

## **PART 9 : VEHICLE TRAVELLERS**

### **9.1 Methodology**

9.1.1 This assessment considers the impact of the scheme on the journeys which vehicle travellers make on the A453 between M1 Junction 24 and the A52 Nottingham (for ease of reference this is referred to in this chapter as the A453 Widening Scheme). The assessment also considers the impact of the scheme on those travelling on local side roads between the villages. The assessment considers the following impacts:

- Travellers Views (changes in the view from the road);
- Traveller Stress (the stresses on drivers and other motorised travellers using the route);
- Traveller Care (the effect on the provision and quality of information and facilities for travellers).

9.1.2 Guidelines issued in the Highways Agency's (HA) Design Manual for Roads and Bridges, Volume 11, Section 3, Part 9 (DMRB 11.3.9) *Vehicle Travellers* supplemented by WebTAG (Transport Analysis Guidance, Unit 3.3.13 *The Journey Ambience Sub-Objective*) have been used in producing this assessment.

9.1.3 The methodology presented for the assessment of Vehicle Travellers in DMRB 11.3.9 addresses the following areas:

- view from the road;
- driver stress.

9.1.4 These impacts are addressed in TAG under the title of Journey Ambience which builds and expands upon assessment techniques in DMRB and which covers the following issues:

- traveller care;
- traveller's views;
- traveller stress.

9.1.5 The methodology used for the assessment is compliant with the DMRB 11.3.9 for a Stage 3 level of assessment, and follows that presented in TAG Unit 3.3.13 where the topics correspond. It takes into account the predicted effects for each factor and the significance of those effects.

9.1.6 The assessment of the effect on vehicle travellers is qualitative. For each factor, the change resulting from the proposals is described. A three point scale is then used to indicate whether the change would lead to the factor becoming Better, Neutral or Worse. Traveller Care and Traveller Stress are further divided into sub-factors as discussed below.

### **Traveller Care**

9.1.7 The experience of a journey along a stretch of road is affected by the provision of facilities and information, including services, roadside toilets, lay-bys and road signs. Journey ambience can also be affected by the spacing and quality of such facilities and information. Attributes that can affect journey quality can be categorised in four ways:

- cleanliness (essentially for public transport users, e.g. seats);
- facilities (such as laybys, shops and toilets);
- information (including the provision of general travel information); and
- environment (essentially for public transport users e.g. overcrowding).

### **Travellers' Views**

9.1.8 Whilst the need to minimise the visual impact of highways is considered a key environmental consideration in the design and assessment of proposals, the effect on road users of the "view from the road" is also taken into account. This is defined as the extent to which travellers are exposed to the different types of scenery through which a route passes. The aspects considered are:

- the type of scenery or the landscape character;
- the extent to which travellers may be able to view the scene;
- the quality of the landscape;
- features of particular interest or prominence in the view.

9.1.9 The extent to which travellers can see the landscape through which they are passing is categorised as follows:

- no view – where the route is in a deep cutting, a tunnel or surrounded by environmental barriers (such as existing dense planting, fencing, walls or hedgerows);
- restricted view – where there are frequent cuttings, tunnels or barriers;
- intermittent view – where there are shallow cuttings or barriers; and
- open view – where the view extends over many miles.

### **Traveller Stress**

9.1.10 Traveller stress is defined in TAG as the adverse mental and physiological effects experienced by travellers. Three main factors influence traveller stress: frustration; fear of potential accidents; and route uncertainty. Taken together, these can lead to feelings of discomfort, annoyance, frustration or fear culminating in physical and emotional tension that distracts from the quality and safety of a journey. The extent of stress depends on drivers' skill and experience, temperament, knowledge of the route and state of health.

9.1.11 Other factors, such as intimidation and a desire to avoid speed, aggression and confrontation, can also play a part in traveller stress. This is a complex subject area often correlated with road design, traffic speeds and vehicle density.

### *Frustration*

9.1.12 For road users influences on frustration include:

- road layout and geometry;
- the condition of the road network; and
- the ability to make good progress along the route.

### *Fear of Accidents*

9.1.13 The main factors leading to fear of accidents are the presence of other vehicles, inadequate sight distances and the possibility of pedestrians stepping out into the road. Conflict with pedestrians is principally a concern in the urban section and is less of a concern within the rural section and the local road network where there is no footpath provision. However, fear of conflict with ramblers and equestrians is higher in the rural section and on local roads.

9.1.14 Other factors include: whether or not the flow of traffic in each direction is physically separated; inadequate lighting; the width of the road/carriageway/lane; the presence of road works; the absence of lane markings, cats eyes, safety barriers and hard shoulders/verges. Fear is the highest when speed flow and the %age of Heavy Goods Vehicles (HGVs) is high.

### *Route Uncertainty*

9.1.15 This relates to the quantity and quality of information provided along the route.

### **Assessment of Driver stress in DMRB**

9.1.16 No reliable correlations have been established between physical factors and driver stress. However, the following tables from DMRB give guidance on the appropriate category of stress for use in environmental assessments, taking into consideration the average peak hourly flows and average journey speed in the worst year in the first fifteen years after opening (from Table 1.2.1 at Section 1 Part 2 of the ES it can be seen that 2027, fifteen years after opening, is predicted to be the worst year in terms of traffic flows).

**Table 2.9.1: Categories of Driver Stress on Dual-Carriageway Roads**

Average peak hourly flow per lane, in flow units / 1hr	Average Journey Speed km / hr		
	Under 60	60-80	Over 80
Under 1200	High *	Moderate	Low
1200-1600	High	Moderate	Moderate
Over 1600	High	High	High

**Table 2.9.2: Categories of Driver Stress on Single Carriageway Roads**

Average peak hourly flow per lane, in flow units / 1hr	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

*NB: A car or light van equals one flow unit. A commercial vehicle over 1½ tons unladen weight or a public service vehicle equals 3 flow units.*

\* "Moderate" in urban areas.

9.1.17 From the traffic computer model generated to predict traffic flows, it is predicted that average peak hourly flows per lane in the rural section in 2027 will be over 1600. Average journey speed will be between 60-80km / hr, and thus from Table 2.9.1 driver stress will be 'high'.

9.1.18 Similarly, it is predicted that average peak hourly flows per lane in the urban section in 2027 will be over 800. Average journey speed will be 50-70km / hr and thus from Table 2.9.2 driver stress will be 'high'.

### Overall Impact Assessment

9.1.19 The overall impact is assessed as follows:

- if the assessment is neutral for all or most of the sub-factors, or improvements on some sub-factors are generally balanced by deterioration on others, the overall assessment is likely to be *neutral*;
- if the change in impact across the factors is, on balance, for the better, the assessment is likely to be *beneficial*;

- if the change in impact across the factors is, on balance, worse, the assessment is likely to be *adverse*;
- the overall significance of impact is likely to be *slight* (beneficial or adverse) where the numbers of travellers affected is low (defined as less than 500 per day);
- the overall significance of impact is likely to be *large* (beneficial or adverse) where the numbers of travellers affected is high (defined as more than 10,000 per day);
- the overall significance of impact is likely to be *moderate* (beneficial or adverse) in all other cases.

## 9.2 Key Guidance and Legislation

9.2.1 There is no specific legislation governing standards on journey ambience for vehicle travellers. The Department for Transport sets the strategy and policy context for delivering the Government's transport objectives, including standards for road safety, the road network, traffic signs and signals and other design and environmental issues. The Highways Agency gives guidance on design issues through the Design Manual for Roads and Bridges.

## 9.3 Consultations

9.3.1 No specific consultations have been undertaken during the assessment of this environmental topic.

## 9.4 The Study Area

9.4.1 The study area was initially defined by the visual envelope for the existing road i.e. what can currently be seen from the road. This was amended in accordance with the landscape and visual impact assessment for the scheme which defines the zone of visual influence of the proposed route i.e. what vehicle travellers will be able to see from the new road (see A453 Environmental Statement *Landscape Effects*).

## 9.5 Baseline Conditions

### Existing Views from the Road – Rural Section

9.5.1 A combination of gently undulating topography, areas of woodland, roadside planting and built structures determine the nature and availability of views within the study area. In general there are few significantly elevated or prominent vantage points. Topographical variation is limited with shallow slopes forming a series of subtle ridges and valleys in an area that lies on the edge of the Trent Valley and the Wolds landscape character areas.

- 9.5.2 Winking Hill and Gotham Hill located to the south of the A453 and to the north of Gotham are distinct areas of higher ground within the study area. The landform and its associated vegetation create a significant visual horizon.
- 9.5.3 The high ground of Brands Hill between Barton in Fabis and Clifton also forms a significant visual barrier separating the Trent Valley to the north of the A453 from the gently undulating Wolds areas to the south.
- 9.5.4 In the area around the Ratcliffe Power Station local topography, both natural and man made, creates a series of localised horizons which reduce longer views, particularly just east of the Power Station in the Barton Lane and Thrumpton areas.
- 9.5.5 The existing speed limit on the A453 is 60mph. The annual average daily traffic (AADT) flow is about 23,000 vehicles in the rural section, of which 19% are Heavy Goods Vehicles (HGV). This is high for a single 2-lane carriageway, and as mentioned above the road suffers from severe congestion at peak times as traffic tails back from Clifton to Barton in Fabis and sometimes further west to Thrumpton and beyond. Congestion also occurs in the M1-bound direction. Together with the poor accident record on the A453, journey times are unreliable. However, slower moving travellers (and indeed those who are stationary) are better able to appreciate the surrounding countryside than those travelling at the normal speed.
- 9.5.6 The local side roads either side of the A453 are principally Kegworth Road, West Leake Road, Barton Lane (Thrumpton), Manor Road (Barton in Fabis), New Road (Barton in Fabis) and Barton Lane (linking the A453 at the Barton in Fabis junction to Nottingham Road). Views from these minor roads are similar to those from the A453, being in parts long-distance over the open, predominantly arable farmland, or intermittent and foreshortened by topography, vegetation or built structures.
- 9.5.7 Vehicle travellers can generally appreciate the countryside far more from the local side roads, where speeds tend to be lower (although the speed limit is the same) and there is much less traffic. When congestion on the A453 is high or there has been an accident, traffic often diverts along the local roads putting pressure on the surrounding countryside.
- 9.5.8 The rural section is currently unlit from M1 Junction 24 to the approach down to the Crusader Roundabout. Views out from the road at night time are therefore limited to views of features which are lit, such as M1 Junction 24 and the Power Station.

### **Existing Views from the Road – Urban Section**

- 9.5.9 Views from the A453 through Clifton are generally foreshortened by buildings close to the road. Houses on both sides of the road, major roundabout junctions at Crusader and Green Lane, the Crusader and Man of Trent public houses, petrol filling station and buildings within the Nottingham Trent University (NTU) campus provide an urban feel to this section of the widening scheme. The terraced blocks of

three and four storeys on the south side of the A453 between the edge of Clifton and the Crusader roundabout form a particularly significant visual barrier.

9.5.10 There are, however, areas of vegetation and open spaces within the urban section which provide relief and some slightly longer distance views from the road. These are:

- on the northern side opposite the Man of Trent public house;
- on both sides of the road at the Clifton Green junction, including across the Village Green to the south;
- across the lower density NTU campus and its sports playing fields to the north.

9.5.11 Vegetative horizons and barriers adjacent to or close to the road within the urban section include the following:

- barrier planting to both sides of the road between the edge of Clifton and the Crusader roundabout, in particular on the existing earth mound on the northern side which creates a strong visual barrier;
- significant barrier planting on an earth mound on the northern side of the road just east of the Crusader roundabout;
- mature trees on both sides of the road at Clifton Green;
- a wide belt of mature trees on the south side of the road opposite the University campus;
- mature trees and tall hedgerow on the north side of the road immediately east of the NTU campus; and
- mature trees and grassed earth mound on the north side of the road between the NTU campus and the Farnborough Road junction at the eastern end of the scheme.

9.5.12 The Highways Agency has recently removed a short section of dead elm trees from the NTU frontage for public safety reasons, and the campus buildings and playing fields are currently open to views from the road. Most of the frontage is currently unsightly.

9.5.13 Within the urban section the existing AADT flow is about 30,000 vehicles of which about 12% are HGVs. Side roads within Clifton are also busy, due to a combination of local traffic and what is thought to be a significant amount of re-routing traffic due to congestion effects. The existing single 2-lane carriageway has a 40mph speed limit, although traffic speeds are below this for much of the time. For travellers through the urban section the visual amenity is consequently reduced.

### **Traveller Stress – Rural and Urban Sections**

- 9.5.14 Traveller stress is influenced by three main factors: frustration; fear of potential accidents; and route uncertainty. The latter, route uncertainty, relates to the quantity and quality of information provided along the route, which is currently considered acceptable for the standard of road within both the rural and urban sections. Travellers generally know where they are going and which movements to make.
- 9.5.15 Frustration due to the inability to make good progress along the route is considered to be high and a primary cause of traveller stress during congested periods. To a lesser extent road layout and geometry can add to stress where side roads meet the A453 at grade and speeding traffic or a busy road causes delay by preventing fluid movements at junctions.
- 9.5.16 Fear of potential accidents is also considered high and is a further cause of traveller stress on the A453. High speeds, the high volume of traffic including HGVs, the lack of physical separation between traffic flows in both directions, side roads and private access directly on to the trunk road, and the possible conflict of traffic with pedestrians, cyclists or equestrians are the main factors leading to fear of accidents.
- 9.5.17 In the rural section and the local road network, conflict with pedestrians, cyclists and equestrians using the carriageway and verge, particularly in the River Soar and Power Station area, heightens traveller stress due to fear of potential accidents here.
- 9.5.18 Variations of brightness at night, from very dark surroundings to brightly lit features such as the Power Station, can increase stress levels.
- 9.5.19 In the urban section, the existing low speeds, often slower than the 40mph limit, tend to reduce the stress through fear of conflict with pedestrians and cyclists.

### **Traveller Care**

- 9.5.20 There are lay-bys on the A453 opposite Thrumpton (east-bound) and opposite Glebe Farm (west-bound). Mobile traders often use these lay-bys to provide facilities for the traveller. It is understood that these traders are doing so without the permission of the Highway Authority.
- 9.5.21 The Clifton Service Station, Crusader public house and Man of Trent public house provide a range of facilities for use by vehicle travellers through Clifton. There are also motorway services provided close by, at the 'Granada' Motorway Services just off M1 Junction 23A at Castle Donington.

## **9.6 Potential Impacts**

- 9.6.1 Effects on vehicle travellers during construction of the A453 Widening Scheme are discussed in Section 2 of this ES, in Part 3 *Disruption due to Construction*. This

includes proposals for traffic management during the works to minimise driver stress.

- 9.6.2 Effects on vehicle travellers once the new scheme is open are discussed in 9.8 below. Effective signage and traffic information services, together with free flowing traffic on the widened road, improved junctions and associated local road network, should minimise driver stress.

## **9.7 Design and Mitigation Measures**

- 9.7.1 The environmental masterplan for the scheme has been developed following the assessment of likely environmental impacts on a wide range of topics. It illustrates essential mitigation measures to reduce adverse impacts, some of which can affect journey ambience. Such measures include:

- grading and shaping of cuttings and embankments;
- new planting and areas of habitat creation;
- position of lighting and large gantry signs;
- replacement laybys;
- the treatment of central reserves; and
- fencing, such as on the highway boundary and for screening (e.g. to reduce noise from the road).

- 9.7.2 A detailed description of the mitigation measures illustrated on the environmental masterplan (see ES Volume 2 Figure 1.2.3) is given in the landscape and visual impact assessment for the scheme (see A453 Environmental Statement Landscape Effects). In general, views from the roads have been considered during the design process, in particular within the rural section to retain open or intermittent views of the countryside for driver interest. As much existing vegetation will be retained as possible, but there will inevitably be losses, particularly on the southern side of the existing road in the rural section.

- 9.7.3 Replacement planting will be of native trees and shrubs generally alongside the new carriageway but also at junctions to help reduce their impact and to integrate them into the countryside. New habitat creation including wildflowers, marshland and ponds will create a diverse landscape and add to driver interest. Planting proposals within the urban section include more ornamental trees and shrubs alongside the road and on the roundabout junctions at Mill Hill, Crusader, Green Lane and Farnborough Road. There will also be an improved frontage with the University, including railings, signage, hedge, tree and shrub planting.

## 9.8 Significance of Effects

### Traveller Views

- 9.8.1 Following the road improvements, views will be similar to existing views after replacement planting has had time to establish. Prior to this there will be more open views where existing vegetation has been removed, principally on the southern side of the road in the rural section in the following locations:
- Junction 24 to Ratcliffe on Soar, opening up views to/from the junction, Kegworth and the Cott industrial complex;
  - opposite the Power Station, including adjacent to Winking Hill Farm, opening up views towards Winking Hill;
  - Power Station to Thrumpton, opening up views towards Winking Hill and Gotham Hill.
- 9.8.2 Vegetation will be removed on the northern side in the rural section in the following locations:
- Parkway / Power Station junction, opening up views of the Power Station;
  - West Leake junction to the western edge of Thrumpton.
- 9.8.3 To the east of the West Leake junction the new road would be in a maximum 7m deep cutting. The road is currently in slight cutting here and thus views from the road will be reduced and limited to the cutting sides (including planting) for a distance of approximately 500m.
- 9.8.4 In enabling traffic to flow much more smoothly and thus ease the current congestion of the A453, more travellers will be able to appreciate the countryside.
- 9.8.5 In the urban section, widening to the south of the new Green Lane junction will necessitate the removal of several mature trees, particularly around the Glapton Lane junction, which will slightly open up views of the residential properties on the south side.
- 9.8.6 The NTU frontage will be completely opened up in the short term as the road is widened and junction improvements are made on the University side. As mentioned in paragraph 9.5.12 above, the Highways Agency has recently removed a short section of dead elm trees from the NTU frontage for public safety reasons, and the campus buildings and playing fields are currently open to views from the road. The frontage is currently unsightly, and the environmental masterplan includes proposals to improve the NTU boundary with new railings, planting and signage, which will improve views from the road in this direction.
- 9.8.7 In overall terms it is considered that traveller views will be *Neutral*.

### **Traveller Stress**

- 9.8.8 Route uncertainty is not considered to be a current problem. Effective signage and traffic information services will be provided in accordance with current standards which should reduce any uncertainty there may be on the current road. Heavy congestion results in travellers currently trying to find alternative routes, which is stressful for visitors to the area who are unfamiliar with the surrounding road network. The reduction in congestion will remove the need for travellers to divert off the trunk road, with an improvement in traveller stress.
- 9.8.9 The improved scheme will further improve traveller stress by reducing frustration of road users, particularly in the rural section. Although traffic numbers are predicted to increase, dualling of the current single carriageway in the rural area and the grade separation of junctions will enable travellers to make better progress and thus reduce journey times and frustration. Congestion within the urban section will generally decrease slightly due to the widening scheme, although signal-controlled junctions will still cause traffic to stop and queue.
- 9.8.10 The main reason for the predicted reduction in traveller stress is considered to be reducing the fear of accidents. Despite the predicted increase in traffic numbers and speed in the rural section, and the high stress levels predicted using the DMRB guidelines (see paragraphs 9.1.16 – 9.1.18 above), the grade separated junctions and associated lighting, segregation of NMUs and central reserve barrier will greatly reduce the fear of potential accidents.
- 9.8.11 Similarly in the urban section, despite the high stress levels predicted using DMRB (see paragraphs 9.1.16 – 9.1.18 above), fear of potential accidents would be reduced by the signal-controlled junctions, lighting throughout and the extension of the existing 40mph speed limit to the proposed Mill Hill Roundabout. All non-signalised right-turn manoeuvres through the urban section would be prohibited, to make the road safer and thus reduce traveller stress.
- 9.8.12 In overall terms it is considered that traveller stress will be *Better* (i.e. significantly reduced) for users of the A453 and surrounding local roads.

### **Traveller Care**

- 9.8.13 For travellers on the local road network, the provision of lay-bys and service areas with facilities such as toilets is not as important as for the longer distance traveller on the strategic trunk road network.
- 9.8.14 Lay-bys will be provided on the A453 in a similar position to existing lay-bys. Although mobile traders often use existing lay-bys to provide facilities for the traveller, it is understood that these traders are doing so illegally. As mentioned in paragraph 9.5.21 above there are facilities at the 'Esso' petrol filling station in Clifton, which will remain (and indeed may be enhanced since improvements

planned for the filling station include a 'Tesco Metro' store), and at the two public houses. There are also motorway services provided close by at M1 Junction 23A.

9.8.15 Effective signage and traffic information services will be provided in accordance with current standards which should be an improvement in this aspect of traveller care, although route uncertainty is not regarded as a current problem.

9.8.16 In overall terms it is considered that traveller care will be *Neutral*.

## **9.9 Summary**

9.9.1 Views from the roads within the rural section are quite different to views from the roads in the urban section, as would be expected. In the rural section, views from the road are generally intermittent with a combination of long distance and closer views of the open, undulating arable countryside, woodland blocks and road side tree belts. Built structures are features in the landscape, including Ratcliffe Power Station.

9.9.2 In the urban section, properties on both sides of the road, major roundabout junctions at Crusader and Green Lane, the Crusader and Man of Trent public houses, petrol filling station and buildings within the Nottingham Trent University (NTU) campus provide an urban feel to this section of the widening scheme. However, there are areas of vegetation and open spaces within the urban section which provide relief and some slightly longer distance views from the road.

9.9.3 Traveller stress is considered high due to the frustration of users being unable to make good progress along the route during congested periods, and due to the fear of potential accidents. High speeds, the high volume of traffic including HGVs, the lack of physical separation between traffic flows in both directions, side roads and private access directly on to the trunk road, and the possible conflict of traffic with pedestrians, cyclists or equestrians are the main factors leading to fear of accidents.

9.9.4 Traveller care is not generally considered a problem due to the presence of lay-bys and good signage, and the facilities available at the petrol filling station in Clifton and the nearby motorway services at M1 Junction 23A.

9.9.5 Traffic flows are anticipated to increase significantly in the 'Do-minimum' situation (without the scheme) and the 'Do-something' situation (with the scheme). As a result of traffic growth, key concerns such as frustration and fear of potential accidents will increase traveller stress without the improvements proposed by the A453 Widening Scheme.

9.9.6 Overall views from the roads will be similar to existing views.

9.9.7 Overall traveller stress will be substantially reduced for users of the A453 and surrounding local roads as frustration due to delays and fear of potential accidents are reduced.

- 9.9.8 Overall the provision of general travel information and services will be similar to existing.
- 9.9.9 Table 2.9.3 below summarises the assessment of impacts on vehicle travellers in accordance with criteria which is derived from TAG:

**Table 2.9.3: Significance of Effects on Journey Ambience**

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		N/A	
	Facilities		✓	
	Information	✓		
	Environment		N/A	
Travellers' Views	-		✓	
Traveller Stress	Frustration	✓		
	Fear of potential accidents	✓		
	Route uncertainty		✓	

- 9.9.10 In accordance with the criteria given in paragraph 9.1.19, the overall impact on vehicle travellers is *Better*. Furthermore, the overall significance of impact is *Large Beneficial* due to the high numbers of travellers affected (defined as more than 10,000 per day).

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