

Public Document Pack

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28 February 2019

Dear Member,

Adur County Local Committee - Thursday, 7 March 2019

Please find enclosed the following document for consideration at the meeting of the Adur County Local Committee on Thursday, 7 March 2019 which was unavailable when the agenda was published.

Agenda No	Item
7.	Shoreham Area Sustainable Transport Package Feasibility Study Sompting and Lancing High Quality Cycle Route (Pages 3 - 36)

Yours sincerely

Tony Kershaw
Director of Law and Assurance

To all members of the Adur County Local Committee

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West Sussex County Council

LANCING AND SOMPTING HIGH QUALITY CYCLE ROUTES

Shoreham Area Sustainable Transport Package
(STP) Feasibility Study



West Sussex County Council

LANCING AND SOMPTING HIGH QUALITY CYCLE ROUTES

Shoreham Area Sustainable Transport Package (STP)
Feasibility Study

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

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1. LANCING AND SOMPTING

1.1. BACKGROUND

- 1.1.1. WSP has been commissioned to undertake technical feasibility work on a package of transport improvements in the Shoreham area, known as the Shoreham Area Sustainable Transport Package (Shoreham STP) on behalf of West Sussex County Council (WSCC).
- 1.1.2. Phase 2 of the study has used the findings from Phase 1 to develop a package of transport improvements. These will support growth and address the forecast impacts from the housing and employment development identified in the Adur Local Plan 2017.
- 1.1.3. Strategic development sites at New Monks Farm, Lancing, and at West Sompting have been identified through the adopted Adur Local Plan 2017. It is therefore pertinent to examine options for high quality cycle infrastructure that could serve this development as well as the existing communities of Lancing and Sompting.

1.2. SCOPE OF WORKS

- 1.2.1. This package of work is to develop cycle infrastructure along three major corridors through Lancing and Sompting. These broadly consist of two north – south corridors using Western Road/Busticle Lane to the west and Grinstead Lane/South Street to the east. An east-west route will connect these two routes as well as the proposed future developments at West Sompting and New Monks Farm.
- 1.2.2. The scope is to provide a design that:
 - Achieves a “hybrid” type facility (see Section 3.4), where space allows and is appropriate, giving segregation between cyclists and road vehicles, and cyclists and pedestrians;
 - Provides priority to cyclists at quieter side roads/accesses;
 - Utilises existing highway land, in particular carriageway space;
 - Where the highway width is constrained, considers opportunities in association with future development to acquire land or other land acquisition opportunities, for example adjoining recreational park land or undeveloped land under local authority ownership, to provide the cycling infrastructure;
 - Considers other cycling infrastructure measures where space is limited;
 - Considers the access requirements of passengers to bus stops, to balance the needs of cyclists, pedestrians and bus passengers;
 - Retains existing parking and highway capacity where possible but which highlights any loss of these facilities required to provide high quality facilities and any mitigation measures; and
 - Connects to key strategic developments, employment, education, retail, community and leisure destinations along the route corridors, and which identifies any suitable locations for cycle storage facilities en-route.

1.3. GUIDANCE DOCUMENTS

- 1.3.1. The proposal has given due regard to relevant guidance in cycle design including:
 - Handbook for cycle-friendly design, Sustrans April 2014;
 - International cycling infrastructure best practice study, TfL December 2014;

- LTN 2/08 Cycle Infrastructure Design, DfT October 2008;
- LTN 1/12 Shared Use Routes for Pedestrians and Cyclists, DfT September 2012;
- London Cycling Design Standards;
- Manual for Streets;
- Manual for Streets 2;
- Design Manual for Roads and Bridges;
- Background information provided by Brighton and Hove City Council on “hybrid” cycling infrastructure delivered on Old Shoreham Road.
- A Leeds/Bradford Cycle City Connect technical note compiled and shared by John White (Senior Engineer at Leeds City Council) and Richard Adams (City Connect Programme Assistant).

2. EXISTING SITUATION

2.1. INTRODUCTION

- 2.1.1. This section summarises the existing conditions in the areas covered by the feasibility design.
- 2.1.2. The chainages referred to in this report relate to the distances annotated in the accompanying drawings 5552/GA/300 – 307.

2.2. WESTERN CORRIDOR

- 2.2.1. The western corridor comprises Western Road, Western Road North and Busticle Lane. It links North Lancing and the A27 to the A259 via Sompting and is approximately 2.4km long. The Pulse bus service operates every 10 minutes along Western Road and Western Road North with Service 9 operating hourly. Service 7 operates every hour along Busticle Lane.
- 2.2.2. At the southern end, Western Road connects with the A259 via a signalised junction. From Chainage 0 to 755 Western Road has a 7.3m wide carriageway with approximately 2.0m wide footways on either side. The section is bounded by Brooklands Park recreational area along its south-western side and residences along its north-eastern side. Lancing Business Park is accessed via The Triangle and Commerce Way,
- 2.2.3. Between Chainages 755 to 985 Western Road crosses the railway line via an overbridge. The carriageway narrows to 6m and the footway to 2.0m.
- 2.2.4. Further north, Western Road changes name to become Western Road North at the junction with Lotts Lane. Between Chainages 985 and 1930, the streetscape is largely uniform in character, with dwellings and residential accesses along either side. Most dwellings have off-street parking accessed via a dropped crossing. There is an approximately 3.0m wide footway / verge either side.
- 2.2.5. At Chainage 1900 there is a Pelican crossing adjacent to Ball Tree Surgery with a footway linking it to the Cokeham Road parade of shops.
- 2.2.6. At Chainage 1930 to 2035 there is a staggered crossroads where Cokeham Road and West Street join Western Road North. There is currently no formal provision for pedestrians to cross at this junction, including no provision of dropped crossings; however, there are footways either side of the junction.
- 2.2.7. From Chainage 2035 to the north, the road transitions to become Busticle Lane, which is of a similar residential nature to the southern sections. However, there is additional, intermittent on-street parking located on both sides until the termination of the corridor at Chainage 2380. Some parking occurs within designated bays but further parking occurs partially mounted on the verge. There is significant degradation of the verge from this occurring.
- 2.2.8. Along the entire corridor, the only existing formal provision for cyclists noted is an advanced stop line at the signalised junction with the A259.

2.3. EASTERN CORRIDOR

- 2.3.1. From south to north, the eastern corridor is formed by the A2025 known locally as South Street and Grinstead Lane. The length of the corridor is approximately 1.8km and it links the A27 east of North Lancing with the A259 via Lancing. The railway station and most shops are located just to the west

of this corridor. The hourly Service 7 bus stops on Grinstead Lane. There is a very infrequent service from bus stops on South Street.

- 2.3.2. The A2025 South Street joins the A259 via a mini-roundabout. A separate study forming part of Shoreham STP Phase 2 has examined the feasibility of upgrading this roundabout and improving cycling and pedestrian infrastructure. The cycle infrastructure proposals for Lancing and Sompting presented in this report tie-in with the proposals put forward for that scheme.
- 2.3.3. From Chainage 0 to 225 several retailers and businesses front onto South Street with on-street parking and wide footways of 3.0m to 4.5m either side.
- 2.3.4. Between Chainage 225 to 700 the A2025 is largely residential with several access roads and established on-street parking. Dwellings and businesses within this section predominately do not have off-street parking and thus there are stretches of on street parking.
- 2.3.5. The A2025 crosses the railway via a 200m-long overbridge. The width of carriageway on this bridge is 9.3m on average with a 3.0-4.0m wide footway either side.
- 2.3.6. North of the bridge, the A2025 continues its residential character, but with wider verges. The carriageway width varies between 9.0m to 10.0m and the footway / verge is between 2.5m and 4.0m. This continues until the roundabout junction with the A27 to the north. The road has a central ghost island for all of the corridor which provides right turn waiting facilities for the side access roads along the corridor.
- 2.3.7. There is no formal cycle provision at present along this corridor.

2.4. EAST – WEST CORRIDOR

- 2.4.1. This corridor connects the two identified strategic development sites at West Sompting and New Monks Farm to the western and eastern corridors as well as providing for east/west trips. This corridor has the potential to provide a parallel route for cyclists on longer distance east –west trips running south of and avoiding the A27, and in addition to the National Cycle Network Route 2 (NCN2) along the coast.

UPPER BRIGHTON ROAD/WEST STREET

- 2.4.2. This section of the corridor is within the western half of Sompting. It is predominately narrow with carriageway widths varying between 5.5m and 7.5m. There is footway along the southern side between Gardeners Arms and Busticle Lane which for most of its length is only 1.5m wide. West of Gardeners Arms, there is a 1.5m footway along the northern side as far as Lambey Lane, the western end of the corridor.
- 2.4.3. The streetscape through here retains its village feel with a flint wall bordering much of the southern or northern side. Where the road narrows, there is priority working and in some places parking has been formalised to reduce road widths, encouraging slower vehicle speeds. There are also speed bumps with markings to visually narrow the road.
- 2.4.4. The Sompting Conservation Area covers part of the corridor between Dankton Lane and approximately 50m east of the Church Lane junction.

- 2.4.5. Two buses per hour in both directions serve this section of the corridor¹. There is no formal provision for cyclists at present. The road is known to experience pressure at peak times from traffic diverting from westbound queues on the parallel A27 towards Lyons Farm, Worthing at peak times.

COKEHAM ROAD/BOUNDSTONE LANE/CRABTREE LANE

- 2.4.6. These three roads link together to form a connection between the western and eastern Corridors for all types of users as they are wide and direct.
- 2.4.7. At the western end of Cokeham Road, there is a parade of local shops with on-street parking. The adjacent footway is wide and some off-street parking occurs on the footway as it is outside the highway boundary.
- 2.4.8. The remainder of Cokeham Road is residential in nature with houses with driveways along both sides. The width of carriageway is between 7.0m to 8.0m with a 1.5m wide footway along both sides. Along most of the residential section, there is also a 1.5m verge which during the site visit had evidence of being used for parking. There was also some parking on-street but, as this was observed during the working day, it is unknown the quantum of parking occurring at peak demand in the evenings and weekends.
- 2.4.9. Boundstone Lane connects Cokeham Road to Crabtree Lane as well as linking to The Sir Robert Woodard Academy. At the junction with both these roads there are mini-roundabouts. There are footways either side, with the footway on the western side raised by an embankment.
- 2.4.10. Crabtree Lane is primarily a residential road with a few local attractors along it such as shops and a pub. The houses along the lane have off-street parking, generally with capacity for a least two cars. Towards the eastern end of Crabtree Lane, there is a parade of shops with on-street parking either side of the road in laybys.
- 2.4.11. The width of the road is variable between 7.4m at the eastern end, 8.5m in the middle and tapering down to 7.0m at the western end. There is a footway of variable width with a verge separating it from the carriageway in some places. There is on-street parking along several stretches, mixture of fully on-road and partially on verge parking.

MASH BARN LANE

- 2.4.12. Mash Barn Lane currently connects only to residential areas and Brighton and Hove Albion F.C. training facility. When the development is complete it will be a connection into the Monks Farm Development for cyclists and pedestrians, with a bus gate planned at Hayley Road.
- 2.4.13. As the road is residential, it is of variable width from 5.5m to 7.3m with an up to 2.0m footway either side. As some dwellings do not have off-street parking, there are parked cars along both sides, reducing the available width. However, the nature of the road is such that it is lightly trafficked and

¹ The Route 16 service that operates along this corridor will be withdrawn to the east of Lyons Farm in April 2019, and will no longer serve Adur District, due to a reduction in funding from the County Council.

speeds are low, and therefore it is considered it is suitable for cyclists to safely cycle on the carriageway.

2.5. ADUR LOCAL PLAN 2017 PROPOSED DEVELOPMENTS

West Sompting

- 2.5.1. This site is comprised of two parcels of land, adjacent to the built-up area of Sompting, sitting either side of West Street. A minimum of 480 dwellings are proposed to be built along with improvements to local infrastructure including the provision of a new Public Right of Way linking to Worthing and footway improvements along West Street.

New Monks Farm, Lancing:

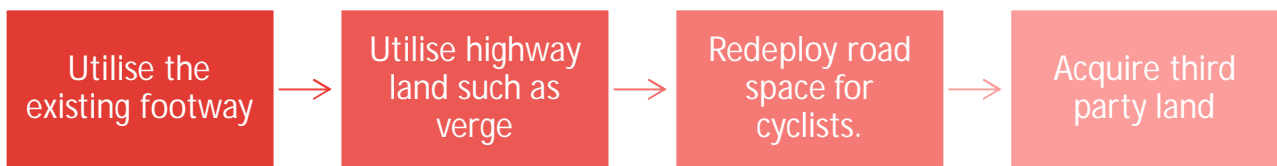
- 2.5.2. The site to the east of Lancing, includes a minimum of 600 dwellings with a new primary school and 10,000 sqm of employment land. One of the accesses into the development will be off Mash Barn Lane, though the primary access is proposed from the north. It is envisioned either improvements to local infrastructure will be made by the development or funding made available to carry them out.

3. PROPOSALS

3.1. METHODOLOGY

3.1.1. In developing the strategy, a staged process was developed to analyse the options for each section of route. For each section, availability of space was assessed as per the below process (Figure 1) to achieve either:

- A two-way “hybrid” route;
- A shared-use path where widths are narrower; or
- On-road cycling where space is not available using reduced road speeds where appropriate.



3.1.2. The different levels of provision are discussed further in Section 3.4.

3.1.3. In developing the proposals, reference has been made to Sustrans guidance “Principles and Processes of Cycle Friendly Design” core design principals:

- Coherence;
- Directness;
- Safety;
- Comfort; and
- Attractiveness.

3.1.4. The coherence principle of design has been given additional weight in ensuring that there is a continuity of provision along the route where possible. Thus a standardised cross section has been applied within “hybrid” sections, and bus stops and crossings have received consistent treatment. The technical details of these are discussed further in Section 3.4.

3.2. LANCING AND SOMPTING SETTING

- 3.2.1. When generating proposals, a scheme's setting has a large influence on the best provision for cyclists to be chosen. The Leeds to Bradford Superhighway has been identified as good example of conversion of an existing road to provide segregated provision for cyclists.
- 3.2.2. The location of the Leeds to Bradford Superhighway is more urban than Lancing and Sompting with wider carriageways from which to acquire space for cyclists. Old Shoreham Road in Brighton is a more local example with a context more similar to the roads throughout Lancing and Sompting, but with a generous highway width (at least 15m).
- 3.2.3. The corridors along which it is sought to deliver provision for cyclists in Lancing and Sompting are generally narrower (generally between 10-13m) with driveways along both sides of the road. Within wider sections of carriageway, there is on-road parking and shops, attractive verges and trees.
- 3.2.4. While space is more constrained within the Lancing and Sompting setting, there is a reasonable amount of highway space available to facilitate off-carriageway cycling infrastructure over significant stretches of the corridors.
- 3.2.5. Development of the feasibility designs included a workshop with WSP and WSCC representatives. The pros and cons of different on-road and off-road and 1-way with flow and bi-directional "hybrid" facilities were discussed. Considerations included:
- availability of space;
 - consistency of route;
 - complexities of treatment at side roads/junctions.
 - loss of verge space;
 - impacts on on-street or verge parking;
 - costs of works to kerb lines and utilities of working on one or both sides of the road;
 - complications of large number of private drive access points along the corridors; and the
 - need to ensure good design to avoid confusion for motorists, cyclists and pedestrians.
- 3.2.6. The design approach to the facilities was also informed by local concerns raised about existing unsegregated shared use facilities on the NCN2 along Lancing Beach front, as well as the desire to provide traffic free off-carriageway facilities attractive to a wide range of cyclists.
- 3.2.7. The overall ambition that informed this design was to provide bi-directional stepped "hybrid" and shared use cycle facilities where space allows.
- 3.2.8. Nonetheless, it was agreed that the treatment of the South Street, Lancing section of the route should be different, due to concerns about available highway space and the acceptability of needing to remove significant amounts of parking near to the shops in this area, where on-road cycle facilities have been shown with proposals to reduce traffic speeds through this area.

3.3. ASSUMPTIONS AND CAVEATS

- 3.3.1. It should be noted that the proposals are based on OS mapping data. The accuracy of this data cannot be guaranteed and there is a margin of error. Observations from a site visit have sought to validate the available widths assumed. However it is strongly recommended that a topographical survey is conducted before any detailed design takes place.

- 3.3.2. This design is for feasibility and early costing purposes only. The drawings are not suitable for construction purposes and will need further development if they are taken forward.
- 3.3.3. Details such as drainage, levels and utilities have not been taken into detailed consideration in developing the design. However, these risks have been captured where necessary.
- 3.3.4. As utilities are unknown, further investigation should be undertaken if this scheme is to be taken forward. Recent cycling schemes elsewhere within West Sussex have been impacted financially by utility diversion works. As Sompting and Lancing are both fairly urbanised, it is likely that there are a significant number of utilities within the footway and the carriageway which will be impacted by the scheme and may require additional works. General assumptions regarding utility diversion costs have been included within the feasibility stage costings for the design, which are reported separately to this report.

3.4. PATH TYPES

- 3.4.1. The definition of a “hybrid” route for the purposes of this scheme is a segregated cycle route where cycleway is set at a level lower than the footway but above the carriageway. Figure 1 and 2 below show typical examples, taken from the Leeds to Bradford Cycle City Connect scheme, for what were defined as ‘Type 1’ and ‘Type 2’ designs.
- 3.4.2. In the context of Lancing and Sompting, it was decided to use the ‘Type 2’ design, where the hard segregation is not present in Figure 2. With limited space in numerous places it is considered that not including this hard segregation could make delivery of the scheme easier. As the design develops, there is scope to demark an offset using coloured surfacing or change this to a ‘Type 1’ facility with hard segregation.
- 3.4.3. There are potentially locations where construction costs of the scheme may be reduced as the design is developed using a form of ‘Type 1’ design, where if the existing carriageway is significantly wide, simple back to back kerbs may be used to form the segregation from the main carriageway, avoiding the need to build up the cycleway. This could also make use of existing drainage through the use of suitable breaks in the kerbs.
- 3.4.4. It should be noted that additional signage may be required like shown in Figure 2 to deter vehicles from parking or loading on the cycle track or footway, particularly for Type 2 designs.
- 3.4.5. There are potentially locations where construction costs of the scheme may be reduced as the design is developed using a form of ‘Type 1’ design, where if the existing carriageway is significantly wide, simple back to back kerbs may be used to form the segregation from the main carriageway, avoiding the need to build up the cycleway. This could also make use of existing drainage using suitable breaks in the kerbs.

Figure 1 – Example of ‘Type 1’ 2-way hybrid route, Bradford (Source: Google)



Figure 2 – Example of ‘Type 2’ 2-way hybrid route, Bradford (Source: Google)



3.4.6. The main obstacle to achieving a hybrid path is the space required. The table below is taken from the Leeds – Bradford Cycle City Connect Technical Note. This accords with the width requirements set out in Sustrans Handbook for Cycle Friendly Design:

- For footways, 1.8m gives space for two wheelchair users to pass each other. 1.5m width allows for a person with a buggy to pass a pedestrian in the opposite direction. The desired width of 2.0m gives a greater level of comfort for all users, especially where flows are high.
- For cyclists, 2.5m gives a width of 1m for each cyclist with a 0.5m gap between them. A 1m width accounts for the dynamic width of a cyclist. At the narrower width of 2.0m, cyclists would need to slow when approaching another cyclist to reduce their dynamic width. For this reason, this reduced width should only be used over distances less than 25m as demonstrated in Table 1.

Table 1 - Recommended path widths (Source: Leeds/Bradford Cycle City Connect Technical Note)

	Desired (mm)	Minimum (mm)	Absolute Minimum (mm)*
One-way cycleway	2200	2000	1500
Two-way cycleway	3000	2500	2000
Footway	2000	1800	1500

*Absolute minimum to be used only over short distances, less than 25 metres.

3.4.7. High level analysis of the available widths along both north-south corridors has shown that available highway land is restricted, in particular where both corridors cross the railway line. This results in the need for cyclists to need to be accommodated on road on the section of Western Road crossing the railway bridge.

3.4.8. LTN 1/12 Shared Use Routes for Pedestrians and Cyclists (DfT) also includes details of minimum cycle way widths, suggesting a 3m preferred effective width for a 2-way cycle track. This is slightly higher than the width assumed within the London Cycling Design Standards (LCDS) which suggests 2.5m to 2.8m for a medium to high cycle flows (medium cycle flows are defined as 150-300 cyclists per hour²). Additional width is also required to account for edge conditions:

- 200mm for a low upstand, up to 150mm in height
- 250mm for a vertical feature, 150mm to 600mm

² A 5-day average peak hour (5-6pm) 2-way flow on the NCN2 near to Brooklands Leisure Park, East Worthing was recorded as 111 cyclists in June 2018. This permanent cycle counter is the busiest cycle monitoring location in West Sussex.

- 500mm for a vertical feature above 600mm. In addition, the Sustrans Handbook for Cycle Friendly Design advises that there should be a 0.5m separation from the carriageway.

- 3.4.9. Building on the guidance above and in Table 1, Table 2 indicates what layouts can be achieved where different corridor widths are available. Where less than 4.6m was available, a shared use path has been opted for.
- 3.4.10. Given the highway width constraints throughout the Lancing and Sompting corridors, it is not considered to be possible to meet all of the widths standards described above. On balance, it is considered that the benefits of providing off-road segregated cycling and pedestrian infrastructure along the route corridors means a reduced level of standards is appropriate as shown in Table 2.
- 3.4.11. The expected levels of cycling along the corridors is not anticipated to be as high as for example the A259 route between Shoreham and Brighton & Hove which is also being assessed through the Shoreham STP study and where design standards are slightly higher than proposed for these routes.

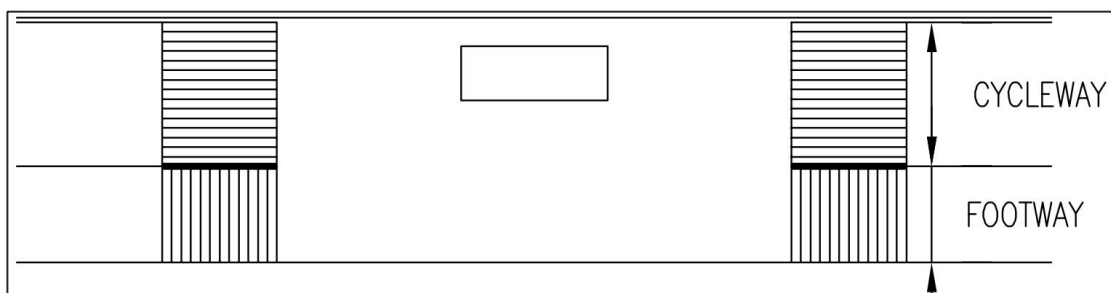
Table 2 – Preferred Path Width Combinations for Lancing-Sompting cycle routes

Cycle Facility Type	Road margin separation (m)	Cycleway (m)	Footway (m)	Nearside vertical feature over 600mm	Total Width (m)
Hybrid	0.25	2.5	1.5-1.8	N/A	4.25-4.55
Shared Use	0-0.5	1.5-1.75	1.5	0-0.5	3-4.25

3.5. BUS STOPS

- 3.5.1. As available highway land is restricted along the corridors, there is insufficient space to effectively segregate cyclists and pedestrians in the vicinity of bus stops. Similarly, to what has been implemented along Old Shoreham Road, it is suggested that the area in vicinity of bus stops is made shared use, where hybrid paths are proposed (Figure 3).

Figure 3 – Bus Stop Shared Area



3.5.2. Consideration should also be given to the position and need for the bus stop. Where space is limited, the bus stop will be relocated if possible and/or kept as a flag-only bus stop.

3.6. CROSSINGS

3.6.1. Along the Western corridor, there are no crossings formal or informal with the exception of the Pelican Crossing adjacent to Ball Tree Surgery. Along the Eastern corridor there are pedestrian refuge islands at several points as well as a Puffin crossing adjacent to the Britannia Pub, south of the Mash Barn Lane/Crabtree Lane junction.

3.6.2. It is proposed to retain the existing crossing locations, where possible.

3.6.3. Where the road is proposed to be narrowed, this may require central islands to be removed where present, but also provides a shorter road-span for pedestrians to cross.

3.7. CYCLE PROVISION ACROSS ACCESSES

3.7.1. In order to provide continuity for cyclists, best practice is to give non-motorised users priority over vehicular traffic from minor side roads where achievable. The principal concern with this arrangement is that priorities must be clear and sufficient visibility is achieved so that cyclists and cars can see each other approaching the junction.

3.7.2. Guidance from Sustrans³ recommends that routes which cross accesses with very low flows should continue uninterrupted. An assumption has been made for each junction about flows and these will need to be validated at preliminary design stage. The Leeds-Bradford cycleway used the table below for reference:

Table 3 - Recommended cyclist provision across side-accesses (Source: Leeds/Bradford Cycle City Connect Technical Note)

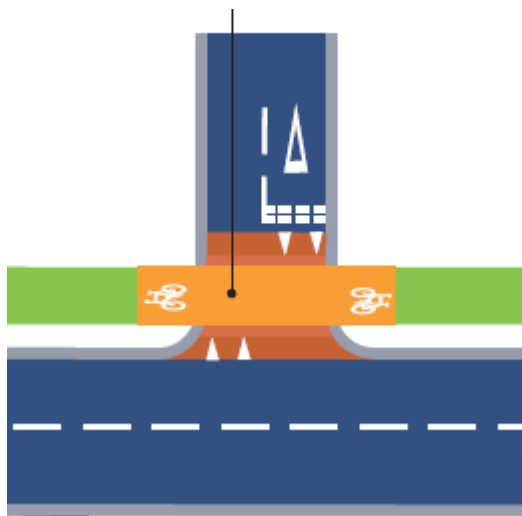
Treatment	Side Road Traffic Flow (vehicles per hour)		Space		Speed Limit	
	<=10	>10	Restricted	Unlimited	30mph	40mph +
Cycleway/ footway across private access	yes	no	Yes	yes	yes	yes
Cycleway/ footway across side road	yes	no	Yes	yes	yes	yes
Set-back speed table	yes	yes	No	yes	yes	Yes

³ Sustrans - Handbook for Cycle-friendly design, 2014

Cycle lane taken across a side road	Consider options above	yes	Yes	yes	yes	Consider options above
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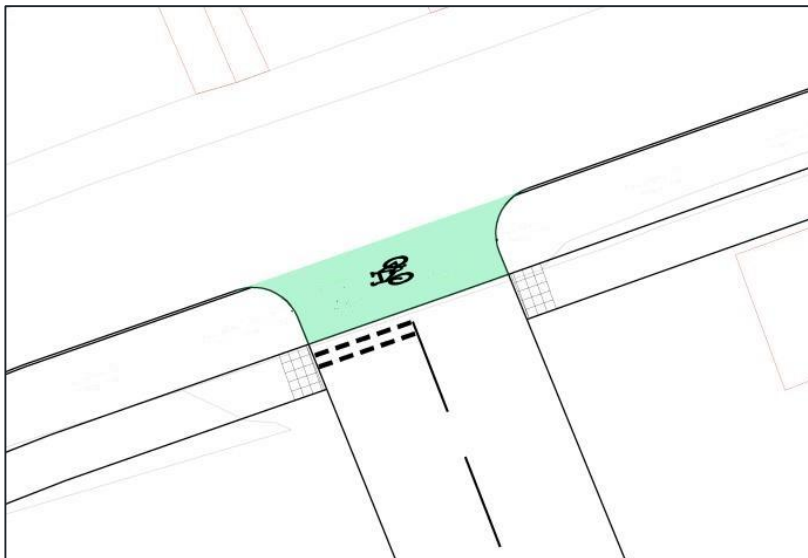
3.7.3. To achieve priority for pedestrians and cyclists at junctions/accesses with low flows and space restrictions, the preferred option is to incorporate a raised, inline crossing (Figure 4). This can only be done if sufficient visibility is achievable on the approach to the junction and if there is sufficient space for the width of the ramps. Additionally, the hybrid route will transition to a shared use path in the vicinity of these crossing points.

Figure 4 – Raised Crossing - Taken from Sustrans Handbook for Cycle Friendly Design



3.7.4. A raised table is not appropriate for all situations, particularly where the access is used by HGVs. A reduced solution for cyclists at junctions is to provide coloured surfacing with give way markings for vehicles approaching from the side road/access. At these locations, radii will be tightened where possible to reduce the crossing distance and turning speeds of vehicles. This layout is shown below in Figure 5.

Figure 5 – Minor access road crossing with constrained space



- 3.7.5. Where advisory on-road cycle lanes cross minor junctions (in South Street, Lancing), the presence of the cycle lane will be highlighted with the use of coloured surfacing.
- 3.7.6. The crossing arrangements proposed at specific locations will be subject to road safety audit assessment in due course to consider safety issues at each junction.

3.8. PARKING

- 3.8.1. One mechanism to increase the amount of road space available for the provision for cyclists is to remove on-road parking. However, consideration must be given to where displaced vehicles will park instead. Most residential dwellings along the three corridors have off-road parking. Consideration has been given to retaining on-road parking for residents in the vicinity of properties with no off-street parking.
- 3.8.2. Providing marked bays can increase the number of cars that can be parked in a space. As such, the proposal generally proposes to mark spaces, using the recommended dimensions in Manual for Streets 2 (2.4 x 4.8m for bay parking, and 2m x 6m for parallel parking).

3.9. CONNECTIONS TO KEY STRATEGIC DESTINATIONS

- 3.9.1. Most attractors are centred on North Road in Lancing which is parallel to Grinstead Lane and connects to Crabtree Lane, along which there are further local shops.
- 3.9.2. Lancing Business Park is located along the eastern side of Western Lane and is a major employment area within Lancing and Sompting. A further major employment area is Shoreham Airport. The New Monks Farm development site will provide opportunities to connect to Shoreham Airport from the East – West cycle corridor, as well as via the existing provision along the southern side of the A27. An access road will be provided towards the airport employment site including a shared footway and cycleway.
- 3.9.3. The Sir Robert Woodard Academy is located on Boundstone Lane, centrally within the Lancing/Sompting agglomeration and just off the East – West cycle corridor. There are two primary schools within Lancing/Sompting in close proximity to the East – West corridor (Sompting Village Primary School, The Globe Primary School in Lancing) with a future one planned within the New Monks Farm development.

3.10. CYCLE STORAGE FACILITIES

- 3.10.1. The provision of good quality cycle storage facilities is essential to provide for end to end journeys and make cycling attractive. Any provision needs to suit all types of bike and be located in a secure location appropriate to the main users.
- 3.10.2. In vicinity of shops, Sheffield stands located in a visible location should be provided. It is suggested that outside the following cluster of shops, cycle parking should be provided:
- Cokeham Road Shops;
 - Crabtree Lane Shops;
 - North Road village centre; and
 - South Street shops.
- 3.10.3. Where there are a cluster of businesses and the predominant user will be employees, then covered, well-lit cycle parking should be provided. This ideally should be in a location where the general public does not have access. Therefore, location of these is outside the remit of this report and influence of WSCC.

3.11. HIGHWAY DESIGN STANDARDS

- 3.11.1. All of the roads within the corridors are either residential or adjacent to local shops and therefore Manual for Streets 1 and 2 respectively are the recommended guidance for highway design. The ethos of Manual for Streets accords with the aims of this study in developing people-orientated streets.

3.12. TYPICAL DESIGN ROAD WIDTHS

- 3.12.1. Along the eastern corridor, the feasibility design road widths are typically 7-8m reflecting the designation of the road as an 'A' class road connecting the A259, Lancing and the A27. This is except for the section of South Street where the typical high width is 6-7m, which is intended to reduce road speeds through this area which has a higher dominance of on-street parking for the shops and businesses and greater pedestrian activity, and where the cycle facilities are proposed to be on-road.
- 3.12.2. Along the Western corridor on Busticle Lane, Western Road North and Western Road, highway widths are reduced to 6m in order to provide the necessary space to accommodate the cyclist facilities. It is noted that this is an important connecting road from the A259, Lancing Business Park to the A27, however it is felt that this narrowing is appropriate given that road width at the railway bridge is currently 6m, sections where additional narrowing is proposed to 6m have good visibility, and traffic flows are lower than the A259 for example.
- 3.12.3. Along the east-west corridor, along Upper Brighton Road, West Street, Cokeham Road and Crabtree Lane, road widths are typically maintained at a minimum of 6m, however in some places the existing carriageway width is below this, for example at the eastern end of West Street.
- 3.12.4. Further assessment of the impact of road narrowing including the collection of traffic flow data is recommended at the next design stage to confirm whether these proposed road widths will be acceptable.

3.13. ASSET MAINTENANCE

- 3.13.1. It is recommended that an asset management plan is prepared for the proposed infrastructure at the next design stage which considers issues in relation to maintenance arrangements and costs, for example, to keep cycle facilities clear of broken glass, leaves and other detritus.
- 3.13.2. Further dialogue will be required with street cleaning services to ensure detritus does not deter cyclists from using the facilities. It is understood street cleaning is operated at District and Borough Council level in West Sussex. Infrastructure life cycle and maintenance regimes for infrastructure such as paved and painted surfaces, as well as winter maintenance arrangements, will also need to be set out, costed and agreed.

3.14. PLANNING PERMISSION

- 3.14.1. It is assumed that the works proposed within this feasibility study are ‘permitted development’ under Part 9, Class A of the Town and Country Planning (General Permitted Development) (England) Order 2015⁴. This states that a planning application would not be required (unless the proposal requires an Environmental Impact Assessment) if:

“A. The carrying out by a highway authority—

(a) on land within the boundaries of a road, of any works required for the maintenance or improvement of the road, where such works involve development by virtue of section 55(2)(b)(1) of the Act; or

(b) on land outside but adjoining the boundary of an existing highway of works required for or incidental to the maintenance or improvement of the highway.”

- 3.14.2. The proposed works are assumed not to require an Environmental Impact Assessment based on guidance on screening selection criteria⁵.

⁴ <http://www.legislation.gov.uk/ukxi/2015/596/schedule/2/part/9/crossheading/class-a-development-by-highways-authorities/made>

⁵ <https://www.gov.uk/guidance/environmental-impact-assessment#Screening-Schedule-2-projects>

4. PROPOSED DESIGN

4.1. INTRODUCTION

- 4.1.1. Within this section the feasibility designs as well as the constraints/opportunities which informed it are discussed. The feasibility design is shown in detail by drawings 5552/GA/300 to 307. When reference is made to highway corridor, this is the width of highway land available and consists of footways, verges and carriageway. These widths are based on the highway boundary data provided to WSP by WSCC.

4.2. WESTERN CORRIDOR

CHAINAGE 0-755 (SHOWN ON 5552/GA/305)

- 4.2.1. To allow for users to connect to the proposed route from the existing NCN2 east-west coastal route, a Toucan crossing is proposed. This will require modelling to determine the feasibility of this proposal at this sensitive junction.
- 4.2.2. Along Western Road, it is proposed to acquire up to 3m from Brooklands Park to allow for the construction of a hybrid path. This is subject to further dialogue with Worthing Borough Council regarding Brooklands Park Masterplan proposals. At the entrance to Brooklands Park, a raised crossing is proposed to give cyclists and pedestrians priority.
- 4.2.3. In the vicinity of The Triangle, some realignment of the kerb is necessary, with some localised reduction in footway width to 1.5m to maintain a 6m road width.
- 4.2.4. Further reduction in available width means that the provision reduces to a shared use path at Chainage 575. The width of the shared use path varies but at a minimum is 3m wide. As the path approaches the railway bridge (Chainage 800), cyclists must transition back onto carriageway. For cyclists travelling in the southbound direction, road markings highlight the opportunity to cross the carriageway to join the shared use path. Restricted highway space in this location means that there is limited room to provide a 'jug handle' type crossing facility here for less confident cyclists to cross like is proposed for the facility to the north of the bridge as described below.

CHAINAGE 755-985 (SHOWN ON 5552/GA/304-305)

- 4.2.5. The bridge is 10.2m wide at its narrowest. This does not allow enough space for advisory lanes and adequate pedestrian provision. It is proposed to keep cyclists on the carriageway over the western bridge without any formal provision for cyclists. However, on road cycle symbols will highlight the presence of cyclists and encourage them to position themselves 0.5-1m from the kerb line. This is the recommended secondary riding position for cyclists by organisations such as Bikeability.

CHAINAGE 985-1930 (SHOWN ON 5552/GA/301 AND 5552/GA/304)

- 4.2.6. The width of the highway corridor varies between 12.4m (Chainage 1385) and 20.8m (approaching the junction with Cokham Road at Chainage 1925). This gives sufficient highway land to provide an off-road hybrid cycle facility along this section of road along the eastern side.
- 4.2.7. At the southern end (Chainage 975) it is proposed that northbound cyclists join via a jug handle type facility on the opposing side. This enables less confident cyclists to pull off the carriageway and then to cross.

- 4.2.8. It is proposed that southbound cyclists re-join the carriageway via a transition onto a short length of on road advisory cycle lane which will encourage them to position themselves offset 0.5-1m off the kerb across the railway bridge.
- 4.2.9. In the vicinity of Osbourne Drive, the path briefly transitions to a shared use path to reduce the level of carriageway encroachment at a local pinch point.

CHAINAGE 1930-2035 (SHOWN ON 5552/GA/301)

- 4.2.10. At Cokeham Road, a proposed increased refuge island gives enough space for cyclists to cross the arm in stages. At this point the route connects with the east-west corridor via the proposed Tiger crossing. This is discussed later.

CHAINAGE 1930-2110 (SHOWN ON 5552/GA/301)

- 4.2.11. The existing footway is raised on an embankment along this section. Due to the level difference, dwellings do not have off-street parking. The on-road parking is linked to the footway via steps.
- 4.2.12. To accommodate a shared use path whilst retaining a 8m road width to allow for on street parking to continue along here, a retaining wall is proposed. A width 1m has been assumed for the purpose of this feasibility study however further investigation would be required at the next design stage.
- 4.2.13. The bus stop is proposed to be relocated on a build out, accessed via a footway to the south as per the existing arrangement.

CHAINAGE 2110-2380 (SHOWN ON 5552/GA/301)

- 4.2.14. On-road parking is common along this section. Highway corridor widths available vary between 13.6m (Chainage 2055) and 20m (Chainage 2275), which is wide enough to provide a hybrid facility throughout the section; provided that the parking is removed. If the parking were retained, there would be insufficient space for a segregated facility and maintaining minimum 6m carriageway widths. Some on-street parking would be retained on the western side of the road.

CHAINAGE 2330-2400 (SHOWN ON 5552/GA/301)

- 4.2.15. At this point, the carriageway widens as it approaches the junction with the A27. To maintain the two lane approach, the path reduces to a shared use path 3m wide. The path will then connect with the A27. Currently there is a signalised pedestrian crossing of the A27. However, there are potential future proposals coming forward for the A27 by Highways England which could result in upgrades in this area.

4.3. EAST-WEST CORRIDOR

UPPER BRIGHTON ROAD/WEST STREET WEST OF CHAINAGE 0-475 (SHOWN ON 5552/GA/300)

- 4.3.1. There is an opportunity for the West Sompting development in discussion with Sompting Estates to provide 3m shared use path on the south side of the road to extend this corridor to The Templars.
- 4.3.2. To the west of the mini-roundabout with Church Lane, Upper Brighton Road /West Street is narrow with chicanes that reduce speeds. The current nature of the road is conducive to on-road cycling . It also forms part of the Sompting Conservation Area. If a greater provision for cyclists was desired then a stronger sense of place with more attractive surfacing and more planters could be achieved

alongside a 20mph speed limit. This would aid with reducing the rat running along this road by traffic displaced from the A27.

WEST STREET CHAINAGE 475-515 (SHOWN ON 5552/GA/300)

- 4.3.3. With low speed traffic and limited space, a tightening of the mini-roundabout geometry is considered the most desirable option to improve conditions for cyclists at this junction.

WEST STREET CHAINAGE 515-785 (SHOWN ON 5552/GA/300)

- 4.3.4. Highway corridor widths vary between 9.7m (Chainage 560) and 7.3m (Chainage 620). This leaves insufficient space for cycle segregation or lanes. However, this narrower carriageway width will induce lower speeds and make the road comfortable for many cyclists to stay on carriageway.
- 4.3.5. There is an opportunity for a 3m shared use path (Chainage 560 and 775) subject to further dialogue with Sompting Estates and the developer for the West Sompting strategic development site along the southern side, which could be offset 0.5m from the existing stone wall.

WEST STREET CHAINAGE 785-1425 (SHOWN ON 5552/GA/300 AND 301)

- 4.3.6. East from Chainage 785 there is insufficient space for a segregated route; however space exists for a shared use path. Through this section, existing highway and footway widths have been maintained or increased where feasible. Where the shared use path crosses side roads, priority has been provided via raised crossings.

WEST STREET CHAINAGE 1425-1500 (SHOWN ON 5552/GA/301)

- 4.3.7. It has been observed that cars park on the south of the road at this location. However, dwellings in the vicinity have off-road parking provision. It is therefore proposed that the existing path is widened to 3.5m to allow use by cyclists and reducing the road width locally to 5.1m. This will act as a traffic calming measure and gateway feature. There is sufficient length of full road width to allow a waiting pocket so that cars do not queue back onto Busticle Lane.

COKEHAM ROAD CHAINAGE 0-155 (SHOWN ON 5552/GA/301)

- 4.3.8. The proposed design comprises of a zebra crossing with a parallel cycle crossing between the two T-junctions. Both users have priority at the crossing. The proposed introduction of this type of crossing would require further assessment including of traffic volume and speed data to ensure that this type of crossing is suitable for this location.
- 4.3.9. At the start of Cokeham Road, the northern footway is raised above the carriageway on an embankment. As the footway is only 2m and the path bends significantly, it is felt there is insufficient width for use by cyclists. Therefore is suggested that the path is widened by reprofiling the embankment with a retaining wall to achieve a 3m wide path.
- 4.3.10. A hybrid path is proposed along the northern side of Cokeham Road. Within the vicinity of the shopping parade, this necessitates realignment of parking as well as the relocation of the bus shelter onto a build-out.

COKEHAM ROAD CHAINAGE 175- 470 (SHOWN ON 5552/GA/301 AND 302)

- 4.3.11. Highway corridor widths at this location vary between 13.1m (Chainage 180) and 15.3m (Chainage 340). There may be space in this location to provide a hybrid cycle facility.

- 4.3.12. This proposal will provide a large improvement for cyclists, but may negatively affect the streetscape. To prevent the proposal from becoming overly utilitarian, trees can be planted at the edge of the footway (using the example of Old Shoreham Road), or a verge can be incorporated where space permits.
- 4.3.13. Where there are crossing islands, it is proposed that these are to be removed as there is a narrower road width to cross. However there is an option to consider relocation if necessary where road widths are greater or the southern kerb line can be realigned.

BOUNDSTONE LANE DOUBLE MINI-ROUNDAABOUT (SHOWN ON 5552/GA/302)

- 4.3.14. As the path approaches the mini-roundabout, it is proposed it transitions to a shared use path. Cyclists will then cross via a refuge island to the opposite side of the junction. The path will continue as shared use until Crabtree Road where it will revert to hybrid.
- 4.3.15. A short spur of shared use path will continue up to Upper Boundstone Road to connect to Sir Robert Woodard Academy. On Crabtree Road, it was felt that a refuge island should not be provided as an island with sufficient capacity cannot be accommodated.

CRABTREE LANE CHAINAGE 25-810 (SHOWN ON 5552/GA/302 AND 303)

- 4.3.16. Highway corridor widths along this section vary between 14.8m (Chainage 615) and 19.2 (Chainage 705). Therefore, there is space at this location to provide a hybrid cycle facility. This would involve removing the existing verge. At least 7 additional trees may need to be removed.
- 4.3.17. Throughout Crabtree Lane it is proposed that pedestrian islands are removed as there is reduced distance for pedestrians to cross and it would retain space for motor vehicles.
- 4.3.18. Between Chainage 650-810, the streetscape widens, and there is provision for parking. It is proposed to formalise the existing parking and bring the hybrid route behind the on-road parking. This will increase the existing capacity for parking, improve the existing streetscape, improve provision for cyclists and may have indirect benefits to local businesses.
- 4.3.19. At Chainage 675, there are a number of utility boxes. To avoid relocation, it is suggested that the path diverts around them through acquisition of approximately 100m² of land from Monks Recreation Ground.
- 4.3.20. Between Chainage 740 and 800, there is insufficient space to maintain the existing parking layby and achieve a hybrid path. Therefore it is proposed land is acquired from Adur Homes to allow for the proposed provision to be maintained through this section.

MASH BARN LANE (SHOWN ON 5552/GA/303)

- 4.3.21. Where Crabtree Lane meets Grinstead Lane, it is proposed that cyclists connect with Mash Barn Lane as well as the cycle provision along Grinstead Lane via an upgraded Toucan Crossing which will connect to Crabtree Lane via a short section of shared use path. Due to the need to maintain the existing parking, because the adjacent dwelling has no off-street provision, the path briefly narrows to 2.3m prior to the crossing.
- 4.3.22. The highway corridor width along this section varies between 13.1m (Chainage 80) and 11m (Chainage 150). The existing situation also includes on-road parking. With this included, there is not enough space to provide effective formal provision for cyclists along this road, and traffic calming measures such as build-outs would be more appropriate to improve facilities for cyclists. The build-

out proposed at the entrance includes a ramped cyclist lane, at-grade with the build-out island to reduce the maintenance burden. The lower traffic flows and lower vehicle speeds on Mash Barn Lane means that it is considered suitable for cyclists to safely cycle on the carriageway, and to link with proposed new development at New Monks Farm. It is noted that a bus gate will restrict access via Hayley Road to buses, cyclists and pedestrians only.

4.4. EASTERN CORRIDOR

CHAINAGE 0-225 (SHOWN ON 5552/GA/307)

- 4.4.1. This section currently comprises two separate clusters of shops. The highway corridor width varies between 20.3m (Chainage 180) and 14.4m (Chainage 175). There is existing on-road parking at various locations on both sides of the road, and several cars were observed parking or loading where there are existing parking restrictions. In order to maintain existing levels of parking provided adjacent to the businesses in South Street, Lancing formal provision for cyclists in this area is unlikely to be achievable. Given the fluctuating width, space required for parking and the high street context, it is proposed that road narrowing to up to 5.8m and streetscape improvements would be the most effective way to improve facilities for cyclists. A 20mph zone with gateway features at either end is proposed between Chainage 15 and 250 to reduce traffic speeds. Both hybrid provision and advisory lanes were considered, but it was deemed that hybrid provision would be too intermittent and advisory lanes would be both intermittent and highly likely to be parked on in this area.

CHAINAGE 225-550 (SHOWN ON 5552/GA/307)

- 4.4.2. Highway corridor widths throughout the rest of this section vary between 11.9m (Chainage 300) and 21m (Chainage 355).
- 4.4.3. This section comprises a number of access roads and intermittent on-road parking on both sides of the road. A hybrid configuration cannot be consistently achieved. Therefore, it is proposed to formalise parking, provide advisory cycle lanes and remove the centre line where the carriageway width between lanes falls below 7.3m.
- 4.4.4. In the vicinity of on-road parking, it is proposed to formalise it with defined bays. On the approach to it, where possible, the advisory cycle lane will terminate. A lead in taper will help cyclists transition around it. A 0.5m buffer zone marking will encourage cyclists to ride away from parked cars and avoid any potential 'dooring' occurring.

CHAINAGE 550

- 4.4.5. At the terminus of the advisory cycle lane northbound, a short section of shared use path, with a connection towards Lancing Railway Station and shopping areas, and a dropped kerb will allow cyclists to transition off-road and cross via a proposed upgraded signalised crossing to the suggested shared use route over the railway bridge. For southbound cyclists, there will be an inline transition to the advisory cycle lane.

CHAINAGE 600-975 (SHOWN ON 5552/GA/306)

- 4.4.6. Over the railway bridge, there is sufficient space to provide a 3.5m wide shared use path on the eastern side. This would require removal of the existing on street parking to maintain carriageway widths. The existing refuge islands would also require removal.

CHAINAGE 975 (SHOWN ON 5552/GA/306)

- 4.4.7. It is proposed to upgrade the existing staggered Pelican crossing to a single phase Toucan crossing to free carriageway space and allow for cyclists. A short section of shared use path on the western side will provide a connection towards North Farm Road and Lancing shopping areas.

CHAINAGE 975-1250 (SHOWN ON 5552/GA/306)

- 4.4.8. Through this section, there is sufficient highway corridor width to provide a hybrid cycle route along the eastern side of the carriageway. At side roads, a raised priority crossing has been proposed to maintain continuity. In several locations, the right turn ghost islands are likely to require removal and further modelling assessment will be required. A number of pedestrian crossing islands may need removing but there may be opportunities to consider kerb realignment on the opposite side of the road to retain such facilities.

CHAINAGE 1250-1350 (SHOWN ON 5552/GA/303)

- 4.4.9. The staggered crossroad with Mash Barn Lane and Crabtree Lane is covered in paragraph 4.3.21.
- 4.4.10. The right turn lanes are shown as being removed at both side roads. Traffic impact will need to be assessed through future modelling. If necessary there is an opportunity to realign kerb lines along the western side of junction to retain the right turn facility.

CHAINAGE 1350-1835(SHOWN ON 5552/GA/303)

- 4.4.11. There is adequate highway corridor width to deliver a hybrid cycle route on either side within this section using the existing verge and partially taking some carriageway width. As there is an existing crossing and onwards provision at the eastern side, this side has been chosen. Where the hybrid path crosses minor arms, coloured surfacing and set back give way markings will highlight cyclist priority.
- 4.4.12. As with elsewhere in the scheme, there are locations where the crossing islands will need to be removed. At some places, there is a possibility of realignment of the opposite kerb if retention is required.

CHAINAGE 1650-1790 (SHOWN ON 5552/GA/303)

- 4.4.13. Along the western side of Grinstead Lane, it is proposed that the on-street parking is retained. To maintain carriageway width, it is suggested that the verge is utilised for parking by installing grasscrete where there is existing verge.
- 4.4.14. At the northern end, it is suggested that there is a transition to a shared path. This would allow for connection to the provision for cyclists towards Shoreham along the A27, which consists of short sections of on-road signed facilities on a parallel residential road to the A27 along with long sections of shared use path.
- 4.4.15. Proposals for cycling facilities at the junction of Grinstead Lane and the A27 are subject to future Highways England proposals for the A27 in this area and therefore there is potential for other connections at this point.

5. CONCLUSIONS

5.1. INTRODUCTION

- 5.1.1. This report has examined options for cycle infrastructure along three major corridors through Lancing and Sompting. These broadly consist of two north – south corridors using Western Road/Busticle Lane to the western side and Grinstead Lane/South Street along the east. A proposed east-west route will connect these two routes as well as the proposed future strategic developments sites at West Sompting and New Monks Farm. The residential roads which connect into these are believed to be suitable for most cyclists to safely ride on the carriageway.
- 5.1.2. In development of the cycling infrastructure proposals, WSCC wanted to be ambitious in its consideration of cycling infrastructure. Benefit-cost analysis should be undertaken to determine the feasibility of taking these schemes forward and where funding should be focused.
- 5.1.3. The availability of land within Lancing and Sompting is mostly restricted to highway land with the exception of small sections where future development is proposed, and where there may be potential to use small strips of adjoining recreational land or green space. Therefore, what can be achieved is largely constrained by maintaining provision for pedestrians at the current level whilst also retaining carriageway widths suitable for the quantum and type of flows which use them.
- 5.1.4. Along significant stretches of each corridor, it has been possible to achieve a hybrid route consisting of separate provision for pedestrians and cyclists. Where this has not been possible, either advisory cycle lanes have been proposed or measures put forward to reduce vehicular speeds so that cycle specific infrastructure is not required.
- 5.1.5. In the vicinity of the Cokeham Road/ Western Road North/Busticle Lane, level differences between carriageway and footway mean that retaining features and embankment reprofiling will be required in order to achieve a continuity of route through here. Further design work will be required to ascertain the feasibility of this.

5.2. DEVELOPMENT OF PROPOSALS

- 5.2.1. This feasibility study has put forward ambitious ideas where possible to achieve the desired cycling corridors, despite regular space constraints. Further design work is necessary to take these options forward.
- 5.2.2. In particular, no investigation of impacts on existing drainage and utilities has been undertaken as part of this feasibility study. Experience with other schemes has shown that required modifications to existing infrastructure can have significant cost implications and therefore if the scheme is progressed, it is strongly recommended appropriate utility investigations are carried out.
- 5.2.3. Where adjustments to junctions have been proposed, no analysis of impact on capacity at the junction has been undertaken. It is recommended that analysis is undertaken of the volume and breakdown of flows before developing this proposal further.
- 5.2.4. Where the scheme joins the A27, it is currently unknown what future provision there will be for cyclists to connect into, and this will depend on future proposals by Highways England.

- 5.2.5. As the purpose of feasibility study is to determine what is possible and not provide a definitive design, the designs shown on 2552/GA/300 - 307 are not for construction. As they have been based on Ordnance Survey mapping, the accuracy of the layout cannot be guaranteed.



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