impact on views from the road during construction will remain as slight.

**Driver Stress**

11.5.2 Traffic management and thus delays are unavoidable during construction of the proposed improvement. However all Traffic Management will be designed in accordance with chapter 8 and will be designed to minimise disruption as much as practicable. It is predicted that driver stress will remain as moderate.



## Post Construction

### View from the road

- 11.5.3 Mitigation measures aim to minimise the cumulative impacts of the A737 road improvements and maximise opportunities to enhance the landscape character and visual amenity of the area. Such minimisation of impacts is the provision of improved alignment to DMRB standards with longer sight distances.

### Driver Stress

- 11.5.4 The choice of alignment and road width influences the driver's perception of the road. The proposed scheme will retain a view of the surrounding landscape ahead by providing slight meanders within the horizontal alignment and very slight changes to the vertical alignment. This will provide a more pleasing and less stressful experience for both drivers and passengers.
- 11.5.5 Any mitigation measures to further reduce driver stress will be achieved by compliance with DMRB standards for the improved alignment of the proposed option. The improved alignment incorporates longer sight distances, a new road surface, a wider road, and opportunities for overtaking (dedicated or opportunistic in this case). Driver frustration has been shown to decrease with better road surfaces, and less congestion, which will be achieved with the provision of overtaking opportunities. Similarly, longer sight distances and wider roads decrease driver fear of potential accidents.

## 11.6 RESIDUAL IMPACT

- 11.6.1 The above mitigation measures will not alter the assessment of impact significance. Therefore the residual impact on both driver stress and vehicle travellers will remain as that stated in Table 11.6.

## 11.7 CONCLUSION

- 11.7.1 The proposed improvement on the A737 at The Den is predicted to reduce driver stress from moderate to low due to the improved, DMRB compliant alignment. There is predicted to be a neutral impact on views from the road, as although there are raised sections at both the western and eastern ends of the proposed improvement, there is a gradual cutting through the middle, which will result in an enclosed feeling for the vehicle traveller.