



# A27 Manor Roundabout to Sussex Pad Provision of Safe Cycleway

Feasibility Study

March 2011  
Highways Agency



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**Highways Agency**

Federated House, London Road, Dorking, RH4 1SZ



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# Executive Summary

This study has been produced by Balfour Beatty Mott MacDonald (BBMM) on behalf of the Highways Agency (HA), and reviews the feasibility of providing a cycleway along the A27 between Manor Road roundabout and Sussex Pad junction.

The study corridor is located between Lancing and Shoreham-by-Sea in West Sussex (see Figure 1.1). This section of the A27 is mostly rural, although the western section of the route is more urban. The A27 in the study area is a two-way dual carriageway, with a speed limit of 40mph west from the western exit to Lancing lay-by, and derestricted (70mph) east from the western exit to Lancing lay-by. Facilities for non motorised users (NMUs) are limited. There is a footway to the southern (westbound carriageway), and part of the northern carriageway. A puffin crossing is provided near to Manor Road. There is no provision for cyclists.

A search for personal injury accidents (PIAs) in the study area involving NMUs over the most recent five year period revealed that there had been a total of 5 PIAs; one fatal, one serious and 3 slight, only one of which involved a cyclist.

The stakeholders for the study include;

- West Sussex County Council;
- Sustrans;
- Police; and
- Worthing Cycle Forum.

The demand for a cycleway along the A27 between Manor Road roundabout and Sussex Pad has been supported through consultation with the WSCC, Worthing Cycle Forum and the Police. They commented that cyclists are currently using the footway which creates conflict with other users, especially with vehicles accessing driveways west of the Autohaus Car Sales Garage. To help verify the consultation responses an NMU count over three days was conducted in early March 2011. The results revealed that cyclists are the main users of the footway, approximately 80% of recorded users were cyclists, and although there are a number of cyclists regularly cycling on the A27, they are again outnumbered by the number of cyclists travelling along the footway.

The background information collated as part of the study has confirmed that the A27 study corridor is a heavily trafficked, high speed road that is not suitable for cyclists. The study corridor has been divided into five sections, and a preferred option has been identified for each section. Together, the five preferred options make up the overall recommendation for the study corridor.

The preferred options for each section are;

- **Section 1: Manor Road roundabout to Sussex Pad (north side)**
  - Shared use path along the north side of the A27 between Manor Road roundabout and Hoe Court then direct cyclists onto Hoe Court → The Drive → Coombes Road;
  - Upgrade the puffin crossing to toucan crossing; and
  - Provide direction signs on both sides of the carriageway.
- **Section 2: Manor Road to Mash Barn Lane**
  - Direct cyclists onto the access roads and widen the existing footway outside 58/60, 66/68/68a/70, 80/82/84/86 and Autohaus to shared use path; and
  - Sign route appropriately
- **Section 3: Mash Barn Lane to Lancing Lay-by**
  - Widen footway into the verge to provide adequate width for a shared use path; and
  - Direction signs

■ **Section 4: Lancing Lay-by**

- Provide a new cycle lane on the verge between the A27 and Lancing lay-by;
- Provide crossing points; and
- Direction signs.

■ **Section 5: Lancing Lay-by to Sussex Pad**

- Widen existing footway into verge to provide adequate width for a shared use path;
- Provide direction signs; and
- Provide crossing points at access roads.

Section 1 is a more recreational route that could link up with the Riverside Path scheme to provide a safe and attractive route for cyclists. If the Riverside Path scheme is not progressed cyclists could use the existing crossing facilities at Sussex Pad to connect with Old Shoreham Road. The route proposed for section 1 is not a direct route and, as part of the route uses the byway between Hoe Court and The Drive / Coombes Road, it would be less suitable and attractive to commuter cyclists. Section 1 is however, considered to offer a safer route for cyclists as there are fewer frontages and crossovers.

Sections 2 to 5 (combined) would provide a direct cycleway connecting residential areas with various employment opportunities in Lancing, Worthing and Shoreham. The demand for a cycleway on the south side of the A27 has been demonstrated from site observations, through consultation and from the NMU surveys. Improvements to the existing footway would also benefit all NMUs.

Cost estimates for the preferred options have been separately costed by item and section. If multiple items and sections were implemented together cost savings could be achieved.

|           | Location                                    | Cost               |
|-----------|---|--------------------|
| Section 1 | Manor Road Roundabout to Sussex Pad (north) | £164,232           |
| Section 2 | Manor Road to Mash Barn Lane                | £69,507            |
| Section 3 | Mash Barn Lane to Lancing Lay-by            | £65,503            |
| Section 4 | Lancing Lay-by                              | £55,459            |
| Section 5 | Lancing Lay-by to Sussex Pad                | £195,160           |
|           | TOTAL Sections 2 to 5                       | £385,629           |
|           | TOTAL (Sections 1 to 5)                     | <b>£549,861.00</b> |

# 1. Introduction

Balfour Beatty Mott MacDonald (BBMM) has been requested by the Highways Agency (HA) to carry out a feasibility study on one of the recommendations from the A27 Sussex Pad Safety Improvements report, which identified the need for provision of a cycleway from A27 Mash Barn Lane to Manor Road roundabout and Manor Road roundabout to Sussex Pad.

This report reviews the feasibility of providing a cycleway along the stretch of the A27 between Manor Road roundabout and Sussex Pad junction (see Figure 1.1), and includes outline concept designs of the proposed cycleway including cost estimates.

## 1.1 Scheme Objectives

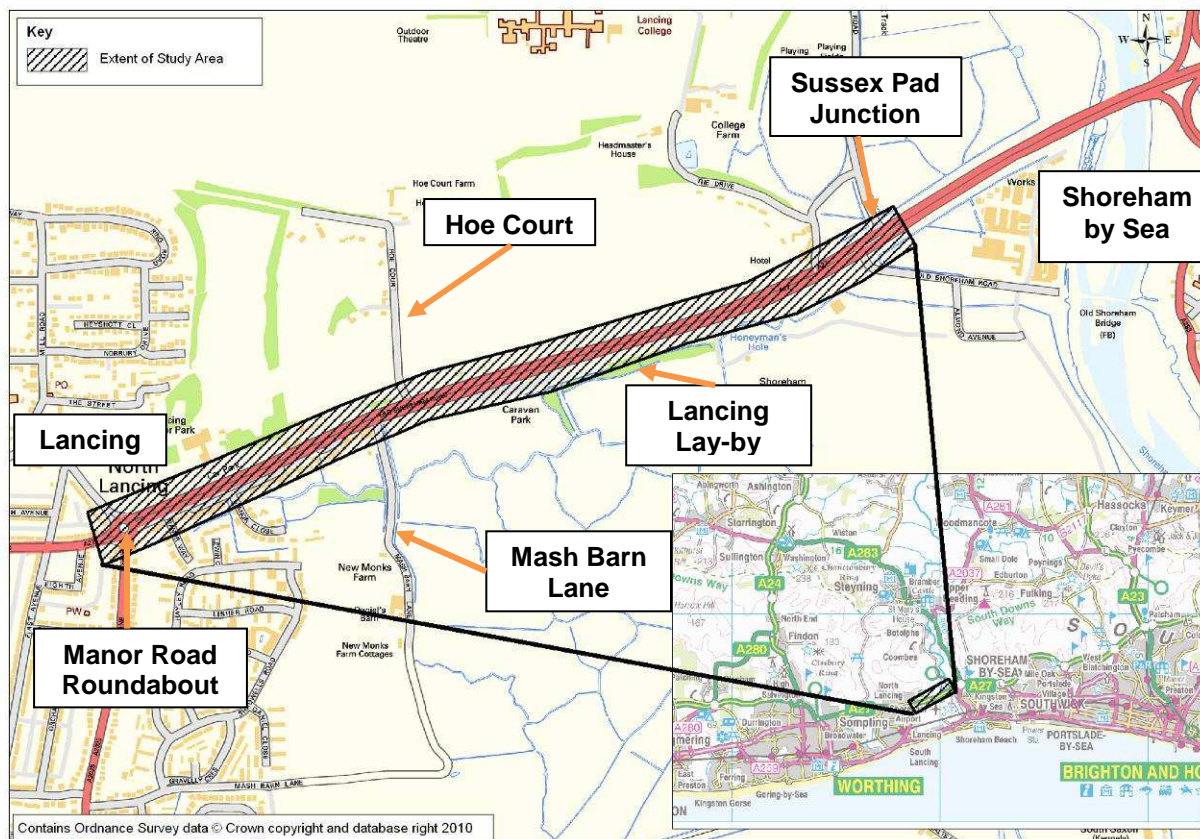
The objectives of this study are;

- Review the existing highway network and surroundings;
- Review accident data for pedestrians and cyclists on the A27;
- Ascertain whether there is a demand for a cycleway along the route;
- Identify existing conditions and constraints;
- Identify feasible options for providing cycle facilities; and
- Recommend a preferred option.

## 1.2 Scheme Location

The scheme corridor is located between Lancing and Shoreham-by-Sea in West Sussex. The scheme extends from GR(518498,105456) to GR(520189,106125). Figure 1.1 provides a location map showing the extent of the study corridor.

Figure 1.1: Location Plan



### 1.3 Issues and Considerations

The main issues and considerations that affect cycling between Manor Road roundabout and Sussex Pad include;

- Two-lane dual carriageway;
- No hard strip alongside the main carriageway;
- Heavily trafficked road;
- High speed road;
- No street lighting east from Lancing lay-by;
- No provision for cyclists on the A27 at the Sussex Pad / Shoreham Airport junction;
- Environmental and ecological considerations (South Downs National Park immediately north of the A27);
- Level differences between footway, verge and carriageway;
- Drainage (outside properties 80 to 86 and Autohaus Garage where there is a drainage gully in the footway running parallel to, but set back slightly from the kerb line, an alternate drainage solution would be required);
- Presence of lighting columns, traffic signs and speed cameras in the highway verge; and
- Access crossovers and junctions along the route.

## **1.4 Structure of the Report**

The report is structured as follows;

**Chapter 2**, reviews the relevant background information, including an assessment of the;

- existing highway and public rights of way (PROW) network;
- traffic flows and speeds;
- public transport information;
- local authority objectives in relation to cycling; and
- local trip attractors;

**Chapter 3**, reviews the accident history for the A27 study corridor, with special consideration to accidents involving non motorised users (NMUs);

**Chapter 4**, assesses the demand for the proposed facility;

**Chapter 5**, identifies the existing conditions and constraints along the study corridor and suggests preferred and alternate options for each section;

**Chapter 6**, details the costings for the preferred option and discusses the findings of the Project Appraisal Report (PAR);

**Chapter 7**, summarises the findings of a preliminary environmental assessment report (PEAR) for the proposed scheme; and

**Chapter 8**, conclusion and summary of recommendations.

## 2. Background Information

The A27 is a Trunk Road and part of the strategic road network, connecting major settlements along the South Coast of England.

The Design Manual for Roads and Bridges (DMRB) 5.2.5 (HD42/05, Para 3.6)) states that an “...*NMU Context Report must be produced at the earliest possible stage in a scheme, ideally where scheme objectives are defined and prior to preliminary design.*” In paragraph 3.13 it goes on to state that “*The NMU Context Report must provide a summary of all available information relevant to existing and potential patterns of use by NMUs within the design life of the scheme. The NMU Context Report must also set out the opportunities and objectives to improve conditions for NMUs.*”

This chapter of the report provides the background information relevant to the proposed cycleway scheme between Manor Road roundabout and Sussex Pad on the A27, to satisfy the first element of an NMU Audit.

### 2.1 Study Corridor

The area surrounding the A27 between Manor Road roundabout and the Sussex Pad junction is mostly rural, with the South Downs National Park located on the northern side of the carriageway. The A27 is a two-way dual carriageway (D2AP), with traffic lanes of approximately 3.65 metres wide, with no hard strip. A grassed central reserve and safety barrier separate the east and westbound carriageways, with one gap in the barrier, which allows eastbound traffic to U-turn at the exit of Lancing lay-by. The study corridor is approximately 1.7km long and is shown in Figure 1.1.

The speed limit along the study area varies from 40mph (west from the western exit to Lancing lay-by) and derestricted (east from the western exit to Lancing lay-by). In the 40mph section street lighting is present between the junction with Mash Barn Lane and Manor Road roundabout. No street lighting is provided along the derestricted section of the A27.

To the west of Mash Barn Lane there are a number of access points / crossovers onto the A27 from businesses, private residences and access road, most of which are on the southern side of the carriageway.

### 2.2 Manor Road Roundabout

The Manor Road roundabout is a 4-arm roundabout, the A27 forming the east and westbound arms, with the A2025 the southbound arm and Manor Road the northbound arm. The roundabout has two lanes of traffic. Both the A27 entry and exit arms are 2 lanes wide, with the A2025 and Manor Road both one lane exit and 2 lanes on entry. Approximately 65 metres east of the roundabout there is a puffin crossing. On the site visit it was confirmed that the pedestrian phase is activated on demand, and that there is an approximate delay of 30 seconds (on each set of signals) between calling the pedestrian phase and the traffic signals turning red.

### 2.3 Sussex Pad / Shoreham Airport Junction

This is a staggered junction, with two sets of traffic signals. Approaching from the west, the first set controls the right-turn into Old Shoreham Road. Fifty metres further east, is the left turn into Coombes Road. Only the second set of signals (Coombes Road) has pedestrian facilities. On both approaches to the junction,

the A27 widens to maintain the two ahead lanes and provide dedicated right and left turn lanes. A merge lane is also provided from both of the minor road exits on the A27.

## 2.4 Facilities for Non Motorised Users

There is currently no off-road provision for cyclists along the A27 study corridor. There is, however, a shared use path on the western edge of Old Shoreham Road, which connects the main access to the airport car park, with the A27.

A footway runs the entire length of the south side of the carriageway. The width of the footway varies between 1.2m and 2.3m, with the narrowest point being behind the bus stop opposite Hoe Court. The gradient of path is flat and the alignment of the route is relatively straight.

The footway along the north side of A27 extends from the Manor Road roundabout to Hoe Court. From Hoe Court to the Sussex Pad junction there is no footway, but there is a wide expanse of verge available within the highway boundary.

There are two crossing points at either end of the study area for NMUs. To the east of Manor Road roundabout there is a puffin crossing and at Sussex Pad there is a pelican crossing. Both crossings are activated on demand.

## 2.5 A27 Traffic Flows

Historical traffic data relating to the A27 has been obtained from the TRADS 2 database. Average Daily Traffic (ADT) and Average Weekday Traffic (AWT) count data for 2009 for the following sites has been selected;

- Site reference T/04/405 Eastbound A27, Lancing A283 to A259 GR (518758,105589); and
- Site reference T/04/406 Westbound A27, Lancing A259 to A283 GR (518758, 105589).

Table 2.1 shows the ADT and AWT and proportion of heavy goods vehicle traffic (HGV) or 12 hour period.

Table 2.1: A27 East of Manor Roundabout 12 Hour Traffic Flows (2009)

|                      | ADT   | ADT HGV | AWT   | AWT HGV |
|----------------------|-------|---------|-------|---------|
| Eastbound (T/04/405) | 21668 | 4.4%    | 23234 | 5.3%    |
| Westbound (T/04/406) | 20667 | 4.5%    | 22075 | 5.4%    |

Source: TRADS 2 Database Yearly Profiles

The results in Table 2.1 indicate that the traffic flows are reasonably similar, but with the main flow of traffic eastbound, towards Shoreham and Brighton. There are approximately 1,000 fewer vehicles over the 12 hour period travelling in the westbound direction, although the proportion of HGV traffic is slightly higher.

Peak hours have also been obtained and Monday to Friday mean peak hours for 2009 are illustrated in Table 2.2.

Table 2.2: A27 East of Manor Road Roundabout Peak Hours

|                      | AM Peak              |                       | PM Peak              |                       |
|----------------------|----------------------|-----------------------|----------------------|-----------------------|
|                      | Peak hour commencing | Recorded traffic flow | Peak hour commencing | Recorded traffic flow |
| Eastbound (T/04/405) | 08:00                | 2592                  | 18:00                | 2097                  |
| Westbound (T/04/406) | 09:00                | 2006                  | 17:00                | 2159                  |

Source: TRADS 2 Database

Table 2.2 shows that traffic volumes in the AM peak are slightly higher than the PM peak. The results confirm the initial findings in Table 2.1 that the eastbound carriageway carries a higher volume of traffic.

85<sup>th</sup> percentile speeds for the east and westbound carriageway for peak and off-peak periods in 2009 have also been investigated.

Table 2.3: 85th Percentile Speeds (mph) Monday to Friday

| Site            | AM Peak | Average Inter Peak | PM Peak | Minimum | Maximum |
|-----------------|---------|--------------------|---------|---------|---------|
| 405 / Eastbound | 47.3    | 48.1               | 48.3    | 46      | 52.6    |
| 406 / Westbound | 34.8    | 38.6               | 27.8    | 22.4    | 52.8    |

Source: TRADS 2 Database

The traffic counters are located within the 40mph speed limit and consequently traffic speeds on the 70mph section of the study area have not been considered. However, from observations it is assumed that they are in excess of those presented in Table 2.3. The speeds presented in Table 2.3 show that in the eastbound direction speeds the speeds are broadly similar which suggests there is no congestion at peak times. In the westbound direction there is greater variation in the speeds recorded. The 85<sup>th</sup> percentile speed are greatest in the inter peak period, but overall are much slower than the eastbound, the reason for which is likely to be vehicles slowing for the traffic signals and roundabout. Speeds are typically higher in the eastbound direction, although the maximum speeds reported are very similar.

Pedestrian and cycle counts were commissioned for this study. The counts were conducted over three days (15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> March 2011) between 07:00 and 19:00, on the footway on the southern side of the A27 to the east of Lancing lay-by. High mast cameras recorded two-way flows of pedestrians and cyclists on the footway, and also cyclists travelling on the A27 carriageway in both directions. Full details are provided in Appendix B.

The results of the counts showed the following level of use;

Table 2.4: NMU Count Results (12 hour Results)

| Day          | Cyclists A27 Eastbound | Cyclists A27 Westbound | Cyclists Footway Eastbound | Cyclists Footway Westbound |
|--------------|------------------------|------------------------|----------------------------|----------------------------|
| Tuesday      | 9                      | 16                     | 55                         | 42                         |
| Wednesday    | 9                      | 16                     | 53                         | 47                         |
| Thursday     | 10                     | 21                     | 39                         | 39                         |
| <b>TOTAL</b> | <b>28</b>              | <b>53</b>              | <b>147</b>                 | <b>128</b>                 |

Source: Count on Us



The results in Table 2.4 clearly show that more cyclists cycle on the footway in preference to the A27. Out of a total of 175 cyclists travelling in an eastbound direction, 16% cycled on the carriageway and 84% cycled on the footway. In the westbound direction 29% of cyclists were recorded on the carriageway and 72% were recorded cycling on the footway.

Table 2.5 below provides a breakdown on the different NMU who use the footway to the east of Lancing Lay-by.

**Table 2.5: Breakdown of NMUs using the Footway (12 hours)**

| Day          | Eastbound Footway |            |            | Westbound Footway |            |            | Two Way TOTAL |            |            |
|--------------|-------------------|------------|------------|-------------------|------------|------------|---------------|------------|------------|
|              | Pedestrians       | Cyclists   | Total      | Pedestrians       | Cyclists   | Total      | Pedestrians   | Cyclists   | Total      |
| Tuesday      | 15                | 55         | <b>70</b>  | 11                | 42         | <b>53</b>  | 26            | 97         | <b>123</b> |
| Wednesday    | 8                 | 53         | <b>61</b>  | 11                | 47         | <b>58</b>  | 19            | 100        | <b>119</b> |
| Thursday     | 15                | 39         | <b>54</b>  | 13                | 39         | <b>52</b>  | 28            | 78         | <b>106</b> |
| <b>TOTAL</b> | <b>38</b>         | <b>147</b> | <b>185</b> | <b>35</b>         | <b>128</b> | <b>163</b> | <b>73</b>     | <b>275</b> | <b>351</b> |

Source: Count on Us

The results in Table 2.5 show that the main users of the footway to the east of Lancing Lay-by are cyclists. Over the three days of the survey 351 NMUs were recorded of which 78% were recorded as cyclists.

## 2.6 Trip Generators

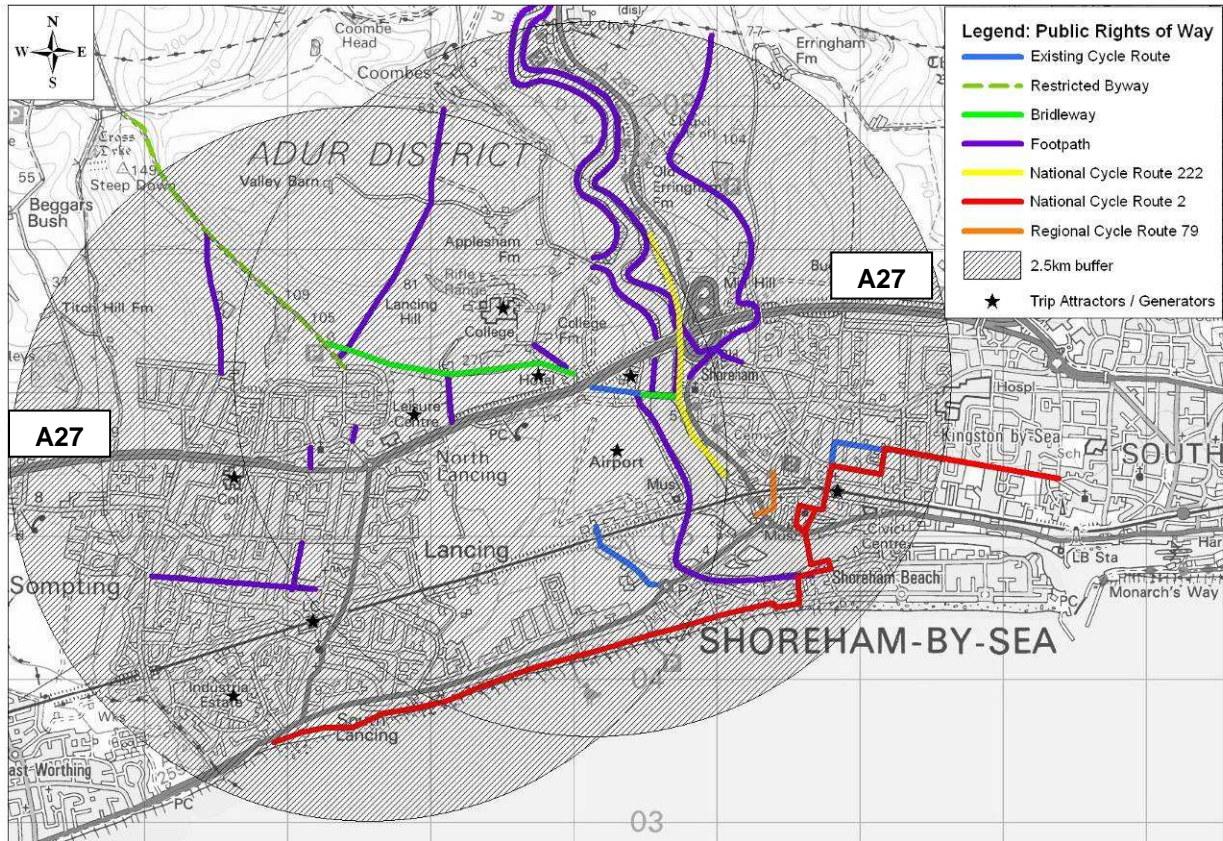
Planning Policy Guidance 13: Transport and DMRB (paragraph 2.9 TA91/05), states that cycling is suitable for most journeys of 5km or less.

Table 2.6 lists a selection of trip generators / attractors within a 5km radius of the study area.

**Table 2.6: Selection of Trip Attractors / Generators within 5km**

| Lancing                      | Shoreham                                     | Worthing                   |
|------------------------------|--|----------------------------|
| Lancing Town centre          | Shoreham Airport (and associated businesses) | Worthing Hospital          |
| Lancing Rail station         | Ricardo Technical Systems                    | East Worthing Rail station |
| Lancing College              | Sussex Pad Hotel                             | Worthing Rail station      |
| Lancing Leisure centre       | Shoreham Town centre                         | Downlands Retail centre    |
| Lancing Business park        | Shoreham Rail station                        | Downlands Business park    |
| Boundstone Community College | Southlands General Hospital                  |                            |
|                              | Kings Manor Community College                |                            |
|                              | Shoreham College                             |                            |

Figure 2.1: Public Rights of Way and Trip Attractors / Generators



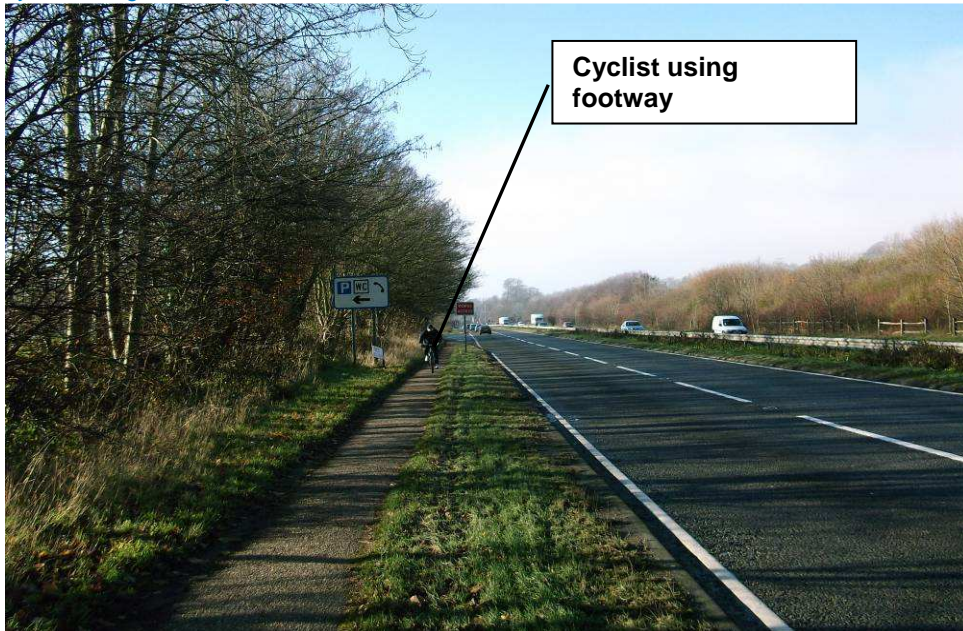
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Providing improved access by sustainable modes of transport to facilities such as those listed above could help to encourage walking and cycling thereby reducing reliance on the private car.

## 2.7 Existing Cycleways and PROW Network

As noted in Section 2.4, there are no existing facilities for cyclists on the A27 study corridor. However, it was observed on the site visits (see Figure 2.2) that the footway is used by cyclists. This observation was confirmed through consultation with West Sussex County Council (WSSCC), Worthing Cycle Forum and the Police. The main points of concern is the possible conflict between user groups due to its insufficient width, and because cyclists are not expected to be cycling on the footway.

Figure 2.2: Cyclist Using Footway



National Cycle Network (NCN) 222 (Downs Link) runs along the eastern bank of the River Adur and connects Shoreham-by-Sea with Bamber and Henfield to the north. Further north NCN 222 links up with Regional Route (RR) 89, the South Downs Way, which travels in an east / west direction. NCR 2 (Newhaven to Portsmouth) runs parallel to the A259 along South Lancing Promenade.

To the north of the A27 there is a network of bridleways that could be used by cyclists as an alternative route to the A27 to access the residential areas in North Lancing. These include the bridleway that runs from The Drive (see Figure 2.4), around the northern boundary of the Sussex Pad Hotel, connecting with Hoe Lane (see Figure 2.3) and the restricted byway to the north of Mill Road (see Figure 2.1 for an overview of the routes).

Figure 2.3: View North along Hoe Court



Figure 2.4: View East Along Bridleway between Hoe Court and The Drive



The footbridge across the River Adur is a bridleway that cyclists are permitted to use. There is also a footpath along the western bank of the River Adur which passes underneath the railway line and links into the A259 Brighton Road to the east of the A259 / New Salts Farm Road / Saltings roundabout. West Sussex's Provisional Local Transport Plan 3 (LTP3) is proposing to convert this footpath to a shared use.

Although there are existing cycle routes in the surrounding area, they are not as attractive as the A27 study corridor as they are less direct and require a substantial diversion. A cycle facility along the A27 between Manor Road roundabout and Sussex Pad would therefore create a much needed linkage between Shoreham and Lancing and the employment, recreational and retail opportunities to the east and west of the study corridor.

Figure 2.1 illustrates the existing cycleways and public rights of way (PROW) in relation to the proposed scheme and local trip attractors / generators.

## 2.8 Public Transport

Public transport services and facilities (i.e. bus stops) have been considered because of the interactions that could take place between cyclists using the footway and passengers waiting at the bus stops or boarding / alighting services.

There are six bus services with routes that use the A27 study corridor, these services are the; 9, 106, X2, X4, X5 and X8. Route 9, is operated by Stagecoach and provides an hourly service (Monday to Friday)

between Shoreham and Angmering. The other bus services are all operated by Compass Travel and provide a more limited level of service. Table 2.7 shows the routes and frequency of service along the A27.

**Table 2.7: Bus Service Routes and Frequencies**

| Service Number | Route                            | Operator       | Service Frequency         |
|----------------|----------------------------------|----------------|---------------------------|
| 9              | Shoreham to Angering             | Stagecoach     | 1 per hour                |
| 106            | Henfield to Worthing             | Compass Travel | 1 every 2 hours           |
| X2             | Pulbrough to Holmbush Centre     | Compass Travel | 1 per day (Mon, Wed, Fri) |
| X4             | Bognor Regis to Holmbush Centre  | Compass Travel | 1 per day (Wed only)      |
| X5             | Littlehampton to Holmbush Centre | Compass Travel | 1 per day                 |
| X8             | Bognor Regis to Holmbush Centre  | Compass Travel | 1 per day (Mon, Fri only) |

Source: Traveline South East

There are three sets of bus stops along the length of the study route;

- North Lancing, Leisure Centre;
- North Lancing, Hoe Court; and
- North Lancing, Old Shoreham Road.

The westbound Leisure Centre bus stop / shelter is located within the highway verge separating the A27 and residential access road, the eastbound Leisure Centre bus shelter is positioned at the back of the footway. Both stops have a bus lay-by. The Hoe Court and Old Shoreham Road bus stops are located at the edge of the existing footway, as there is no dedicated waiting area / shelter for passengers there could be a potential point of conflict (see Figure 2.5). There is no controlled crossing point for pedestrians to access the Hoe Court bus stop, therefore pedestrians using this stop must use either the Manor Road or Sussex Pad crossings which require a long diversion, or cross without any facilities.

**Figure 2.5: Westbound A27 Bus Stop Opposite Hoe Court**



## 2.9 Schemes in the Vicinity

There are three schemes being developed by BBMM for the HA within / in the vicinity of this section of the A27, all of which are currently at the concept design stage.

The opportunities and constraints for all four schemes should be considered collectively, to ensure appropriate and linked facilities are provided.

### A27 Chichester to Worthing Cycle Study

Assessments of cycle facilities on the A27 through Worthing have been reviewed in study number 10-4285, and include the section of the A27 up to Manor Road roundabout. The cycling conditions vary on the A27 through Worthing, and the opportunities and the recommendations on how to improve facilities for cyclists reflect this. On the section between the eastern end of the A27 Sompting by-pass to the Manor Road roundabout, the road is a single carriageway subject to a maximum 40 mph speed limit. The short-term recommendations for this section include signing to an alternative route that would join the Manor Road roundabout from the south, along Grinstead Lane.

However, further studies for the section have also been recommended, and these assessments would include both on-carriageway measures and improved crossing facilities. It is important that, should a further study be commissioned, that the conclusions and recommendations of this study (10-4290) are fully incorporated, to ensure seamless and connected improvements to the cycle network.

### A27 Lancing Lay-by VOSA Improvements

The purpose of this scheme is to provide a suitably designed lay-by on the A27 that accommodates not only the needs of VOSA but is also attractive to motorists in need of rest.

The proposed works include site clearance to provide new fencing bordering the A27 carriageway, the installation of a new footway, a new island and vehicle restraint system on the hard standing within lay-by and picnic tables within the soft estate, modifications to existing toilet facilities, resurfacing and the installation of road markings.

### Sussex Pad Riverside Path

The proposed scheme will link the western side of the Riverside path to Coombes Road. Travelling north, the shared route (cyclists, pedestrians and equestrians) will pass underneath A27 Shoreham Bypass turning west and then running parallel to the A27 to connect with Coombes Road (either connecting directly onto Coombes Road or joining an existing access). The proposal will require the purchase of land on the northern side of the A27, as there is insufficient width within the existing highway boundary.

The shared path will connect to Coombes Road, a quiet road, with links to the bridleway network and into the South Downs National Park. The route offers an alternative to cyclists to access the north side of the A27 without the need to cross the A27 at the Sussex Pad intersection. Moreover, by way of the footbridge over the River Adur this path will link into NCR 222 into Shoreham.

## 2.10 Strategic Objectives

This report is one of a number of studies on cycle facilities on the Area 4 network currently being carried out. It is part of an area-wide objective by the HA to improve facilities for cyclists on the Area 4 Network.

WSCC LTP2 (2006 – 2016) includes the cycling strategy 'Pedalling Ahead'. The main LTP objective is to increase cycling trips across the County by at least 23% between 2005/06 and 2015/16.

The LTP recognises that the A27 is a barrier to non motorised traffic and that there are a lack of safe routes for cyclists (paragraph 5.2.1). For coastal West Sussex the LTP states the Council will *"Work with the Highways Agency to improve access across the A27 for cyclists, pedestrians and equestrians."* Section 6.1.3 states that they will implement *"...specific accessibility-related transport schemes, such as...cycleways...ensuring that resources are used efficiently and effectively to achieve the best possible accessibility benefits for people."*

In Adur District, one of the main issues for WSCC is reducing congestion on the A27 by focusing on long term solutions. This will include *"...encouraging changes in travel behaviour by improving access to a wider range of travel modes and integrating them better and promoting alternatives."* (Appendix 01: Adur)

WSCC Provisional LTP 3 promotes the construction and use of new cycle facilities to increase the level of cycling in the Shoreham area. It proposes to provide a new cycle facility along an existing footway running along the western banks of the River Adur to connect to the A259.

## 2.11 Development Proposals

The only development proposal of significance in the area is a proposed golf course on land at the back of the Lancing Lay-by. The land is currently being used for aggregate recycling, primarily for use in the construction of the golf course.

Access to the site will be by way of a separate access / egress from the Lancing lay-by; the access is to the west of the public conveniences and the egress at the western end of the lay-by. The site is currently predominately used by HGVs.

Once the golf course is open the existing separate access / egress to the recycling site will be consolidated into the existing egress. The Section 106 Agreement for the proposed Golf course states that the developers are to provide a foot / cycleway a minimum of 3m wide.

It is understood that the Highways Agency has not raised any objections to the proposed use as a golf course.

There is also a small residential development proposed to provide a block of flats at the site of number 4 Old Shoreham Road. There are limited details on the development proposals, although it is understood that the access arrangements may alter the existing road layout. The implications of this scheme on the proposals should be considered when more information is available.

## 3. Accidents

### 3.1 All Road Users

The most recent 5 years of accidents, from September 2005 to August 2010, have been obtained and analysed for the study area. The results for all personal injury accidents (PIA) show that within this period there have been a total of 59 accidents of which 5 (8.5%) involved NMUs. The accident statistics also show that the 59 accidents resulted in a total of 77 casualties.

There was one fatal accident within the timeframe, with four accidents classified as serious and 54 accidents classed as slight. Full details are provided in Appendix C.

The data shows that the most accidents occurred in 2007 (13), with 11 accidents occurring in 2008, 2009 and 2010, seven accidents occurring in 2006 and six accidents occurring in 2005. It is however worth noting that 2005 and 2010 are not full years, with only four and eight months of data respectively.

Over the five year period, the most accidents occurred in May and September (eight accidents each), with the fewest number of accidents in March and July (two accidents each).

86% of the accidents occurred in the light, 93% of accidents occurred in fine weather conditions and 81% of the accidents occurred when the road surface was dry. The accident and casualty data is summarised in Table 3.1.

Table 3.1: Accident and Casualty Data Summary

| Year         | Accidents (Casualties) |              |              | Total          |
|--------------|------------------------|--------------|--------------|----------------|
|              | Slight                 | Serious      | Fatal        |                |
| 2005         | 6 (8)                  | 0            | 0            | <b>6 (8)</b>   |
| 2006         | 7 (10)                 | 0            | 0            | <b>7 (10)</b>  |
| 2007         | 12 (15)                | 1 (1)        | 0            | <b>13 (16)</b> |
| 2008         | 11 (13)                | 0            | 0            | <b>11 (13)</b> |
| 2009         | 10 (15)                | 0            | 1 (1)        | <b>11 (16)</b> |
| 2010         | 8 (10)                 | 3 (4)        | 0            | <b>11 (14)</b> |
| <b>TOTAL</b> | <b>54 (71)</b>         | <b>4 (5)</b> | <b>1 (1)</b> | <b>59 (77)</b> |

### 3.2 Non Motorised Users

Of the 59 accidents reported, 5 (8.5%) involved NMUs, which can be broken down into three accidents involving pedestrians, one accident involving a cyclist and one accident involving an invalid carriage (classified as NMU in paragraph 1.3 TA 91/05).

Of the three pedestrian accidents, one was fatal, one was classed as serious and one as slight. The accident involving a cyclist was slight, as was the accident involving the invalid carriage.

Three of the accidents (pedestrian serious, pedestrian slight, and invalid carriage slight) all occurred in the vicinity of the Manor Way puffin crossing. The fatal accident occurred to the east of the lay-by, opposite the Withy Patch Caravan Park and the cyclist accident occurred to the east of Grinstead Lane.



The narrative descriptions for these accidents indicate that the following were at fault for the accident;

- Pedestrian Serious accident = Pedestrian error;
- Pedestrian Slight accident = Driver error;
- Cyclist Slight accident = Pedestrian error;
- Pedestrian Fatal accident = Pedestrian error; and
- Invalid Carriage Slight accident = Pedestrian error.

### **3.3 Accident Data Summary**

The accident data reveals that there were a total of 5 accidents involving NMUs in the most recent five years. The small number of accidents means that it is not possible to conclude any significant findings, however the results do indicate that NMUs were more likely to be fault for causing the accident and that 60% of the NMU accidents occurred in the vicinity of Manor Road crossing.

## 4. Establishing the Need and Demand

The study brief states that this report should consider the feasibility of a cycleway along the A27 between Manor Road roundabout and the Sussex Pad junction. The cycleway should encourage cyclists to use the controlled crossing at Manor Road rather than using Sussex Pad junction.

This Chapter of the report sets out how the feasibility for providing a cycleway was established and the likely current and generated demands by cyclists.

### 4.1 Consultation – The Need

Consultation with WSCC Cycling Officer has been positive, with recognition that a cycleway along this section of the A27 would provide a valuable connection. The Cycling Officer also passed on correspondence from a local resident regarding a cycle link between Lancing and Shoreham Airport. The resident suggested that there are a significant number of cyclists on this route currently cycling on the footway and that there have been a number of ‘near misses’ between cyclists and vehicles emerging from their driveways.

Worthing Cycle Forum has also commented on the need for a cycle path between Lancing and Shoreham Airport. In a written response to a letter from the Highways Agency regarding the A27 Chichester to Worthing Cycle Study which discussed the options for improving facilities for pedestrians and cyclists on the A27, the Cycle Forum stated that;

*“While this is outside Worthing, there is considerable demand from local cyclists for this route. There is no viable alternative for cyclists and the volume of cycle traffic using pavements is already causing complaints from local residents just east of Manor road roundabout. There is a clear need to create a properly designed cycle facility to address the problems that the A27 has created here. It was noted that particular attention must be paid to the lay-by [Lancing] running adjacent to this route which is used by drivers as a ‘rat-run’. Ways of reducing traffic speeds entering and exiting this lay-by should be explored.” (Worthing Cycle Forum, 24/01/2011)*

The need for a cycle facility between Lancing and Shoreham Airport was given the highest priority from the Worthing Cycle Forum, even though this section of route is not in Worthing.

Further support for a cycle route between Lancing and Shoreham Airport was received from the Police Community Support Officer (PCSO) for Manor Ward, Lancing. In their communication it was stated that *“Over the years we have had many complaints of cyclists using the pavement in the area of the Autohaus Car showroom and the group of houses immediately to the west of it.”* The PCSO goes on to state that *“We have tried educating the cyclists and at times threatened to enforce this with the issue of £30 fixed penalty notices. The flip side of this is that we then get complaints from those connected with cycling that we are forcing them to ride on a very busy trunk road. (Incidentally that is not our aim and we encourage them to dismount and walk the 100 metres or so...)...one idea was that if there was a cycle lane there the home owners would be expecting cyclists and would perhaps take more care when entering/exiting their properties.”* The evidence provided by the PCSO further demonstrates the need for a workable solution that does not compromise the safety of cyclists.

The consultation comments on cycle demand were confirmed on site, where cyclists were observed on the footway (see Figure 2.2). This suggests that there is a need to provide a cycleway along the study corridor to overcome safety concerns, and encourage more people to cycle.

Full copies of the written consultation responses are provided in Appendix D.

## 4.2 Establishing the Demand

A count of NMUs using the existing footway adjacent to the westbound A27 carriageway was undertaken in 15<sup>th</sup>, 16<sup>th</sup> and 17<sup>th</sup> March 2011. The results (presented in Table 2.4 and Table 2.5) show that there are some cyclists cycling on the main carriageway however, the proportion of cyclists using the footway is between two and five times greater, depending on direction. Cyclists are also the main users of the footway east of Lancing Lay-by significantly outnumbering pedestrians. Approximately 80% of users were cyclists, the remainder were pedestrians including children, adults and the mobility impaired.

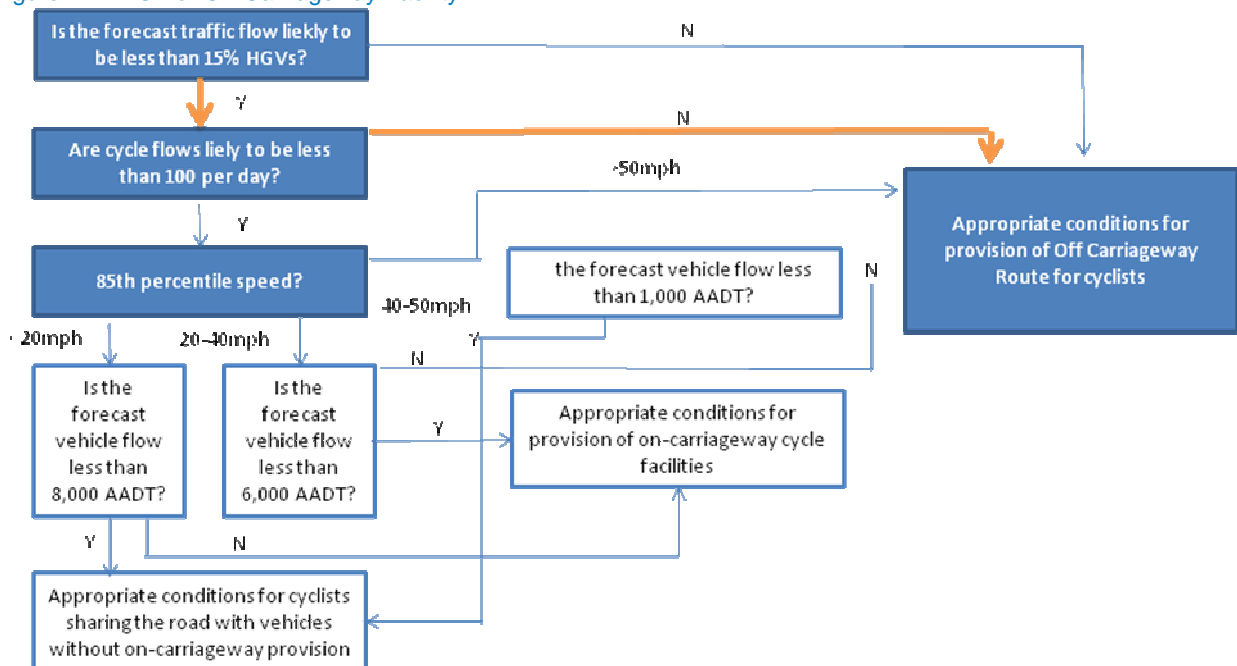
The counts undertaken do not however take into account the impact of suppressed demand, so the existing lack of cycling facilities is likely to deter a significant demand.

In summary, there is an existing demand for cycling along the A27 study corridor which is likely to increase if more appropriate facilities were provided.

## 4.3 On Carriageway or Off Carriageway?

After ascertaining that there is a demand for a cycleway, the study also assessed whether the cycleway should be provided on or off the carriageway. Figure 3/1 of TA 91/05 provides guidance to aid this decision (see Figure 4.1), although it does state that “*These criteria should not be applied rigidly, but in conjunction with judgement based upon the vehicle speed limit, volume/content of motorised traffic, volume of NMUs and other local issues*”.

Figure 4.1: On or Off-Carriageway Facility



Source: Figure 3/1 of TA 91/05

The highlighted route in Figure 4.1 uses the background information gathered in Section 2. The overall result is that the A27 study corridor should provide off-carriageway facilities, because of the number of cyclists currently using the footway, but also because of the speed traffic and the volume of traffic carried on the road.

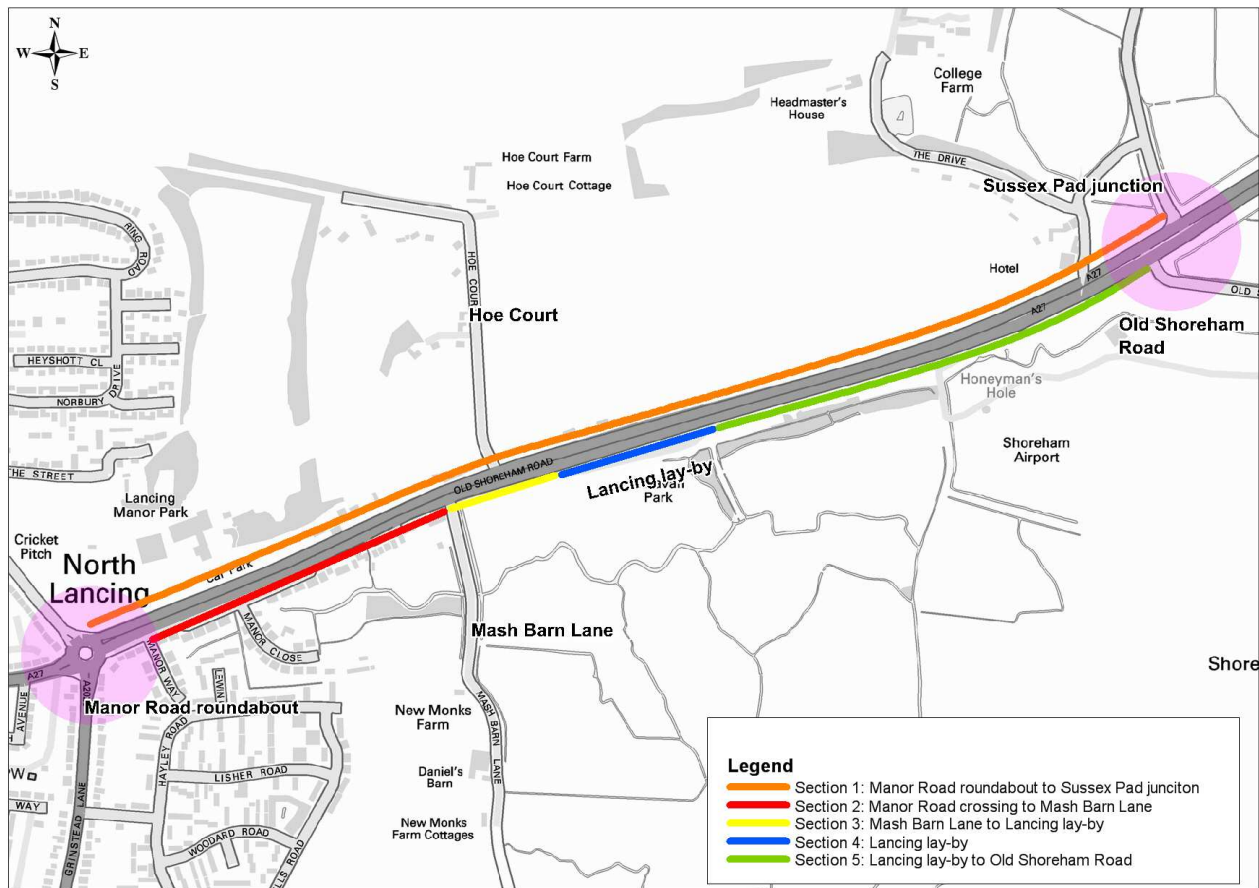
As a large part of the study corridor is 70mph dual carriageway, cycling on the carriageway is not recommended, as accidents involving NMUs which occur on such roads are more likely to result in serious injury or fatality.

## 5. Route Assessments

This Chapter of the report has been divided into five headings to represent the five sections that make up the study corridor (see Figure 5.1) and should be read in conjunction with the proposals map (drawing numbers: LMNS/10-4290/003 and LMNS/10-4290/004).

Within each section, the issues affecting cyclists have been assessed. A preferred option has been recommended for each section and plans drawn up, in some instances a number of alternative options have also been reviewed. The preferred options are presented alongside initial costings and three PAR scores in Chapter 6. A summary of the recommendations is provided in Chapter 8.

Figure 5.1: Study Corridor Section Plan



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### 5.1 Section 1: Manor Road Roundabout to Sussex Pad (North Side)

#### 5.1.1 Existing Conditions and Constraints

The A27 is a dual carriageway throughout the study corridor. Between Manor Road roundabout and Hoe Court, it is subject to a maximum 40mph speed limit and well lit. From Hoe Court to Sussex Pad junction, the speed limit increases to 70mph and there is no street lighting, therefore cycling on the carriageway is not recommended.

The puffin crossing across the A27 is located approximately 65m west of the Manor Road roundabout. The crossing area is 3m wide with a 12m wide, 3m deep staggered central refuge, bounded by guardrailing. The pedestrian crossing is activated on demand, with a call time of approximately 30seconds. The signal aspects for pedestrians mounted on the nearside. A signal control box is located within the central refuge. Dropped kerbs and tactile paving are provided.

The northern side of the corridor is less populated than the southern. There are only four vehicle crossovers (over the verge / footway) giving access to private residences, plus an access / egress to a parking area on a former petrol station. There is a footway (width varying between 1.5m and 2.0m) from the Manor Road roundabout that continues eastbound as far as the junction with Hoe Court. Most of the footway (excluding the parking area) has a grass verge to the carriageway, which varies from 1.5m to 6m in width. Within this area is a bus stop, located in a 75m lay-by directly east of the puffin crossing, and there was evidence of this being used illegally for second hand car sales.

There is no footway between the junction of Hoe Court and the Sussex Pad Hotel, although there is a short section provided from the hotel to the first set of signals at the intersection with Old Shoreham Road. The footway does not continue to Coombes Road, although there is evidence of cyclists using the grassed area. There is sufficient land available within the highway boundary to provide a new shared use cycle lane between Hoe Court and the Sussex Pad Hotel, although there would be a significant associated cost.

### 5.1.2 Preferred Option

Change the Puffin crossing to a Toucan crossing. This will require the crossing width to be increased to 4m to provide sufficient space for pedestrians and cyclists to pass without conflict (Local Transport Note 2/95 paragraph 2.4.1). The tactile paving on the crossing approaches would need to be changed to reflect the new method of control. A signal control cabinet located within the central pedestrian refuge, may require relocation if the crossing is widened to Toucan standards. To overcome this it is suggested that the crossing is widened westwards although space is limited on the southern side.

Provide advisory direction signs on the both sides of the crossing.

Remove the eastern part of the lay-by which is used illegally for car sales, whilst retaining the bus stop lay-by. Provide shared use path (unsegregated) from Manor Road roundabout to Hoe Court to provide a safe route for pedestrians and cyclists. Vegetation at the back of the verge will require cutting back / removing. At the junction with Hoe Court provide signs directing cyclists onto an alternate route along Hoe Court and the byway which runs from Hoe Court to The Drive, around the northern boundary of the Sussex Pad Hotel. Hoe Lane is a 20mph road which provides access to approximately 17 properties, it is therefore considered a suitable road for cyclists to use. This alternate route would link-up with the Riverside Path scheme which emerges on Coombes Road. The by-way is an unmade path, therefore more suited to recreational cycling as for parts of the year it may be boggy.

| Advantages  | Disadvantages   |
|---|---|
| <ul style="list-style-type: none"> <li>• Would encourage cyclists to cross at Manor Road crossing</li> </ul>                            | <ul style="list-style-type: none"> <li>• Costs associated with construction</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Less environmental impact than a route along the whole length of the study corridor</li> </ul> | <ul style="list-style-type: none"> <li>• Loss of verge</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Lower construction costs than a route along the whole length of the study corridor</li> </ul>  | <ul style="list-style-type: none"> <li>• Widening footway will require relocation of street furniture</li> </ul>                        |
| <ul style="list-style-type: none"> <li>• Makes use of existing routes</li> </ul>  | <ul style="list-style-type: none"> <li>• Potential need to relocate signal box would have significant financial implications</li> </ul> |
| <ul style="list-style-type: none"> <li>• The byway would provide a more attractive route</li> </ul>                                     | <ul style="list-style-type: none"> <li>• Adding to the amount of street clutter with additional signs</li> </ul>                        |

| Advantages  | Disadvantages   |
|---|---|
| <ul style="list-style-type: none"> <li>• Signing to alternative routes</li> </ul>                           | <ul style="list-style-type: none"> <li>• Longer, less direct route</li> </ul>                 |
| <ul style="list-style-type: none"> <li>• Link to Riverside Path scheme</li> </ul>                           | <ul style="list-style-type: none"> <li>• By-way may not be passable all year round</li> </ul> |
| <ul style="list-style-type: none"> <li>• Improved accessibility</li> </ul>                                  |   |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul>          |   |
| <ul style="list-style-type: none"> <li>• Pedestrians become more aware of cyclists using footway</li> </ul> |   |

### 5.1.3 Alternate Options

#### Shared Use Path Adjacent North Carriageway

Provide a shared use path (unsegregated) adjacent to the north side of the carriageway between Manor Road roundabout and Coombes Road.

| Advantages   | Disadvantages  |
|--|--|
| <ul style="list-style-type: none"> <li>• Continuous and direct route</li> </ul>                    | <ul style="list-style-type: none"> <li>• High financial cost associated with construction</li> </ul>                   |
| <ul style="list-style-type: none"> <li>• Could link up with Riverside Path scheme</li> </ul>       | <ul style="list-style-type: none"> <li>• Significant amount of vegetation clearance and habitat disturbance</li> </ul> |
| <ul style="list-style-type: none"> <li>• Signing to alternative routes</li> </ul>                  | <ul style="list-style-type: none"> <li>• Proximity to South Downs National Park</li> </ul>                             |
| <ul style="list-style-type: none"> <li>• Improved accessibility</li> </ul>                         | <ul style="list-style-type: none"> <li>• May encourage cyclists and pedestrians to cross at Sussex Pad</li> </ul>      |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul> | <ul style="list-style-type: none"> <li>• Less attractive environment</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Widening footway will require relocation of street furniture</li> </ul>       |

#### Relocate the Crossing Option

This could be to the west closer to Manor Road roundabout or to the east closer to the Leisure Centre bus stops. Both relocations would enable a wider and deeper waiting area to be provided on the southern side of the carriageway. In its present location a 2m wide waiting area is provided, however if the crossing is relocated a waiting area of 3.5m could be provided.

| Advantages  | Disadvantages  |
|---|--|
| <ul style="list-style-type: none"> <li>• Would encourage cyclists to cross at Manor Road crossing</li> </ul>    | <ul style="list-style-type: none"> <li>• Loss of verge</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Pedestrians become more aware of cyclists using footway</li> </ul>     | <ul style="list-style-type: none"> <li>• Costs associated with construction</li> </ul>                           |
| <ul style="list-style-type: none"> <li>• Better signing onto alternative routes</li> </ul>                      | <ul style="list-style-type: none"> <li>• High costs involved with relocating the crossing</li> </ul>             |
| <ul style="list-style-type: none"> <li>• Improved accessibility</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Adding to the amount of street clutter with additional signs</li> </ul> |
| <ul style="list-style-type: none"> <li>• More convenient for cyclists crossing the A27 at Manor Road</li> </ul> |  |

## 5.2 Section 2: Manor Road to Mash Barn Lane

On the southern side, an access road runs parallel to the A27 from the puffin crossing east for approximately 250m. There are no traffic regulation orders (TROs) along the access road with regards to it being a one way street, although it is a local authority road (WSCC). The access road serves 23 properties and Manor Close. A grassed verge separates the access road from the A27 and a bus stop, shelter and lay-by is provided within this area, 70m east of the puffin crossing. This is within the highway boundary. There are level differences in this section, with the A27 on higher ground than the access road. The

footway runs along the back of the access road, however it is not continuous along the entire section. There are two short sections where properties are accessed directly off the A27, the highway boundary plans show that these roads are within the highway boundary. In these locations the footway is located behind the verge, but at the far end of this section (outside properties 80, 82, 84, 86 and Autohaus car sales) there is no grassed verge and the footway abuts the carriageway.

### 5.2.1 Preferred Option

Provide an advisory cycle lane on the access roads, and sign them with TSRG sign 967 (route recommended for pedal cycles on the main carriageway of a road). The access roads provide access to a small number of properties are therefore not heavily trafficked. On street parking is minimal. As most of the properties have driveways and the speed limit is 30mph cycling along these roads is considered to be appropriate. This option would require consultation with WSCC as the first section of access road is their road.

Convert the two sections of footway (adjacent to properties 58/60 and 66/68/68a/70), into an unsegregated shared use path. There is scope to widen the footway to 3m + 0.25m bounding and still provide the required amount of separation (0.5m) from the carriageway (TA 90/05 Para 7.21 and 7.22). Widening the footway may require the relocation of utilities or vegetation in the verge. The start and end of the footway would need dropped kerbs and appropriate tactile paving. The footway outside number 66 could be flared to give cyclists a direct route and avoid the need for sharp turns.

Outside properties 80/82/84/86 and the car sales garage the footway is approximately 2.5m wide. There is no verge separating the footway from the carriageway and no scope to widen the footway, as the property boundaries abut the footway. A drainage gully (serving the footway) runs 0.8m from the kerb line. It is recommended that an unsegregated shared use path 2m wide, allowing 0.5m for segregation from the carriageway should be provided here. Paragraph 7.16 TA90/05 states that *“Unsegregated shared facilities have operated satisfactorily down to 2.0m wide with combined pedestrian and cycle use of up to 200 per hour.”* The NMU survey (undertaken east of Lancing Lay-by) indicated that over 12 hours the footway was on average used by 232 NMUs the majority of which were cyclists. Therefore this option, although more costly than signing for cyclists to dismount, may be more appropriate and appealing to cyclists as the route would be continuous. An additional 0.25m should be provided to account for ‘kerb shyness’, however this cannot be achieved without widening in to the carriageway. The footway would require repaving and profiling to provide a level surface (at present 0.9m of the surface area is sloped to provide drainage). A new means of providing drainage for the shared use path would need to be considered to eliminate the need for a drainage gully in the footway.

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>Cheaper to implement than mandatory cycle lane</li> </ul>         | <ul style="list-style-type: none"> <li>Adding to amount of street clutter by introducing more signs</li> </ul>                        |
| <ul style="list-style-type: none"> <li>Improved accessibility</li> </ul>                                 | <ul style="list-style-type: none"> <li>Alternative drainage solution is required</li> </ul>   |
| <ul style="list-style-type: none"> <li>Safer for cyclists than using the A27</li> </ul>                  | <ul style="list-style-type: none"> <li>Cyclists will still come into conflict with vehicles on crossovers and access roads</li> </ul> |
| <ul style="list-style-type: none"> <li>Fewer environmental impacts as less works on the verge</li> </ul> | <ul style="list-style-type: none"> <li>Conflict between pedestrian and cyclists</li> </ul>  |



## 5.2.2 Alternate Options

### In Access Road

There is scope to provide an advisory cycle lane on the access road at the back of the highway verge. Such a route should be marked on the carriageway with a dashed white line, with the cycle symbol at the start and end of the section, and at appropriate intervals along it. Signing should also be provided, to advise cyclists and notify drivers. An advisory cycle lane is preferred to a mandatory cycle lane, as motorised vehicles are permitted to use it if safe to do so, and given that some on street parking takes place, this option would be sensible.

On the two short access road sections, it is suggested that a cycle way / lane is provided within the verge / highway, this would provide a more direct route for cyclists which will avoid parked cars and driveways. This should be appropriately sign posted and marked out.

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>• Vehicles more likely to take notice of cyclists using lined cycle lane</li> </ul> | <ul style="list-style-type: none"> <li>• Adding to amount of street clutter by introducing more signs</li> </ul>                        |
| <ul style="list-style-type: none"> <li>• Advisory cycle lane does not require a TRO</li> </ul>                             | <ul style="list-style-type: none"> <li>• May need to move street furniture within the verge</li> </ul>                                  |
| <ul style="list-style-type: none"> <li>• Improved accessibility</li> </ul>   | <ul style="list-style-type: none"> <li>• Intruding on grass verge</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul>                         | <ul style="list-style-type: none"> <li>• Conflict between pedestrian and cyclists</li> </ul>  |
|  | <ul style="list-style-type: none"> <li>• Cyclists will still come into conflict with vehicles on crossovers and access roads</li> </ul> |
|  | <ul style="list-style-type: none"> <li>• Higher costs associated with construction of cycle lane within verge</li> </ul>                |

### Adjacent to Properties 80/82/84/86

Outside properties 80/82/84/86 and the car sales garage sign for Cyclists Dismount (TSRGD 966) as there is no verge separating the foot and carriageway and due to the drainage gully in the footway. The benefit of this approach is that the potential for conflict between pedestrians and cyclists is reduced, and as a signing scheme it should also be cheaper to implement and no alternative drainage solution is required.

Conversely, as cyclists prefer continuous routes they are likely to ignore the signs and continue to cycle, or not use the facility at all.

| Advantages   | Disadvantages  |
|--|--|
| <ul style="list-style-type: none"> <li>• Cheaper to implement as no alternative drainage solution required</li> </ul>      | <ul style="list-style-type: none"> <li>• Adding to amount of street clutter by introducing more signs</li> </ul>   |
| <ul style="list-style-type: none"> <li>• Reduced potential conflict between cyclists and vehicles at crossovers</li> </ul> | <ul style="list-style-type: none"> <li>• Cyclists likely to ignore the signs and continue to cycle on the path so will still face conflict with vehicles at crossovers.</li> </ul> |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul>                         |  |

## 5.3 Section 3: Mash Barn Lane to Lancing Lay-by

### 5.3.1 Existing Conditions and Constraints

The bus stop on the westbound side is in a lay-by to the east of Mash Barn Lane. The bus stop sign is located to the rear of a 1.2m wide footway, which is below the acceptable minimum width for a shared use path. The bus lay-by extends across the junction mouth of Mash Barn Lane.

### 5.3.2 Preferred Option

Keep the existing bus stop arrangement and widen the footway into the verge. The highway boundary plan shows that there is scope to widen the existing footway. This option would provide the required width to provide a shared-use cycleway. The bus stop could continue to operate in the same position.

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>• Able to provide a path of uniform width</li> </ul>        | <ul style="list-style-type: none"> <li>• Environmental impact as loss of habitat and grassed verge</li> </ul> |
| <ul style="list-style-type: none"> <li>• No costs associated with moving the bus stop</li> </ul>   | <ul style="list-style-type: none"> <li>• Construction costs</li> </ul>  |
| <ul style="list-style-type: none"> <li>• Buses can continue to use the stop</li> </ul>             | <ul style="list-style-type: none"> <li>• Need to relocate street furniture</li> </ul>                         |
| <ul style="list-style-type: none"> <li>• Improved bus boarding / alighting facilities</li> </ul>   |   |
| <ul style="list-style-type: none"> <li>• Improved accessibility</li> </ul>                         |   |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul> |   |

### 5.3.3 Alternate Options

#### Signing

Sign for 'Cyclists Dismount' behind the bus lay-by, until the footway widens out sufficiently to accommodate a shared use path. The drawback of this option is that cyclists prefer continuous routes which do not require them to dismount, losing speed and time resulting in high levels of non-compliance and reduced safety.

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>• Cheaper to implement as minimal construction costs</li> </ul> | <ul style="list-style-type: none"> <li>• Cyclists likely to ignore signs</li> </ul>                 |
| <ul style="list-style-type: none"> <li>• No costs associated with moving the bus stop</li> </ul>       | <ul style="list-style-type: none"> <li>• Increased risk of pedestrian / cyclist conflict</li> </ul> |
| <ul style="list-style-type: none"> <li>• Buses can continue to use the stop</li> </ul>                 |   |
| <ul style="list-style-type: none"> <li>• Safer for cyclists than using main carriageway</li> </ul>     |   |

#### Close the Bus Stop

Close this set of bus stops as there is an alternative set of stops to the west (opposite the Leisure Centre) within 400metres which has better waiting facilities and safer crossing facilities and the majority of the residential properties are located to the west of this stop (although there are approximately 17 properties in Hoe Court). The footway could then be widened to provide the required dimensions.

| Advantages  | Disadvantages  |
|---|--|
| <ul style="list-style-type: none"> <li>• Able to provide a path of uniform width</li> </ul>             | <ul style="list-style-type: none"> <li>• May involve lengthy discussions / consultation with WSCC, local bus companies and public</li> </ul> |
| <ul style="list-style-type: none"> <li>• Able to provide bus boarding / alighting facilities</li> </ul> | <ul style="list-style-type: none"> <li>• May cause complaints from local residents</li> </ul>  |

| Advantages   | Disadvantages   |
|--|---|
| <ul style="list-style-type: none"> <li>Existing bus stop position encourages pedestrians to cross the A27 where there is no safe crossing point</li> <li>Safer for cyclists than using main carriageway</li> </ul> | <ul style="list-style-type: none"> <li>Will require construction and therefore will have cost associated with it</li> </ul> |

### Change Bus Stop Arrangement

Close the lay-by and change the arrangement of the bus stop, so that buses stop on the main carriageway, as per the arrangement at Sussex Pad Hotel, where the bus stops are located in the merge and left turn lanes. On-carriageway bus stops are acceptable in a 40mph area providing that traffic levels are not too high and there is good visibility. If this option were to be progressed the acceptability of an on-carriageway should be given further consideration. Area 4 has been upgrading bus stops on its network, to provide improved boarding and alighting by introducing bus borders. If the bus stop / lay-by is used infrequently it may be feasible to remove the bus lay-by and alternatively have buses stopping on the main carriageway, therefore allowing improved boarding and alighting. Analysis of the bus timetables indicates that there are a maximum of 23 services (not including school / special bus services) which call at this stop on a weekday. Over a 12 hour period this equates to less than two buses per hour. If the lay-by is removed the delay to general traffic on the A27 should be minimal, especially as only the 9 operates services during the AM and PM peak hours. The footway could then be widened to give the required dimension.

| Advantages   | Disadvantages  |
|--|--|
| <ul style="list-style-type: none"> <li>Able to provide a path of uniform width</li> <li>Able to provide bus boarding / alighting facilities</li> <li>Existing bus stop position encourages pedestrians to cross the A27 where there is no safe crossing point</li> <li>Safer for cyclists than using main carriageway</li> </ul> | <ul style="list-style-type: none"> <li>May involve lengthy discussions with WSCC, local bus companies and public</li> <li>May cause complaints from local residents</li> <li>Will require construction and therefore will have cost associated with it</li> <li>Safety considerations regarding buses stopping on-carriageway</li> <li>Safety considerations as no safe / controlled crossing facilities for pedestrians accessing bus stop</li> </ul> |

## 5.4 Section 4: Lancing Lay-by (Southern Side of A27)

### 5.4.1 Existing Conditions and Constraints

Lancing lay-by is located on the southern side of the A27. Alongside its function as a rest area, it is used by VOSA as a weighbridge and also provides the access and egress to an aggregates recycling facility. Although the lay-by is more suitable for cyclists than the main carriageway, there are several possible obstructions, including;

- snack van and customers,
- car passengers,
- vehicle doors,
- queuing for the public toilets,
- VOSA staff,
- access and egress to aggregates site

therefore it would be unwise to route cyclists through the lay-by.

### 5.4.2 Preferred Option

Create a new cycle path along the verge adjacent to the A27. With this option there may be environmental considerations to take account of (for example loss of habitat), and also the need to relocate signs and lighting columns. As the cycle path will be dual direction there is the possibility that drivers on the westbound A27 could be confused / dazzled by lights travelling towards them in the wrong direction. To mitigate against this there should be a minimum of 1.5m separation of the cycleway from the mainline.

| Advantages  | Disadvantages   |
|---|---|
| <ul style="list-style-type: none"> <li>Separate route for cyclists therefore reduced potential for conflict with other users</li> </ul> | <ul style="list-style-type: none"> <li>Relocation of street furniture in verge</li> </ul> |
| <ul style="list-style-type: none"> <li>Alterations to the lay-by exit will make it safer for NMUs</li> </ul>                            | <ul style="list-style-type: none"> <li>Confusion for drivers</li> </ul>                   |
| <ul style="list-style-type: none"> <li>Improved accessibility for cyclists</li> </ul>   | <ul style="list-style-type: none"> <li>Loss of habitat</li> </ul>                         |
|   | <ul style="list-style-type: none"> <li>Costs associated with construction</li> </ul>      |

### 5.4.3 Alternate Option

There are footways on either side of the lay-by which could be converted into a shared use path. The limitations with this option relate to conflict with pedestrians and vehicles, for example the public conveniences, snack van, weighbridge and parked cars opening doors into the footway.

| Advantages  | Disadvantages  |
|---|--|
| <ul style="list-style-type: none"> <li>Lower costs</li> </ul>   | <ul style="list-style-type: none"> <li>Conflict with various users of the lay-by</li> </ul>        |
| <ul style="list-style-type: none"> <li>Less environmental impact</li> </ul>                           | <ul style="list-style-type: none"> <li>Difficult to achieve required width</li> </ul>              |
| <ul style="list-style-type: none"> <li>Using existing route</li> </ul>                                | <ul style="list-style-type: none"> <li>Toilets and weighbridge limit widening potential</li> </ul> |
| <ul style="list-style-type: none"> <li>Pedestrians should be aware of presence of cyclists</li> </ul> |  |
| <ul style="list-style-type: none"> <li>HA own the public conveniences</li> </ul>                      |  |

## 5.5 Section 5: Lancing Lay-by to Sussex Pad Junction

### 5.5.1 Existing Conditions and Constraints

At the exit to Lancing lay-by the speed limit changes from 40mph to 70mph (derestricted). The street lighting also ends at the change of speed limit.

There is a footway from the lay-by entrance to the Old Shoreham road junction, with a verge providing separation from the carriageway. The footway ranges from 1.5m to 2m wide and verge width is a minimum of 1.5m wide. The footway surface is in a poor condition and is not ideal for cycling on.

Along this section there is an access / egress into the Withy Patch Caravan Park, with dropped kerbs provided on the footway, but no tactile paving.

A set of bus stops are positioned on the western side of the Sussex Pad junction. The bus stops are positioned on the footway, with buses stopping on the carriageway.

The Sussex Pad junction is a staggered cross road with signals controlling traffic on all the arms. A pelican crossing is provided across the A27 to the east of the Old Shoreham Road (airport) junction. On the north

side of the crossing, there is a short section of footway linking to the Sussex Pad Hotel, but there is no footway east toward Coombes Road. There is an uncontrolled crossing across the mouth of Old Shoreham Road (airport) junction with a pedestrian refuge in the centre of the carriageway and dropped kerbs on either side of Old Shoreham Road.

### 5.5.2 Preferred Option

Widen the existing footway into the verge to accommodate a shared use path and provide direction signs and signs indicating the start and end of the route.

| Advantages  | Disadvantages   |
|---|---|
| <ul style="list-style-type: none"> <li>• Able to provide a path of uniform width</li> </ul>             | <ul style="list-style-type: none"> <li>• Costs associated with construction</li> </ul>                  |
| <ul style="list-style-type: none"> <li>• Safe route away from traffic</li> </ul>                        | <ul style="list-style-type: none"> <li>• Environmental impact with construction in the verge</li> </ul> |
| <ul style="list-style-type: none"> <li>• Pedestrians should be aware of presence of cyclists</li> </ul> | <ul style="list-style-type: none"> <li>• Relocation of existing street furniture</li> </ul>             |
| <ul style="list-style-type: none"> <li>• Signing to alternative routes</li> </ul>                       |   |
| <ul style="list-style-type: none"> <li>• Improved accessibility for cyclists</li> </ul>                 |   |

## 6. Cost Estimates and PAR

This Chapter of the study will provide the cost estimates for the preferred option for each section along the study corridor and summarise the results of the PAR which has also been undertaken for the preferred option.

### 6.1 Cost Estimates

The purpose of the cost estimates is to provide an early indication of the likely cost of construction, so that an approximate scheme value can be added into the PAR. At this early stage of development, statutory undertaker enquiries have not been undertaken.

The costs for the preferred options have been calculated per item and also by Section, to allow separate lengths of the study corridor to be improved in stages. The estimated cost of all sections is £549,861.00. Savings however, could be achieved, for example in traffic management, site accommodation costs etc. if multiple items and sections were undertaken at the same time

A summary of the cost assessment is as follows:

**Table 6.1: Summary of Cost Estimates per Section**

|              | Location                                    | Proposal   | Cost               |
|--------------|---|--|--------------------|
| Section 1    | Manor Road Roundabout to Sussex Pad (north) | Widen footway to provide shared use path between Manor Road Roundabout and Hoe Court. Provide new direction signage and convert the Puffin crossing to a Toucan Crossing.  | £164,232           |
| Section 2    | Manor Road to Mash Barn Lane                | A combination of signing for cyclists to cycle on road and widening footways to provide a shared use path. Accompanied by direction signing. Repave and profile the section of footway outside properties 80 – 86 and Autohaus garage. | £69,507            |
| Section 3    | Mash Barn Lane to Lancing Lay-by            | Widen footway into the verge to provide shared use path, accompany with signing.   | £65,503            |
| Section 4    | Lancing Lay-by                              | Provide a new section of cycleway along the verge between Lancing Lay-by and the A27. Accompany with signing.  | £55,459            |
| Section 5    | Lancing Lay-by to Sussex Pad                | Widen footway into the verge to provide a shared use path. Accompany with signing.   | £195,160           |
| <b>TOTAL</b> |   |  | <b>£549,861.00</b> |

To avoid double counting the costs presented above only include the cost of upgrading the Puffin to Toucan crossing near Manor Road Roundabout in Section 1. The prices presented are net of RPI.

A full breakdown of the cost calculations is given in Appendix E.

## 6.2 PAR

Three Project Appraisal Reports (PAR) have been completed for the study recommendations, they are;

- Cycle facilities only on the north side of the study corridor (Section 1);
- Cycle facilities on the south side of the study corridor (Section 2 to 5); and
- Cycle facilities on the north and south sides of the study corridor (Sections 1 to 5).

An accessibility PAR has been completed for the three options. Rather than generating a first year rate of return or a benefit to cost ratio, the accessibility PAR arrives at a Value Management (VM) score and a Priority Category as an indication of the likely level of success the scheme will have. The results of the PAR are provided in Table 6.2.

Table 6.2: PAR Scores

| Section                  | Section Number in Report | Value Management Score | Priority Category |
|--------------------------|--------------------------|------------------------|-------------------|
| Northern Section         | 1                        | 5                      | 3                 |
| Southern Section         | 2 to 5                   | 4                      | 3                 |
| North and South Combined | 1 to 5                   | 4                      | 3                 |

## 7. Preliminary Environmental Assessment

A stage 1 Scoping Assessment (following DMRB guidance) of the scheme at this phase has been undertaken, the main findings of which are summarised below, and full details are provide in Appendix F.

A Record of Determination Requirement is not necessary at this stage of the project, however this is dependent on the location of works being confirmed as the South Downs National Park is located immediately north of the A27 carriageway.

The Mens and Ebernoe Common Special Area of Conservation (SAC), a European Protected Site, has been identified as within 30km of the study corridor. If works are to be progressed an Appropriate Assessment Screening Matrix (AASM) report would need to be produced to identify any potential impacts on these sites.

A summary of the findings of Table 1: Assessment of Potential Environmental Risks for the Operational and Completed Scheme is provided in Table 7.1.

**Table 7.1: Assessment of Potential Environmental Risks**

| DMRB Topic                              | Potential Impact |                                  |
|---|------------------|----------------------------------|
|   | During Works     | Operational and Completed Scheme |
| Air Quality                             | Slight Adverse   | Neutral                          |
| Cultural Heritage                       | Slight Adverse   | Neutral                          |
| Landscape                               | Slight Adverse   | Slight Adverse / Adverse         |
| Geology and Soils                       | Slight Adverse   | Slight Adverse                   |
| Nature Conservation                     | Slight Adverse   | Neutral                          |
| Materials                               | Slight Adverse   | Neutral                          |
| Noise and Vibration                     | Slight Adverse   | Neutral                          |
| Effect on all Travellers                | Slight Adverse   | Slight Beneficial                |
| Community and Private Assets            | Slight Adverse   | Slight Adverse                   |
| Road Drainage and the Water Environment | Slight Adverse   | Neutral                          |

The overall outcome of Table 7.1 is that during the works there will be a Slight Adverse Impact on the Environment due to construction associated activities. Once the scheme is completed most (6/10) of the Slight Adverse impacts will become Neutral. The effect on all travellers is expected to have a slight beneficial impact. The impact on geology and soils and community and private assets is determined as slight adverse, and the impact on landscape slight adverse / adverse due to the loss of vegetation.

A summary of the findings from Table 2: Assessment of Potential Environmental Risks for the Completed Scheme, in the long term (15 years) is provided in Table 7.2.

**Table 7.2: Assessment of Potential Environmental Risks for the Completed Scheme**

| WebTAG Topic     | Potential Impact |         |         |
|------------------|------------------|---------|---------|
|                  | Beneficial       | Neutral | Adverse |
| Greenhouse Gases |                  | ✓       |         |



| WebTAG Topic                      | Potential Impact |         |
|-----------------------------------|------------------|---------|
|                                   | Beneficial       | Adverse |
| Townscape                         |                  | ✓       |
| Heritage and Historical Resources |                  | ✓       |
| Biodiversity                      |                  | ✓       |
| Water Environment                 |                  | ✓       |
| Physical Fitness                  | ✓                |         |
| Journey Ambience                  | ✓                |         |

The results of the assessment indicate that there are not considered to be any adverse impacts with the proposed scheme. Physical fitness and journey ambience along the route are expected to improve and have therefore been scored as a beneficial impact. The remaining five topic areas are expected to have a neutral impact on the surrounding area.

Table 3 of the main report (see Appendix F) provides a summary of the risks and mitigation where the impacts have not been classed as neutral in Tables 1 and 2. The following risks were identified as requiring further mitigation measures / additional requirements;

- Air Quality
- Noise and Vibration
- Ecology: Protected Areas
- Ecology: Protected Species
- Landscape
- Potential Arboriculture Requirements
- Materials

## 8. Conclusions and Recommendations

BBMM has investigated the options for providing a cycleway between Manor Road roundabout and Sussex Pad junction in Lancing, West Sussex, where there are currently no cycling facilities provided.

The study corridor is approximately 1.7km long and is a two way dual carriageway with a speed limit of 40mph between Manor Road roundabout and Lancing lay-by, increasing to 70mph for the rest of the route. There is a high level of traffic on the study corridor with over 2000 vehicles in the AM and PM peaks. Traffic speeds are also high with the average 85% speed over a day over 52mph<sup>1</sup> and more than 5% of the traffic is HGV. These factors therefore make cycling along the study corridor particularly dangerous as accidents involving cyclists on high speed roads are more likely to result in serious injury or fatality. For this reason it has been decided that off-carriageway facilities would be the most appropriate solution.

The purpose of the study is to improve accessibility and safety for cyclists between Lancing and Shoreham. A review of trip generators / attractors within a 5km radius of the study corridor has shown that there are a number of key attractions in the Lancing / Worthing and Shoreham areas, but there is currently no direct or safe cycle route to connect them. The A27 study corridor represents a significant opportunity to link the Lancing / Worthing and Shoreham areas, improve modal shift towards more sustainable modes of transport and improve accessibility. As well as connecting trip generators / attractors the route would also bridge the gap between the proposals put forward as part of the Chichester to Worthing Cycle study (which abuts the west of the study corridor) and the Riverside Path scheme (which abuts the east of the study corridor).

Accident statistics for the most recent five year period have been investigated and reveal that of the 59 accidents reported along the study corridor, five (8.5%) involved NMUs, one of which was a slight injury to a cyclist.

Consultation has taken place with WSCC, Worthing Cycling Forum and the Police all of who confirm that cyclists currently use the footway on the southern side of the A27. The Police in particular highlighted that the section of footway outside properties 80 – 86 and the Autohaus garage and is a problem area as cars accessing their driveways are not expecting to see cyclists there. A NMU survey was also undertaken to understand the current level of cycling along the study corridor. The results of the survey conducted over three days in March 2011 revealed that cyclists are the main users of the footway, approximately 80% of recorded users were cyclists, and although there are a number of cyclists regularly cycling on the A27, they are again outnumbered by the number of cyclists travelling along the footway.

The study corridor was divided into five sections relating to the road characteristics. For each section a preferred option has been identified, and in some instances alternative options have also been considered and summarised. The preferred options for each section are;

- **Section 1: Manor Road roundabout to Sussex Pad (north side)**
  - Shared use path along the north side of the A27 between Manor Road roundabout and Hoe Court then direct cyclists onto Hoe Court → The Drive → Coombes Road;
  - Upgrade the puffin crossing to toucan crossing; and
  - Provide direction signs on both sides of the carriageway.
- **Section 2: Manor Road to Mash Barn Lane**

<sup>1</sup> The traffic counter are located within the 40mph section of the study corridor and therefore do not give an indication of the speeds in the 70mph section of the study corridor.

- Direct cyclists onto the access roads and widen the existing footway outside 58/60, 66/68/68a/70, 80/82/84/86 and Autohaus to shared use path; and
- Sign route appropriately
- **Section 3: Mash Barn Lane to Lancing Lay-by**
  - Widen footway into the verge to provide adequate width for a shared use path; and
  - Direction signs
- **Section 4: Lancing Lay-by**
  - Provide a new cycle lane on the verge between the A27 and Lancing lay-by;
  - Provide crossing points; and
  - Direction signs.
- **Section 5: Lancing Lay-by to Sussex Pad**
  - Widen existing footway into verge to provide adequate width for a shared use path;
  - Provide direction signs; and
  - Provide crossing points at access roads.

Section 1 is a more recreational route that could link up with the Riverside Path scheme to provide a safe and attractive route for cyclists. If the Riverside Path scheme is not progressed cyclists could use the existing crossing facilities at Sussex Pad to connect with Old Shoreham Road. The route proposed for section 1 is not a direct route and, as part of the route uses the byway between Hoe Court and The Drive / Coombes Road, it would be less suitable and attractive to commuter cyclists. Section 1 is however, considered to offer a safer route for cyclists as there are fewer frontages and crossovers.

Sections 2 to 5 (combined) would provide a direct cycleway connecting residential areas with various employment opportunities in Lancing, Worthing and Shoreham. The demand for a cycleway on the south side of the A27 has been demonstrated from site observations, through consultation and from the NMU surveys. Improvements to the existing footway would also benefit all NMUs.

Cost estimates for the preferred options have been provided by section, although if all sections were implemented together a cost saving could be achieved.

## 8.1 Conflict Points

Conflict points and potential obstructions along the proposed cycleway were noted during a site visit on 6<sup>th</sup> December 2010.

The following items were identified as a potential conflict point or obstruction along the route;

- Narrow footway between the bus lay by and the car sales garage;
- Lack of waiting area for passengers waiting for buses at the Hoe Court and Airport bus stops;
- Pedestrian refuge at the puffin crossing to the east of Manor Road roundabout is not wide / large enough to accommodate cyclists and pedestrians;
- Poor quality surfacing;
- Street furniture and traffic signs in the verge may require relocation;
- Frontage access to residential properties west of car sales garage;
- Potential for conflict (cyclist / vehicle) at the lay-by access and egress;
- Potential for conflict (cyclist / vehicle) on the access and egress' to the access roads set back from the A27 between Manor roundabout and the car sales garage; and
- Drainage gully / cross fall on footway;

# Appendices

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# Appendix A. Drawings

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# Appendix B. Non Motorised User Survey Results

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## Appendix C. Accident Narratives

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## Appendix D. Consultation Correspondence

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# Appendix F. Preliminary Environmental Assessment Report

|   |  |                        |   |
|---|--|------------------------|---|
| <b>Scheme Title:</b>                          | A27 Manor Road to Sussex Pad Roundabout. Study   | <b>Scheme Code:</b>    | 4290  |
| <b>Location:</b>                              | A27 Shoreham Road from Manor Road roundabout to Sussex Pad junction. Near Sompting, East Sussex.   | <b>Grid Reference:</b> | Start: 518498, 105456<br>End: 520189, 106125    |
| <b>Originator (Date):</b>                     | David Hope-Thomson<br>27/01/11   | <b>Checker (Date):</b> | Fiona Davis Rev A / K Baldock Rev B<br>28/01/11 |
| <b>Approver (Date):</b>                       | Thomas Knight  | <b>Revision</b>        | B   |
| <b>Proposed works:</b>                        | <p><u>Several options have been suggested for works:</u></p> <ol style="list-style-type: none"> <li>Convert the existing footway between Autobahn Garage on Old Shoreham Road and Sussex Pad on the southern side of the A27 carriageway into a shared use (cyclists/pedestrians) path (3m wide by approximately 900m) – PEA previously undertaken for this part of the scheme.</li> <li>Upgrade Manor Road pelican crossing to a toucan crossing through additional lighting. Widen the existing footway to 3m wide by approximately 80m on the northern side of the A27 between Manor Road roundabout for shared use path.</li> <li>Between Manor Road crossing and Autobahn garage on Old Shoreham Road widen the existing footway (on the southern side of the A27 carriageway) to provide a shared use (cyclists/pedestrians) path 3m wide by approximately 535m. This will result in the loss of some of the existing verge, approximately 1m x 535m. Combined with providing advisory cycle lane at the back of the highway.</li> <li>An assessment to identify the impact of installing a shared use (cyclists/pedestrians) path 3m wide on northern side of A27 from Hoe Court to Sussex Pad, including need to change Sussex Pad crossing to a toucan crossing.</li> <li>New sign posts will be required – number, dimensions and the exact locations have not been determined at this Concept Stage. It is likely that works will involve some carriageway white lining, exact dimensions to be confirmed.</li> </ol> <p>Details of the extent and requirements for vegetation clearance are to be confirmed.</p> <p>Traffic Management, location of site compound, timing and duration of works are to be confirmed.</p> |                        |   |
| <b>Assumptions/limitations of assessment.</b> | <ul style="list-style-type: none"> <li>At this phase of the scheme a stage 1 Scoping Assessment has been carried out as per DMRB guidance and is based upon information provided by the designer. The purpose of this assessment is to identify potential environmental risks to the delivery of the scheme. The assessment is based on risks identified without mitigation, when the desktop study (available on request) was completed.</li> <li>No site visit has been carried out.</li> <li>Environmental Risks change (for example new legislation and policies are introduced, new designated sites are introduced and distributions of protected species change). On this basis it is critical that this assessment is updated on a regular basis.</li> <li>It is the Project Manager's responsibility to ensure the Environment Team is kept up to date with all changes to the scope of the Project.</li> </ul>   |                        |   |
| <b>Further assessment requirements:</b>       |  |                        | <b>Requirement (Y/N)</b>                        |

|   |   |
|---|---|
| Preliminary Environmental Assessment  | Yes   |
| <u>RoD Requirement:</u> Is the Area of Works situated wholly or in part in a 'Sensitive Area'?<br>(The Highways (Assessment of Environmental Effects) Regulations (SI 1999 no 369) identify sensitive areas as an Area of Outstanding Natural Beauty, National Park, World Heritage Site, Scheduled Ancient Monument site, Sites of Special Scientific Interest or a European site within the meaning of regulation 10 of the Conservation (Natural Habitats etc.) Regulations 1994). | Not at this stage; However, this will depend on the confirmed location of works. South Downs National Park is located immediately north of the A27 carriageway. |
| <u>RoD Requirement:</u> Is the Area of Works greater than a hectare (10000m <sup>2</sup> )?   | TBC   |
| <u>AASM non-bat requirement:</u> Is the area of works within 2km of a European Protected Site designated under Article 6 of The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007?  | No  |
| <u>AASM bat requirement:</u><br>Is the area of works within 30km of a European Protected Site designated for bats under Article 6 of The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007?   | Yes: works are within 30km of The Mens and Ebernoe Common SAC.  |
| <u>AASM requirement:</u><br>Crossing/adjacent to upstream of, or downstream of, watercourses designated in part or wholly in a European Protected Site designated under Article 6 of The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007?   | No  |

**Table 1: Assessment of Potential Environmental Risks for the Operational and Completed Scheme (in accordance with the DMRB guidance).**

| DMRB Topics | Potential Impact | Qualifying Statement | Further |
|-------------|------------------|----------------------|---------|
|-------------|------------------|----------------------|---------|



|                   | <b>During works</b> | <b>Operational and Completed Scheme</b> |   | <b>Assessment Required</b>  |
|-------------------|---------------------|---|---|---|
| Air Quality       | Slight adverse      | Neutral                                 | <p><b>During works:</b> decrease in air quality throughout the locality from emissions, dust and particulates generated from all construction related activities and effects associated with TM. Particularly Withy caravan site and the existing Public Right Of Way (PROW).</p> <p><b>Post works:</b> on road conditions are anticipated to revert to pre-construction levels as all construction equipment and TM shall be removed upon completion of works. Works will not change traffic volume &amp;/or speed; therefore a neutral effect is anticipated in the long-term.</p>  | TBC. Potential requirement for liaison with the Local Authority and Air Quality Specialist during the design phase to confirm any survey requirements and to inform the environmental assessment. |
| Cultural Heritage | Slight adverse      | Neutral                                 | <p><b>During works:</b> no significant impact anticipated due to construction works located within the highways boundary and a lack of cultural features within the vicinity/ likely visual curtilage.</p> <p><b>Post works:</b> on road conditions are anticipated to return to pre-construction levels as all construction equipment and TM shall be removed upon completion of works. At this stage it is not considered that screening vegetation is to be lost.</p>  | No  |
| Landscape         | Slight adverse      | Slight adverse / adverse                | <p><b>During Works:</b> Potential slight adverse impact on sensitive receptors (in particular South Downs National Park, Withy Park Caravan Site &amp; existing PROW) during works from the use of traffic management &amp; the use of machinery on site.</p> <p><b>Post Works:</b> Potential long-term adverse impact due to increased signage and vegetation clearance resulting in increased exposure of sensitive receptors (in particular Withy Caravan Park) to the A27. Long-term impacts to other sensitive receptors (i.e. South Downs National Park &amp; existing PROW) are considered reduced due to the presence of existing footway and the presence of local screening vegetation bordering eastbound carriageway, which is to be unaffected by works.</p> | Yes. RoD may be required if improvement works fall within the National Park.  |

|                     |                |                |  |   |
|---------------------|----------------|----------------|--|---|
| Geology and Soils   | Slight adverse | Slight adverse | <b>During and Post works:</b> slight adverse impact due to the footpath widening encroaching into the soft estate.   | No  |
| Nature Conservation | Slight adverse | Neutral        | <p><b>During works:</b> Risk of damage / disruption to potential protected species and their habitats from vegetation clearance and excavations. Particular impacts comprise: protected species (herptiles/dormice/nesting birds/bats).; damage to tree roots; contact with Giant Hogweed or spreading of Japanese knotweed from works. Impact to trees in close proximity to work area from construction works.</p> <p><b>Post works:</b> post construction risk of fragmenting nesting/ foraging/ hibernation habitats and/or flight lines; compacting the ground; and/or spreading Japanese knotweed and giant hogweed.</p> | Yes: Initial walkover survey to inform the need to conduct specialist protected species surveys. Arboriculture assessment will be needed where works in close proximity to trees. |
| Materials           | Slight adverse | Neutral        | <p><b>During works:</b> construction related activities are anticipated to produce waste materials. Works shall be mostly confined to hard standing although some works on the soft estate are necessary; therefore a slight adverse impact is anticipated during the construction phase. The level of impact is dependent on how materials are treated (reduced, reused, and recycled).</p> <p><b>After works:</b> a neutral long-term impact upon materials is anticipated as conditions will revert to pre-work levels.</p>   | TBC. A site waste management plan may be required. WAC testing.   |

|   |                |                   |   |  |
|---|----------------|-------------------|---|--|
| Noise and Vibration                     | Slight adverse | Neutral           | <p><b>During works:</b> increase in ambient noise and vibration levels throughout the locality from all construction related activities and effects associated with TM.</p> <p><b>After works:</b> on road conditions are anticipated to revert to pre-construction levels as all construction equipment and TM shall be removed upon completion of works. Works will not change traffic volume &amp;/or speed; therefore a largely neutral effect is anticipated in the long-term.</p> | <p>TBC.<br/>Contact the Local Authority and residents in advance of works.<br/>Liaise with the Local Authority and Noise and Vibration Specialist during the design phase to confirm any survey requirements and to inform the environmental assessment.</p> |
| Effects on All Travellers               | Slight adverse | Slight beneficial | <p><b>During works:</b> temporary disruption to journey times from all construction related activities; associated TM arrangements; and consequential potential delays.</p> <p><b>After works:</b> on road conditions are anticipated to revert to pre-construction levels; due to the improved condition of the footways/ shared use path for pedestrians and cyclists a beneficial impact is anticipated post works.</p>  | No.  |
| Community and Private Assets            | Slight adverse | Slight adverse    | <p><b>During works:</b> temporary disruption to community and private assets from all construction related activities and associated TM. No land take is currently required.</p> <p><b>After works:</b> increased exposure to views of the carriageway / noise / air quality to Withy Caravan Park due to loss of screening.</p>  | No.  |
| Road Drainage and the Water Environment | Slight adverse | Neutral           | <p><b>During works:</b> short-term risk of damage, disruption or pollution to a water source from dust and construction related materials generated throughout the construction phase.</p> <p><b>After works:</b> conditions are anticipated to revert to pre-construction levels as all construction equipment and TM shall be removed upon completion of works.</p>   | No.  |

**Table 2: Assessment of Potential Environmental Risks for the Completed Scheme (overall long term assessment in accordance with WebTAG guidance of 15 years). Table to assist in the completion of the PAR.**

| WebTAG Topics                     | Potential Impact |         |         | Qualifying Statement   |
|-----------------------------------|------------------|---------|---------|--|
|                                   | Beneficial       | Neutral | Adverse |  |
| Greenhouse Gases                  |                  | √       |         | On road conditions are anticipated to revert to pre-construction levels. There shall be no permanent change to traffic speed &/or volume. Given the temporary duration of works, emissions shall contribute to the global production of greenhouse gases; although this is anticipated to be negligible. |
| Townscape                         |                  | √       |         | The area of works is not set within a townscape and as such a neutral impact is anticipated on the long term.  |
| Heritage and Historical Resources |                  | √       |         | As the scope of works is to upgrade existing footpaths and carriageway crossing points a neutral impact is anticipated in the long term.   |
| Biodiversity                      |                  | √       |         | A long-term neutral impact is anticipated provided that no important habitats are affected by works.   |
| Water Environment                 |                  | √       |         | Given that the scope of works is to upgrade existing footpaths and carriageway crossing points a neutral impact is anticipated in the long term.   |
| Physical Fitness                  | √                |         |         | The installation of a dual use footpath will encourage physical fitness through cycling/walking and as such a beneficial impact is anticipated in the long term.   |
| Journey Ambience                  | √                |         |         | As the scope of works is to upgrade existing footpaths and carriageway crossing points a beneficial impact is anticipated in the long term due to the improved safety.   |

**Table 3: Summary of risks (as required by the DMRB) and mitigation where impacts are not neutral in Table 1 and 2. This table should be read in conjunction with Appendix B.**

| Risk                               | Brief outline of additional requirements  |
|------------------------------------|---|
| Air Quality<br>Noise and Vibration | Contact the local residents in advance of works.<br><br>Potential requirement for an Air Quality and Noise Assessment.<br><br>Potential requirement for liaison with the Local Authority. |

|  |  |
|--|--|
| <p>Ecology: Protected areas<br/>Works occur within 30km of two Natura2000 sites where bats are the primary interest or qualifying feature for the designation. Natura2000 sites are of <b>European importance</b>.</p> | <p>Appropriate Assessment Screening Matrix (AASM) .</p> <p>Appropriate Assessment Screening Matrix (AASM) to identify likely effects of the final design on the integrity of the European Sites and features of primary / qualifying interest for the designations.</p> <p>AASM to be reviewed and approved by the HA, who are entitled a maximum of 2 weeks to review each revision.</p> <p>Natural England to be notified of AASM outcome a minimum of 28 days before construction.</p> <p>Liaison with Natural England to identify the requirement for formal assent.</p> <p>Natural England require 28 days for response.</p>  |
| <p>Ecology: Protected species<br/>Risk of damage or loss of protected species and their habitats from potential construction activities within the HA soft estate.</p>   | <p>Initial walk over survey to identify potential presence; potential impacts and the need for protected species surveys.</p>  |
| <p>Landscape: If works are located within the South Downs National Park.</p>   | <p>Liaise with statutory consultees as soon as possible to discuss the scope of the proposed scheme, and consider any comments within the design.<br/>EIA Determination and Record of Determination (RoD) required for works which may result in a permanent impact on the South Downs National Park.</p> <p>Liaise with statutory consultees as part of the RoD consultation process, minimum of 28 day consultation period.</p> <p>EIA Determination and RoD to be reviewed and approved by the HA, who are entitled a maximum of 2 weeks to review each revision. Responses from all statutory consultees required for RoD approval.</p> <p>Notice of Determination (NoD) for the scheme requires approval from the Highways Agency, and NoD must be provided in appropriate press outlets a minimum of 6 weeks prior to the proposed construction date.</p> <p>Ensure that any screening vegetation lost is replanted in a manner that will rapidly reduce exposure of Wither Caravan Park to the A27.</p> <p>All works are to be carried out from the carriageway as far as possible and shall minimise the movement of site vehicles / machinery within the soft estate.</p> |
| <p>Potential Arboriculture Requirements</p>  | <p>Full arboriculture assessment to be undertaken as part of the detailed design due to the proximity of works to mature trees.</p> <p>Potential loss of trees and associated screening.</p> <p>Arboriculturalist overseeing all works within close proximity of trees.</p>  |

|           |  |
|-----------|--|
|           | Laying of a geotextile membrane in order to spread the weight and limit excavation in and around the trees present.                      |
| Materials | <p>Potential requirement for WAC testing.</p> <p>A Site Waste Management Plan (SWMP) may be required dependent on the scheme budget.</p> |

## Appendix A: Supplementary Information to inform assessment of risks.

| <b>Desktop Study of Environmental Assets within 1km of the Site</b> |  |  |                                   |
|---|--|--|-----------------------------------|
| <b>Air Quality</b>  | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;200m</b>                              | <b>200m-1km</b>                                      |                                   |
| Local Air Quality Management Area (LAQMA)                           | No   | No   | DEFRA, 18/01/11                   |
| Buildings (see buildings section below)                             |  |  |                                   |
| <b>Cultural Heritage Statutory Designation</b>                      | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;300m</b>                              | <b>300m-1km</b>                                      |                                   |
| Scheduled Ancient Monument  | Shoreham Airfield Dome Trainer, 100m SE      | No   | Area 4 Database/ CHAMPS, 18/01/11 |
| Listed Building   | 6 Grade II buildings, the closest is 242m NW | 16   | Area 4 Database/ CHAMPS, 18/01/11 |
| World Heritage Site   | No   | No   | Magic, 18/01/11                   |
| Registered Common Land  | No   | No   | Magic, 18/01/11                   |
| <b>Cultural Heritage Non-Statutory Designation</b>                  | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;300m</b>                              | <b>300m-1km</b>                                      |                                   |
| Registered Battlefield  | No   | No   | Magic, 18/01/11                   |
| Registered Parks and Gardens  | No   | No   | Magic, 18/01/11                   |
| Conservation Area   | North Lancing, 117m NW from start point      | Old Shoreham, 517m E from end point                  | Area 4 Database/ CHAMPS, 18/01/11 |
| Archaeological Interest   | No   | No   | Area 4 Database/ CHAMPS, 18/01/11 |
| <b>Natura 2000 Sites Ecology: Statutory Designation</b>             | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;200m</b>                              | <b>200m-2km</b>                                      |                                   |
| Special Area of Conservation (SAC)                                  | No   | No   | Magic, 18/01/11                   |
| Special Protection Area (SPA)                                       | No   | No   | Magic, 18/01/11                   |
| RAMSAR  | No   | No   | Magic, 18/01/11                   |
| <b>Natura 2000 Sites BATS Ecology: Statutory Designation</b>        | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;200m</b>                              | <b>200m-30km</b>                                     |                                   |
| Special Area of Conservation (SAC) designated for bats              | No   | The Mens 22.8km NW<br>Ebernoe Common 28.4km NW       | Area 4 Database/ CHAMPS, 24/01/11 |
| <b>Ecology: Statutory Designation</b>                               | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;200m</b>                              | <b>200m-1km</b>                                      |                                   |
| Site of Special Scientific Interest (SSSI)                          | No   | Adur Estuary, 322m E                                 | Magic, 18/01/11                   |
| National Nature Reserve (NNR)                                       | No   | No   | Magic, 18/01/11                   |
| Local Nature Reserve (LNR)  | No   | Lancing Ring Nature Reserve, 427m N from start point | Magic, 18/01/11                   |
| <b>Ecology: Non-Statutory Designation</b>                           | <b>Distance from Site</b>                    |  | <b>Website and date accessed.</b> |
|   | <b>&lt;200m</b>                              | <b>200m-1km</b>                                      |                                   |
| Ancient Woodland  | No   | No   | Magic, 18/01/11                   |

|   |   |  |  |
|---|---|--|--|
| Site of Nature Conservation Interest (SNCI)/ County Wildlife Site/LWS | No  | Lancing Ring, North Lancing, 700m NW from start point  | Area 4 Database/ CHAMPS, 18/01/11                                |
| RSPB Reserve  | No  | No   | <a href="http://www.rspb.org.uk">www.rspb.org.uk</a><br>24/01/11 |
| Priority Habitat  | Mudflats, beneath Adur Bridge. Coastal and grazing coastal marsh 36m N  | Mudflats, beneath Adur Bridge. Coastal and grazing coastal marsh 36m N   | Area 4 Database/ CHAMPS, 24/01/11                                |
| <b>Ecology: Natural Area (Site within)</b>                            | <b>Species listed for conservation importance</b>   | <b>Habitats listed for conservation importance</b>   | <b>Website and date accessed.</b>                                |
| South Downs 74  | Includes great crested newts, dormice, water voles, brown hare, wart biter cricket, corn bunting and Adonis blue butterfly. | Cereal field margins (containing rare arable weeds).<br>Coastal and floodplain grazing marsh.<br>Fens and reedbeds.<br>Juniper Juniperus communis formations on calcareous grassland*.<br>Lowland calcareous grassland - important orchid sites*.<br>(characterised by undisturbed rendzina soils).<br>Lowland heathland (including chalk heath)*.<br>Maritime cliffs and slopes.<br>Saltmarsh.<br>Shingle above high tide mark with perennial vegetation*.<br>Yew <i>Taxus baccata</i> Woodland*. | Magic, 18/01/11  |
| South Coast Plain and Hampshire Lowland 75                            | Includes great crested newts, dormice, water  | Coastal and floodplain grazing marsh.<br>Purple moor grass   | Magic, 18/01/11  |



|   |   |  |  |
|---|---|--|--|
|   | voles, brown hares, otters, greater horseshoe bats, medicinal leeches and barn owls.  | and rush pasture<br>Ancient and/or species rich hedgerows<br>Reedbeds and fens<br>Lowland heathland<br>Chalk rivers<br>Saline lagoons and sea grass beds<br>Cereal field margins<br>Lowland acid and calcareous grasslands<br>Coastal vegetated shingle<br>Sand dunes<br>Estuaries and coastal salt marshes. |  |
| <b>Landscape: Statutory Designation</b>                 | <b>Distance from Site</b>   |  | <b>Website and date accessed.</b>  |
|   | <b>&lt;200m</b>   | <b>200m-1km</b>  |  |
| Area of Outstanding Natural Beauty (AONB)               | No  | No   | Magic, 18/01/11  |
| National Park   | South Downs 10m, N of carriageway   | N/A  | Magic, 18/01/11  |
| Green Belt  | No  | No   | Magic, 18/01/11  |
| <b>Landscape: Non-Statutory Designation</b>             | <b>Distance from Site</b>   |  | <b>Website and date accessed.</b>  |
|   | <b>&lt;200m</b>   | <b>200m-1km</b>  |  |
| Heritage Coasts   | No  | No   | Magic, 18/01/11  |
| <b>Landscape: National Character Area (Site within)</b> | <b>Key Characteristics</b>  |  | <b>Website and date accessed.</b>  |
| South Downs 125   | Chalk outcrop with north facing scarp and chalk cliffs, alluvial flood planes with rectilinear pastures and wet grazing meadows, coniferous and broadleaved woodland such as chalk ash, yew forest and beech hangers. |  |  |
| <b>Geology: Statutory Designation</b>                   | <b>Distance from Site</b>   |  | <b>Website and date accessed.</b>  |
|   | <b>&lt;200m</b>   | <b>200m-1km</b>  |  |
| Site of Special Scientific Interest (SSSI)              | No  | No   | <a href="http://www.natureonthemap.org.uk">www.natureonthemap.org.uk</a><br>24/01/11 |
| <b>Geology: Non-Statutory Designation</b>               | <b>Distance from Site</b>   |  | <b>Website and date accessed.</b>  |
|   | <b>&lt;200m</b>   | <b>200m-1km</b>  |  |
| Regionally Important Geological Site (RIGS)             | Unknown   | Unknown  | Unknown  |

| <b>Water: Non statutory Designations:<br/>(within 500m of the Site)</b>         | <b>Distance from Site</b>  |   |                   | <b>Website and date accessed.</b>       |
|---|--|---|-------------------|---|
| Groundwater Protection Zone   | Total Catchment Area, 595m NE from end point; Outer zone, 759m NE from endpoint and 1395m NW from start point; Inner zone 864m NE from end point and 1376m NW of start point |   |                   | Environment Agency, 18/01/11            |
| Nitrate Vulnerable Zone   | Work area completely within a NVZ  |   |                   | DEFRA, 18/01/11                         |
| Balancing ponds   | No   |   |                   | HA DDMS, 18/01/11                       |
| Road drainage feature   | Gullies, Ditches, Filter Drains and Catch pits along edge of carriageway   |   |                   | HA DDMS, 18/01/11                       |
| Other water bodies  | About four water areas within 200m from carriageway  |   |                   | HA DDMS, 18/01/11                       |
| <b>Buildings(including residential, farms, schools, commercial, industrial)</b> | <b>Distance from Site</b>  |   |                   | <b>Website and date accessed</b>        |
|   | <b>&lt; 200m<br/>(air)</b>   | <b>&lt;500m<br/>(noise)</b>   | <b>500m - 1km</b> |   |
| Farms; residential buildings; caravan park; a hotel and a garage.               | 340  | 670   | 940               | Area 4 Database/ CHAMPS, 18/01/11       |
| <b>Other</b>  | <b>Distance from Site</b>  |   |                   | <b>Website and date accessed.</b>       |
|   | <b>&lt;200m</b>  | <b>200m-1km</b>   |                   |   |
| Pedestrian Right of Way (Footpath, Bridleway etc.)                              | None identified  | COMBINED OC AND RCL. SECTION 28, MILITARY BYELAW LAND, RACECOURSES AND AERODROMES HAVE ALL BEEN REMOVED, 656m NW                                  |                   | Magic, 27/01/11                         |
| Footway   | Between Autobahn garage and Sussex Pad. Manor road and Manor road roundabout. Between Manor road and Autobahn garage. A27 Hoe Court to Sussex Pad                            | Between Autobahn garage and Sussex Pad. Manor road and Manor road roundabout. Between Manor road and Autobahn garage. A27 Hoe Court to Sussex Pad |                   | Aerial photography and IRF223. 24/01/11 |
| <b>Additional information:</b>  |  |   |                   |   |
|   |  |   |                   |   |

| Protected Species Desktop Study within 1km of the Site |  |                          |                           |
|--|--|--------------------------|---------------------------|
| Protected Species                                      | Records (species; date of record, distance & direction to site)  |                          |                           |
|  | Date checked: 18/01/11   |                          |                           |
|  | Area 4 Database  | Herptile Risk Assessment | Other:<br>Area 4 Database |
| Amphibians   | None recorded  | No balancing ponds       | Dead fox on carriageway   |
| Badgers  | Dead badger, 275m NE   | N/A                      | Common Shrew, 594m NE     |
| Bats   | None recorded  | N/A                      |                           |
| Birds  | Barn owl, 292m N; 589m SE;<br>607m S; 717m S; 737m NW;<br>812m E; 855m S; 982m S   | N/A                      |                           |
| Dormice  | None recorded  | N/A                      |                           |
| Otters   | None recorded  | N/A                      |                           |
| Reptiles   | Common Lizard, 662m SW;<br>665m SE<br><br>Adder, 493m N<br><br>Viviparous lizard, 162m N<br><br>Grass snake on carriageway<br>and 478m NE<br><br>Slow worm, 29m S; 203m S;<br>323m NW; 397m NW; 799m<br>NE; 882m W; 960m W<br><br>Wall lizard colony, 656m S | No balancing ponds       |                           |
| Water Voles  | 907m NE  | N/A                      |                           |
| White Clawed Crayfish                                  | None recorded  | N/A                      |                           |

**Appendix B: Environmental Assessment Timeline - An indicative time line for the remaining anticipated Environmental Assessment process**

| POTENTIAL REQUIREMENTS   |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
|--|--|------------------|-----------------|------------|--------------|----------------------|----------------|----------|------------------|----------------|----------------------|------------------|-------|
|  | Reptile survey                                       | Amphibian survey | Dormouse survey | Bat Survey | Other survey | Environmental Report | ROD/NOD        | AASM     | Noise Assessment | Air Assessment | Landscape Assessment | Drainage Consent | Other |
| Apr  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| May  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Jun  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Jul  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Aug  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Sep  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Oct  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Nov  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Dec  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Jan  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Feb  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Mar  |  |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Time taken and brief justification   | TBC  | TBC              | N/A             | N/A        | N/A          | 2 weeks              | Up to 6 months | 2 months | TBC              | TBC            | N/A                  | N/A              | N/A   |
| Approximate total timeframe for Environmental Assessment.                                | To be confirmed upon receipt of full design details. |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Indicative start date for works, taking into account assessment, surveys and mitigation. | To be confirmed upon receipt of full design details. |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |
| Other information (e.g. Sub-consultant cost per hour).                                   | To be confirmed upon receipt of full design details. |                  |                 |            |              |                      |                |          |                  |                |                      |                  |       |

**NB: The timescales are indicative for surveys and assessments only, and do not include assumptions for mitigation or protected species licensing, as these shall be determined during the design phase.**

## Appendix C: Constraints and requirements for further survey beyond scoping stage

Further assessment is likely to be required if any of the points below are likely as part of the Project.

### 1 Air Quality

If one of the following is likely;

- Road alignment changing by > 5m
- Daily traffic flows changing by > 1000 AADT
- HDV flows changing by > 200 AADT
- Daily average speed changing by > 10km/hr
- Peak hour speed changing by > 20km/hr
- An AQMA will be affected (confirm via consultation with Local Authority)

Or

- A change of more than 10% in AADT
- A change of more than 10% in HDV
- A change in daily average speed of more than 20km/hr

Note. If the construction period is > 6 months it must be assessed separately

### 2 Noise and Vibration

If one of the following is likely;

- The project alters the line or level of the carriageway
- The project will cause a change in traffic flow (including during construction)
- The project will cause a change in traffic speed (including during construction)
- The project will cause changes to other infrastructure that could increase noise

and

- There are sensitive receptors within 2km that may be subject to a change in noise and vibration (confirm via consultation with Local Authority and Noise Expert if required)

### 3 Cultural Heritage

If one of the following is likely;

- relevant designations or other important cultural heritage items within <300m
- new land disturbance (does not include 'made' land)
- Listed buildings within 1km

and;

- The Local Authority and/or English Heritage agree further assessment is required.

### 4 Ecology and Nature Conservation

- There is evidence that nature conservation designation or protected species could be affected;

### 5 Landscape

- If the scheme is located within an area of significant landscape value (ie designated landscape or non-designated landscape of 'good' or higher quality (see Vol 11, Section 3, Part 5, paragraph 3.9) and a potential significant/noticeable effect on the landscape as a result of the scheme is likely.
- If any significant landscape feature (eg. vegetation of significant landscape or amenity value (including grassland) or other physical, biological, historical or cultural landscape features) is likely to be noticeably affected by the scheme.

- If the visual amenity of any identified visual receptor (most critically, private properties, public buildings and outdoor areas including footpaths) is likely to be noticeably altered by the scheme
- and;
- The BBMM Landscape Team is in agreement.

## 6 Geology and Soils

- The scheme coincides with a geological designation
- The scheme coincides with potentially contaminated land

## 7 Drainage and the Water Environment

- The project will affect an existing floodplain or water course
- The project will change either the road drainage or natural land drainage catchments
- Traffic flow will increase >20%
- The project will change the number/type of junction
- The project is located within an Indicative Floodplain and/or Source Protection Zone
- The project will allow sediment to be carried to watercourses
- The project will allow drainage discharges to the ground

## 8 All Travellers and Community & Private Assets

- The scheme will cause existing and proposed routes, rights of way and important community facilities to be severed, lengthened or made more unsafe for pedestrians, cyclists and equestrians
- Driver Stress is likely to rise (do not consider the construction phase)
- The scheme will go beyond the HA boundary.