12 Vehicle Travellers

12.1 Introduction

This chapter reports on the predicted effects of the Proposed Scheme on vehicle traveller views, travellers care and traveller’s stress.

12.2 Assessment Methodology

12.2.1 Approach

This assessment has been undertaken in accordance with the methodology detailed in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 9 for Vehicle Travellers. In addition, WebTAG (the Department for Transport’s Web-based Transport Analysis Guidance) Unit 3.3.13 “The Journey Ambience Sub-objective” was referred to for further best practice guidance and significance criteria.

The following four scenarios are assessed in this report:

- Do minimum: No Proposed Scheme
- Do something 1: The Proposed Scheme
- Do something 2: The Proposed Scheme and associated development
- Do something 3: The Proposed Scheme and associated development including CVLR and SLIN

12.2.2 Traveller Views

Traveller views from the road are defined as the extent to which vehicle travellers are exposed to different types of scenery/landscape/townscape through which the route passes. View from the road also relates to the extent to which travellers, including drivers, can perceive the landscape through which they are passing. The perception will vary with the relative level of the road and its surrounding vegetation.
The methodology used for assessment of landscape and visual effects is described in Chapter 8 - Landscape and Visual Effects, and has been used in conjunction with the four view elements outlined in the DMRB Volume 11, Section 3, Part 9. These are identified as:

- The types of scenery or the landscape character;
- The extent to which travellers may be able to view the scene and the significance of the view;
- The quality of the landscape and visual resource; and
- Features of particular interest or prominence in the view.

There are four categories which are used in assessing the traveller's ability to see the surrounding landscape through which they are passing. All views are transient.

- No view – road in deep cutting or contained by earth bunds, environmental barriers or adjacent structures (Channeled view of road);
- Restricted view – frequent cuttings or structures blocking the view;
- Intermittent view – road generally at ground level but with shallow cuttings or barriers at intervals; and
- Open view – view extending over many miles, or only restricted by existing landscape features.

The view from the road has been assessed in relation to the travellers (including drivers) perspective of the landscape through which the route passes.

In assessing travellers views it is important to understand the sensitivity of travellers to changes in the landscape and views from the road. Visual effects need to be assessed through a flexible approach, with assessment of receptors dependant on nature and context. Visual effects can be either adverse or beneficial.

In the absence of any specified DMRB impact criteria, guidance contained in WebTAG has been used to assess the impact of the Proposed Scheme on travellers views. The Proposed Scheme is assessed as either ‘better’, ‘neutral’ or ‘worse’ than the existing situation.

12.2.3

Driver Stress

Driver stress is defined as “the adverse mental and physiological effects experienced by a driver traversing a road network.” Driver stress has three main components:
• Frustration relates to road layout and geometry, the condition of the road network and the ability to make good progress along a route;
• Fear of potential accidents results from the design of the road, the presence of safety features and interaction with other vehicles and pedestrians; and
• Route uncertainty relates to the quantity and quality of information provided along the route.

Driver Stress has been assessed using a series of tables contained in the DMRB Volume 11, Section 3 Part 9. These tables provide guidance on the appropriate category of stress (High, Moderate, Low) for a given stretch of road, based on the speeds and flows existing for peak hour flows along a stretch of road at least 1km in length. A variety of factors including traffic speed and flow, number of junctions, evenness of road surfacing and road layout and level of interaction between the pedestrians/cyclists can influence stress levels and induce “feelings of discomfort, annoyance, frustration or fear culminating in physical and emotional tension that detracts from the value and safety of a journey”. The extent of stress induced in drivers depends upon the individual’s skill, experience, state of health, knowledge of the route, and temperament. Increased stress results in decreased driving standards, although this varies between individuals.

DMRB does not permit the use of finely graded assessments of driver stress, therefore a descriptive scale of measuring stress levels, based on best practice and the consultants experience, as set out in the Table 12.1 has been used in this assessment.

Table: 12.1: Significance of effects on Driver's Stress

<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
</tr>
</thead>
</table>
| High   | • Heavily congested roads, resulting in delays;  
          • High number of vehicles;  
          • Numerous junctions;  
          • Lack of clear signage;  
          • Cyclists on the road;  
          • Pedestrians in close proximity of traffic;  
          • Pedestrians crossing away from official crossing points;  
          • Winding and confusing roads;  
          • Poor road surfacing; and  
          • Poor lighting. |
<table>
<thead>
<tr>
<th>Impact</th>
<th>Description</th>
</tr>
</thead>
</table>
| Moderate| • Congested roads, particularly during rush hour, causing delays;  
         |   • Moderate number of vehicles;  
         |   • Limited signage;  
         |   • Some pedestrians and cyclists using the road;  
         |   • Fairly frequent junctions; and  
         |   • Variable quality of road surfacing. |
| Low     | • Straight roads with even surfacing;  
         |   • Low number of vehicles;  
         |   • Separation of pedestrians and cyclists from motorists;  
         |   • Clear and frequent pedestrian crossings;  
         |   • Few junctions; and  
         |   • Clear signage. |

12.2.4

*Traveller Care*

Traveller care incorporates the quality of facilities and information along a route. Two sub factors are assessed under traveller care as follows:

- Facilities – the presence, spacing and quality of facilities for road users such as lay-bys, roadside toilets, service areas and dedicated facilities for pedestrians and cyclists such as cycle lanes and crossings; and
- Information – the presence of warning and direction signs for vehicle travellers, and the spacing and quality of these signs.

In the absence of any specified DMRB impact criteria, guidance contained in WebTAG has been used to assess the impact of the Proposed Scheme on traveller care. The Proposed Scheme is assessed as either ‘better’, ‘neutral’ or ‘worse’ than the existing situation.

12.3

*Baseline Conditions*

12.3.1

*Traveller Views*

The existing connection from the A4500 Weedon Road to Berrywood Road is via Sandy Lane, which lies between 100-600m to the west of the Proposed Scheme and provides the visual baseline for this assessment.
Sandy Lane joins the A4500 Kislingbury roundabout at the south adjacent to residential properties at South View before heading in a northward direction, passing Larkhall Lane, properties at Norwood Cottages and Norwood House, a Plant nursery beyond Norwood Farm, and terminates at a mini roundabout at Berrywood Drive, near the Duston housing area.

Grass verges and low cropped hedgerows align the road. Some occasional semi mature/mature tree planting occurs, specifically near Norwood House and Norwood Cottages and around the boundary of the Sandy Lane Plant Nursery. Although the vegetation curtails visibility and channels the view, travellers do experience some glimpsed transient views of the immediate landscape, as a result of the elevated nature of the route and occasional breaks in the hedgerows. In particular, views are afforded of the ridge at Berry Wood and St Crispins to the east. In parts the general characteristic of the route retains its rural form, particularly near Larkhall Lane, however urban components influence the visual context with the road cutting through an urban fringe landscape. Transient open views are afforded of the A4500 roundabout and road corridor, residential properties at South View, and more glimpsed transient views of housing at Pine View (St Crispins), Berrywood Drive, and the urban edge of Duston.

In general, travellers views assessed from Sandy Lane are considered to be intermittent.

12.3.2

Driver Stress

Sandy Lane is a single carriageway with two lanes approximately 7m wide between the edges of the road section. Traffic flow along various sections of Sandy Lane is relatively moderate with a volume of 445 vehicles (AM peak flow- Two way) along the section between the A4500 Weedon Road and Larkhall Lane and 332 vehicles (AM peak flow- Two way) along the section between Port Road and Berrywood Road. The speed limit at certain sections, along the south of Sandy Lane is 30mph. The northern section of the lane starting from the Berrywood Road- Sandy Lane junction to Larkhall Lane is a speed derestriction zone.

The geometry and sight lines along Sandy Lane are generally acceptable, however entry points to some private properties from Sandy Lane form blind curves that can surprise the driver, potentially leading to accidents.

The road surface is generally good, however due to the vehicle speed derestriction along the northern section of Sandy Lane the traveller could be put under stress.
The fear of accidents on Sandy Lane is likely to be high. There is limited provision for pedestrians and cyclists resulting in Non Motorised Users mixing with motorised traffic. This condition is exacerbated with no safety provisions like lane separators, hard shoulders or cat’s eyes on the road. Additionally, the narrow lanes will not allow for overtaking of any vehicles, especially the section of road with a sizeable HGV traffic. Direction and warning signs are present, however there are a few blind curves that lack reflector signs, considered important especially in the dark. The fear of accidents is exacerbated with inadequate lighting along sections of Sandy Lane.

Based on the DMRB guidance for assessing stress levels with average speed and vehicle flow outlined in Table 12.1, the driver stress along different sections of the Sandy Lane is found to be moderate. The average peak hourly traffic flow per lane along the carriageway is considered moderate¹, thus the levels of frustration are found to be moderate.

12.3.3

Traveller Care
Facilities

No lay-bys are located along the Sandy lane, the nearest one being located along the A4500 Weedon Road. Whilst this lay-by facility is in close proximity no signage/information is evident on Sandy Lane.

No provisions for cyclists exist on Sandy Lane, and there are limited provisions for pedestrians (i.e. along the residential plots to the eastern section of the road), giving no scope for segregation of vehicles. No signalised pedestrian crossing is located, even near the residential properties at the southern end of the Sandy Lane.

Information

En route information provided to road users can be classified into route specific information (e.g. direction signs) and general travel information (such as warning signs). Route specific information, especially direction signs of branching roads from Sandy Lane, along with warning signs of hairpin bends is generally good. Warning signage is, however, inadequate especially at sections with bends with no reflector signs located along all the road curvatures and bends.

¹ The rate is deduced to be approximately under 600 vehicles per lane
12.4 Potential Impacts

Potential impacts have been assessed during construction and operation of the Proposed Scheme.

12.4.1 Construction Impacts

Traveller Views

During construction works drivers and passengers using the existing Sandy Lane, A4500 Weedon Road and Berrywood Road will have there views affected by construction works. This impact will represent direct views of the road construction, site traffic and the site compound.

The benefits of the proposed landscaping will not be immediately realised, therefore the overall effect during construction on travellers view is expected to be worse when compared to the existing situation.

Driver Stress

During the period of construction of the Proposed Scheme additional stress would be unavoidable as traffic is managed to facilitate the most efficient and effective balance between the needs of traffic and construction. In particular the junctions where the Proposed Scheme merges with the A4500 Weedon Road junction in the south, with the existing Sandy Lane and the new junction at Berrywood Road in the north are likely to present the greatest potential sources of frustration as the construction of a new roundabout and tie ins to the existing route are implemented. These factors are likely to increase the driver's stress levels. During the construction phase, there could be a temporary change to the road surface, which may reduce vehicle speed, causing congesting and frustration thus increased stress levels. The effect of construction on driver stress is therefore likely to be moderate.

Traveller Care

Offsite construction works of the Proposed Scheme include closure and landscaping of the existing lay-by along the entry point west of the A4500 Weedon Road and the construction of a new lay by adjacent to the existing carriageway. Disruption to traffic at the A4500 Weedon Road junction due to the construction of the new lay by will lead to unavoidable driver frustration. The closure of the existing lay by will add to inconvenience to the traveller and is therefore assessed as being worse than the existing situation.
12.4.2 Operational Impacts

Traveller Views
An assessment of travellers views along the route during operation at day 1, and at year 15 has been considered.

Under the do something 1 scenario at year 1, vehicular travellers would experience channelled views along the road due to a combination of the scheme design (embankment and structural landscape). Views would therefore be afforded of the ground modelling and the emerging landscape planting. Transient intermittent views would be afforded of the adjacent landscape; these would be seen beyond the corridors structural landscape. Vehicular travellers would afford views of the new junction arrangements on the A4500 Weedon Road and at Berrywood Road to the north, where there would be a low magnitude of change to the view. The overall effect on travellers views, in this scenario, considering the sensitivity of the receptor is low, is assessed as neutral when compared to the existing situation.

Under do something 1 scenario at year 15, as the structural landscape has established, views would be afforded of the maturing woodland, hedgerow and tree planting. These would heavily filter and curtail the extent of views beyond the road corridor. Views would be channelled along the road and the landscape structure would provide a high quality setting for the road, with visual benefits. The overall effect on travellers views, in this scenario, is assessed as neutral when compared to the existing situation.

Under the do something 2 and 3 scenarios, occasional views would be afforded of the new development at Upton Lodge. However, this needs to be considered against the backdrop of existing development on the valley slopes, for example, Pine View, St Crispins and Berrywood Drive. The overall effect on travellers views, in this scenario, is assessed as worse when compared to the existing situation.

Driver Stress
Under the do something 1 scenario the carriageway characteristics for the Proposed Scheme, which comply with the DMRB guidance, will ensure smooth flow of traffic compared to the existing Sandy Lane. The width of the carriageway is sufficient to allow overtaking of vehicles, reducing frustration levels for the traveller and driver stress.
The road design layout, geometry and quality of materials will commensurate with the DMRB design standards along all sections of the road. Geometry of the Proposed Scheme is such that the smooth bends and gentle slopes along the route can leave a pleasant driving experience. Dedicated turnings and signalised junctions will improve the flow of traffic and congestion resulting in an increase in route certainty, reliability of journey times and therefore a reduction in the level of frustration and driver stress. However at unsignalised junctions especially at ch 1075 and ch 1350 where the access to proposed development merges with the Proposed Scheme travellers may have to compromise with speed to avoid accidents, thus affecting the traffic flows.

Dedicated cycle lanes and footways, and signalised junctions will segregate motorised and non-motorised traffic, leading to reduced erratic stoppage of vehicles and ensure smooth flow of traffic. In spite of a projected increase in the %HGV traffic from 7% to 10% between 2008 and 2021 respectively, the proposed speed limitation and signages will contribute to reduce the fear of accidents. With increased safety provisions like dedicated cycle lanes/pedestrian paths, hard shoulders and signalised crossing, adequate lighting and segregation of traffic, the fear of potential accidents is assessed as low.

Based on the DMRB guidance for assessing stress levels with average speed and vehicle flow outlined in Table 12.1, the driver stress is anticipated to be Moderate on both sides along different sections of the Proposed Scheme. The AM peak hour flow (two way) along the southern section of the SLRR will be at 332 and 489 in the years 2008 and 2021 respectively. It is anticipated to be at 327 and 483 at the Proposed Scheme Mid Point Link in 2008 and 2021 respectively. The guidance suggests a peak hourly traffic flow under 600 vehicles per hour per lane on a single carriageway with average journey speed of 60-80 Km/hr produces estimated frustration levels that would be moderate².

The likely impact of the Proposed Scheme on driver stress is likely to be beneficial compared to the existing situation. The route alignment and junction improvements would improve the flow of traffic, which in turn will reduce

² For SLRR the data on approximate average peak hourly flow per lane (units/hr) was deduced from the projected AM flow (two way) by dividing the figures by two for the years 2008 and 2021. The 40mph speed limit was assumed to be the average speed for the above assessment.
frustration. Fear of potential accidents and route uncertainty would also improve with the Proposed Scheme through clear signage and segregation of traffic from non motorised users.

For the do something 2 scenario the AM peak flow (two way) on the Proposed Scheme with the associated development in place is projected to be at 774 and 1078 for years 2008 and 2021 respectively for the southern section of the Proposed Scheme. The hourly peak flow (two way) along the Mid Point Link of the Proposed Scheme is 578 and 925 for the years 2008 and 2021 respectively. It is to be noted that these projections are two way figures, therefore should be divided by two to obtain approximate one way peak flow rate to assess against the DMRB guidance. Whilst the peak hour flows with the Proposed Scheme and Upton Lodge development scenario is higher than the Proposed Scheme only scenario, the driver stress assessed using the DMRB guidance for stress levels is found to be moderate.

The design geometry, safety features and route certainty features on the Proposed Scheme remain unaltered with the associated development included; therefore there is no major deviation from the do something 1 scenario on driver stress.

Under the do something 3 scenario the carriageway characteristics of all the three roads will comply with DMRB standards, thus it will ensure smooth transition from one road into another. Development of the CVLR and SLIN, will alter the projected traffic flows on the Proposed Scheme and on the existing Sandy Lane. The projected AM hourly peak flow (two way) along the southern section of the Proposed Scheme will be at 903 and 1372 in the year 2008 and 2021 respectively. The flows will be at about 701 and 1177 in 2008 and 2021 respectively along the Proposed Scheme Mid Point of Link. These flows are identified to cause moderate driver stress. It is to be noted that these projections are two way figures, therefore they were divided by two to obtain approximate one way peak flow rate to assess against the DMRB guidance.

As a result of the improvement to existing and the implementation of new Public Rights of Ways, including dedicated cycling facilities, the fear of accidents associated with all 3 do something scenarios is considered to be low.
**Traveller Care**

No lay-bys have been designed for the Proposed Scheme, however the newly constructed lay-by located along the A4500 Weedon Road is less than 2km, and will serve drivers of the Proposed Scheme.

The Proposed Scheme provides pedestrian paths on either side of the road and dedicated cycle path along the eastern side. Segregated equestrian and pedestrian paths at signalised junctions will improve the ease of travel for pedestrians, especially residents along the road. Whilst cyclists cross by toucan crossing, pedestrians will cross by pelican crossing. The Proposed Scheme thus accommodates pedestrians, cyclists and equestrians, giving greater priority to users of sustainable transport compared to the existing Sandy Lane where limited provisions for pedestrians and cyclists exist. These improved facilities aim at improving access from the adjacent rural areas to Northampton.

All road markings and directional signs in the Proposed Scheme will be designed in accordance with The Traffic Signs Regulations and General Directions 2002 and will provide sufficient information and signage for the traveller.

With adequate signage, separate provisions for pedestrians/cyclists and adequate signalised junctions, the Proposed Scheme will have beneficial effects on Traveller care.

No change in the proposal towards provision of lay-bys, or pedestrian/cyclist facilities has been observed between the do something 1 and 2 scenarios, therefore there is no variation in impact on traveller care and is assessed to be better than the existing situation.

The assessment of the do something 3 scenario has identified that no lay-bys are proposed along either the Proposed Scheme or CVLR. Whilst the proposed facilities close to the A4500 Weedon Road junction will provide relief to travellers traversing along these roads, the chances of this facility serving those traversing north of the Proposed Scheme, i.e. along SLIN, are limited. However, the design aspects, signage and facilities for pedestrian/cyclist are found to be better than the existing Sandy Lane and therefore beneficial. Taking all aspects into account the impact on traveller care in this scenario is considered to be better than the existing situation due to the improved signage and pedestrian/cyclist facilities.
12.5 Mitigation Measures

The majority of the impacts identified as part of the proposals of the Proposed Scheme have been assessed as beneficial impacts to vehicle travellers as a result of general improvements to safety and route journey. The negative impacts of the Proposed Scheme to vehicle travellers and therefore requiring mitigation will be primarily experienced at the construction phase of the Proposed Scheme.

Disruption to road users during construction would be minimised through the provision of a Traffic Management System, including appropriate signing and traffic controls (e.g. traffic lights). The traffic management system will aim to keep traffic moving and thus minimise driver stress.

The closure of the existing lay by and the construction of the new lay by will be managed in such a way that limits any inconvenience to the traveller. The existing lay by will remain in operation for as long as is feasibly possible. In addition, strategically placed signage will be used to provide advance warning of the lay-by closure.

In order to minimise any adverse operational travellers views from the road a landscape strategy of structural landscape would be implemented prior to the time of road opening. At year 15 all adverse views will be mitigated as structural landscape will have fully established with a maturing landscape framework. Chapter 8 – Landscape and Visual Effects provides more details of this mitigation.

12.6 Residual Impacts

Throughout the construction phase a negative impact of travellers views from the road will be experienced. The traveller will be subjected to views of the construction of the road, construction traffic and the site compound. As the construction phase for the Proposed Scheme is forecasted to be over a 12 month period this impact is deemed to be short term and temporary. In addition with relatively low numbers of vehicles it is considered to be a localised.

12.7 Summary

This chapter has assessed the impacts and effects of both the existing and the Proposed Scheme under the do minimum and the do Something 1, 2 and 3 scenarios.
The visual impacts of the Proposed Scheme on vehicle travellers views have been assessed. Under the do something 1 scenario travellers on the road would experience channelled views along the road corridor and transient views of the SLRR proposed structural landscape. Intermittent views of the immediate landscape would be afforded. Over time travellers would experience views of a maturing landscape. Overall the significance of visual impact of operation would be neutral.

Under the do something 2 and 3 scenarios the effect on traveller views is considered to be worse when compared to the existing situation. Occasional views would be afforded of the new development at Upton Lodge. However this needs to be considered against the backdrop of existing development on the valley slopes, for example, Pine View, St Crispins and Berrywood Drive.

Travellers would be subjected to a negative impact as a result of the construction phase of the Proposed Scheme and the effect on travellers view is expected to be worse when compared to the existing situation. This impact is considered to be short term, temporary and localised.

The Proposed Scheme, will cause moderate levels of stress during construction particularly at junctions where the Proposed Scheme merges with the A4500 Weedon Road junction in the south, with the existing Sandy Lane and the new junction at Berrywood Road in the north. Appropriate traffic management procedures will be adopted to reduce the stress and ensure the free flow of traffic, as much as possible.

The Proposed Scheme would result in beneficial effects on levels of driver stress post-construction due to the significant improvement in terms of, enhanced highway design and safer driving conditions under all 3 do something scenarios. Reduced frustration would result given the free flowing nature of traffic and improved journey times. Fear of accidents would decrease due to segregation of cyclists and pedestrians, good lighting and presence of signalised junctions. Adequate signages that comply with the Traffic Signs Regulations and General Directions 2002 will increase route certainty along the road.

The Proposed Scheme will have a beneficial effect on the traveller care aspect post-construction, for Do-Something scenarios, due to improved provision for pedestrians/cyclists, design of adequate signages and assuring route certainty for
travellers. Overall the improvements to traveller care are considered to be better than the existing situation.

12.8 References
