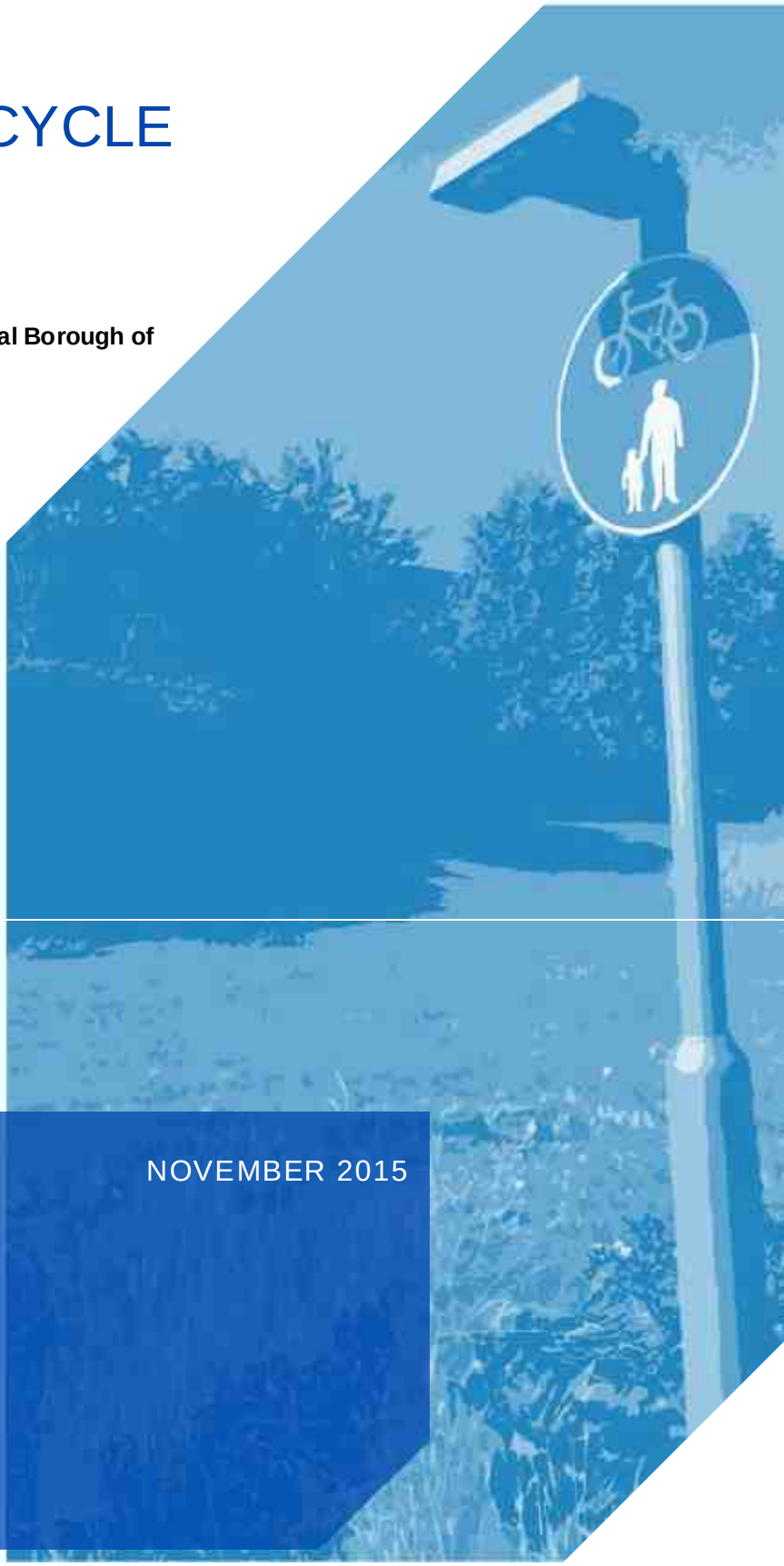
700013019-WSP-BC A02

A4 CORRIDOR CYCLE SCHEME

BUSINESS CASE

Slough Borough Council and The Royal Borough of Windsor & Maidenhead



NOVEMBER 2015

WSP | PARSONS BRINCKERHOFF

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BUSINESS CASE

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

70013019-WSP-BC

Project no: 70013019
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APPENDICES

1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

1.1.1 This Business Case report has been prepared to review and appraise a package of proposals to improve conditions for cyclists along the A4 corridor between Slough and Maidenhead.

1.1.2 The Business Case has been prepared in accordance with the Department for Transport's (DfT) guidance, including *The Transport Business Cases* (January 2013) and *Transport Analysis Guidance - TAG Unit A5.1 Active Mode Appraisal* (January 2014).

1.1.3 The Business Case adopts a 'five case' approach to ensure that all aspects of the scheme proposals are considered to an appropriate level of detail, proportionate to the scale of the project. The five separate cases presented in this report are:

- → **The Strategic Case**
- → **The Economic Case**
- → **The Financial Case**
- → **The Commercial Case**
- → **The Management Case**

1.1.4 Following an independent assessment of the draft Business Case by WYG consultants, on behalf of Thames Valley Berkshire Local Enterprise Partnership, the Business Case has been updated to include additional information on the points identified. An addendum report has also been prepared to identify the relevant sections of this Business Case Report which have been updated. The Business Case Independent Assessment (WYG, October 2015) and Business Case Addendum are presented in Appendix I.

1.2 PROJECT BACKGROUND

1.2.1 Slough Borough Council (SBC) and the Royal Borough of Windsor and Maidenhead (RBWM) are working alongside Buckinghamshire County Council to implement an improved cycle route along the A4 corridor between Slough, Taplow and Maidenhead. The scheme will provide a continuous and safer route for cyclists, linking residential areas to local railway stations, retail centres and employment opportunities. It will also link to existing local and national cycle route networks, supporting a wider range of local utility and recreational cycling trips.

1.2.2 The Business Case covers the sections of the overall A4 corridor scheme which lie within Slough Borough Council (SBC) and The Royal Borough of Windsor and Maidenhead (RBWM) boundaries.

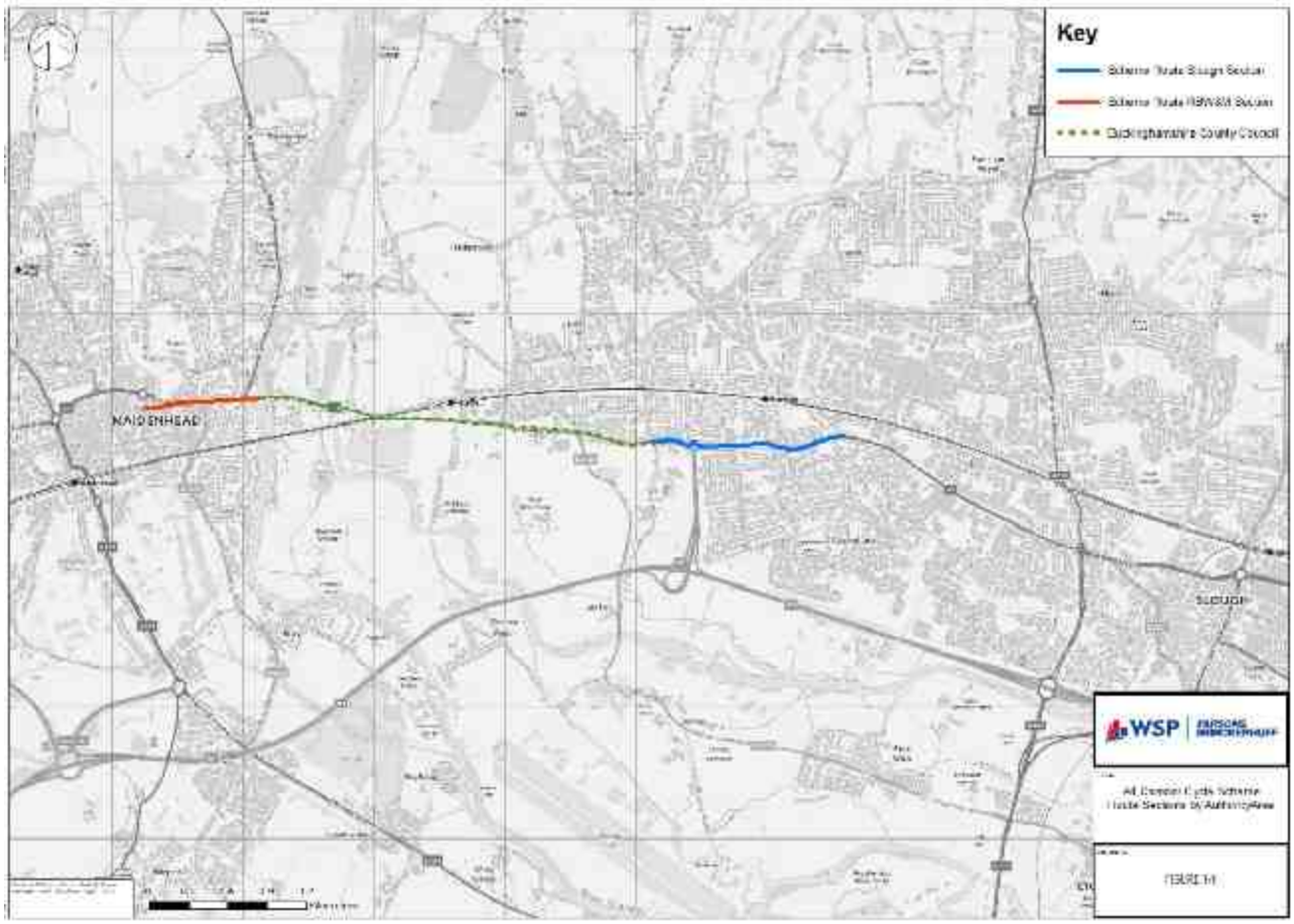
→ The section of the overall scheme within SBC's control will run along the A4 between Burnham Lane and the Huntercombe Lane junction.

→ The section of the overall scheme within RBWM's control will run along the A4 from Maidenhead Bridge and then continue toward the centre of Maidenhead along Bridge Street and High Street.

1.2.3 The report excludes the section of the route which lies within the Buckinghamshire County Council boundary (A4 between Huntercombe Lane and Maidenhead Bridge). A separate design and funding process is being undertaken for that section of the scheme.

1.2.4 Figure 1-1 illustrates the location and extent of the proposed scheme with reference to the three identified sections.

Figure 1-1: A4 Corridor Cycle Scheme Route Sections by Authority Area



1.3 CURRENT STAGE OF PROPOSALS

1.3.1 The project is supported by a parallel preliminary design phase, which is resulting in a preferred design option being developed for both the SBC and RBWM route sections.

1.3.2 Reflecting the twin-track approach, the project will be taken forward through the detailed design and costing stage. Once funding is secured and the detailed designs approved the scheme is expected to be taken forward for contractor tendering and construction.

1.4 SUPPORTING DOCUMENTS

1.4.1 In order to inform the Business Case production process an Options Assessment Report (OAR) and Appraisal Specification Report (ASR) have been produced (presented in Appendix II).

1.4.2 The ASR details the approaches and methodologies, most notably modelling, which was adopted in appraising the scheme. These methodologies are also presented within this Business Case.

1.4.3 The OAR sets out in detail the processes surrounding the option selection and development undertaken by both SBC and RBWM in reaching a decision on the current preferred scheme options. These processes are also outlined in *Chapter 2 - The Strategic Case* of this document.

2 THE STRATEGIC CASE

2.1 INTRODUCTION

2.1.1 The Strategic Case sets out SBC's and RBWM's aspirations in relation to cycling and sustainable travel and how their vision fit with the guiding policy aims.

2.1.2 The following sections will be included within the Strategic Case, based on the approach detailed in the next sections:

- → What is driving the project?
- → Existing Cycling Conditions
- → Scheme Objectives
- → Constraints and Inter-dependencies
- → Option Generation
- → Proposed Scheme Summary
- → Design Criteria
- → Policy Alignment

2.2 WHAT IS DRIVING THE PROJECT?

2.2.1 This section presents the national and local policy context for the proposed scheme alongside a review of the existing conditions and scheme proposals.

PLANNING POLICY & GUIDANCE

2.2.2 A review of the following policy documents has been undertaken to inform the Strategic Case:

- → National Planning Policy Framework (NPPF)
- → SBC Local Development Framework Core Strategy 2006 to 2026;
- → Slough Local Plan – Retained policies
- → Slough's Third Local Transport Plan
- → RBWM Local Transport Plan
- → RBWM Maidenhead Town Centre Area Action Plan
- → RBWM Local Plan

2.2.3 The UK Government policy set out in NPPF clearly indicates that a hierarchy should be adopted in the treatment of different modes of travel. Where possible, it states that greater priority should be given to walking and cycling over private motorised transport modes. The NPPF also requires local authorities to identify routes where infrastructure improvements could be made to widen travel choice options and support sustainable patterns of economic growth.

2.2.4 The SBC and RBWM planning policies are consistent with those set out at the national level, by stating the importance of increasing cycling levels and reducing the need for people to undertake journeys by private car.

2.2.5 The Maidenhead Town Centre Area Action Plan (AAP) also sets out specific policies to improve local accessibility, including Policy MTC 14 which includes a requirement to improve access to the Town Centre for cyclists.

2.2.6 The AAP also identifies the link to the Town Centre from the A4 as a key link to be enhanced to support accessibility and regeneration objectives.

2.3 EXISTING CYCLING CONDITIONS AND USERS

2.3.1 This section present a review of the existing cycling conditions to help identify the justifications for implementing the scheme proposals. This section also outlines those who are being targeted by the scheme proposals and what is known or can be ascertained about their needs, current behaviours and attitudes.

SBC SECTION

2.3.2 The majority of the A4 corridor along the SBC section of the scheme comprises a single carriageway road with two traffic lanes operating in both directions. Additional traffic lanes are gained at the approach to the major junctions that are present along its length.

2.3.3 Traffic data provided by SBC indicates that the peak hourly two-way traffic flows on this section of the A4 are approximately 1500 vehicles per hour. The vehicle average speed is 30 miles per hour.

2.3.4 The route section includes a four-arm signalised junction at the intersection between the A4 Bath Road, Station Road and Elmshott Lane. There is also a large roundabout (60 metre ICD) at the A4 Bath Road, Goldsworthy Lane and Huntercombe Spur (for the M4 Junction 7).

2.3.5 There are no dedicated on-carriageway cycling facilities on this section of the scheme route, including the absence of advisory / mandatory cycle lanes or advanced stop lines on the approach arms at the signalised crossing.

2.3.6 The existing footways are not signed or marked for shared pedestrian/cycling use. However, cycle count data indicates that currently a significant proportion of cyclists use the footways adjacent to the carriageway to travel along this section of the A4 rather than using the carriageway. This suggests reluctance by cyclists for using the carriageway, which may reflective of the traffic conditions along the route.

RBWM SECTION

2.3.7 The majority of the A4 along the RBWM section of the scheme comprises a single carriageway road with one traffic lane operating in both directions. Additional traffic lanes are gained at the approach arms of the A4094 roundabout. The A4 becomes a two-lane dual carriageway road to the west of Moorbridge Road.

2.3.8 There are no dedicated on-carriageway cycling facilities on this section of the scheme route, and no advisory / mandatory cycle lanes are present.

2.3.9 The route diverts from the A4 at the Moorbridge Road and connects onto High Street via Moorbridge Road and Bridge Street.

2.3.10 Moorbridge Road and Bridge Street comprise single carriageway roads flanked by footways, with advanced stop lines provided at the Bridge Street / Forlease Road / Moorbridge Road signalised junction. There is short section of advisory on-carriageway cycle lane on Moorbridge Road facilitating access to the advanced stop line cycle box.

2.3.11 There is an existing cycling contraflow scheme being progressed by RBWM which connects High Street to the west end of Bridge Street. This contraflow scheme falls outside of the scope for the A4 Cycle Scheme Business Case.

CYCLING JOURNEY PATTERNS

2.3.12 Cycling patterns will be defined by the specific purposes for which journeys are carried out:

- → Travel patterns for commuter cycling has been informed by a review of 2011 Census Origin-Destination travel to work data. This is provides an indication of the residential and employment catchment areas within which people's travel-making decision would be affected by the existing route. The potential to positively address patterns of cycling are discussed further in Section 5 and, in doing so, the identified catchments will be used to define the extent of the appraisal study area and assessment zones.
- → Non-commuter and leisure cycling is an important consideration for the scheme as it provides connections to leisure cycling routes including the Jubilee River Cycle Route.

EXISTING CYCLE USE

2.3.13 SBC and RBWM have provided supporting cycling monitoring reports which indicates that there is a positive year-on-year trend of increased cycling use in both unitary authority areas.

2.3.14 Cycling data for RBWM, which has been disaggregated by gender, indicates that it is heavily skewed towards male cyclists. While there could be a number of reasons for this, research published the TfL[1] indicates that across a sample population, when compared to male cyclists, female cyclists are less inclined to cycle on routes which have high traffic volumes and / or there is no or limited separation from motorised traffic.

2.3.15 Data provided by RBWM comparing Maidenhead to Windsor, indicates that Windsor has a higher number of active cyclists than Maidenhead; this is despite Windsor having a significantly smaller population size. Therefore, the opportunity exists to target further improvements where this can best deliver positive outcomes in seeking to achieve an increase in cycling levels.

EXISTING ACCIDENT AND ROAD SAFETY

2.3.16 A review of personal injury accident (PIA) data published for the years 2009 to 2013 indicates that at least one PIA per year was recorded on involving cyclists on both Slough and Maidenhead sections. Whilst this is not uncommon for such a major road corridor, it is also the case that six events involved pedal cyclists on the on SBC section of A4 corridor and seven events concerned pedal cyclists on the RBWM section of A4 corridor between 2010 and 2014.

EXISTING CONDITIONS SUMMARY

2.3.17 A review of the existing conditions indicates that there are opportunities to enhance the level of utility for cycling provided by the road infrastructure. The data suggests that measures to improve the existing infrastructure should focus on improving road safety conditions for cyclists and address the inequality that exists, both in terms of the balance of road space attributed to cyclists and apparent levels of gender bias among cycle users.

[1] Transport for London (June 2012). *Cycle Route Choice.*

2.4 SCHEME OBJECTIVES

2.4.1 The A4 corridor is a key strategic transport link providing connectivity between the Slough and Maidenhead conurbations. It is an important vehicular route as well as catering for pedestrians, cyclists and public transport.

2.4.2 As identified above, there is an opportunity to increase levels of cycling by improving the level of cycling facilities along this corridor. Therefore the principal project objective for the scheme is:

> *The provision of a safer and more convenient, direct cycle route between Slough and Maidenhead along the A4 corridor.*

2.4.3 The following SMART (Specific, Measurable, Attainable, Relevant and Time-bound) objectives are drawn from discussions with the project team and existing project development work.

- → Encourage a mode shift towards cycling for a range of journey purposes
  - o Work
  - o Education
  - o Leisure
- → Reduce the necessity to undertake journeys by private motor vehicle.
- → Address the existing gender inequality in cycle use.
- → Improve perceived cycling amenity on the A4 corridor.
- → Minimise cycling personal injury accidents on the A4 corridor.

2.4.4 Each of the above objective outcomes can be measured following the implementation of the scheme to determine the extent to which the scheme has met each objective and whether further measures are necessary to achieve a more positive outcome.

2.5 CONSTRAINTS AND INTER-DEPENDENCIES

CONSTRAINTS

2.5.1 There are no high level internal or external constraints which are expected to affect the delivery of the proposed scheme.

INTER-DEPENDENCIES

2.5.2 As detailed within *Chapter 3 - The Economic Case,* the allocation of capital funding from sources within the local authority as well as external funding sources is required to deliver the proposed scheme. The scheme sections within each local authority area can be progressed as stand-alone elements. However, works

will be coordinated between the three authorities to minimise traffic disruption during construction. Coordination of works with other major construction projects in the area will also be sought. However, there is full confidence from both SBC and RBWM that the works can be progressed within the required timescales.

2.6 OPTION GENERATION

2.6.1 This section sets out the process by which options for the scheme were derived and developed by both SBC and RBWM. The processes undertaken by each authority is presented separately and the following aspects of the options development process are considered:

- → Generating Initial Options
- → Option Sifting
- → Stakeholder Consultation
- → Option Finalisation

SBC SECTION

Generating Initial Options

2.6.2 An internal review of the study route by SBC officers produced the initial scheme options of providing a segregated on-carriageway cycle route or an off-carriageway cycle route.

Option Sifting

2.6.3 A site visit was undertaken by SBC officers to determine the feasibility of implementing a segregated on-carriageway cycle lane on the A4. The factors which were considered are summarised below.

2.6.4 This study section of the A4 has a speed limit of 40mph and 2 traffic lanes operating on both directions. Therefore the road carries high volumes of motorised traffic. Furthermore, the A4 is also used as a diversion route if any incidents occur on the M4 motorway, resulting in an occasional significant increase in motorised traffic above the typical baseline levels.

2.6.5 In addition to the above, it was noted that the A4 serves as a major distributor road for traffic leaving the M4 at Junction 7 travelling towards the Slough Trading Estate, as well as towards Taplow and Maidenhead.

2.6.6 An outcome of this review was that implementing an on-carriageway cycle facility on this section A4 would lead to potential conflicts with other infrastructure priorities on this key transport corridor. There would therefore be greater benefits to all users in promoting an off-carriageway cycling facility.

2.6.7 Following the outcome of the preliminary options assessment, the decision was made to focus on the provision of an off-carriageway cycling facility, with sub-options of siting route along the north or south side of the A4.

2.6.8 An on-site review of the Huntercombe Spur roundabout identified that the southern section of the roundabout could be perceived as a potential pinch point. Part of the road is subject to a national speed limit that changes to a 40mph at the roundabout and it was identified that the existing posted speed limits and uncontrolled crossing points were not particularly suited to safe crossing by cyclists.

Option Finalisation

2.6.9 In order to deliver maximum benefit to cyclists, and in view of the existing conditions on the A4, it was considered that the provision of an off-carriageway cycle route, running along the north side of the A4 would be the preferred option to be taken forward to the design stage.

2.6.10 The supporting notes underpinning the decisions reached by the design team on the finalised option through the preliminary design process are presented in the OAR (Appendix II.

Stakeholder Consultation

2.6.11 SBC has confirmed that, following the production of the preferred design option, a consultation exercise will be undertaken using an on-line survey questionnaire portal. In addition, letters will also be sent to businesses and residences fronting the A4 informing them about the proposed scheme.

2.6.12 Consultation will also be undertaken by SBC with the Local Access Forum and statutory consultees to present the proposed design option and record their feedback.

RBWM SECTION

Generating Initial Options

2.6.13 RBWM held a workshop with the Local Cycle Forum on 6th November 2013 to discuss options for improving cycling infrastructure within Maidenhead. The meeting briefing note is presented in the OAR (Appendix II).

2.6.14 The outcomes of this consultation process led to an assessment of proposed route options. Those routes which deviated from the scheme objectives, focusing on the interurban nature of the A4, were not considered for inclusion as options. Following this workshop, the focus of investment has been on the development of a scheme for the A4, as it presents the most direct and effective route option.

Option Sifting & Stakeholder Consultation

2.6.15 RBWM developed and reviewed a number of variants for improving cycling infrastructure associated with the A4, these included:

1. Improvement of the existing route via Horseguards Drive and Guards Club Road.
2. Providing single-direction cycle routes along each side of the A4.
3. Providing a bi-directional cycle route along the south side of the A4.

2.6.16 Option 1 was effectively discounted since Horseguards Drive is designated as a private road and local residents are opposed to intensification of use by cyclists and associated liabilities. This is also the least direct option and is therefore likely to be less attractive to the majority of cyclists.

2.6.17 Option 2 was found to have a number of problems inherent to providing a route along the northern side of the A4, including:

- → The need to cross the A4 via the Moorbridge Road subway, which is too narrow for shared use by pedestrians and cyclists.
- → There are bus stops on the north side where limitations on the extent of available highway land make it difficult to achieve satisfactory clearances. It was also considered that buses could potentially mask cyclists from motorists turning left at the Ray Park Avenue junction.
- → There are many junctions and accesses on the northern side, which would bring cyclists into potential conflict with motorists turning in and out. There is also insufficient space to align the cycle route away from the main road to be able to give cyclists sufficient priority at side roads.
- → The cycle lane being positioned inside the left turn lane for traffic on the approach to Maidenhead Bridge could leave cyclists vulnerable to left hook collisions.

2.6.18 Option 3 does not require use of subways to cross the A4, there are fewer interactions with bus stops, there are fewer private accesses, and would be subject less potential conflict at junctions.

2.6.19 Option 3 was therefore presented to the Local Cycle Forum for their review in March 2014. The level of commentary from the Local Cycle Forum necessitated a second workshop. This was held on 18th March 2014 and involved a review of further options.

2.6.20 The outcome of this second workshop was that segregated cycle lanes on both sides of the carriageway were not considered by the Forum to be feasible as it would reduce the available cycle lane widths to 1.5m, which would not permit overtaking by other cyclists.

2.6.21 The preferred option was a scheme to progress with on-carriageway cycle lanes on both sides of the A4. A summary of the second workshop is presented in the OAR (Appendix II).

Option Finalisation

2.6.22 The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. Additional measures are included at key locations including bus stops, to prevent conflicts between cyclists and other road users.

2.7 PROPOSED SCHEME SUMMARY

2.7.1 Following the option appraisal process undertaken by SBC, it was determined that the provision of an off-carriageway cycle route, running along the north side of the A4, is the preferred option to be taken forward to the design stage.

2.7.2 From the perspective of design, it was decided that the preliminary design of the route would focus on a combination of shared cycle footway provision and conversion of parallel services roads to one-way streets (for motorised traffic) to accommodate new two-way dedicated cycle lanes. Improvements and modifications for key junctions and crossing points are also proposed at the appropriate interfaces with existing infrastructure.

2.7.3 RBWM has also undertaken an extensive options development process to derive a preferred scheme to take forward to the preliminary design stage. The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. The proposals on the A4 are complemented by improved connectivity onto Moorbridge Lane Road from the A4. Additional measures are included at key locations, including bus stops, aimed at preventing conflicts between cyclists and other road users.

2.7.4 The current preliminary design options for both the SBC and RBWM sections of the scheme are presented in Appendices B and C, respectively.

2.8 DESIGN CRITERIA

2.8.1 The scheme is being designed to meet the needs of all cyclists based on the design criteria shown below. The following core design documents have been consulted during the design process to ensure that good design practice is followed:

→ London Cycling Design Standards. Transport for London, 2014.

- → Local Transport Note (LTN) 1-12 Shared Use Routes for Pedestrians and Cyclists. DfT, 2012.
- → LTN 2-08 Cycle Infrastructure Design. DfT, 2008.
- → Cycle Network Signing - Technical Information Note No. 05. Sustrans, 2013.
- → Segregation of Shared Use Routes - Technical Information Note No. 19. Sustrans, 2014.
- → Guidance on the use of tactile paving surfaces. Department for Environment, Transport and the Regions, 1998.

2.9 POLICY ALIGNMENT

2.9.1 The table below summarises the significant Policy support for cycling. It clearly shows that enhancing cycle infrastructure along the A4 corridor aligns with local and national policy, as set out in Section 2.2.

Strategic Aims for Cycling → / Key Policy Documents ↓	A sustainable transport network with a well-connected, accessible cycle network	Reduce transport's contribution to greenhouse gas emissions	Improve health by encouraging active travel modes and improving local air quality	Support the local economy by providing access to employment, amenities and services	Provide reliable journey times for users	Increase cycle modal share	A safe and secure cycle network
National Planning Policy Framework (NPPF)	✓	✓	✓	✓		✓	✓
SBC Local Development Framework Core Strategy	✓	✓	✓	✓		✓	
Slough Local Plan – retained policies	✓	✓	✓	✓	✓	✓	✓
Slough's Third Local Transport Plan	✓	✓	✓	✓	✓	✓	✓
RBWM Local Plan	✓	✓		✓	✓	✓	✓
RBWM Local Transport Plan	✓	✓	✓	✓	✓	✓	✓
RBWM Maidenhead Town Centre Area Action Plan	✓	✓	✓	✓	✓	✓	✓

3 THE ECONOMIC CASE

3.1 INTRODUCTION

3.1.1 The Economic Case presents the forecast value for money of the scheme in the form of a Benefit Cost Ratio (BCR). The scheme's potential trip generation has been determined through a cycle demand transport model. The methodology used to create the model is presented in the ASR (Appendix II).

3.1.2 The transport model has been used to estimate changes to the following impacts:

- → User Benefits
- → Health Benefits
- → Business Benefits
- → Accidents
- → Marginal External Cost Savings
- → Wider Economic Benefit

3.2 OPTIONS APPRAISED

3.2.1 The OAR, produced in August 2015 by WSP | Parsons Brinkerhoff, on behalf of SBC and RBWM, outlined the options for each section of the route and detailed the sifting process that was undertaken to arrive at the final route alignment. The OAR is presented in Appendix II.

3.2.2 The preferred options which have been taken forward for appraisal within this Business Case are summarised below.

SBC PREFERRED SCHEME OPTION

3.2.3 The finalised option comprises the provision of a new off-carriageway cycle route, running along the north side of the A4 between Burnham Lane and the Huntercombe Lane junction. The scheme will support commuting and utility trips. The scheme design is presented in Appendix III.

RBWM PREFERRED SCHEME OPTION

3.2.4 The finalised option includes the provision of 2-metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would comprise a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated cycle lanes. Additional measures are included at key locations including bus stops, to prevent conflicts between cyclists and other road users. The scheme design is presented within in Appendix IV.

OPTIONS APPRAISAL SUMMARY

3.2.5 Following the options appraisal process detailed in the OAR, it has been considered that the options selected for the final scheme represent the most cost effective solutions to maximise the scheme objectives. Both options are assessed independently within the Economic Case as well as the expected scenario whereby both sections are delivered together.

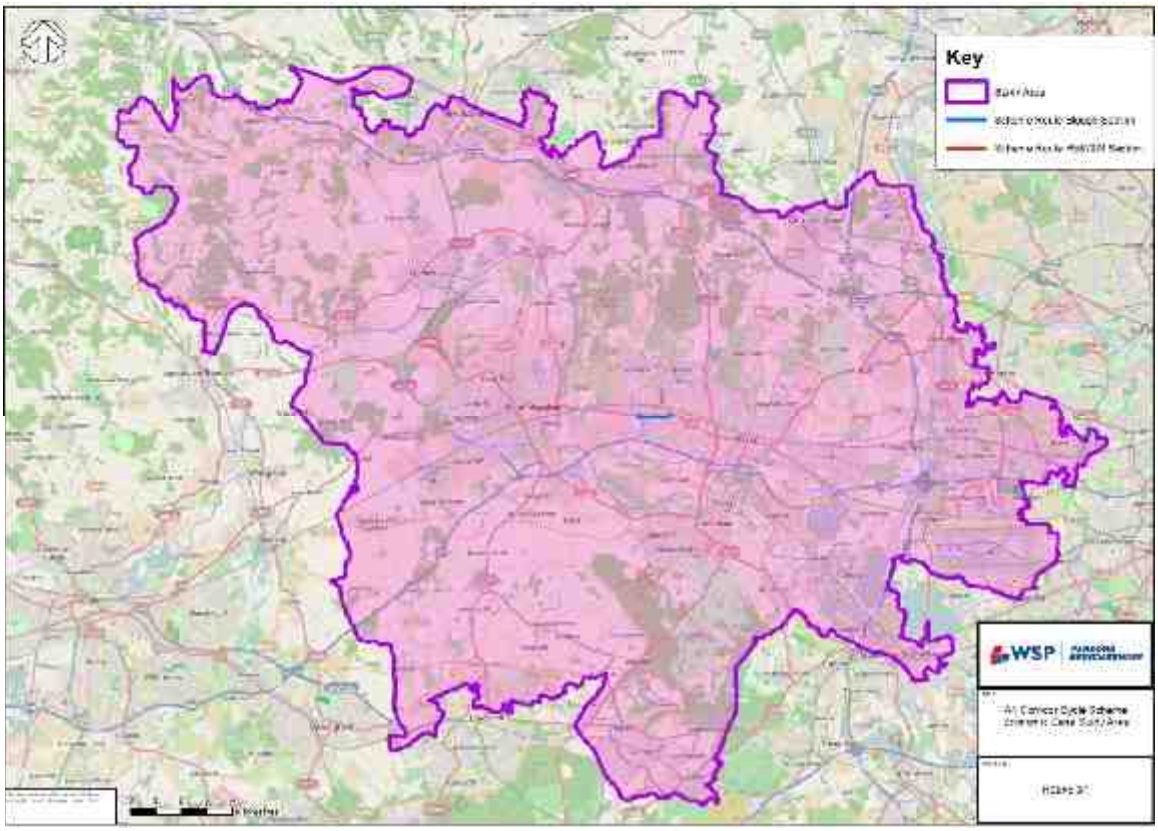
3.2.6 All 'with development' scenarios are assessed against a future baseline whereby conditions remain consistent with the existing infrastructure provided along the A4 corridor.

3.3 ASSUMPTIONS

3.3.1 The following assumptions have been incorporated in the Economic Case:

- → The route assessed and extent of the scheme catchment area is as shown in Figure 3-1.
- → Construction and design costs are as provided by SBC and RBWM.
- → There are no dedicated cycle facilities along the route corridor in the base scenario, with the scheme providing a continuous dedicated cycle facility along the scheme sections which is segregated from the motorised traffic on the A4.
- → The cycling demand model assumes that the utility of all modes except cycling remain unchanged.
- → Benefits are forecast based on an indicative 10 year scheme life, the period typically used for UK cycling scheme appraisal.
- → All figures presented are based on 2010 prices, with a year-on-year price inflation discount rate of 3.5% applied to 2015 prices.

Figure 3-1: Economic Case Study Area



3.4 COSTS

3.4.1 SBC and RBWM have indicated that the current scheme costs estimates are as follows:

RBWM & SBC Sections Combined	
Thames Valley Berkshire Local Enterprise Partnership (TVBLEP)	= £700k
Section 106	= £110k
Council Capital Funds	= £750k
Total	= £1.56m

SBC Section Only	
TVBLEP	= £483k
Section 106	= £50k
Council Capital Funds	= £377k
Total	= £910k

RBWM Section Only	
TVBLEP	= £217k
Section 106	= £60k
Council Capital Funds	= £373k
Total	= £650k

3.4.2 In line with the DfT's guidance[2] and taking account of the current project stage it is also appropriate to consider the application of an optimism bias. Detailed costing information, including utility diversion costs have already been considered and therefore a Stage 2 optimism bias of 15% is appropriate, for the construction costs. This takes into account the potential level of cost escalation risks associated with the scheme, which can be reduced further once more detailed scheme specifications have been produced. As the project progresses and detailed site investigations, including utility scans, are undertaken to provide greater cost certainty, the optimism bias level can be reduced accordingly.

3.4.3 These construction costs are considered to be robust for this stage of scheme development, and with the inclusion of optimism bias are likely to be an overestimate of the actual outturn costs of the scheme.

3.5 FORECASTING POTENTIAL DEMAND

METHODOLOGY: COMMUTER CYCLISTS

3.5.1 The potential demand impact of the scheme has been estimated using a disaggregate mode choice model as outlined in WebTAG unit A5.1 which uses coefficients derived from Wardman, Tight and Page (2007)[3], to forecast the changes in the attractiveness of cycling for commuting trips of up to 7.5 miles. The model uses the current base proportion of population who cycle between Origins and Destinations (ODs) to determine the new level of cycling that new infrastructure would generate..

3.5.2 The following inputs have been used in the model:

- → 2011 Census travel to work OD data has been used to establish those trips that would pass through the route corridor.
- → The average cycling speed along the route is assumed to be a moderate 14km/hr.

3.5.3 It is important to note that this cycling demand model assumes that the utility of all modes except cycling which remain unchanged.

[2] DfT (January 2014). *Transport Assessment Guidance Unit A1.2 - Scheme Costs.*

[3] Wardman, Tight and Page (2007), *Factors influencing the propensity to cycle to work*. Institute of Transport Studies, University of Leeds.

METHODOLOGY: WEEKDAY NON-COMMUTING CYCLISTS

3.5.4 The number of weekday non-commuting cyclists has been estimated using 12 hour observed cycle count data on the A4 section of the scheme. The ratio between cyclists travelling during the AM peak and those travelling during the inter-peak was calculated and applied to the predicted number of one-way commuter trips in the demand model. This provided estimates for the weekday non-commuting trips generated by the scheme.

METHODOLOGY: WEEKEND NON-COMMUTING CYCLISTS

3.5.5 The number of weekend non-commuting cyclists has been estimated using cycle survey data made available by SBC for the A4 recorded near Leigh Road. The surveys were undertaken on weekdays and weekends, providing a ratio of weekday to weekend trips which has been applied to the number of commuter and weekday non-commuting cyclists previously calculated as using the route.

RESULTS: COMMUTER CYCLISTS

SBC Section Only

3.5.6 Survey data indicates that for trips along the SBC section of the route corridor, the base number of one-way commuter cycle trips is 51. Based on the scheme improvements, the potential number of one-way commuter cycle trips is 91, an additional 40 (78% increase) one-way commuter trips on the route.

RBWM Section Only

3.5.7 Survey data indicates that for trips along the RBWM section of the route corridor, the base number of one-way commuter cycle trips is 63. Based on the scheme improvements, the potential number of one-way commuter cycle trips is 85, an additional 22 (35% increase) one-way commuter trips on the route.

Combined SBC and RBWM Sections

3.5.8 Survey data indicates that for trips along both the RBWM and SBC sections of the route corridor, the base number of one-way commuter cycle trips is 99. Based on the scheme improvements, the potential number of one-way commuter cycle trips is 165, an additional 66 (67% increase) one-way commuter trips on the route.

RESULTS: WEEKDAY NON-COMMUTING CYCLISTS

SBC Section Only

3.5.9 The base number of one-way weekday non-commuting cyclists along the SBC section of the route corridor is 102. The model forecasts an additional 80 cyclists will use the route as a result of the improvements, an increase of 78%.

RBWM Section Only

3.5.10 The base number of one-way weekday non-commuting cyclists along the RBWM section of the route corridor is 169. The model forecasts an additional 45 cyclists will use the route as a result of the improvements, an increase of 27%.

Combined SBC and RBWM Sections

3.5.11 The base number of one-way weekday non-commuting cyclists along the both the SBC and RBWM sections of the route corridor is 196. The model forecasts an additional 138 cyclists will use the route as a result of the improvements, an increase of 70%.

RESULTS: WEEKEND NON-COMMUTING CYCLISTS

SBC Section Only

3.5.12 The base number of one-way weekend non-commuting cyclists along the SBC section of the route corridor is 108. The model forecasts an additional 84 cyclists will use the route as a result of the improvements, an increase of 78%.

RBWM Section Only

3.5.13 The base number of one-way weekend non-commuting cyclists along the RBWM section of the route corridor is 116. The model forecasts an additional 42 cyclists will use the route as a result of the improvements, an increase of 36%.

Combined SBC and RBWM Sections

3.5.14 The base number of one-way weekend non-commuting cyclists along the both the SBC and RBWM sections of the route corridor is 192. The model forecasts an additional 141 cyclists will use the route as a result of the improvements, an increase of 73%.

3.5.15 The model results have been used to quantify the forecast scheme benefits, as detailed below.

3.6 USER BENEFITS: JOURNEY QUALITY

METHODOLOGY

3.6.1 Whilst many factors influence journey quality, for cyclists the fear of potential road traffic collisions is a significant factor. As the fear of a collision is influenced by the concerns about road safety, schemes that include segregated cycle tracks and improvements to intimidating junctions greatly improve cycle journey quality.

3.6.2 Journey quality is calculated on the basis of values as presented in TAG Data Book A4.1.67. This table provides a benefit for the provision of a new off-road cycle lane of 7.03 pence per minute experienced and 2.97 pence per minute experienced for an on-road cycle lane (2010 prices). As the change in conditions is experienced by existing users the most, current users of the route experience the full value of the benefit whereas, new cyclists only experience half of the benefit.

3.6.3 It has been assumed that commuter and weekday non-commuting cyclists enjoy the journey quality time benefits on 250 days per year (the average number of working days per year), whilst weekend non-commuting cyclists received the benefit on 112 days per year.

RESULTS

SBC Section Only

3.6.4 The benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £330,044 over the 10 year scheme life for the SBC section of the route.

RBWM Section Only

3.6.5 The benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £115,426 over the 10 year scheme life for the RBWM section of the route.

Combined SBC and RBWM Sections

3.6.6 The benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £607,078 over the 10 year scheme life for users of both the SBC and RBWM sections of the route.

3.7 USER BENEFITS: JOURNEY TIME SAVINGS

METHODOLOGY

3.7.1 The journey times on the SBC and RBWM sections of the existing facility have been estimated using the Cycle Streets journey planner based on a cruising cycle speed of 14km/h.

3.7.2 The proposed infrastructure improvements have been reviewed to identify the extent for potential journey time reductions based on the provision of a more direct route for cyclists and locations where the new route will bypass traffic signals where journey delay is currently experienced.

3.7.3 Web Tag Table A 1.3.1: Values of Time by Trip Purpose is then applied to the journey time saved.

RESULTS

SBC Section Only

3.7.4 The Value of the Journey Time Savings is estimated at **£82,042** over the 10 year scheme life.

RBWM Section Only

3.7.5 The Value of the Journey Time Savings is estimated at **£20,691** over the 10 year scheme life.

Combined SBC and RBWM Sections

3.7.6 The Value of the Journey Time Savings is estimated at **£147,257** over the 10 year scheme life.

3.8 BUSINESS BENEFITS: ABSENTEEISM

METHODOLOGY

3.8.1 Research carried out by the WHO[4] found that absenteeism from work is expected to decrease when more people cycle to work. Moderate physical activity is seen to lead to a reduction in sick days taken from work and hence provides a benefit to the employer. This is in addition to the benefit of better health for the individual.

3.8.2 In the UK the average absence of employees is 6.8 days per year, of which 95% is accounted for by short-term sick leave[5]. Research by the WHO suggests an expected reduction in absenteeism from increased cycling or walking of 6% based on 30 minutes of exercise per day. Extrapolating this to apply to the forecast average of 44 minutes exercise per day for new commuter cyclists using the route (two one-way journeys) leads to an average reduction in absenteeism of 8.7% (0.6 days per cyclist).

3.8.3 Applying this absenteeism reduction to the number of commuter cyclists and factoring in WebTAG Data Book Table A1.3.1, values of time (£27.07 per hour) and average working hours for Slough and Maidenhead (35.2 hours per week for) from the Annual Survey of Hours and Earnings 2014 (ONS[6]), provides scheme life absenteeism savings.

[4] WHO (January 2015) Physical Activity Fact Sheet
[5] DfT (January 2014) TAG Unit 4.1 Social Impact Appraisal
[6] ONS (November 2014) Annual Survey Of Hours And Earnings - Workplace Analysis

RESULTS

SBC Section Only

3.8.4 For cyclists using the SBC section of the scheme only the monetary benefit of absenteeism reduction is estimated to be **£36,628**.

RBWM Section Only

3.8.5 For cyclists using the RBWM section of the scheme only the monetary benefit of absenteeism reduction is estimated to be **£20,722**.

Combined SBC and RBWM Sections

3.8.6 For cyclists using the both and SBC and RBWM sections of the scheme the monetary benefit of absenteeism reduction is estimated to be **£61,122**.

3.9 HEALTH BENEFITS: WHO HEAT TOOL

METHODOLOGY

3.9.1 The World Health Organisation (WHO) has developed a Health Economic Assessment Tool (HEAT)[7] that calculates the economic benefit of preventing early mortality by increasing the number of people regularly exercising through cycling. The tool requires estimates of the number of new cyclists as a result of the scheme; the time per day they will spend active; and mortality rates applicable to the group affected by the scheme. The tool then provides an economic benefit of reduced mortality based on the value of a prevented fatality.

3.9.2 The estimated increase in regular commuter, weekday non-commuting and weekend non-commuting cyclists have been input into the HEAT tool. It has been assumed that commuter cyclist journeys would be two-way trips. Additional weekday and weekend non-commuting trips are assumed to be one-way trips (they would return by another route or use another mode).

[7] WHO Health Economic Assessment Tool (HEAT) – accessed online at http://www.heatwalkingcycling.org/index.php on 08/09/2015

RESULTS

SBC Section Only

3.9.3 The results of the HEAT calculation for the SBC only are presented below, showing a total health benefit of **£434,000** over a 10 year scheme life.

Table 3-1: HEAT Tool Results (SBC Section)

Cyclist Class	Health benefit
Commuter cyclist	£179,000
Weekday non-commuting cyclist	£179,000
Weekend non-commuting cyclist	£76,000
Total	**£434,000**

RBWM Section Only

3.9.4 The results of the HEAT calculation for the RBWM are presented below, showing a total health benefit of **£242,000** over a 10 year scheme life.

Table 3-2 HEAT Tool Results (RBWM Section)

Cyclist Class	Health benefit
Commuter cyclist	£103,000
Weekday non-commuting cyclist	£101,000
Weekend non-commuting cyclist	£38,000
Total	**£242,000**

Combined SBC and RBWM Sections

3.9.5 The results of the HEAT calculation for both the SBC and RBWM sections combined are presented below, showing a total health benefit of **£741,000** over a 10 year scheme life.

Table 3-3 HEAT Tool Results (SBC & RBWM Sections)

Cyclist Class	Health benefit
Commuter cyclist	£296,000
Weekday non-commuting cyclist	£319,000
Weekend non-commuting cyclist	£126,000
Total	**£7,694**

3.10 CYCLE COLLISIONS

METHODOLOGY

3.10.1 By isolating the number of personal injury collisions (PICs) involving cyclists, it is possible to estimate the predicted increase or decrease in cycle collisions as a result of the scheme. PIC data obtained from the STATS 19 database identified six 'Slight' personal injury collisions involving cyclists on the SBC section proposed scheme from 2010 to 2014. Seven 'Slight' events of personal injury collisions involving cyclists were recorded on the RBWM section of the proposed scheme, from 2010 to 2014.

3.10.2 Empirical evidence presented by The Royal Society for the Prevention of Accidents (RoSPA)[8] has indicated that the introduction of new cycling facilities, which provide a greater level of separation from motor vehicle, typically result in approximately a 28% reduction in accidents involving cyclists compared to a situation without these facilities. The RoSPA report also identifies that increases in the number of cyclists do not have a direct correlation with increased cycling accident rate.

3.10.3 The potential accident reduction relationship has been applied to the route sections of the scheme, with the results presented below.

[8] RoSPA, May 2015. Cycling Policy Paper.

RESULTS

3.10.4 The forecast change in annual average cycle collisions is presented in the tables below, revealing that the number of cycle collisions is expected to decrease as a result of the scheme.

SBC Section Only

Table 3-4: Annual Accident Rate Effects (Cyclists)

Scenario	Slight	Serious	Fatal	Total
Base Annual Accident Rate	1.20	0	0	1.20
Accident Rate Reduction for the 'With Development' Scenario	-0.34	0	0	-0.34
Annual 'With Development' Accident Rate	0.86	0	0	0.86

3.10.5 Monetising these benefits using values detailed in WebTAG Table A 4.1.3 produces a forecast monetised benefit of **£40,881** across the scheme life.

RBWM Section Only

Table 3-5: Annual Accident Rate Effects (Cyclists)

Scenario	Slight	Serious	Fatal	Total
Base Annual Accident Rate	1.40	0	0	1.40
Accident Rate Reduction for the 'With Development' Scenario	-0.39	0	0	-0.39
Annual 'With Development' Accident Rate	1.01	0	0	1.01

3.10.6 Monetising these benefits using values detailed in WebTAG Table A 4.1.3 produces a forecast monetised benefit of **£47,694** across the scheme life.

Combined SBC and RBWM Sections

Table 3-6: Annual Accident Rate Effects (Cyclists)

Scenario	Slight	Serious	Fatal	Total
Base Annual Accident Rate	2.60	0	0	2.60
Accident Rate Reduction for the 'With Development' Scenario	-0.73	0	0	-0.73
Annual 'With Development' Accident Rate	1.87	0	0	1.87

3.10.7 Monetising the combined benefits using values detailed in WebTAG Table A 4.1.3 produces a forecast monetised benefit of **£88,575** across the scheme life.

3.11 MARGINAL EXTERNAL COST SAVINGS

METHODOLOGY

3.11.1 The scheme will lead to modal shift towards cycling amongst commuters. Where this shift affects a transfer from car journeys, there will be benefits to reduced car use in the form of decongestion, car collisions, greenhouse gas, air quality, noise and indirect tax benefits. These benefits have been estimated using the Marginal External Cost (MEC) method, based on the forecast reduction in car kilometres as a result of the scheme.

3.11.2 The number of new commuter cycling trips has been applied to the current proportion of car trips on the scheme route to give an estimated reduction of car trips as a result of the scheme. For the purpose of this report it is assumed that the proportion of new cycle trips transferred from existing car users will be proportionate to the existing average car driver mode share for Slough and Maidenhead (65%). Any car trips that have been replaced by cycle trips are assumed to be 5.1 km – which is the average trip length for cycle trips based on the current DfT data[9].

3.11.3 The estimated reduction in car km is then used to calculate the MEC benefits using figures outlined in TAG Data Book Table A 5.4.2.

[9] DfT (2014) National Travel Statistics - Table NTS0306

RESULTS

SBC Section Only

3.11.4 The MEC benefits forecast as a result of the SBC section of the scheme are shown in Table 3.7 below, totalling **£231,939** across the 10 year scheme life.

Table 3-7: MEC Benefits (SBC Section)

Cost Type	Benefit
Congestion	£261,583
Infrastructure	£1,696
Accident	£3,362
Local Air Quality	£573
Noise	£1,696
Greenhouse Gases	£12,443
Indirect Taxation	£77,413
Total	**£231,939**

RBWM Section Only

3.11.5 The MEC benefits forecast as a result of the RBWM section of the scheme are shown in Table 3.8 below, totalling **£130,198** across the 10 year scheme life.

Table 3-8: MEC Benefits (RBWM Section)

Cost Type	Benefit
Congestion	£146,839
Infrastructure	£952
Accident	£17,605
Local Air Quality	£322
Noise	£952
Greenhouse Gases	£6,985
Indirect Taxation	-£43,456
Total	**£130,198**

Combined SBC and RBWM Sections

3.11.6 The MEC benefits forecast as a result of the SBC and RBWM sections of the scheme are shown in Table 3.9 below, totalling **£506,528** across the 10 year scheme life.

Table 3-9: MEC Benefits (SBC & RBWM Sections)

Cost Type	Benefit
Congestion	£571,267
Infrastructure	£3,703
Accident	£68,491
Local Air Quality	£1,252
Noise	£3,703
Greenhouse Gases	£27,173
Indirect Taxation	-£169,062
Total	**£506,528**

3.12 WIDER ECONOMIC BENEFIT

METHODOLOGY

3.12.1 Research suggests that cycling benefits the local economy and a national study carried out by the London School of Economics[10] concluded that each cyclist contributes a Gross Cycling Product (GCP) of £230 per year to the economy. This research was supported by a European wide study[11] which found that cycling delivers wider economic benefits in terms of supporting jobs and driving tourism – with the cycling industry having greater employment intensity than any other transport sub-sector.

RESULTS

SBC Section Only

3.12.2 Applying the findings of the LSE study to the forecast increase in cycling, the SBC section of the scheme will generate a Wider Economic Benefit of **£235,285** over the 10 year scheme life.

[10] London School of Economics (2011). The British cycling economy: Gross Cycling Product

[11] Neslen, A - The Guardian (November 2014) Europe's cycling economy has created 650,000 jobs

RBWM Section Only

3.12.3 The RBWM section of the scheme is forecast to generate a Wider Economic Benefit of **£132,077** over the 10 year scheme life.

Combined SBC and RBWM Sections

3.12.4 The SBC and RBWM sections of the scheme are forecast to generate a Wider Economic Benefit of **£402,901** over the 10 year scheme life.

3.13 OTHER BENEFITS

3.13.1 A number of other, non-quantified benefits will be delivered by the scheme, including:

- → There will potentially be an improvement in journey time reliability for cyclists as they may be less affected by delays than other forms of traffic, particularly during the morning and evening peak hours.
- → As part of the infrastructure design scheme there will be a rationalisation of existing signage and where necessary signs will be removed or relocated to de-clutter the road side environment. This is expected to have benefits for cyclists and pedestrians by removing obstructions to movement and also for motor vehicle drivers by making the local highway regulations more clearly legible.

3.14 BENEFIT COST RATIO

SBC Section Only

3.14.1 The table below presents a summary of the forecast Present Value of Benefits and Present Value of Costs for implementing the SBC section of the scheme, presenting a **BCR of 1.59**.

Table 3-10: Benefit and Cost Summary (SBC Section)

Present Value of Benefits:	**£1,155,535**
Health Benefits	£434,000
Business Benefits (Absenteeism)	£36,628
User Benefits (Journey Quality & Journey Time Saving)	£412,087
Collisions	£40,881
Marginal External Cost Savings	£231,939
Present Value of Costs	**£873,602**
Net Present Value	**£281,933**
Benefit Cost Ratio	**1.32**
Wider Economic Benefit (Gross Cycling Product)	£235,285
Net Present Value inc. Wider Economic Benefit	**£517,218**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.59**

3.14.2 In order to inform the future funding decisions, a further benefit cost assessment has been undertaken including a 15% optimism bias attached to the construction costs estimate. The results of this assessment are presented in the table below.

Table 3-11: Benefit and Cost Summary (SBC Section including 15% Optimism Bias)

Present Value of Benefits:	**£1,155,535**
Health Benefits	£434,000
Business Benefits (Absenteeism)	£36,628
User Benefits (Journey Quality & Journey Time Saving)	£412,087
Collisions	£40,881
Marginal External Cost Savings	£231,939
Present Value of Costs	**£997,817**
Net Present Value	**£157,718**
Benefit Cost Ratio	**1.16**
Wider Economic Benefit (Gross Cycling Product)	£235,285.39
Net Present Value inc. Wider Economic Benefit	**£393,003**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.39**

RBWM Section Only

3.14.3 The table below presents a summary of the forecast Present Value of Benefits and Present Value of Costs for implementing the RBWM section of the scheme, presenting the scheme's **BCR** of **1.18**.

Table 3-12: Benefit and Cost Summary (RBWM Section)

Present Value of Benefits:	**£576,732**
Health Benefits	£242,000
Business Benefits (Absenteeism)	£20,722
User Benefits (Journey Quality & Journey Time Saving)	£136,117
Collisions	£47,694
Marginal External Cost Savings	£130,198
Present Value of Costs	**£600,601**
Net Present Value	**-£23,869**
Benefit Cost Ratio	**0.96**
Wider Economic Benefit (Gross Cycling Product)	£132,078
Net Present Value inc. Wider Economic Benefit	**£108,208**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.18**

3.14.4 In order to inform the future funding decisions, a further benefit cost assessment has been undertaken including a 15% Optimism Bias attached to the construction costs estimate. The results of this assessment are presented in the table below.

Table 3-13: Benefit and Cost Summary (RBWM Section including 15% Optimism Bias)

Present Value of Benefits:	**£576,732**
Health Benefits	£242,000
Business Benefits (Absenteeism)	£20,722
User Benefits (Journey Quality & Journey Time Saving)	£136,117
Collisions	£47,694
Marginal External Cost Savings	£130,198
Present Value of Costs	**£600,601**
Net Present Value	**-£ 112,594**
Benefit Cost Ratio	**0.84**
Wider Economic Benefit (Gross Cycling Product)	£132,077
Net Present Value inc. Wider Economic Benefit	**£19,483**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.03**

Combined SBC and RBWM Sections

3.14.5 The table below presents a summary of the forecast Present Value of Benefits and Present Value of Costs for implementing the both the SBC and RBWM sections of the scheme, presenting a **BCR of 1.73**.

Table 3-14: Benefit and Cost Summary (SBC & RBWM Sections)

Present Value of Benefits:	**£2,151,560**
Health Benefits	£741,000
Business Benefits (Absenteeism)	£61,122
User Benefits (Journey Quality & Journey Time Saving)	£754,335
Collisions	£ 88,575
Marginal External Cost Savings	£506,528
Present Value of Costs	**£1,474,203**
Net Present Value	**£ 464,416**
Benefit Cost Ratio	**1.46**
Wider Economic Benefit (Gross Cycling Product)	£402,901
Net Present Value inc. Wider Economic Benefit	**£867,317**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.73**

3.14.6 In order to inform the future funding decisions, a further benefit cost assessment has been undertaken including a 15% Optimism Bias attached to the construction costs estimate. The results of this assessment are presented in the table below.

Table 3-15: Benefit and Cost Summary (SBC and RBWM Sections including 15% Optimism Bias)

Present Value of Benefits:	**£2,151,560**
Health Benefits	£741,000
Business Benefits (Absenteeism)	£61,122
User Benefits (Journey Quality & Journey Time Saving)	£754,335
Collisions	£ 88,575
Marginal External Cost Savings	£506,528
Present Value of Costs	**£1,687,143**
Net Present Value	**£464,416**
Benefit Cost Ratio	**1.28**
Wider Economic Benefit (Gross Cycling Product)	£402,901.24
Net Present Value inc. Wider Economic Benefit	**£867,317**
Benefit Cost Ratio inc. Wider Economic Benefit	**1.51**

Benefit Cost Ratio Summary

3.14.7 The above economic assessment have indicated that based on the current costs estimates for implementing either the SBC or RBWM would deliver positive net benefits. The inclusion of a 15% optimism bias results in the net benefits becoming marginal, so clearly defining the areas subject to cost escalation should be carried out in order to reduce the level of this theoretical value. In particular, further definition on the level of statutory undertaker plant diversion, which is often one of the largest 'unknown' cost at design feasibility stage, will have a significant bearing the level of potential 'double-counting' that could otherwise occur.

3.14.8 The greatest benefits are returned by delivering both the SBC and RBWM sections as a combined scheme, albeit with different funding sources. As presented in this Business Case, there is a strong desire by both authorities to deliver both sections together, and thereby realise the maximum potential net benefits for both sections of the scheme. This therefore supports the approach adopted in the submission of a joint Business Case report, covering the combined schemes.

3.15 APPRAISAL SUMMARY TABLES

3.15.1 The Appraisal Summary Tables (ASTs) provide a summary of the key aspects of the Economic Case. The ASTs focus on four key appraisal areas, in accordance with guidance presented in WebTAG:

- Economy;
- Environmental;
- Social / Distributional; and
- Public Accounts.

3.15.2 Appraisal Summary Tables for implementing the SBC and RBWM scheme options independently, as well as both sections together are presented in Appendix V.

3.16 SENSITIVITY TESTING

3.16.1 WebTAG unit A5.1 sets out the importance of undertaking relevant sensitivity testing where assumptions have been included in the benefit cost appraisal.

3.16.2 For the purpose of this appraisal, it is expected that the following parameters will influence the outcomes:

- Change in journey time for cycle users following implementation of the scheme.
- Average journey distance per cycling trip.

JOURNEY TIME CHANGE

3.16.3 The change in journey time has been determined by estimating the extent to which the proposed scheme facilitates travel along the corridor, including through changes in waiting times at junctions.

3.16.4 A sensitivity test has been undertaken to determine the effects of altering the change in average journey time by ± 50%.

SBC Section

3.16.5 A 50% reduction in the change in journey time would result a BCR of 1.58 which represents a 1% negative change.

3.16.6 A 50% increase in the change in journey time would result a BCR of 1.61 which represents a 2% positive change.

RBWM Section

3.16.7 A 50% reduction in the change in journey time would result a BCR of 1.17 which represents a 1% negative change.

3.16.8 A 50% increase in the change in journey time would result a BCR of 1.19 which represents a 1% positive change.

Combined SBC and RBWM Sections

3.16.9 A 50% reduction in the change in journey time would result a BCR of 1.71 which represents a 2 % negative change.

3.16.10 A 50% increase in the change in journey time would result a BCR of 1.75 which represents a 2 % positive change.

Journey Time Change Summary

3.16.11 The results of the journey time change sensitivity test indicate that even significant alterations in the predicted journey time chances produce negligible effects on the overall project BCR.

AVERAGE JOURNEY DISTANCE

3.16.12 The latest available DfT statistics have been reviewed to derive a current value for average cycle journey distance; this has been incorporated into the main appraisal. In order to derive a suitable sensitivity test a review of historical DfT statistics for average cycling distance has been used to determine the ten year high and low average journey distances for cycling.

3.16.13 The ten year high value for average journey distance is 3.3 miles (5.3 km) and the ten year low values is 2.4 miles (3.8 km).

SBC Section

3.16.14 Using the 10 year high, average journey distance would result a BCR of 1.63 which represents a 3% positive change.

3.16.15 Using the 10 year low, average cycle distance would result a BCR of 1.39 which represents a 13% negative change.

RBWM Section

3.16.16 Using the 10 year high, average journey distance would result a BCR of 1.20 which represents a 2% positive change.

3.16.17 Using the 10 year low, average cycle distance would result a BCR of 1.04 which represents a 14% negative change.

Combined SBC and RBWM Sections

3.16.18 Using the 10 year high, average journey distance would result a BCR of 1.20 which represents a 2% positive change.

3.16.19 Using the 10 year low, average cycle distance would result a BCR of 1.59 which represents a 14% negative change.

Average Journey Distance Summary

3.16.20 The results of the average journey distance sensitivity test indicate that alterations in the predicted journey time chances produce minor effects on the overall project BCR.

3.16.21 The current national average cycling journey distance has been included in the main appraisal. However, it is noted that there is a positive year-on-year trend on increasing average journey distance. If this trend were to continue, supported by improvements to cycling infrastructure and supporting travel planning measures it is expected that greater benefits will be realised compared to those presented in this assessment.

3.17 BUCKINGHAMSHIRE COUNTY COUNCIL SECTION

3.17.1 The SBC and RBWM sections of the A4 corridor scheme lie either side of an adjoining section which runs through the Buckinghamshire County Council (BCC) area. Whilst a separate Business Case has been developed for this section, it is important to consider the potential cumulative effects of the implementation of this scheme in conjunction with the SBC and / or RBWM route sections assessed within this Business Case.

3.17.2 The proposal currently under consideration for the SBDC section includes a new 2m wide segregated off-carriageway cycling facility, with new crossing facilities on the A4.

3.17.3 Delivering all three sections in combination would provide a continuous high quality new cycle facility running between Slough and Maidenhead, the benefits of which would, based on the evidence presented in this report, further add to the Business Case for the overall scheme.

3.17.4 It is expected that forecast benefits for delivering all three sections together would achieve the greatest outcomes compared to the project costs. However, as presented above, neither the SBC nor RBWM sections of the scheme will be dependent on either of the other sections of the route being deliver to ensure that the project objectives are satisfied.

4 THE FINANCIAL CASE

4.1 INTRODUCTION

4.1.1 The Financial Case sets out the sources of funding by SBC and RBWM for the scheme, including an assessment of the affordability and financial risks involved.

4.2 DERIVATION OF COSTS

4.2.1 The scheme costs have been prepared by engineers at SBC and RBWM. These cost estimates have been produced on the basis of the preferred scheme options for both the SBC and RBWM route sections.

4.2.2 The costs have been informed by previous similar infrastructure schemes undertaken by the relevant authorities. This costing approach will add a degree of cost certainty prior to the detailed design and site investigation works being undertaken.

4.2.3 As presented in *Chapter 3 - The Economic Case* it is also appropriate to consider the application of an Optimism Bias of 15% to the construction costs to ensure that the potential level of financial risk associated with the scheme is taken into account.

4.2.4 This optimism bias level is in line with guidance provided by DfT for assessing transport schemes, based on the current project stage. As the project progresses and greater cost certainty is attained, the optimism bias level can be reduced accordingly. However, given that some of the costs have been informed by evidence gathered from other scheme, there is a small risk that applying this level of optimism bias could lead to an over-representation of outturn cost, which could affect the Business Case.

4.2.5 The scheme costs are also exclusive of consultancy design fees which have been reported separately.

4.2.6 Cost estimate summary tables for SBC, RBWM and the two authorities combined are presented in Tables 4-1 to 4-3, respectively.

Table 4-1: Scheme Cost Estimate Summary (SBC Section Only)

Cost Item	Cost
Capital Costs	£910,000
Land Acquisition	£0
Optimism Bias (15%)	£136,500
Sub-Total	£1,046,500
Scheme Design & Development	£50,000
Total	£1,096,500

Table 4-2: Scheme Cost Estimate Summary (RBWM Section Only)

Cost Item	Cost
Capital Costs	£650,000
Land Acquisition	£0
Optimism Bias (15%)	£97,500
Sub-Total	£747,500
Scheme Design & Development	£10,000
Total	£757,500

Table 4-3: Scheme Cost Estimate Summary (Combined SBC and RBWM Sections)

Cost Item	Cost
Capital Costs	£1,560,000
Land Acquisition	£0
Optimism Bias (15%)	£234,000
Sub-Total	£1,794,000
Scheme Design & Development	£60,000
Total	£1,854,000

4.2.7 The scheme proposals for both the SBC and RBWM sections of the route are for works on the existing adopted public highway with established and budgeted maintenance regimes to cover on-going review repair and improvement works. The scheme proposals will therefore not require additional capital to be allocated to cover the whole life costs following the successful implementation of the scheme.

4.3 FINANCIAL RISKS

4.3.1 Both SBC and RBWM have extensive experience delivering infrastructure projects within the public highway and therefore are able to quickly identify, mitigate and manage financial risks.

4.3.2 The key financial risks for the scheme are associated with the construction phase of the project. In particular the potential for diversion and / or protection of utility apparatus, which often leads to the greatest cost variances on schemes from conception to delivery.

4.3.3 Further utility related cost certainty will be provided through undertaking C3 (budgetary) and C4 (detailed) utility searches as specified under the New Roads & Street Works Act 1991.

4.3.4 Approaches to managing the project's financial risk are as outlined in *Chapter 6 - The Management Case*.

4.4 FUNDING SOURCES

4.4.1 SBC and RBWM have indicated that capital cost funding will be sourced from the following three independent funding streams:

- → Internal capital funds
- → TVBLEP grants
- → Section 106 funding

4.4.2 These funding sources are considered in turn below.

Internal Capital Funds

4.4.3 Approval for internal capital funding for the SBC section of the scheme will be required from both the SBC Cabinet and Capital Strategy Steering Group.

4.4.4 Approval for internal capital funding for the RBWM section of the scheme will be required from RBWM's Budget Steering Group, Overview and Scrutiny Panel, Cabinet and Council.

TVBLEP Grants

4.4.5 The allocation of funding by TVBLEP to the scheme will be subject to review and acceptance of the full Business Case for the SBC and RBWM scheme sections.

Section 106 Funding

4.4.6 Section 106 funding will be secured from new developments along the A4 corridor who have or will be subject to a financial contribution as part of negotiations over planning application. RBWM has indicated that funding has already been secured from Miller Homes to undertake improvement works on the section of path in front of the Kings Quarter development.

4.5 COMPLIANCE WITH NATIONAL GUIDANCE

4.5.1 All funding sourced for the project will be obtained and managed in full compliance with the guidelines set out by the UK Government[12] to ensure that all public funds are used appropriately.

[12] HM Treasury (July 2013). Managing Public Money.

5 THE COMMERCIAL CASE

5.1 INTRODUCTION

5.1.1 The Commercial Case details the procurement strategy for the project and is informed by the following strategic outcome objectives:

- → To deliver the scheme within the final cost estimate and secured funding.
- → To deliver the scheme to project programme.
- → To deliver best value.
- → To deliver the scheme to the appropriate quality level.
- → To ensure stakeholder acceptance and 'buy-in'.

5.2 OUTPUT BASED SPECIFICATION

5.2.1 The Commercial Case is based on realising the following strategic outcomes:

- → Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints;
- → Minimise further preparation costs with respect to scheme design by ensuring best value, and appropriate quality;
- → Obtain contractor experience and input to the construction programme to ensure the implementation programme is robust and achievable; and
- → Obtain contractor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk and improve out-turn certainty thereby reducing risks to a level that is 'As Low as Reasonably Practicable' (HSE Risk Management).

5.3 PROCUREMENT AND DELIVERY

5.3.1 Both SBC and RBWM have confirmed that no planning consents are required to permit the proposed scheme to proceed to the construction stage, as all works can be delivered under appropriate powers conferred by the Highways act 1980.

5.3.2 Both SBC and RBWM will take on the marginal risks associated with each authorities section of the overall scheme.

5.3.3 SBC and RBWM have set out their proposed procurement strategies to demonstrate that both authorities have robust procurement procedures which will be followed.

SBC

5.3.4 The procurement process will be run in strict accordance with the legislative framework set out within the SBC Council Procurement Operating Procedures that ensures that the purchase of goods, services and works required by SBC is handled in a transparent, timely, efficient and effective manner with due regard to purchasing best practise. Additionally, the process will be governed by the SBC's own Constitutional Contract Procedure Rules and will be subject to the Councils Procurement Gateway Process.

5.3.5 SBC's preferred route is to go out to direct tender as this enables the Invitation to Tender to obtain the "*Most Economically Advantageous Tender and achieving Best Value and value for money for the Council*". The contract threshold will be below the Office Journal of the European Union (OJEU) threshold of £4,348,350 therefore a formal tender process using the electronic tendering procedure and at least three tenders to be evaluated.

RBWM

5.3.6 The procurement process will be run in accordance with RBC's procurement rules which ensure that the purchase of goods, services and works required by the Council is handled in a transparent, timely, efficient and effective manner with due regard to purchasing best practise.

5.3.7 The preferred procurement option for RBWM's section of the scheme is to go out to competitive tender, with bids assessed on a combination of quality and cost. RBWM's experience indicates that this approach achieves best value for the Council. The contract threshold will be below the OJEU threshold of £4,348,350 therefore a formal tender process using the electronic tendering procedure and at least three tenders to be evaluated.

5.4 PAYMENT MECHANISMS, PRICING FRAMEWORK AND CHARGING MECHANISMS

5.4.1 The NEC 3 *Option B: Priced Contract with bill of quantities and schedule of rates*, rather than a fixed price contract will be used by both SBC and RBWM. This allows for penalty clauses relating to over-running.

5.4.2 Payments to the contractor will be made monthly in arrears to the value of 80% of the project, subject to the project engineer checking and agreeing the submission made by the contractor as the build progresses.

5.4.3 Payments to the contractor will be subject to further cross-checking against delivery of the agreed programme to minimise over-runs. Where possible, the project engineer will work with the contractor to identify mitigating actions to restore progress before seeking to invoke the use of penalty clauses. The final 20% will be paid once the project is substantially complete and has been signed off by the project engineer.

5.4.4 This option will ensure that the contractual and commercial arrangements are clearly defined from the outset. The form of contract is well understood within the construction supply chain and the risk will be allocated to the party best able to manage it the most cost effective way. It is expected that a fixed price quotation would result in the contractor submitting a considerably higher price in order to cover their risk.

5.5 CONTRACTUAL RISK

5.5.1 The proposed contract terms and conditions to be used by both SBC and RBWM for the works will be the *NEC 3 Option B: Priced Contract* with bill of quantities and schedule of rates, rather than a fixed price contract.

5.5.2 This approach will ensure that the contractual and commercial arrangements are clearly defined from the outset. The form of contract is well understood within the construction supply chain and the risk will be allocated to the party best able to manage it the most cost effective way. It is expected that a fixed price quotation would result in the contractor submitting a considerably higher price in order to cover their risk.

5.6 CONTRACT LENGTH AND CONTRACT MANAGEMENT

5.6.1 Each section of the A4 cycle route will be delivered by the relevant individual local authority. Contract length will be dependent on the individual programming, which is yet to be defined in detail. This will be completed once public consultation and detailed design work has been completed. Current project programmes prepared by SBC and RBWM are presented in Tables 6-1 and 6-2 of *Chapter 6 - The Management Case*.

5.6.2 The works will be progressed in consultation between Network Management Teams in SBC, RBWM and BCC. Works will be coordinated in order to minimise the impact on road users and residents, and to avoid works in one authority taking place in close proximity to or impacting upon those taking place in an adjacent authority.

5.6.3 Each local authority will use its own delivery agents to implement the scheme and, as such, contracts will be managed in accordance with established protocols. Risk management forms an integral part of these arrangements.

6 THE MANAGEMENT CASE

6.1 INTRODUCTION

6.1.1 The DfT's guidance document, '*The Transport Business Case: Management Case*', outlines the areas that should be covered as part of the Transport Business Case documentation. These aspects are covered under the following sections of this Management Case:

- → Evidence of similar projects
- → Programme and project dependencies;
- → Governance, Resourcing and Responsibilities;
- → Managing Project Risks
- → Stakeholder management; and
- → Benefits Realisation.

6.1.2 The management approach has been developed following the outline set out below:

- → Set the appropriate governance structure to ensure outcomes and objectives are met;
- → Identify and plan for the key approval milestones ensuring information is provided in good time so as to not delay the programme, and;
- → Assess how the delivery process will be managed to achieve optimum financial and impact performance.

6.2 EVIDENCE OF SIMILAR PROJECTS

6.2.1 This section presents evidence to demonstrate that both SBC and RBWM are experienced at delivering similar infrastructure projects to those proposed for this scheme.

SBC

6.2.2 SBC has significant delivering high quality transport infrastructure including cycle infrastructure schemes. A selection of recent examples is presented below.

6.2.3 The Heart of Slough scheme was completed in 2012 for £12.5million and included the implementation of high quality shared use cycle facilities allowing commuters to travel between the shopping areas, train station, work and home.

6.2.4 As part of the Local Sustainable Transport Fund, SBC delivered the A4 Salt Hill Park shared use cycle route in 2014. The scheme costs were £170,000.

6.2.5 SBC introduced bus lanes, junction improvement works, cycling and pedestrian facilities linking the northern section of Farnham Road, the A4 and Slough Trading Estate as part of the *Better Bus* scheme in 2014. The total scheme costs were £2.2million.

RBWM

6.2.6 RBWM also has extensive experience of successfully delivering cycling schemes as well as major highway schemes.

6.2.7 The annual Local Transport Plan capital programme includes provision for cycling schemes with an average value of £150k. Recent schemes include:

- → A308 Maidenhead Road, Windsor – shared use footway / cycleway; and
- → A329 High Street, Ascot – shared use footway / cycleway.

6.2.8 Stafferton Way Link Road is a £4 million scheme, which includes the construction of a major multi-purpose new road link and bridge, with new roundabout junctions, pedestrian and cycling facilities. This scheme is scheduled to be completed in December 2015.

6.3 PROGRAMME

6.3.1 The project programmes for both SBC and RBWM are presented in Tables 6-1 and 6-2 respectively, setting out the envisaged key stages in project delivery, the original timescales and current revised timescales.

Table 6-1: SBC Project Programme

Task	Original Timescale	Revised Timescale (where changed)
Programme Entry Status	24 July 2014	
Data Collection	April 2015	May / June 2015
Independent Assessment of full Business Case	Due May 2015	Due November 2015
Financial Approval from local transport body	Due July 2015	Due November 2015
Feasibility work	Complete	
Acquisition of statutory powers	Unlikely to be needed	
Detailed design	Complete	
Procurement	Complete by December 2015	Complete by February 2016
Start of construction	Spring 2016	
Completion of construction	December 2016	March 2017
One year on evaluation	December 2017	March 2018
Five years on evaluation	December 2021	March 2022

Table 6-2: RBWM Project Programme

Task	Original Timescale	Revised Timescale (where changed)
Programme Entry Status	24 July 2014	
Data Collection	April 2015	May / June 2015
Independent Assessment of full Business Case	Due May 2015	Due November 2015
Financial Approval from local transport body	Due July 2015	Due November 2015
Feasibility work	Complete	
Acquisition of statutory powers	Unlikely to be needed	
Detailed design	Spring / Summer 2015	January / February 2016
Procurement	Complete by December 2015	Complete by May 2016
Start of construction	Spring 2016	Summer 2016
Completion of construction	December 2016	March 2017
One year on evaluation	December 2017	March 2018
Five years on evaluation	December 2021	March 2022

6.4 GOVERNANCE, RESOURCING AND RESPONSIBILITIES

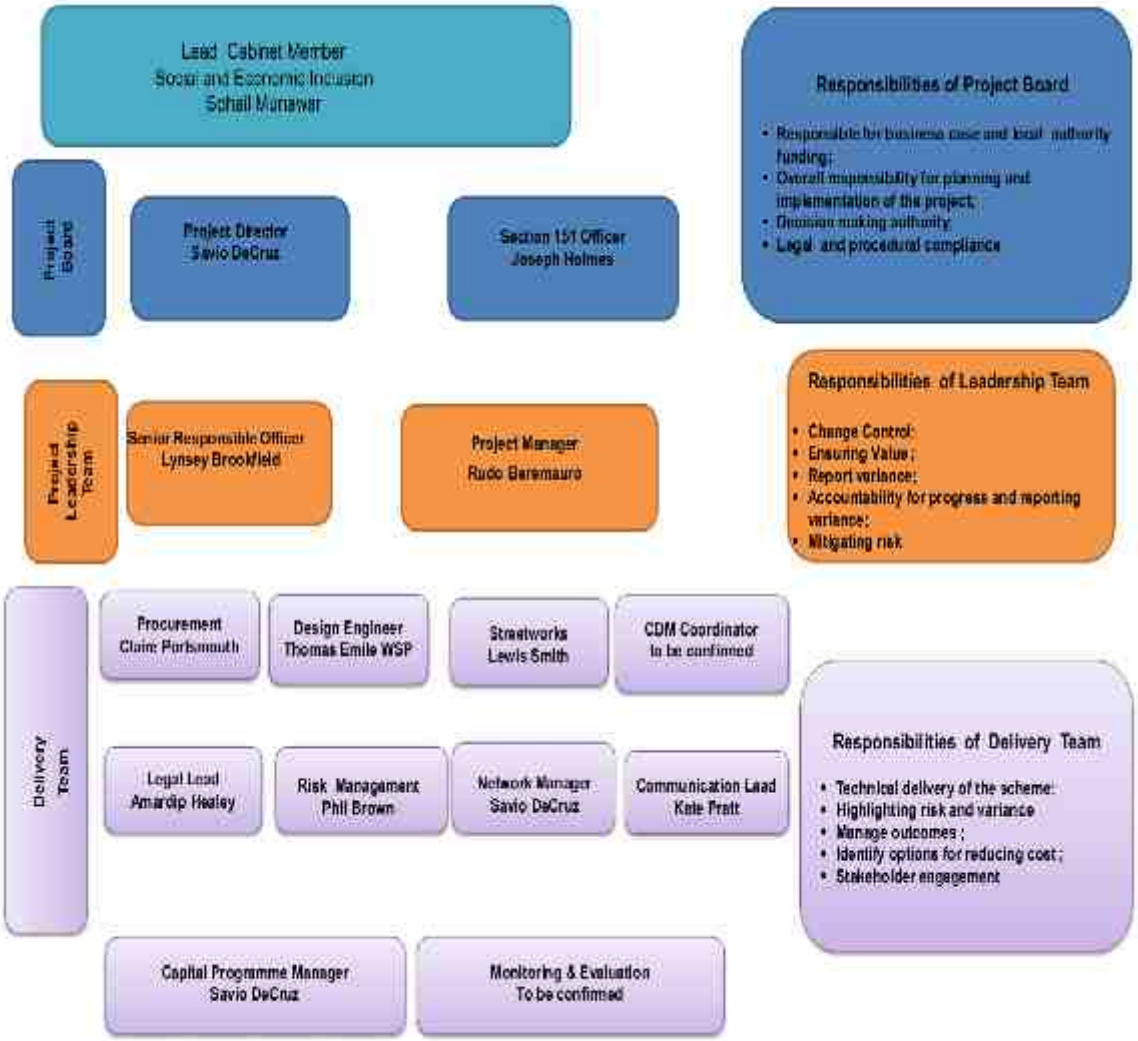
6.4.1 A detailed resource plan has been produced by both SBC and RBWM, which will be managed and updated as changes to the requirements occur.

6.4.2 Appropriate additional resources will be acquired where forecast resource need is greater than available resource need.

6.4.3 Senior staff within the project team should be maintained over the lifetime of the project to provide continuity and development of skills and experience. This is important to effectively manage the shifting political landscape against which the project needs to be delivered.

6.4.4 SBC's and RBWM current resource plans are presented below demonstrate a clear resourcing strategy for delivering the project and outline the responsibilities which lie against each resource sector.

SBC'S PROJECT RESOURCE PLAN



RBWM'S PROJECT RESOURCE PLAN

6.5 CONTRACT MANAGEMENT

The DfT13 requires confirmation that arrangements will be made for continuity between those involved in developing the contract and those who will subsequently manage it.

6.5.1 The SBC Project Manager will undertake monitoring of the scheme during implementation to ensure that any mitigation measures identified in the risk review are undertaken and fully adhered to.

6.5.2 RBWM will manage the scheme as a named major project within their corporate management system. Progress will be reported monthly to the Business Improvement Programme Board, which is comprised of a member / officer group.

6.5.3 To ensure continuity, key officers who have worked on the development of the scheme will form part of the project delivery team.

[13] Department for Transport (DfT) (2013). The Transport Business Cases.

6.6 MANAGING PROJECT RISKS

6.6.1 All of the land required for the scheme lies within the extent of adopted highway and therefore is under the full control of SBC or RBWM. Therefore, no additional land ownership agreements and purchase will be necessary to secure the implementation of the proposed scheme.

6.6.2 Project risks will be mitigated by further development of the design at the appropriate stages, including risks for the scheme promoters to address during the implementation stage. This would include appropriate levels of value engineering to optimise value and reduce risk as well as appropriate road safety audits to address any recommendations.

6.6.3 SBC have identified the following programme dependencies:

- → Timely procurement of a contractor to undertake the works.
- → Liaising with the Stakeholders including residents and businesses fronting the A4 and ensuring they are updated regularly.

6.6.4 RBWM have identified the following programme dependencies:

- → Stakeholder consultation
- → Approval of internal Capital Bids
- → Timely procurement of a contractor to undertake the works
- → Utility diversion / protection works.

6.6.5 Further to the above dependencies, the key project risks identified for the SBC and RBWM sections of the scheme are set out in Tables 6-3 and 6-4, respectively, along with measures to mitigate or reduce the effect of each risk.

Table 6-3: SBC Risk Review Summary

Risk	Management of risk
Unfavourable response to wider public consultation.	Consultation for the proposed one way on service roads may receive objection from the businesses. Programme allows for detailed design to be modified where necessary to address specific objections.
Increase of capital costs due to changes to the design before and during construction	Manage scheme costs and benchmark against similar schemes.
Delays in procurement process.	Programme allows adequate time for procurement.
Delays in achieving local contribution towards costs.	Ensure SBC funding in place and on-going dialogue with partners.
Cross boundary working in order to coordinate the design, consultation and delivery of the scheme with Royal Borough of Windsor and Maidenhead and Buckinghamshire County Council.	Coordinate with both Boroughs during design and construction stages.
Utilities –unknown services struck during the construction works.	Digging of trial holes and CAT scans for any advance works.
Changes to design after commencing construction.	Fully complete design prior to commencing construction/ allow for contingency provision.

Table 6-4: RBWM Risk Review Summary

Risk	Management of risk
Unfavourable response to consultation.	Early engagement of Cycle Forum, Lead Member and Local Ward Members. Programme allows for detailed design to be modified where necessary to address specific objections.
Internal funding bid is rejected	Bids are being submitted September 2015, which allows concerns to be identified and addressed at an early stage.
Increase of capital costs due to changes to the design before and during construction	Contingency included within budget. Value engineering to reduce costs where possible.
Delays in procurement process.	Programme allows adequate time for procurement.
Cross boundary working in order to coordinate the design, consultation and delivery of the scheme with Buckinghamshire County Council and Slough Borough Council.	Ongoing dialogue with both Boroughs during design and construction stages.
Utilities – unknown services struck during the construction works.	C2 NRSWA searches have been undertaken. Trial holes and CAT scans will be used prior to excavation.

6.7 BENEFITS REALISATION

6.7.1 This section presents the proposed monitoring and evaluation strategy for the project as well as the key Go / No Go decision points. The proposed reporting and approval process will also be summarised.

GO / NO GO DECISION POINTS

6.7.2 The following stages of the project programme represent key points where Go / No Go decisions can be undertaken to ensure that the appropriate project viability considerations are undertaken in advance of significant capital commitment:

- → Public consultation stage
- → Local Enterprise Partnership funding approval
- → Internal funding approval

PROJECT REPORTING AND REVIEW

6.7.3 Both SBC and RBWM have confirmed that the reporting structure will mirror the governance structure shown in Resource Plans above, and the Project Manager will be responsible for ensuring that the Project Board is made aware of any changes to the project.

6.7.4 The Project team will hold monthly meetings and any unresolved items are escalated to the Project Board.

6.7.5 In addition to the above, SBC uses the PRINCE 2 project management methodology when delivering projects.

PROJECT MONITORING AND EVALUATION

6.7.6 In order to inform the project monitoring and evaluation process, preconstruction traffic, pedestrian and cyclists surveys have been undertaken at key locations on the A4 corridor (survey locations and specifications detailed in the ASR presented in Appendix II).

6.7.7 It is proposed by SBC to undertake one year post-implementation repeat surveys, and by RBWM to undertake one year and five year repeat surveys, to allow a comparison against the pre-construction volumes and an evaluation of the success of the scheme to be made.

6.8 STAKEHOLDER MANAGEMENT

6.8.1 This section identifies key stakeholders involved in the project approval, funding and delivery process together with the proposed stakeholder management strategy.

SBC

6.8.2 The following stakeholders have been identified by SBC as playing an important role in the project delivery and review process:

- → Residents and businesses fronting the cycle scheme will be informed about the proposal.
- → Contractors – Briefing to be undertaken before works commence.
- → Statutory Consultees and Local user groups such as Local Access Forum
- → Ward Councillors
- → RBWM
- → Buckingham County Council
- → Thames Valley Berkshire Local Enterprise Partnership
- → First Berkshire Bus Company

6.8.3 It is proposed that monthly meetings will be held with contractors and designers to ensure that the project is on target and stakeholders are kept up to date.

6.8.4 In addition, an exhibition is planned in order to combine the 3 Local Authorities, SBC, RBWM and Buckinghamshire County Council schemes.

RBWM

6.8.5 RBWM have set out the following ways in which stakeholders will be kept involved in the project and managed, where necessary.

- → Lead Member for Highways and Transport and Local Ward Members will be consulted on the proposal and kept informed.
- → Statutory consultees, residents and businesses fronting the scheme will be consulted on the proposal.
- → Utility companies will be engaged prior to works commencing to agree the extent and timing of works.
- → There will be ongoing Liaison with Buckinghamshire County Council and SBC to coordinate works and keep each other appraised of progress.
- → There will be regular progress reports to Thames Valley Berkshire Local Enterprise Partnership.
- → There will be monthly meetings with contractors and designers to ensure that the project is on target and stakeholders (including the Local Cycle Forum, Partnership for the Rejuvenation of Maidenhead (PRoM) and Maidenhead Town Partnership) are kept up to date.

7 SUMMARY AND CONCLUSIONS

7.1 SUMMARY

7.1.1 This Business Case report has been prepared in accordance with the relevant DfT guidance to review and appraise a package of proposals to improve conditions for cyclists along the A4 corridor between Slough and Maidenhead.

7.1.2 The Business Case has taken a five case approach to ensure that all aspects of the scheme proposals have been considered to an appropriate level of detail, proportionate to the scale of the project. The five separate cases presented in this report are:

- → The Strategic Case
- → The Economic Case
- → The Financial Case
- → The Commercial Case
- → The Management Case

7.1.3 The **Strategic Case** has set out SBC's and RBWM's aspirations for the scheme in relation to cycling and sustainable travel and how they fit with the guiding policy aims. In addition the options development process has been reviewed to demonstrate that the proposed scheme has bene fully considered to ensure that the optimum proposal is taken forward.

7.1.4 The **Economic Case** has presented the forecast value for money of the scheme in the form of a Benefit Cost Ratio (BCR) and based on changes in cycle demand and journey enhancements resulting from the scheme.

7.1.5 The forecasted positive change in commuter cycling demand is summarised in the table below.

Table 7-1: Forecast Change in Commuter Cycling Demand Summary

Route Section	Base Commuter Cyclist Numbers (One-Way Trips per Day)	Forecast New Commuter Cyclist Demand (One-Way Trips per Day)	Increase in Commuter Cycle Trips (One-Way Trips per Day)	% Change
SBC	51	91	40	+78%
RBWM	63	86	23	+37%
Combined SBC and RBWM	99	165	66	+60%

7.1.31 The cycle scheme has been show to deliver a positive economic case with forecast net present value of £ if both schemes are delivered together. This benefit is comprised largely of health benefits through increased active travel amongst the city's population, as well as wider economic benefits (the gross cycling product).

7.1.32 Given forecast costs of £1.46m (2010 prices), the combined scheme is expected to achieve a BCR of 1.73, as shown in the table below.

Table 7-2: BCR Summary

Route Section	BCR (inc. Wider Economic Benefit)
SBC	1.59
RBWM	1.18
Combined SBC and RBWM	1.73

7.1.42 Additional assessments that assume the application of a 15% Optimism Bias have been undertaken to provide some indication of the effect that any cost escalation may have on the rationale for the scheme, although this needs to be reviewed in view of the informed basis on which the construction costs were derived, in order to minimise the risk of double counting of the costs.

7.1.43 Additional sensitivity tests have also been carried out to investigate the sensitivity of the scheme to variations in the proposed assumptions that are used as inputs into the evaluation criteria.

7.1.44 The **Financial Case** has set out the sources of funding for both the SBC and RBWM sections for the scheme. In addition the Financial Case identifies financial risks involved and associated mitigation procedures.

7.1.45 The **Commercial Case** has detailed the procurement strategies devised by both SBC and RBWM for the project. This includes procedures to reduce contractual risk for the construction phase of the project.

7.1.46 The **Management Case** has detailed the institutional arrangements around how the scheme will be delivered by SBC and RBWM, including the project programme and resourcing plan. This aspect of the Business Case also includes a risk and mitigation review and a stakeholder management strategy.

7.2 CONCLUSIONS

7.2.1 The Business Case has identified that both the SBC and RBWM could be delivered independently and also that positive outcomes for cyclists would be expected to be achieved in line with the scheme objectives.

7.2.2 The maximum benefit and investment returns would be achieved by delivering both sections of the scheme together. It is also anticipated that further benefits would arise from the delivery of the adjoining scheme, within the Buckinghamshire County Council area, which is subject to a separate design and funding process.

7.2.3 It is considered that not progressing with the scheme would give rise to negligible change in cycling levels for journeys along the A4 corridor. Therefore, the proposed scheme is necessary to realise the strategic project objectives.

Appendix I

A4 Corridor Cycle Scheme Business Case Addendum Note

A4 CORRIDOR CYCLE SCHEME BUSINESS CASE ADDENDUM NOTE

DATE: 09 November 2015

A draft Full Business Case (FBC) report for the A4 Corridor Cycle Scheme proposals was prepared by WSP | Parsons Brinkerhoff (WSP|PB) and submitted to WYG (on behalf of Thames Valley Berkshire Local Enterprise Partnership (TVBLEP)) for review in September 2015. WSP|PB has subsequently received WYG's *Business Case Independent Assessment* report (RT-A087383-12, dated 26 October 2015).

The WYG report states that, subject to clarification of a number of points and the provision of additional supporting information, it is recommended that the Business Case be signed off for approval.

The Full Business Case has been updated to provide WYG with the requested level of information necessary the assessment to be completed. The final Business Case report reference is 70013019-WSP-BC-A02, dated 9th November 2015.

This Addendum note has been prepared and appended to the Full Business Case to outline where relevant section/s of the document have been updated to address each of the specifics point raised by WYG. The table references where additional information was requested by WYG, along with the corresponding response in the current Full Business Case. This cross-referenced information should ease the process of auditing.

Business Case Review Summary Table

Issue identified by WYG	Reference in WYG review (RT-A087383-12) where issue is raised	Location in current Full Business Case (70013019-WSP-BC-A02) where issue is addressed
Options Assessment Report (OAR)		
"The OAR does not define the future without scheme."	Paras 3.1.5 and 3.1.8	Clarified in paras 3.2.5 and 3.2.6.
The Strategic Case		
"The only subsection issues within the DfT's *The Transport Business Cases* guidance which haven't been covered are Constraints and Inter-dependencies."	Para 3.3.2	Covered under Section 2.5.

The Economic Case		
"More detail is required regarding the Options Appraised."	Paras 3.3.4 and 3.3.5	Covered under Section 3.2.
"The report should be updated to include the AST within the main body or as an Appendix."	Paras 3.3.6 and 3.3.7	Outlined in Section 3.15 and presented in Appendix V.
The Financial Case		
"The whole life costs should be considered."	Paras 3.3.12 and 3.3.13	Covered in para 4.2.7.
The Commercial Case		
"No outline of the approach has been included."	Para 3.3.15	Covered in Section 5.2.
"Payment Mechanisms, Pricing Framework and Charging Mechanisms, Contract Length and Contract Management issues as suggested in the DfT guidance are not detailed."	Para 3.3.16	Payment Mechanisms, Pricing Framework and Charging Mechanisms covered in Section 5.4. Contract Length and Contract Management covered in Section 5.6.
The Management Case		
"No outline of the approach taken to assess if the project is deliverable is provided."	Para 3.3.18	Covered in para 6.1.2.
"There is no detail regarding previous successfully delivered similar projects."	Para 3.3.19	Covered in Section 6.2.
"It would be useful to have supporting text to explain continuity between those developing the contract and those who will manage the scheme."	Para 3.3.21	Covered in Section 6.5.
Summary		
"The Business Case, OAR and ASR do not really investigate the implications of not providing a scheme."	Section 4.5	Discussed in para 7.2.3

In addition to the issues identified and addressed in the table above, WYG also raised the lack of supporting information for the Buckinghamshire section of the proposed scheme as an "*area of concern*".

As presented in the Full Business Case, the Buckinghamshire section of the scheme is outwith the scope of the Full Business Case required for TVBLEP. However, the Buckinghamshire section is considered within the overall scheme review, as the implementation of the Buckinghamshire scheme section will deliver additional benefits to cyclists using both the SBC and RBWM sections of the scheme. It is considered that sufficient information has therefore been submitted in relation to this specific submission to the TVBLEP.

As demonstrated within the Business Case, both the SBC and RBWM scheme sections would provide positive net present values if undertaken independently, with greater returns predicted if delivered in combination. Whilst the successful delivery either the SBC or RBWM sections of the overall scheme is not dependent on the parallel delivery of the Buckinghamshire section, it is evident that further benefit would accrue and that some further confidence can be taken that the case for the proposal would be further reinforced.

It is also noted that a separate Business Case was not deemed to be required to support a successful bid made to the DfT through the Local Growth Fund for the Buckinghamshire section of the scheme. Taken together, both independent submissions can be taken as further support for the principles of introducing these improvements.

Based on the above information and updated information provided in the Full Business Case, it is considered that sufficient information has been provided to enable WYG to sign off the Full Business Case.

Appendix II

Options Assessment Report and Appraisal Specification Report

700013019-WSP-OAR A02

A4 CORRIDOR CYCLE SCHEME

OPTION ASSESSMENT REPORT

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

AUGUST 2015

WSP | PARSONS BRINCKERHOFF

A4 CORRIDOR CYCLE SCHEME

OPTION ASSESSMENT REPORT

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

70013019-WSP-OAR

Project no: 70013019
Date: August 2015

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QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Draft Report Outline			
Date	20/7/2015	31/08/2015		
Prepared by	Chris Harris	Chris Harris		
Signature				
Checked by		Kevin Kay		
Signature				
Authorised by		Kevin Kay		
Signature				
Project number		700013019-WSP-OAR A02		
Report number				
File reference		70013019		

PROJECT TEAM

CLIENT

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

WSP | PARSONS BRINKERHOFF

Elliott Chua	Project Manager
Craig Drennan	Project Director
Chris Harris	Project Engineer

TABLE OF CONTENTS

1 INTRODUCTION

1.1.1 This Option Assessment Report (OAR) describes the work undertaken to identify a range of proposals that could address the requirement to improve conditions for cyclists along the A4 corridor between Slough and Maidenhead. The outcomes of the OAR will in incorporated into the Appraisal Specification Report (ASR) and full Business Case for the scheme.

1.1.2 The report covers the sections of the overall scheme which lie within Slough Borough Council (SBC) and The Royal Borough of Windsor and Maidenhead (RBWM) administrative boundaries.

- The section of the overall scheme within SBC's control will run along the A4 between Burnham Lane and the Huntercombe Lane junction.
- The section of the overall scheme within RBWM's control will run along the A4 from Maidenhead Bridge and then continue toward the centre of Maidenhead along Bridge Street and High Street.

1.1.3 The report excludes the section of the route which lies within the South Bucks District Council (SBDC) administrative boundary (A4 between Huntercombe Lane and Maidenhead Bridge). The design process, business case and funding framework for that section of the overall scheme is subject to a separate assessment.

1.1.4 This report outlines the process by which the project has been approached and covers the sifting of the options which has been undertaken in order to determine the optimum option that would best achieve the intervention-specific objectives.

1.1.5 The structure of the OAR is as follows:

→ Understanding the Current Situation
→ Understanding the Future Situation
→ The Need for Interventions and Scheme Objectives
→ Defining the Geographic Study Area
→ Generating Initial Options
→ Option Sifting
→ Stakeholder Strategy Review
→ Option Finalisation
→ Summary and Conclusions

2 UNDERSTANDING THE CURRENT SITUATION

2.1 INTRODUCTION

2.1.1 This section sets out the existing conditions and main issues affecting the study route which have led to this scheme being brought forward.

2.1.2 The aspects considered to be of relevance are:

- → existing infrastructure conditions;
- → cycling travel mode share;
- → cycling journey patterns; and
- → accident and road safety records.

2.2 EXISTING INFRASTRUCTURE CONDITIONS

SBC SECTION

2.2.1 The majority of the A4 corridor along the SBC section of the scheme comprises a single carriageway road with two traffic lanes operating in both directions. Additional traffic lanes are gained at the approach to the major junctions that are present along its length.

2.2.2 Traffic data provided by SBC indicates that the peak hourly two-way traffic flows on this section of the A4 are approximately 1500 vehicles per hour. The vehicle average speed is 30 miles per hour.

2.2.3 The route section includes a four-arm signalised junction at the intersection between the A4 Bath Road, Station Road and Elmshott Lane. There is also a large roundabout (60 metre ICD) at the A4 Bath Road, Goldsworthy Lane and Huntercombe Spur (for the M4 Junction 7).

2.2.4 There are no dedicated on-carriageway cycling facilities on this section of the scheme route, including the absence of advisory / mandatory cycle lanes or advanced stop lines on the approach arms at the signalised crossing.

2.2.5 The existing footways are not signed or marked for shared pedestrian/cycling use. However, cycle count data indicates that currently 85% of cyclists use the footways adjacent to the carriageway to travel along this section of the A4 rather than using the carriageway. This suggests a reluctance by cyclists for using the carriageway, which may reflective of the traffic conditions along the route.

RBWM SECTION

2.2.6 The majority of the A4 along the RBWM section of the scheme comprises a single carriageway road with one traffic lane operating in both directions. Additional traffic lanes are gained at the approach arms of the A4094 roundabout. The A4 becomes a two-lane dual carriageway road to the west of Moorbridge Road.

2.2.7 There are no dedicated on-carriageway cycling facilities on this section of the scheme route, and no advisory / mandatory cycle lanes are present.

2.2.8 The route diverts from the A4 at the Moorbridge Road and connects onto High Street via Moorbridge Road and Bridge Street.

2.2.9 Moorbridge Road and Bridge Street comprise single carriageway roads flanked by footways, with advanced stop lines provided at the Bridge Street / Forlease Road / Moorbridge Road signalised junction. There is short section of advisory on-carriageway cycle lane on Moorbridge Road facilitating access to the advanced stop line cycle box.

2.2.10 There is an existing cycling contraflow scheme being progressed by RBWM which connects High Street to the west end of Bridge Street. This contraflow scheme falls outside of the scope for the A4 Cycle Scheme Business Case.

2.3 CYCLING JOURNEY PATTERNS

2.3.1 Cycling patterns will be defined by the specific purposes for which journeys are carried out:

- → Travel patterns for commuter cycling has been informed by a review of 2011 Census Origin-Destination travel to work data. This is provides an indication of the residential and employment catchment areas within which people's travel-making decision would be affected by the existing route. The potential to positively address patterns of cycling are discussed further in Section 5 and, in doing so, the identified catchments will be used to define the extent of the appraisal study area and assessment zones.
- → Non-commuter and leisure cycling is an important consideration for the scheme as it provides connections to leisure cycling routes including the Jubilee River Cycle Route.

2.4 EXISTING CYCLE USE

2.4.1 SBC and RBWM have provided supporting cycling reports which indicates that there is a positive year-on-year trend of increased cycling use in both unitary authority areas.

2.4.2 Cycling data for RBWM which has been disaggregated by gender indicates that it is heavily skewed towards male cyclists. While there could be a number of reasons for this, research published the TfL[1] indicates that across a sample population, when compared to male cyclists, female cyclists are less inclined to cycle on routes which have high traffic volumes and / or there is no or limited separation from motorised traffic.

2.4.3 Data provided by RBWM comparing Maidenhead to Windsor, indicates that Windsor has a higher number of active cyclists than Maidenhead; this is despite Windsor having a significantly smaller population size. Therefore, the opportunity exists to target further improvements where this can best deliver positive outcomes in seeking to achieve an increase in cycling levels.

2.5 EXISTING ACCIDENT AND ROAD SAFETY

2.5.1 A review of personal injury accident (PIA) data published for the years 2009 to 2013 indicates that at least one PIA per year was recorded on involving cyclists on both Slough and Maidenhead sections. Whilst this is not uncommon for such a major road corridor, it is also the case that 5 events involved pedal cyclists on the on SBC section of A4 corridor and involved pedal cyclists on the RBWM section of A4 corridor between 2009 and 2013.

2.6 EXISTING CONDITIONS SUMMARY

2.6.1 A review of the existing conditions indicates that there are opportunities to enhance the level of utility for cycling provided by the road infrastructure. The data suggests that measures to improve the existing infrastructure should focus on improving road safety conditions for cyclists and address the different levels of inequality that exist, both in terms of the balance of road space attributed to cyclists and apparent levels of gender bias among cycle users.

[1] Transport for London (June 2012). *Cycle Route Choice.*

3 UNDERSTANDING THE FUTURE SITUATION

3.1 PROPOSED SCHEME

3.1.1 The proposed scheme seeks to provide a convenient and safer cycle route between Slough and Maidenhead along the A4 corridor.

3.1.2 The scheme, which will link to a separate scheme being promoted through Thames Valley Buckinghamshire LEP covering an adjacent section, will improve provide cycle connectivity between the following locations:

- → Bishops Centre Retail Park;
- → Slough Trading Estate;
- → Burnham and Taplow stations; and
- → Adjacent residential areas.

3.1.3 The cycle infrastructure will be used by commuter and other utilitarian cyclists, as well as for leisure trips, connecting to National Cycle Route NCN 61 via the Jubilee River, Cliveden and Burnham Beeches.

3.1.4 The scheme will for the most part comprise the provision of segregated pedestrian and cycle ways adjacent to the A4 carriageway. At localised sections the cycle route will make use of minor streets which run parallel to the A4, allowing for an additional level of separation from the motorised traffic on the mainline A4 carriageway.

3.2 FUTURE SCENARIOS

The sections of A4 Corridor Cycle scheme will be delivered separately by SBC and RBWM, in addition to the scheme section being taken forward by SBDC through Buckinghamshire County Council (BCC), which is being dealt with independently of the scheme included in the Business Case.

Based on the above, a number of implementation outcomes are possible. Relevant to this study, the following future scenarios are:

1. The SBC section of the scheme only is taken forward to completion;
2. The RBWM section of the scheme only is taken forward to completion;
3. The SBC and RBWM sections are taken forward to completion but the SBDC section is not taken forward;
4. All three sections (SBC, RBWM & SBDC) are taken forward to completion;

5. One of either the SBC or RBWM sections is taken forward to completion along with the SBDC section.

4 THE NEED FOR INTERVENTIONS AND SCHEME OBJECTIVES

4.1 INTRODUCTION

4.1.1 This section documents the rationale that has supported the promotion of the overall scheme, including the origins of the scheme objectives.

4.2 PLANNING POLICY & GUIDANCE

4.2.1 A review of the following policy documents has been undertaken as part of this report:

- → National Planning Policy Framework (NPPF)
- → SBC Local Development Framework Core Strategy 2006 to 2026;
- → Slough Local Plan – retained policies
- → RBWM Local Transport Plan
- → RBWM Maidenhead Town Centre Area Action Plan
- → RBWM Local Plan

4.2.2 The UK Government policy set out in NPPF clearly indicates that a hierarchy should be adopted in the treatment of different modes of travel. Where possible, it states that greater priority should be given to walking and cycling over private motorised transport modes. The NPPF also requires local authorities to identify routes where infrastructure improvements could be made to widen travel choice options and support sustainable patterns of economic growth.

4.2.3 The SBC and RBWM planning policies are consistent with those set out at the national level, by stating the importance of increasing cycling levels and reducing the need for people to undertake journeys by private car.

4.2.4 The Maidenhead Town Centre Area Action Plan (AAP) also sets out specific policies to improve local accessibility, including Policy MTC 14 which includes a requirement to improve access to the Town Centre for cyclists.

4.2.5 The AAP also identifies the link to the Town Centre from the A4 as a key link to be enhanced to support accessibility and regeneration objectives.

4.3 PROJECT OBJECTIVES

4.3.1 The A4 corridor is a key strategic transport multi-modal road providing the most direct access between the Slough and Maidenhead conurbations.

4.3.2 As identified in Section 2, there is an opportunity to increase levels of cycling participation through improved facilities along this corridor. Therefore, the principal project objective for the scheme is:

> The provision of a safer and more convenient, direct cycle route between Slough and Maidenhead along the A4 corridor.

4.3.3 The following SMART (Specific, Measurable, Attainable, Relevant and Time-bound) objectives are drawn from discussions with the project team and existing project development work.

- → Encourage a mode shift towards cycling for a range of journey purposes
  - o Work.
  - o Education
  - o Leisure
- → Reduce the necessity to undertake journeys by private motor vehicle.
- → Address the existing gender inequality in cycle use.
- → Improve perceived cycling amenity on the A4 corridor.
- → Minimise cycling personal injury accidents on the A4 corridor.

4.3.4 Each of the above objective outcomes can be measured following the implementation of the scheme to determine the extent to which the scheme has met each objective and whether further measures are necessary to achieve a more positive outcome.

5 DEFINING THE GEOGRAPHIC STUDY AREA

5.1 INTRODUCTION

5.1.1 This section sets out the geographic area selected to inform the economic appraisal section of the Business Case.

5.2 ORIGIN-DESTINATION DATA

5.2.1 The 2011 Census Origin-Destination travel to work data has been be used to help fix the geographical extent of the study area and define the assessment zones. This data reveals the areas between which people are currently travelling by cycle to access employment opportunities.

5.2.2 Across the study area, data from the Middle Special Output Areas (MSOAs) has been used to evidence the origins and destinations which would be influenced by the A4 corridor scheme.

5.3 ADDITIONAL CYCLE JOURNEY INFORMATION

5.3.1 As discussed in Section 2 and 3, non-commuter and leisure cycling are defined by the proposals to connect with other leisure cycling routes including the Jubilee River Cycle Route.

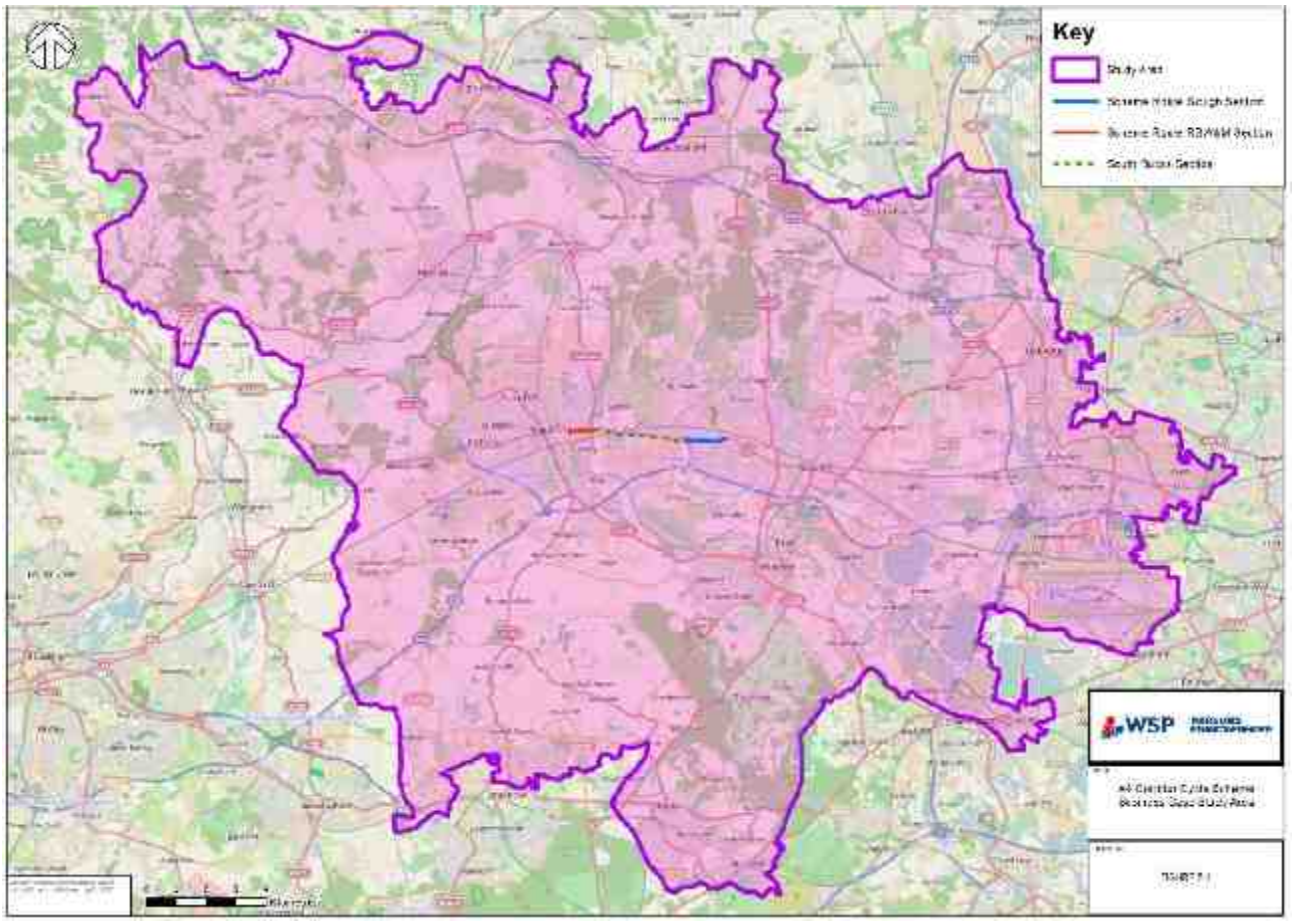
5.3.2 Discussions with RBWM's Principal Transport Policy Officer (Oliver Gordon) have help to identify that areas to the north of Maidenhead including Marlow and Bourne End would also have an influence on the study area as there is a reportedly well-used leisure cycling loop between Maidenhead and these areas via the riverside cycle paths.

5.3.3 Third party evidence of the use of this cycle loop route is supported by a preliminary review of the 'Strava Heatmap' tool which records journey routes of cyclists employing the Strava mobile application on their personal devices. The Heatmap suggests shows that the loop is a favoured route for cyclists connecting onto the route via the Maidenhead section of the study route.

5.4 FINALISED STUDY AREA

5.4.1 The review of the Origin Destination data, supported by ancillary information, has led to a well-defined study area for the scheme to being defined for this project. This study area has been constituted by the aggregation of MSOAs to ensure that catchment data for both commuter and non-commuter trips can be easily incorporated into the full Business Case and the Economic Case, in particular.

5.4.2 The finalised catchment area is presented in Figure 5-1.



6 OPTION DEVELOPMENT PROCESS

6.1 INTRODUCTION

6.1.1 This section sets out the process by which options for the scheme were derived and developed by both SBC and RBWM. The processes undertaken by each authority is presented separately and the following aspects of the options development process are considered:

- → Generating Initial Options
- → Option Sifting
- → Stakeholder Consultation
- → Option Finalisation

6.2 SBC SECTION

GENERATING INITIAL OPTIONS

6.2.1 An internal review of the study route by SBC officers produced the initial scheme options of providing a segregated on-carriageway cycle route or an off-carriageway cycle route.

OPTION SIFTING

6.2.2 A site visit was undertaken by SBC officers to determine the feasibility of implementing a segregated on-carriageway cycle lane on the A4. The factors which were considered are summarised below.

6.2.3 This study section of the A4 has a speed limit of 40mph and 2 traffic lanes operating on both directions. Therefore the road carries high volumes of motorised traffic. Furthermore, the A4 is also used as a diversion route if any incidents occur on the M4 motorway, resulting in an occasional significant increase in motorised traffic above the typical baseline levels.

6.2.4 In addition to the above, it was noted that the A4 serves as a major distributor road for traffic leaving the M4 at Junction 7 travelling towards the Slough Trading Estate, as well as towards Taplow and Maidenhead.

6.2.5 The result of this review was that implementing an on-carriageway cycle facility on this section A4 would lead to potential conflicts with other infrastructure priorities on this key transport corridor. There would therefore be greater benefits to all users in promoting an off-carriageway cycling facility.

6.2.6 Following the outcome of the preliminary options assessment, the decision was made to focus on the provision of an off-carriageway cycling facility, with sub-options of siting route along the north or south side of the A4.

6.2.7 An on-site review of the Huntercombe Spur roundabout identified the southern section of the roundabout as a potential pinch point. Part of the road is subject to a national speed limit that changes to a 40mph at the roundabout and it was identified that the existing speed limits and uncontrolled crossing point were not particularly suited tosafe crossing by cyclists.

OPTION FINALISATION

6.2.8 In order to deliver maximum benefit to cyclist, and in view of the existing conditions on the A4, it was considered that the provision of an off-carriageway cycle route, running along the north side of the A4 is the preferred option to be taken forward to the design stage.

6.2.9 The supporting notes supporting the decisions made by the design team when taking the finalised option through the preliminary design process are presented in Appendix A.

STAKEHOLDER CONSULTATION

6.2.10 SBC have confirmed that following the production of the preferred design option a consultation exercise will be undertaken using an on-line survey questionnaire portal. In addition, letters will also be sent to businesses and residences fronting the A4 informing them about the proposed scheme.

6.2.11 Consultation will also be undertaken by SBC with the Local Access Forum and statutory consultees to present the proposed design option and record their feedback.

6.3 RBWM SECTION

GENERATING INITIAL OPTIONS

6.3.1 RBWM held a workshop with the Local Cycle Forum on 6th November 2013 to discuss options for improving cycling infrastructure within Maidenhead. The meeting briefing note is presented in Appendix B.

6.3.2 The outcomes of this consultation process led to an assessment of proposed route options. Those routes which deviated from the scheme objectives focusing on the interurban nature of the A4 were not considered for inclusion as options. Following this workshop, the focus of investment has been on the development of a scheme for the A4, as it presents the most direct and effective route option.

OPTION SIFTING & STAKEHOLDER CONSULTATION

6.3.3 RBWM developed and reviewed a number of options for improving cycling infrastructure associated with the A4, these included:

1. Improvement of the existing route via Horseguards Drive and Guards Club Road.
2. Providing single-direction cycle routes along each side of the A4.
3. Providing a bi-directional cycle route along the south side of the A4.

6.3.4 Option 1 was effectively discounted since Horseguards Drive is designated as a private road and residents are opposed to intensification of use by cyclists and associated liabilities. This is also the least direct option and is therefore less attractive to cyclists.

6.3.5 Option 2 was found to have a number of problems inherent to providing a route along the northern side of the A4, including:

- → The need to cross the A4 via the Moorbridge Road subway, which is too narrow for shared use by pedestrians and cyclists.
- → There are bus stops on the north side where limitations on the extent of available highway land make it difficult to achieve satisfactory clearances. It was also considered that buses could potentially mask cyclists from motorists turning left at the Ray Park Avenue junction.
- → There are many junctions and accesses on the northern side, which would bring cyclists into potential conflict with motorists turning in and out. There is also insufficient space to align the cycle route away from the main road to be able to give cyclists sufficient priority at side roads.
- → The cycle lane being positioned inside the left turn lane for traffic on the approach to Maidenhead Bridge could leave cyclists vulnerable to left hook collisions.

6.3.6 Option 3 does not require use of subways to cross the A4, there are fewer interactions with bus stops, there are fewer private accesses, and would be subject less potential conflict at junctions.

6.3.7 Option 3 was therefore presented to the Local Cycle Forum for their review in March 2014. However, this option was subject to extensive commentary by the Local Cycle Forum which necessitated a second workshop held on 18th March 2014 to review further options.

6.3.8 The outcome of this second workshop was that segregated cycle lanes on both sides of the carriageway was not considered by the Forum to be feasible as it would reduce the available cycle lane widths to 1.5m, which would not permit overtaking by other cyclists.

6.3.9 The preferred option was to progress with on-carriageway cycle lanes on both sides of the A4. A summary of the second workshop is presented in Appendix B.

OPTION FINALISATION

6.3.10 The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. Additional measures are included at key locations including bus stops, to prevent conflicts between cyclists and other road users.

7 SUMMARY AND CONCLUSIONS

7.1 OPTIONS ASSESSMENT SUMMARY

7.1.1 Both SBC and RBWM have engaged with consultative process on the specification for design of the cycle improvement scheme, which has involved an options generation, sifting and finalisation stages. Based on this, finalised options are being taken forward to the design stage.

7.1.2 Based on the finalised options, Options Assessment Summary Tables (see Tables 7-1 to 7-5) have been produced to review all the potential assessment areas. An initial appraisal has been undertaken to determine the potential level of impact of the proposed option on each of the assessment areas.

7.1.3 Specific assessment areas where no, or negligible effect is predicted have been scoped out from further assessment in the ASR and the full Business Case appraisal.

7.1.4 The Options Assessment Summary Tables are presented below.

7.2 CONCLUSIONS

7.2.1 The options assessment process undertaken by both authorities has ensured that the finalised design options represent the most viable option that best meets the scheme objectives and complies with the national and local policy.

OPTION ASSESSMENT SUMMARY TABLES

Table 7-1: Option Assessment Summary (Strategic Fit)

Assessment Areas	Type of analysis	Key Input Data	Outcomes	Predicted Impact
Transport and Spatial Strategy and local objectives fit				
National Policy Alignment	Review of alignment against objectives evidenced by the other areas of assessment carried out.	NPPF: National Planning Policy Framework	Table of alignment between policy and scheme proposals to be included in Business Case.	N/A
Local Policy Alignment		SBC LDF Core Strategy 2006 to 2026; Slough Local Plan – retained policies RBWM Local Transport Plan RBWM Maidenhead Town Centre Area Action Plan RBWM Local Plan	Table of alignment between policy and scheme proposals to be included in Business Case.	N/A
Meeting Intervention Objectives				
Scheme objectives fit	Review of option performance against objectives	Scheme Objectives	Table of alignment of proposed options with objectives to be included in Business Case.	N/A

Table 7-2: Option Assessment Summary (Value for Money – Economic Impacts)

Assessment Areas	Type of analysis	Key Input Data	Format of Outcomes	Predicted Impact
Business users and transport providers	Business Users: Review of changes in journey time and cost. Transport providers: Review of changes in revenue to transport providers.	Option design and specification. TAG Data Book	Commentary on overall impact	Both SBC and RBWM options have been developed to minimise adverse impacts on existing road users including businesses and transport providers.
Reliability	A qualitative assessment of the impact of the option on reliability.	Estimated change in journey time	Commentary on overall impacts and qualitative assessment ('Neutral', 'Beneficial', 'Adverse')	The proposed scheme is predicted to have a neutral impact on journey times for motorised transport as they are not predicted to significantly affect existing junction or link capacities. The proposed scheme is predicted to have a beneficial effect on journey time reliability for cyclists as they will be separated from other traffic modes whilst maintaining directness of route.
Regeneration	Qualitative estimation of the change in accessibility to jobs as a result of the transport intervention.	Expected change in the number of residents in a regeneration area in employment from wider planning documents and indicative changes in journey times.	Commentary on impact of option on affordability. Qualitative Assessment: None, Slight, Moderate, Large scale.	Slight benefit - The proposed RBWM section of the scheme is linked to the town centre improvement strategy.
Wider Impacts	Qualitative estimation of potential change in cycling levels as a result of the scheme.	Estimate of Gross Cycling Product based on LSE data of £230 per year per additional cyclist. Estimated change in the number of cyclists.	Qualitative assessment using: None, Slight, Moderate, Large scale.	Qualitative assessment indicates a slight change due to existing high levels of on-footway cycling. Quantitative results will be presented in the Business Case.

Table 7-3: Option Assessment Summary (Environmental Impacts)

Assessment Areas	Type of analysis	Key Input Data	Outcomes	Predicted Impact
Noise	Desktop identification of likelihood and potential severity of impact, given nature of intervention option.	Location and numbers of receptors or proxies (e.g. population density). Traffic flows. Option design and specification.	Key Impacts: Commentary on overall impacts.	Neutral - change in traffic flow predicted to be less than 25%; and change in percentage of heavy goods vehicles would be less than 20%; and change in speed would be less than 10 kph.
Air quality	Desktop identification of likelihood and potential severity of impact, given nature of intervention option.	Option design and specification.	Key Impacts: Commentary on overall impacts.	Neutral – change in AADT is predicted to be less than 700 vehicles and change in speed is less than 5kph.
Greenhouse gases	Economic benefit analysis	Change in car kilometres as a result of scheme	Monetary Benefit / Cost	Positive – monetary benefit
Landscape	Desktop identification of likelihood, potential severity and incremental impact, given nature of intervention option.	Option design and specification.	Key Impacts: Commentary on overall impacts.	Impacts predicted to be negligible due to proposed scale of infrastructure and minimal signage strategy.
Townscape	Desktop identification of likelihood, potential severity and incremental impact, given nature of intervention option.	Option design and specification.	Key Impacts: Commentary on impacts on the coherence and distinctiveness of townscape resources.	Adverse impacts predicted to be negligible due to proposed scale of infrastructure and minimal signage strategy.
Historic Environment	Desktop identification of likelihood, potential severity and incremental impact, given nature of intervention option.	Option design and specification. Local environmental/planning information and data.	Key Impacts: Commentary on overall impacts.	It is noted that Maidenhead Bridge is Grade 1 listed (1117619). There are Grade 2 listed milestones at Bath Road / Station Road junction (1321974) and on Morebridge Road (1319372) – by bridge parapet. Current proposals are not predicted to impact on these historic sites.
Biodiversity	Desktop identification of likelihood, potential severity and incremental impact, given nature of intervention option.	Option design and specification. Local environmental/planning information and data.	Key Impacts: Commentary on overall impacts.	All infrastructure will be provided within the extent of adoptable highway. No significant biodiversity impacts are predicted to result from the scheme.
Water environment	Desktop identification of likelihood, potential severity and incremental impact, given nature of intervention option.	Option design and specification. Local environmental/planning information and data.	Key Impacts: Commentary on overall impacts.	There is predicted to be no change to the highway drainage requirements or to the means of discharge, and there would be negligible change to the volume and quality discharged.

Table 7-4: Option Assessment Summary (Impact on Society)

Assessment Areas	Type of analysis	Key Input Data	Outcomes	Predicted Impact
Non-business users	A qualitative assessment of the impact of the option on journey time.	Estimated change in journey time	Commentary on overall impacts and qualitative assessment ('Neutral', 'Beneficial', 'Adverse')	There is predicted to be a beneficial impact on non-business users, particularly through improved opportunities for leisure cycling which the scheme will create.
Physical activity	Identification of whether intervention is likely to generate significant additional numbers cycling.	Option description/characteristics. Catchment analysis.	Key Impacts: Commentary on overall impacts. Qualitative assessment of potential change based on measures proposed, length of route improvements and catchment population.	There is predicted to be a beneficial impact on physical through creating new opportunities for people to cycle; particularly to cycle to work.
Journey quality	Qualitative assessment of changes to the end to end journey experience of transport users (considering traveller care; travellers' views; and traveller stress).	Option description/characteristics. Catchment analysis and existing cycle use surveys. Review of existing accident data.	Key Impacts: Commentary on overall impacts. Qualitative Assessment: Neutral, Beneficial, Adverse.	There is predicted to be a beneficial impact on journey quality by providing a more coherent and direct route for cyclists with a greater level of separation from motorised vehicle traffic.
Accidents	Review of likelihood of options addressing any existing accident problems.	KSI accident statistics for highway network for area relevant to intervention options.	Key Impacts: Commentary on overall impacts. Qualitative Assessment: Neutral, Beneficial, Adverse.	There is predicted to be a beneficial impact on accident rates by providing a greater level of separation for cyclists from motorised vehicle traffic.
Security	Reviewing of design/characteristics to ensure no significant security risk will be introduced.	Option description/characteristics.	Commentary on overall impacts.	There is predicted to be no change to the likely incidence of crime or fear of crime related to road users (including non-motorised).
Access to services	Assessment of level of impact on people accessing the transport system, especially those households without a car.	Option description/characteristics. Walking catchment assessment, only if required.	Qualitative Assessment	There is predicted to be no change in the routes served by the public transport system or accessibility to services.
Affordability	Affordability impacts need only be identified where intervention has been designed to address affordability.	Option description/characteristics.	Commentary on overall impacts.	There is no change in fares / travel costs to users.
Severance	Judgmental assessment of the impact of the transport intervention on severance.	Option description/characteristics.	Commentary on overall impacts.	There is predicted to be a slight positive change in severance for cyclists due to the implementation of the scheme, due to the proposed improvements in the level of access for cyclists.

Table 7-5: Option Assessment Summary (Public Accounts)

Assessment Areas	Type of analysis	Key Input Data	Outcomes	Predicted Impact
Cost to broad transport budget	Review of capital and operating/maintenance costs based on application of standard unit rates.	Option design and specification characteristics. Estimated costs. Inflation and optimism bias rates.	Commentary on overall impacts. Monetary Assessment to be presented in full Business Case.	Costs will be related to the project design and construction as well as any additional maintenance requirements for the life cycle of the scheme.
Indirect tax revenues	Estimate of indirect tax and revenue impacts based on reduction in car use.	Option design and specification characteristics. Estimated reduction in car kilometres.	Commentary on overall impacts. Monetary Assessment to be presented in full Business Case.	Indirect tax revenues are predicted to reduce based on predicted reduction in the level of car use caused by people choosing to cycle rather than travel by car or other motorised mode of transport which runs on a taxable fuel source.

Appendix A

SBC SECTION - PRELIMINARY DESIGN DEVELOPMENT NOTES

PRELIMINARY DESIGN DEVELOPMENT NOTES

WSP | PB Design Decisions:

1. Initial concept design was to propose a 3m wide cycle route throughout the design on the northern side of the A4 Bath Road from Huntercombe Lane junction to Burnham Lane junction. 3m could not be achieved everywhere, due to constraints with the extent of the highway boundary.
2. Design considered the introduction of corduroy paving across the full width of the cycle route on the approach to and exit from side road junctions as well as across vehicle crossovers. Client confirmed that there should be no corduroy paving throughout design in order to avoid street cluttering.
3. Tactile paving areas at junction crossing points were designed to occupy width of cycle route as much as possible. This was to accommodate shared use by both cyclists and pedestrians.
4. Dropped kerbs and tactile paving extent at side roads and crossing points are dictated by highway boundary limits. Design has been adjusted as much as possible to accommodate this. Tactile crossing points are within the limits of the highway boundary.
5. The existing traffic island at the southern end of Goldsworthy Lane has been redesigned to accommodate a new traffic island 2.3m wide to improve the ease of cyclists crossing. A 2.5m wide pedestrian island could not be achieved due to the constraints with the vehicular lane widths either side. A typical bicycle is approximately 1.8m long so our design has over-compensated for this.
6. Cycle route crossing point at Kinnaird Close set back from junction mouth for safety reasons.
7. Cycle route crossing point at Westlands Avenue set back from junction mouth for safety reasons. Give way markings and lane markings have been proposed to create a greater awareness to drivers of cyclists crossing.
8. Elephant footprint road markings have been used across the junction mouth of Whittle Parkway and Bath Road to create a greater awareness to drivers of cyclists crossing. Give way road markings have also been proposed upon exiting Whittle Parkway.
9. Proposed traffic signage has been installed on the majority of existing lamp columns to prevent street clutter.
10. Existing traffic signage at certain points has been relocated onto existing lamp columns to prevent street clutter.
11. Existing signage along proposed cycle route have been designed to be relocated to the back of proposed route avoid conflicts between cyclists, pedesrians and street furniture.
12. Traffic island at Burnham Lane widened to accommodate standing cyclists side by side.
13. Service roads carrying proposed cycle route to be converted to a 1 way traffic flows as confirmed by Client. Traffic to enter service road from 466 Bath Road entrance and exit junction outside 430 Bath Road. Hence no entry signs have been incorporated on the design to cater for this.
14. Cycle road markings in both directions have been indicated on design on service roads, to indicate 2 way cycling.

15. Coloured surfacing has been included on design drawings where cycle route crosses junction mouths to create awareness. This is not to be implemented physically on site and is only indicative on design drawings.
16. Locations of existing service covers and street furniture within proposed cycle route have been highlighted on drawings.

Appendix B

RBWM SECTION - OPTION DEVELOPMENT NOTES

CYCLE FORUM 05 March 2014

ITEM: MAIDENHEAD CYCLING WORKSHOP

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1. Purpose of the Report

1.1 This report summarises the outcomes from the workshop that was held on 6th November 2013 to consider cycling issues and proposals for future cycling infrastructure in Maidenhead.

2. Supporting Information

Background

2.1 On 6th November, a workshop was held with members of the Cycle Forum and other key stakeholders to consider:

- The vision, objectives and design principles for improving cycling in Maidenhead
- Existing cycle routes and issues
- Proposals for future cycle routes and parking facilities

2.2 The aim of the workshop was to identify desired cycling outcomes and priorities for investment in cycling infrastructure that will help to achieve this.

Vision, objectives and design principles

2.3 The results from the visioning exercise are reproduced in **Appendix 1**.

2.4 When asked about what they would like Maidenhead to look and feel like from a cycling perspective, the responses were similar across all of the tables:

> *"A leading cycling town, actively encouraging cycling, with more secure cycle parking with CCTV in the town centre and railway station."*
>
> *"Link existing paths into the town centre from all four points – north, south, east and west."*
>
> *"Need for routes into the town centre – key safe corridors."*
>
> *"Needs to feel safe."*

2.5 Several different approaches to providing for cyclists were presented, based on best practice from the UK and Europe:

- Hackney – close roads to motor vehicles, but retain through routes for cyclists, and one way streets with exemptions for cyclists, but few segregated cycle routes.
- Netherlands – fully segregated cycle routes above 20 mph / 2,000 vehicles per day.
- Denmark – painted cycle lanes above 25mph (40km/h); segregation by kerb above 30mph (50km/h); full segregation with a kerb and safety strip above 40mph (70km/h).

2.6 The consensus was that some form of segregation was desirable, with no particular distinction made between the Dutch and Danish approaches. This desire for segregation is supported across the UK (e.g. 'Love London – Go Dutch').

2.7 Other features that were identified as desirable included:

- Contra-flow cycle lanes in one-way streets
- Wayfinding / branding of individual cycle routes
- Shared use of underpasses
- Reduced speed limits on town centre, residential and rural roads
- A radical overhaul of the town centre road network to make it cycle friendly
- Preference for traffic signals over roundabouts, which are hazardous for cyclists
- Advanced stop lines at signal-controlled junctions
- Improved traffic signal phasing to reduce vehicle / cyclist conflict

Existing routes and issues

2.8 Participants were asked to draw on a map, the routes that they currently cycled and to highlight key issues that they would like to see addressed. The results are shown in the plan in **Appendix 2**. Common themes included:

- Cycling to and from north Maidenhead is particularly challenging – there are few dedicated cycle routes or alternatives to the main roads.
- The A4 and A308 are significant barriers to cycling, with roundabouts being particularly hazardous, as evidenced by casualty statistics (see **Appendix 3**).
- There is extensive illegal use of subways by cyclists to avoid the roundabouts.
- There are several short links across Maidenhead that could provide quick wins in terms of creating through routes for cyclists.
- Cyclists dislike shared use footway / cycleways - they result in conflict with pedestrians and require cyclists to repeatedly give way at side roads.
- The town centre road network is poor – cyclists frequently cycle the wrong way down one-way streets because alternative routes are circuitous and unattractive.

Proposed cycle routes

2.9 Participants were then asked to propose new cycle routes and draw these on another map. The results are shown in **Appendix 4**. Suggestions were largely focused in and around the town centre, highlighting the importance of this location and the extent of the short-comings of the road network. Participants were asked to come up with a range of proposals ranging from modest, low-cost measures through to flagship schemes. Suggestions included:

- A safe cycle route between the town centre and the river.
- Signal-controlled surface crossings of the A4 at all key junctions.
- Shared use of the subways under the A4 / A308.
- Improved surface crossings to Maidenhead station.
- A pedestrian / cycle bridge link over the A4 to Kidwells Park.
- Contra-flow cycle lanes on all one-way streets in the town centre.
- Improved two-way cycle access under the Forlease Road bridge.
- A new footbridge / cycle bridge across the River Thames at Ray Mill Island.
- Allow cycling on the Thames Path to Cookham.
- Provide more cycle parking at the station and locations across the town centre.

Next Steps

i. Routes along and across the A4 to be tackled as a priority:

a. Finalise the design for the cycle route between Maidenhead Bridge and the town centre. This needs to be tied in with: the Maidenhead Bridge gateway feature; Stafferton Way Link Road; the Moorbridge Road slip road; and the Waitrose junction improvement scheme.

b. Consider permitting cycling in the Sainsbury's subway for a trial period, with segregation by markings and limited use of barriers at critical locations. This would require changes to the Sainsbury's Walkway Agreement and is dependent upon getting support from other stakeholders such as the Access Advisory Forum.

c. Improve the route from the Magnet across Town Moor, with a replacement pedestrian / cycle bridge across York Stream. Delivery of the scheme would have to be fitted around the Waterways scheme and would be reliant upon progression of the scheme through the Sainsbury's subway / plaza.

ii. Improve the town centre road network:

a. Consider a 20 mph speed limit for all roads contained within the ring road. This will be reviewed as part of the Maidenhead Access and Movement Study, which is currently underway.

b. Consider contra-flow cycle routes on one-way roads within the town centre. Two way cycle movements will be permitted on the eastern section of High Street when this is remodelled as part of The Colonnade re-development. Other routes will be reviewed as part of the Maidenhead Access and Movement Study and in conjunction with planning applications for the various opportunity sites around the town centre.

c. Consider permitting cycling in the northern section of King Street and in the pedestrian link between King Street and West Street. This will be reviewed as part of the Maidenhead Access and Movement Study.

d. Improve the crossing to the rail station. This junction will be reviewed as part of the Broadway Plaza and Maidenhead Station redevelopment schemes.

iii. Consider permitting cycling on the Thames Path to Cookham:

a. Open dialogue with the Thames Path National Trail Authority and consult with local stakeholders. The cycling policy is due to be reconsidered in spring 2014 by the Thames Path Partnership.

iv. Improve cycle parking:

a. Provide additional two-tier cycle parking at Maidenhead Station to increase overall capacity. A scheme has already been designed for the Shoppenhanger's Road side of the station and works have been ordered through First Great Western. The cycle parking will be bolted down and can be reused when the station is redeveloped.

b. Additional cycle parking to be provided at sites within the town centre. This will be considered as part of the Maidenhead Access and Movement Study.

Funding

2.10 There are a number of existing funding sources available as outlined above, which will contribute to the delivery of these schemes, including:

- Local Transport Plan Grant
- Local Sustainable Transport Fund Grant
- S106 developer contributions
- Pinch Point Funding for Stafferton Way Link Road

2.11 In addition, we will seek to maximise opportunities to secure future funding through mechanisms such as:

- Local Growth Fund – part of the council's funding for integrated transport measures is being allocated to the Local Enterprise Partnership from 2015/16. We will seek to secure funds for walking and cycling measures as part of wider packages of measures.
- Developer Funding - There are several major developments coming forward in and around Maidenhead town centre, where contributions could be made to cycling schemes, e.g. Broadway Plaza, Maidenhead Station, etc.
- Central Government Funding – While central government has not indicated that any further capital funding will be made available for transport schemes outside of the LTP Grant, and the Local Growth Fund, we are aware that there is a rising groundswell of support across the UK to allocate funding specifically to cycling. If additional funding is made available, then the packages of schemes that we are developing for Maidenhead and Windsor will provide a sound basis for any bid.

3. Recommendation

3.1 It is recommended that members of the Cycle Forum note the outcomes from the Maidenhead Cycling Workshop and agree the proposed next steps.

Maidenhead Cycling Workshop (6 November 2013)

Table No.	What do you want Maidenhead to look and feel like in cycling terms?	Who do you want to emulate (e.g. Hackney, Netherlands, Denmark)?	What standard of routes do you want and under what circumstances (e.g. unsegregated roads, cycle lanes, physical segregation, etc)?	What features do you want to see in principle (e.g. speed limits, one way exemptions for cyclists, pedestrianized areas, major road crossings, side road / junction treatments)?	Additional Comments
2	• A leading cycling town, actively encouraging cycling, with more secure cycle parking with CCTV in the town centre and railway station. • Thames Valley and British Transport Police attend the Cycle Forum. • Provision should vary for the three main types of cyclists: leisure, city (commuter), and sports.	• The Dutch and Danes. • Leading cycling towns such as Totnes, Oxford, Cambridge, Exeter, Chichester and Reading. • All university towns are cycle friendly as students do not have cars. • European immigrants are more included to cycle. • Young people under 25 mainly cannot afford the insurance to run cars.	• More advanced stop lines with lead-in lanes. • Contra-flow cycle lanes in one-way streets. • Clearer cycle route signs numbered and named (as in Chichester) and marked North, South, East and West. • Cycle lanes alongside main roads and segregated with penalties for motorists who park on them. • Residential roads with 20mph limits do not need segregation. • Off-carriageway cycle paths are the best solution to avoid deaths and injuries to cyclists. • Underpasses should be split between cyclists and pedestrians to allow cyclists to continue mounted. • Wide footways, such as the one above the A4 at Castle Hill could be resurfaced and split for cyclists and pedestrians. • A marked restriction of 10mph on shared paths with pedestrians.	• All residential roads with a default speed limit of 20mph. • All town centre roads including the A4 should have a 30mph speed limit. • All rural roads should have a 40mph speed limit. • Reducing speed limits particularly in residential roads will deter "rat runners". • Speed cushions on difficult straight roads would be good for cyclists. • Town centre access is not cycle friendly and needs radical improvement. • Roundabouts are lethal for cyclists as they can be missed by drivers of vehicles entering. • Traffic signals could be an alternative with advanced stop lines and phased lights allowing cyclists to proceed first.	• More cycle parking is needed at the railway station replacing car parking at the station front. • Only allowing a pick up and dropping zone for short time vehicle loading and unloading. • Road surfaced in the town centre such as West Street going down to the car park are very poor, particularly for cycling. • Entry to Maidenhead from the Jubilee River is cycle path on the Slough side is very poor, particularly over Maidenhead Bridge. • The Green Way entering from Stafferton Way is a much better route for cyclists travelling to Windsor from Maidenhead town centre than the Stafferton Way Link Road. However, a toucan crossing will be needed. • Government support for cycling is increasing strongly, with the APPCG producing the Get Britain Cycling report, which was unanimously supported by Parliament. We feel RBWM are moving in the right direction with full government support.
3	• Roads filled with cyclists rather than cars • Needs to <u>feel</u> safe • Need for routes into the town centre – key safe corridors • Need to cater for 80% who don't currently cycle		• Direct routes, segregated from traffic • Consistent routes	• Avoid shared use paths • Shared used of subways? • Routes to avoid busy main roads • Cyclists friendly traffic calming on lesser trafficked roads • Preference for traffic signals (over roundabouts) • No need for car traffic in town centre	
4	• Welcoming / safe / accessible • Link existing paths leading into the town centre from all four points – north, south, east and west	• Dutch	• Shared surface / integration of pedestrians and cyclists • Some designated cycle routes • Safe secure parking for cyclists	• Need more streets pedestrianized • Link existing paths leading into the town centre from all four points – north, south, east and west • Safe and secure cycle parking	• Road user education: o Cyclists going wrong way down one way streets o Cyclists going through red lights o Respect for pedestrians / others

Appendix 2 - Maidenhead Cycling Workshop – Existing Routes Used by Cyclists

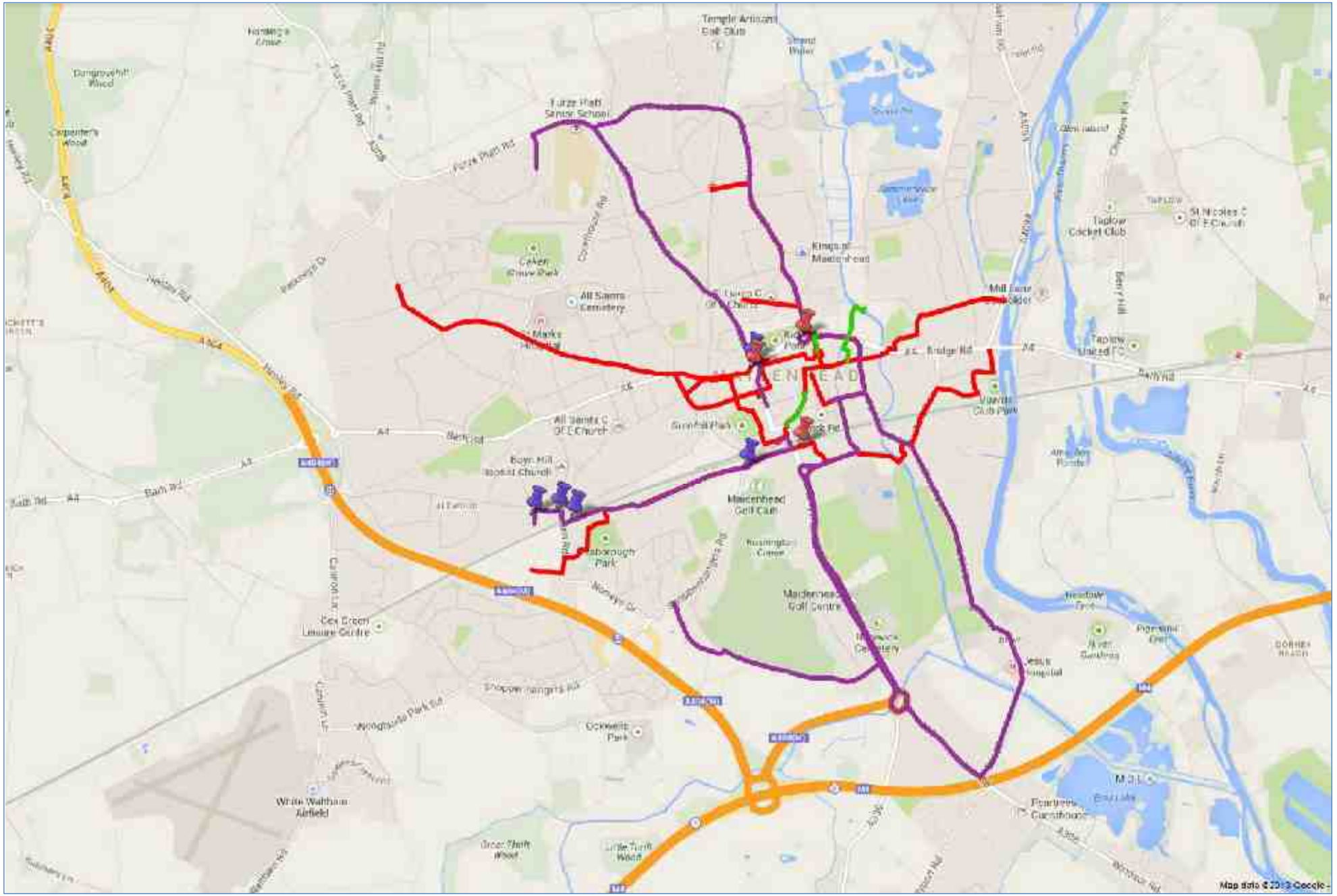


Table 2 - North West Route

Table 2 - South West Route

Table 2 - South East Route

Table 2 - North East Route

Table 2 - North Route

Table 2 - Station to Town Centre Link

Table 2 - Grenfell Road to Station Link

Table 2 - East Ring

Table 2 - Castle Hill Roundabout
Very dangerous for cyclists travelling east to west

Table 2 - Sainsbury's Roundabout
Takes courage to turn right

Table 2 - Stafferton Way Car Park Link
Path needs segregation - large numbers of pedestrians in peak periods - too slow

Table 3 - South East Route

Table 3 - South Route (East)

Table 3 - South Route (West)

Table 3 - Harvest Hill Road Route

Table 3 - South West Route

Table 3 - North West Route

Table 3 - North Route

Table 3 - A308 Marlow Road
Left filter is dangerous for cyclists

Table 3 - Ludlow Road
Right turn from Shoppenhanger's Road is very difficult

Table 3 - Footpath 56
Not a legal cycle route

Table 3 - Altwood Road
Not a legal cycle route

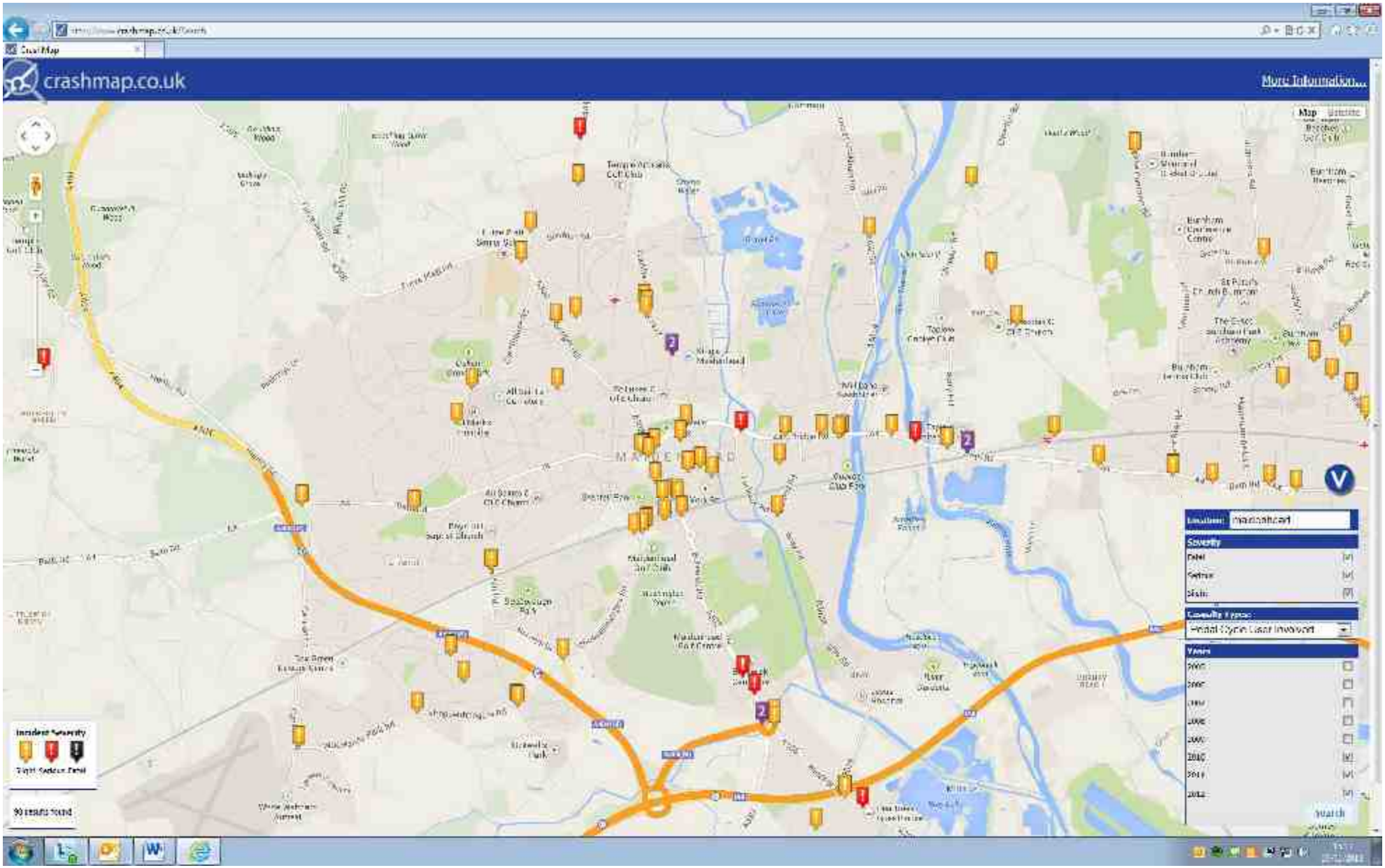
Table 3 - Footpath Link to Shirley Road
Not a legal cycle route

Table 4 - Green Way (North)

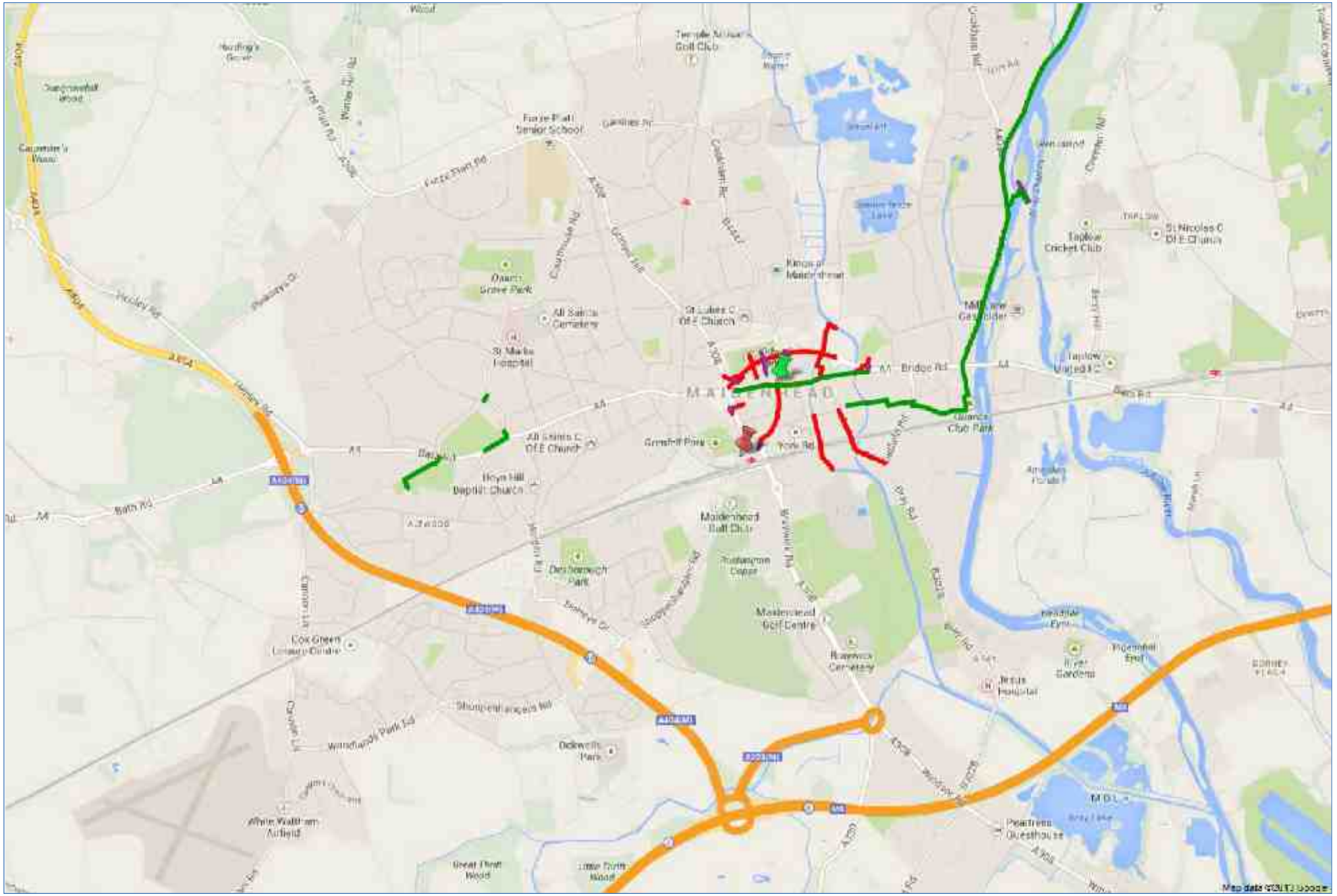
Table 4 - Sainsbury's Underpass

Table 4 - Queen Street
Cyclists travel the wrong way

Appendix 3: Maidenhead Cycling Workshop - Cyclist Casualties (2010 – 2012)



Appendix 4: Maidenhead Cycling Workshop – Proposed Routes



A4 Castle Hill to Police Stn
Bury the A4 between Castle Hill and Police Station roundabouts

A4 Bad Godesberg Way subway
Allow cycling in the subway

Kidwells Park to West Street
New pedestrian / cycle bridge from Kidwells Park to West Street

A4 St Cloud Way
New surface level crossing at Sainsbury's

Green Way (North)
Widen path and allow cycle access

A4 Bridge Road Subway
Allow cycling in the subway

Forlease Road
Two way cycling under rail bridge

Green Way (South)
Improve the route through the tunnel

Queen Street / High Street
Contra-flow cycle routes

A308 Frascati Way
Allow cycling in subway between High Town Rd and King St

Maidenhead Station
Provide more cycle parking

A4 Bad Godesberg Way
Improved crossing facilities

Kidwells Park to West Street
New pedestrian / cycle bridge from Kidwells Park to West Street

A4 St Cloud Way
Improved crossing facilities

A4 /Bridge Road
Improved crossing facilities

A308 King Street
Improved crossing facilities

A308 Frascati Way
Improved crossing facilities

Ray Mill Island
New pedestrian / cycle bridge

Thames to Town Centre
Shared use of Thames Path to Cookham and quiet route to the town centre.
Shared use of Thames Path to Cookham and quiet route to the town centre.

Ray Mill Island
New pedestrian / cycle bridge

Moorbridge Road / Bridge Street / High Street
Contra-flow cycle lanes

Deadman's Alley Extension
Conversion of existing informal track to shared use.

Footpath 48
Cycle access to schools

A4 to Courthouse Road
Connect existing A4 cycle route to Courthouse Road

Cycle Parking
Provide additional cycle parking around the town centre

ITEM: A4 CYCLE ROUTE, MAIDENHEAD

Report Author:	Gordon Oliver	**Position:**	Principal Transport Policy Officer
Telephone:	01628 796097	**Email:**	gordon.oliver@rbwm.gov.uk

1. Purpose of the Report

1.1 This report describes the proposals for a new cycle route along the A4 between Maidenhead Bridge and the town centre.

2. Supporting Information

Background

2.1 One of the key outcomes of the Maidenhead Cycling Workshop on 6th November 2013 was the need for a cycle route to connect the town centre to the Riverside area of Maidenhead.

2.2 Despite demand on this corridor being suppressed by the lack of dedicated cycling infrastructure, the eastern approach to the town centre is one of the most popular routes to and from the town centre for cyclists, catering for over 200 movements per day (7am to 7pm).

2.3 The request for a route along this eastern corridor is consistent with previous requests received from local cyclists for routes to connect the town to the Jubilee River and to provide a link through to Taplow and Slough. The National Trust has also requested a cycle route along the A4 in order to facilitate access to their property at Cliveden.

2.4 It should be noted that Buckinghamshire County Council has been working on a proposal for a cycle route along their section of the A4 between Maidenhead Bridge and Taplow, which will form the basis of a bid to the Thames Valley Buckinghamshire Local Enterprise Partnership for funding in 2015/16.

Option Development

2.5 A number of options were considered for the cycle route including:

1. Improvement of the existing route via Horseguards Drive and Guards Club Road.
2. Providing single-direction cycle routes along each side of the A4.
3. Providing a bi-directional cycle route along the south side of the A4.

2.6 Option 1 was effectively discounted since Horseguards Drive is a private road and residents are opposed to intensification of use by cyclists. This is also the least direct option and is therefore less attractive to cyclists.

2.7 Option 2 was found to have a number of problems inherent to providing a route along the northern side of the A4, including:

- The need to cross the A4 via the Moorbridge Road subway, which is too narrow for shared use by pedestrians and cyclists.

- There are bus stops on the north side where limitations on the extent of the available highway land make it difficult to achieve satisfactory bus stop bypasses - also it was considered that buses could mask cyclists from motorists turning left at the Ray Park Avenue junction.

- There are many junctions and accesses on the northern side, which would bring cyclists into conflict with motorists turning in and out. There is also insufficient space to bend the cycle route away from the main road to be able to give cyclists priority at side roads.

- There would be a particular issue with the cycle lane being positioned inside the left turn lane for traffic on the approach to Maidenhead Bridge, leaving cyclists vulnerable to left hook collisions.

2.8 Option 3 does not require use of subways to cross the A4, there are fewer problems with bus stops, there are fewer private accesses, and there is less conflict at junctions. This option is therefore being put forward as the preferred option.

Consultation on the Preferred Option

2.9 A scheme has been developed, which is shown in the plan in Appendix 1.

2.10 It is proposed to have a two-way cycleway running alongside the existing footway on the south side of the A4. It was originally proposed to have a Dutch style protected cycle lane with grade separation between the footway and the cycleway. However, the frequent changes in level at junctions, bus stops and crossing points would have made it uncomfortable and unattractive to cyclists. It was therefore decided to design the cycleway to be at the same level as the footway, but with a drainage channel to help demarcate the boundary between footway and cycleway.

2.11 Grade separation between the footway and cycleway can still be achieved on the section between Oldfield Road and Reform Road, since the footway is currently elevated to provide a safe means of escape from the Miller Homes site in the event of a flood.

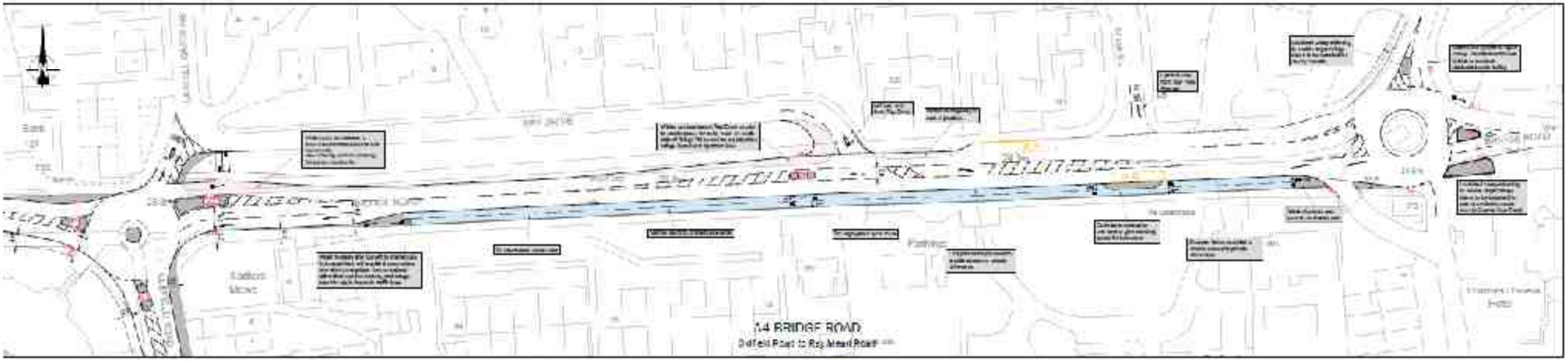
2.12 The proposal will make use of the new slip road from the A4 at the end of Moorbridge Road. From here, the route would continue into town via Bridge Street and High Street. Advanced stop lines will be provided on the east and westbound approaches to the Forlease Road / Moorbridge Road / Bridge street junction as part of an improvement scheme that is being constructed in March 2014. A contra-flow cycle lane will be provided on the eastern section of the High Street as part of the Colonnade development.

2.13 The scheme will need to tie up with the Stafferton Way Link Road, which joins the A4 at the Oldfield Road junction. It also needs to coordinate with the Maidenhead Bridge Gateway scheme and the Moorbridge Road slip road scheme, which are being developed in parallel.

2.14 The intention is for the cycle route to be considered as part of the planning application for the Stafferton Way Link Road in April. Members of the Cycle Forum have been provided with details of the proposal in advance of this meeting and are invited to make any comments by **Friday 7 March**.

3. Recommendation

3.1 It is recommended that members of the Cycle Forum endorse Option 3 as the preferred design for the A4 cycle route.



DRAFT FOR DISCUSSION

A4 Bridge Road, Maidenhead Bridge to Forlease Road

Outline cycle facility designs

Appendix 1

Client: Royal Borough of Windsor and Maidenhead

peterbrett

29524/00 I/02 | A

NOTES FROM A4 CYCLING WORKSHOP (18/03/2014)

Present

- Harry Bodenhofer
- Peter England
- David Lambourne
- David Layzell
- Paul Messing
- Gordon Oliver
- Mark Powell
- Andrew Small

Objectives for the Scheme

The following objectives were identified:

- The route must cater for all cycling journeys that may use the route:
    - Inter-urban journeys (e.g. Maidenhead to Taplow / Slough)
    - Links to Jubilee River for recreation as well as utility trips to Windsor
    - Links between town centre and the Riverside area
    - Local journeys (e.g. to bank, post office, shops)
    - Links to north Maidenhead
- In the long-term, the route should continue across the bridge and link to the Bucks scheme
- The route should cater for all standards of cyclist
- The route should be convenient, direct and continuous at junctions
- The route should have good levels of safety / perceived safety to encourage new cyclists
- There needs to be crossing points at key locations to cater for pedestrians and cyclists

Review of Options

Option 2, which includes the bi-directional cycle route along the south side of the A4 was rejected. Although it had fewer interruptions and discontinuities than Option 1, there are significant safety concerns associated with crossing Waldeck Road and Oldfield Road that cannot readily be overcome. Also, it was felt that cyclists would find it too challenging to exit from Guards Club Road.

A number of issues were identified with Option 1:

- As well as linking to the town centre, the route should cater for cyclists approaching from the Police Station roundabout and from the new cycle route through Town Moor / Sadler's Road
- The Moorbridge Road subway is not currently wide enough for shared use. Asking cyclists to dismount is not acceptable. A surface level crossing over the A4 is the preferred means of crossing the A4. Alternatively, the subway should be widened to accommodate shared use, but this would be very expensive and disruptive to traffic during construction.
- The proposed ramp from the A4 to Moorbridge Road presents safety risks to cyclists who may be carrying straight on along the A4. There should be traffic calming to reduce vehicle speeds as

they enter Moorbridge Road and an advisory cycle route should continue across the mouth of the slip road.

- The cycle lanes should have pigmented asphalt to highlight its presence to motorists. This is particularly important at side roads.
- The raised kerb used to segregate cyclists from motorists has to be discontinuous at side roads, accesses and crossings. This may present a hazard to motorists and cyclists where it starts unless protected by a bollard.
- A lane with of 1.8m does not allow cyclists to overtake other cyclists whilst still remaining within the lane. The lane should be widened or an alternative 'over-rideable' form of segregation provided (e.g. .
- The route is discontinuous in a westbound direction at the Oldfield junction, which is where the need for protection is greatest. Cyclists should have the option join a shared use footway / cycleway or remain on carriageway if confident and / or traffic is quiet. The footway will have to be widened to accommodate this.
- The land at Sadlers Mews should be utilised to provide a short section of peripheral cycle route such that cyclists approach the crossing point at 90o. Cyclists need greater protection when crossing Oldfield Road. If possible, cyclists should be protected when rejoining the carriageway at Oldfield Road if turning left on the shared footway / cycleway.
- There is opportunity for vehicles to pass a bus at the Ray Park Avenue stop by ustilising the central hatched area. This could lead to conflict with cycles if vehicles then turned left into Ray Park Avenue.
- The petrol station was acknowledged as a major source of conflict. Pigmented asphalt will help to highlight the crossing and signing and lining changes may be required to highlight the presence of cyclists to motorists. Confident cyclists will 'take the lane', but less confident cyclists will need to use the footway and cross via a refuge before returning to the carriageway at the bridge. This will need the footway to be widened on the corner of the A4 / Ray Mead Road with a widened refuge on Ray Mead Road.
- The westbound exit from the A4 / Ray Mead Road roundabout should be narrowed to a single lane to allow the cycle lane to be on carriageway, with a bus stop bypass.
- Traffic using Maidenhead Bridge should be calmed (e.g. a 20 mph speed limit). A zebra crossing was proposed for people who are unable to use the path beneath the bridge due to the steps.

Other Options / Issues:

Other options for the route were considered, including:

- Horseguards Drive / Guards Club Road - this is the existing route, but it utilises a section at the end of Horseguards Drive that is a private road and residents object to the presence of the cycle route.
- Ray Park Road – This offers a fairly quiet alternative to the A4, but it represents a significant detour for cyclists who are continuing along the A4 into Buckinghamshire.

An issue was raised with respect to the existing pedestrian crossing on the A4, which only gives vehicles a red signal when there is no traffic.

700013019-WSP-ASR A02

A4 CORRIDOR CYCLE SCHEME

APPRAISAL SPECIFICATION REPORT

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

AUGUST 2015

WSP | PARSONS BRINCKERHOFF

A4 CORRIDOR CYCLE SCHEME

APPRAISAL SPECIFICATION REPORT

Slough Borough Council and The Royal Borough of Windsor & Maidenhead

70013019-WSP-ASR

Project no: 70013019
Date: August 2015

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QUALITY MANAGEMENT

ISSUE/REVISION	FIRST ISSUE	REVISION 1	REVISION 2	REVISION 3
Remarks	Draft Report Outline			
Date	20/7/2015	31/08/2015		
Prepared by	Chris Harris & Frank Ocran	Chris Harris		
Signature				
Checked by		Kevin Kay		
Signature				
Authorised by		Kevin Kay		
Signature				
Project number		700013019-WSP-ASR A02		
Report number				
File reference		70013019		

PROJECT TEAM

CLIENT

Slough Borough Council & Royal Borough of Windsor and Maidenhead

WSP | PARSONS BRINKERHOFF

Elliott Chua	Project Manager
Craig Drennan	Project Director
Chris Harris	Project Engineer

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF REPORT

1.1.1 This Appraisal Specification Report (ASR) has been compiled to inform decision makers and stakeholders on how the business case appraisal for a new cycle route upgrade will be undertaken and how it will be supported by the necessary transport modelling work, taking account of budgetary, programme, political, environmental and spatial constraints.

1.1.2 The content of the ASR has been informed by the Department for Transport's (DfT) WebTAG Transport Analysis Guidance which states that the ASR should set out:

- → the proposed approach to modelling and forecasting;
- → the proposed methodology for assessing each of the significant sub-impacts presented within the Appraisal Summary Table; and
- → the proposed level of design or specification which will inform the cost estimation.

1.1.3 Due to the scale and extent of the scheme proposals, the assessment of environmental effects is presented in a separate Options Assessment Report (OAR) (see Appendix A). The accompanying document has confirmed that the impacts of the proposed scheme on each environmental criteria will not be significant and, therefore, that a detailed review of environmental effects can be scoped out of further assessment.

1.1.4 After this introductory chapter, which presents the project background, current stage of the scheme proposals and scheme objectives, the ASR is structured as follows:

- → Chapter 2 records the main challenges and issues facing the scheme including a review of the project objectives and outcomes as well as the potential project risks and mitigation measures.
- → Chapter 3 summarises the proposed transport modelling methodology that helps to inform the basis for the assessment.
- → Chapter 4 sets out the proposed methodology for meeting the requirement of the 5 core sections of the full Business Case report including: the Strategic Case; Economic Case; Financial Case; Commercial Case; and Management Case.
- → Chapter 5 presents the summary and conclusions including the Appraisal Specification Summary Table.

1.2 PROJECT BACKGROUND

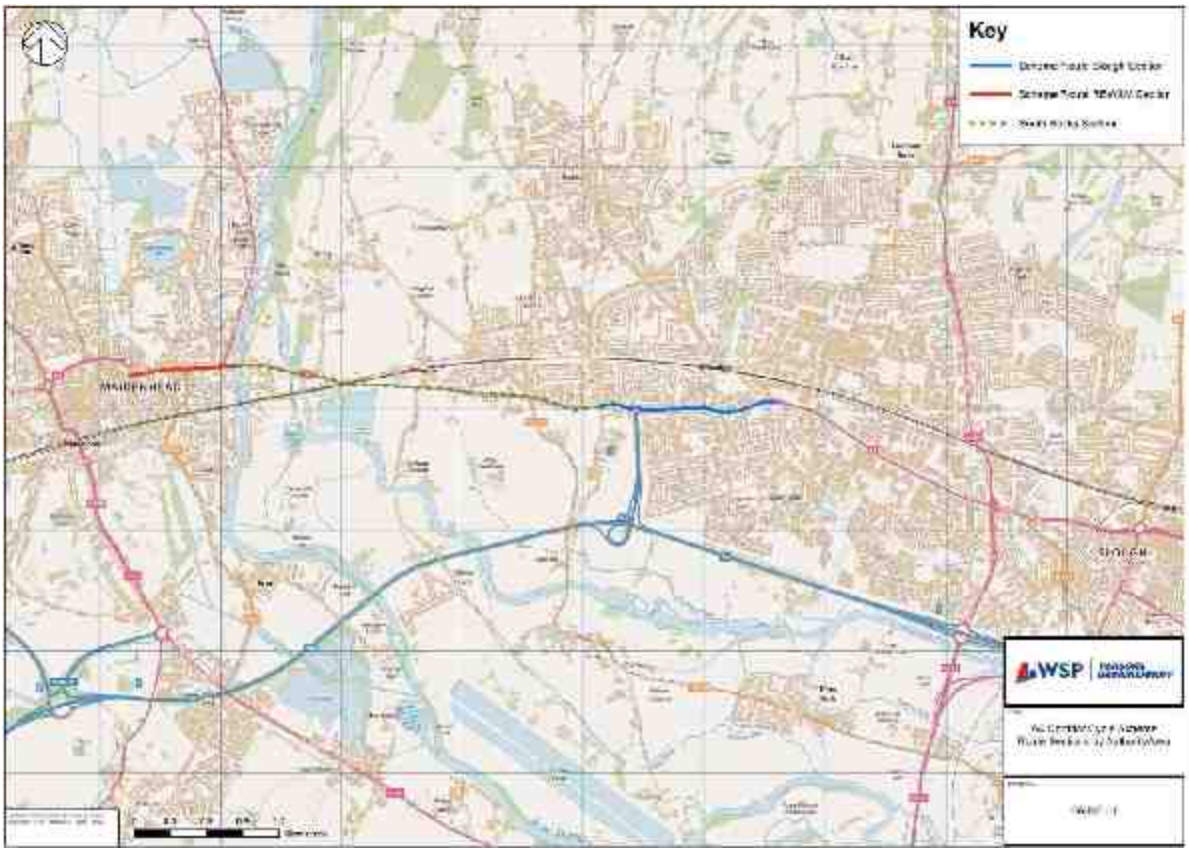
1.2.1 The proposed project concerns a package of infrastructure improvements to enhance conditions for cyclists along the A4 corridor between Slough and Maidenhead. This ASR covers the sections of the overall scheme which lie within the administrative boundaries of Slough Borough Council (SBC) and The Royal Borough of Windsor and Maidenhead (RBWM). These are defined as follows:

- The section of the overall scheme within SBC's control extends along the A4 between Burnham Lane and the Huntercombe Lane junction.
- The section of the overall scheme within RBWM's control extends along the A4 from Maidenhead Bridge and then continues toward the centre of Maidenhead along Bridge Street and High Street.

1.2.2 The report excludes the section of the route which lies within the South Bucks District Council (SBDC) administrative boundary (A4 between Huntercombe Lane and Maidenhead Bridge). The design process, business case and funding framework for that section of the overall scheme is subject to a separate assessment.

1.2.3 Figure 1-1 illustrates the location and extent of the proposed scheme with reference to the three identified sections.

Figure 1-1: A4 Corridor Cycle Scheme Route Sections by Authority Area



1.3 CURRENT STAGE OF PROPOSALS

1.3.1 The project is supported by parallel preliminary design phase, which is resulting in a preferred design option being developed for both the SBC and RBWM route sections.

1.3.2 Reflecting the twin-track approach, the project will be taken forward through the detailed design and costing stage. Once funding is secured and the detailed designs approved the scheme is expected to be taken forward for contractor tendering and construction.

1.4 SCHEME OBJECTIVES

1.4.1 The A4 corridor is a key strategic transport link providing connectivity between the Slough and Maidenhead conurbations. It is an important vehicular route as well as catering for pedestrians, cyclists and public transport.

1.4.2 As identified in the accompanying OAR, there is an opportunity to increase levels of cycling by improving the level of cycling facilities along this corridor. Therefore the principal project objective for the scheme is:

> The provision of a safer and more convenient, direct cycle route between Slough and Maidenhead along the A4 corridor.

1.4.3 The following SMART (Specific, Measurable, Attainable, Relevant and Time-bound) objectives are drawn from discussions with the project team and existing project development work.

- → Encourage a mode shift towards cycling for a range of journey purposes
  - o Work.
  - o Education
  - o Leisure
- → Reduce the necessity to undertake journeys by private motor vehicle.
- → Address the existing gender inequality in cycle use.
- → Improve perceived cycling amenity on the A4 corridor.
- → Minimise cycling personal injury accidents on the A4 corridor.

1.4.4 Each of the above objective outcomes can be measured following the implementation of the scheme to determine the extent to which the scheme has met each objective and whether further measures are necessary to achieve a more positive outcome.

2 CHALLENGES AND ISSUES

2.1 SCHEME OPTIONS

2.1.1 The accompanying OAR sets out in detail the processes of option selection and development undertaken by both SBC and RBWM in reaching the current preferred scheme options.

2.1.2 Following the option appraisal process undertaken by SBC, it was determined that the provision of an off-carriageway cycle route, running along the north side of the A4, is the preferred option to be taken forward to the design stage.

2.1.3 From the perspective of design, the preliminary design of the route would focus on a combination of shared cycle footway provision and conversion of parallel services roads to one-way streets (for motorised traffic) to accommodate new two-way dedicated cycle lanes. Improvements and modifications for key junctions and crossing points are also proposed at the appropriate interfaces with existing infrastructure.

2.1.4 RBWM has also undertaken an extensive options development process to derive a preferred scheme to take forward to the preliminary design stage. The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. The proposals on the A4 are complemented by improved connectivity onto Moorbridge Lane Road from the A4. Additional measures are included at key locations, including bus stops, aimed at preventing conflicts between cyclists and other road users.

2.2 EXPECTED OUTCOMES

2.2.1 In line with the scheme objectives summarised in Chapter 1, it is expected that the following outcomes would result from the successful implementation of the proposed scheme:

- → An increase in cyclists using the A4 corridor along the study section, compared to a baseline situation.
- → A modal shift being achieved for cycling commuting trips along the A4 corridor as well as a commensurate reduction in private motor vehicle mode share.
- → A proportionate increase in female cyclists using the A4 corridor for all journey purposes (including commuting, utility trips and leisure) to address the current gender inequality in existing cycle use.

- → An improvement in the level of cycling amenity along the A4 corridor and a reduction in the perceived level of fear and intimidation experienced by cyclists.
- → A reduction in the rate of injury accidents involving cyclists on the relevant section of the A4.
- → Improvement in cycle journey times along the sections of the route subject to the assessment.

2.3 RISKS AND MITIGATION FOR DELIVERY

2.3.1 All of the land required for the scheme lies within the extent of adopted highway and therefore is under the full control of SBC or RBWM. Therefore no additional land ownership agreements and purchase will be necessary to secure the implementation of the proposed scheme.

2.3.2 The key project milestones for the SBC scheme are as set out in Table 2-1 below.

Table 2-1: SBC Project Programme

Task	Timescale
Data Collection	Completed - August 2015
Independent Assessment of full Business Case	September 2015
Financial Approval from Local Transport Board	November 2015
Feasibility work	Completed - August 2015
Detailed design	September 2015
Procurement	February 2016
Start of construction	Spring 2016
Completion of construction	March 2017
One year on evaluation	March 2018
Five years on evaluation	March 2022

2.3.3 The project milestones have not been firmed up for the RBWM section of the scheme at the time of the ASR production, however, they are expected to be consistent with those programmed by SBC in order to allow for comprehensive assessment of the route.

2.3.4 Project risks will be mitigated by further development of the design at the appropriate stages, including risks for the scheme promoters to address during the implementation stage. This would include appropriate levels of value engineering to optimise value and reduce risk as well as appropriate road safety audits to address any recommendations.

2.3.5 The following key project risks are set out in Table 2-1, along with measures to mitigate or reduce the effect of each risk.

Table 2-2: Project Risks and Mitigation Measures

Item No.	Risk	Likelihood	Severity	Mitigation Measures
1	Unfavourable response to wider public consultation.	M	M	Consultation for the proposed one way on service roads may receive objection from local businesses. Programme allows for detailed design to be modified or additional signage to be considered where necessary to address specific objections.
2	Increase of capital costs due to changes to the design before and during construction.	M	M	Manage scheme costs and benchmark against similar schemes.
3	Delays in procurement process.	L	M	Programme allows adequate time for procurement.
4	Delays in achieving local contribution towards costs.	L	L	Ensure funding in place and on-going dialogue with partners.
5	Lack of cross boundary working to coordinate the design, consultation and delivery of the scheme between SBC, RBWM and Buckinghamshire County Council.	L	L	Coordination between all parties during design and construction stages.
6	Utilities – unknown services struck during the construction works.	M	M	Following initial statutory undertaker enquiries, digging of trial holes and intrusive scans to define any advance works.
7	Changes to design after commencing construction.	L	M	Fully complete design prior to commencing construction/ allow for contingency provision. This would extend to identifying the key fixes in design parameters to minimise occurrence.

3 MODELLING METHODOLOGY

3.1 DATA COLLECTION

3.1.1 In order to understand the existing transportation conditions along the study corridor Automatic Traffic Count (ATC) surveys have been undertaken at key locations on the A4 (as well as connecting roads to Maidenhead Town Centre). These are intended to provide a picture of pre-construction conditions.

3.1.2 In addition, footway surveys have been undertaken at locations adjacent to the ATC survey sites to record pedestrian and on-footway cycling movements. These surveys recorded the direction of each movement.

3.1.3 The surveys were untaken by an independent data collection company in June and July 2015. The full survey specification plans on which these were based are presented in Appendix B.

3.1.4 SBC and RBWM have also made available additional survey data covering the study area to provide supporting information that would help quantify existing cycling patterns.

3.2 PROPOSED MODELLING APPROACH

3.2.1 The DfT's WebTAG guidance clearly sets out the importance of considering the scale and scope of the proposed scheme when developing a 'transport model' to assess the proposed scheme.

3.2.2 As the proposed scheme is aimed directly at improving conditions for cyclists, the proposals are not predicted to result in any significant changes in conditions for motorists, public transport modes or pedestrians. Therefore, the proposed 'transport model' has been based on an assessment of existing cycling conditions as well as the potential for changes in the levels of cycling following the implementation of the scheme.

3.2.3 Existing commuter and non-commuter cycling trips will be determined by a review of the survey data (outlined in Section 3.1).

- The commuter trips will be determined from journeys made during the two-hour weekday AM peak (0700 to 0900) with the assumption that return trips will occur between 1600 and 1800.
- Weekday non-commuter trips (utility and leisure cycling) will be derived from reviewing journeys made outwith the AM and PM peak periods.

- Weekday to weekend conversion factors will be derived from additional cycle count information provided by SBC for the A4 corridor.

3.2.4 The methodology for determining the extent of the model study area is detailed in full in the accompanying OAR. The study area reflects the extent of the 2011 Census Origin Destination data for travel to work trips by cycle. This area is composed of Middle Special Output Areas (MSOAs) to ensure that catchment data can be easily incorporated into the model.

3.2.5 The model will comprise a matrix of origin and destination zones, defining where people are currently cycling. The catchment population will only be derived of journeys where the section of the A4 corridor covered by the proposed scheme fulfils a logical route choice.

3.2.6 These parameters will be incorporated in the Economic Case appraisal, as part of the full Business Case. The appraisal methodology is outlined in Chapter 4.

3.3 ASSUMPTIONS AND SENSITIVITY TESTING

3.3.1 WebTAG unit A5.1 sets out the importance of assumptions in defining appraisal outcomes and undertaking relevant sensitivity testing.

3.3.2 For the purpose of this appraisal, it is expected that the following parameters will influence the outcomes:

→ Change in journey time for cycle users following implementation of the scheme;

→ Average journey distance per cycling trip.

3.3.3 The change in journey time will be determined by estimating the extent to which the proposed scheme facilitates travel along the corridor, including through changes in waiting times at junctions.

3.3.4 A sensitivity test will be undertaken to determine the effects of altering the change in journey time by ± 50% to reflect variability across different user groups and to establish a robust basis for the assessment.

3.3.5 The latest available DfT statistics will be reviewed to derive a current value for average cycle journey distance. This value will be incorporated into the main appraisal model.

3.3.6 A review of historical DfT statistics for average cycling distance/purpose will be used to determine the recorded level of variability and establish the level of sensitivity which could affect the appraisal outcomes.

4 APPRAISAL METHODOLOGY

4.1 INTRODUCTION

4.1.1 This Chapter reviews the proposed approach for the five key sections of the full Business Case. These key sections are:

- → **The Strategic Case**
- → **The Economic Case**
- → **The Financial Case**
- → **The Commercial Case**
- → **The Management Case**

4.2 STRATEGIC CASE

INTRODUCTION

4.2.1 The Strategic Case will set out SBC's and RBWM's aspirations in relation to cycling and sustainable travel and how it fits with national policy aims.

4.2.2 The following sections will be included within the Strategic Case, based on the approach detailed in the next sections:

- → What is driving the project?
- → Local attitudes to cycling
- → Scheme Objective
- → Option Generation
- → Proposed Scheme
- → Design Criteria
- → Policy Alignment

WHAT IS DRIVING THE PROJECT?

4.2.3 This section will present the national and local policy context for the proposed scheme alongside a review of the existing conditions and scheme proposals. This review will allow conclusions to be drawn on the reasons why the scheme is currently required.

LOCAL ATTITUDES TO CYCLING

4.2.4 This section will present a review of those who are being targeted by the scheme proposals and what is known or can be ascertained about their needs, current behaviours and attitudes.

SCHEME OBJECTIVES

4.2.5 This section will set out the principal and supporting objectives for the scheme. These objectives will be in line with those presented in Chapter 1 of the ASR and will include SMART (Specific, Measurable, Attainable, Relevant and Time-bound) objectives. These can be monitored following implementation of the project to monitor the effect of the scheme over time.

OPTION GENERATION

4.2.6 This section will set out the process by which options for the scheme were derived and developed by both SBC and RBWM. The processes undertaken by each authority will be presented separately and the following aspects of the options development process will be considered:

- → Generating Initial Options
- → Option Sifting
- → Stakeholder Consultation
- → Option Finalisation

4.2.7 The outcomes of this section will be consistent with the processes detailed in the accompanying OAR (*see* Appendix A)

PROPOSED SCHEME

4.2.8 The scheme proposals resulting from the option generation process will be presented and a review of the key infrastructure enhancements that the proposals are expected to deliver will be undertaken.

DESIGN CRITERIA

4.2.9 The details of the relevant the design guidance used to inform the design process to date will be presented, including any departures from standard, where relevant. This will allow all interested parties to be satisfied of the principles which underline the scheme design.

POLICY ALIGNMENT

4.2.10 To summarise the Strategic Case, a summary will be presented of the how the scheme objectives align with national and local policy.

4.3 ECONOMIC CASE

INTRODUCTION

4.3.1 The economic case will focus on the forecasted value for money of the scheme in relation to a Benefit Cost Ratio (BCR). The forecast cycle trip generation will be used to estimate changes to the following impacts:

- → User Benefits
- → Health Benefits
- → Business Benefits
- → Accidents
- → Marginal External Cost Savings
- → Wider Economic Benefit

COSTS

4.3.2 The current construction cost for the SBC and RBWM sections of the scheme will be outlined along with allowances made to define preliminaries, diversions costs and optimism bias.

FORECASTING POTENTIAL DEMAND

4.3.3 The potential changes in cycle usage will be estimated using a disaggregate mode choice model as outlined in WebTAG unit A5.1. This travel demand assessment uses coefficients derived from Wardman, Tight and Page (2007) to forecast changes in the attractiveness of cycling trips, resulting from infrastructure improvements within the scheme catchment area.

4.3.4 The model uses the current baseline proportion of population who cycle between the Origins and Destinations (ODs) affected by the route to forecast 'post scheme' proportions cycling trips.

BENEFITS

User Benefits: Journey Quality

4.3.5 Journey quality is an important consideration given that a major factor is the perceived fear of accidents which is likely to be significantly reduced through the introduction of the proposed scheme. Professional judgement and published research figures will be used as a guide to derive the value associated with changes in journey quality.

User Benefits: Travel Time (decongestion)

4.3.6 Decongestion will be quantified using the marginal external cost method using forecasts of reduced car kilometres (from expected mode shift) as a result of the scheme.

Business Benefits: Absenteeism

4.3.7 Research carried out by the WHO found that absenteeism from work can decrease when more people cycle to work. Moderate physical activity is seen to lead to a reduction in sick days taken from work and hence provides a benefit to the employer. This is in addition to the benefit of better health for the individual.

4.3.8 In the UK the average absence of employees is 6.8 days per year, of which 95% is accounted for by short-term sick leave. Research by the WHO suggests an expected reduction in absenteeism from increased cycling or walking of 6% based on 30 minutes of exercise per day.

4.3.9 Using the estimated increase in cycling trips and following the approach recommended in TAG Unit A4.1 we will estimate the benefits of a reduction in absenteeism.

Health Benefits: WHO HEAT Tool

4.3.10 The World Health Organisation (WHO) has developed a Health Economic Assessment Tool (HEAT) that calculates the economic benefit of preventing early mortality by increasing the number of people regularly exercising through cycling.

4.3.11 The tool can make use of estimated new cyclists being generated by the scheme; the time per day they will spend active; and mortality rates applicable to the group affected by the scheme. The tool then provides an economic benefit of reduced mortality based on the value of a prevented fatality.

4.3.12 The estimated increase in cyclists will be been inputted into the HEAT tool, and the monetised benefits of reduced mortality rates established.

Accidents

4.3.13 Accidents will be quantified using the marginal external cost method using forecasts of reduced car kilometres (from mode shifts) as a result of the scheme.

4.3.14 Using STATS19 accident records, we will establish where there is a higher than expected level of personal injury accidents (primarily involving cyclists) on the scheme route sections. If this is the case, the potential monetary savings of reduced accidents will be applied using WebTAG 4.1 input factors.

4.3.15 It is also acknowledged that any forecast increases in cycling demand on the sections of the scheme under consideration will lead to changes in cycling trips on the surrounding cycle road network. The general improvement in cycling activity and participation may increase cycle movements across the study area. There is no clear evidence to indicate what effect changes in on-carriageway cycling volumes would have on existing accident rates and therefore the consideration of effects beyond the road sections where the new infrastructure will directly change conditions for cyclists will not be assessed.

MARGINAL EXTERNAL COST SAVINGS

4.3.16 The scheme is expected to lead to a modal shift towards cycling amongst commuters. Where this shift is away from cars, there will be benefits to reduced car use in the form of decongestion, car collisions, greenhouse gas emissions, air quality, noise and indirect tax benefits. These benefits have been estimated using the Marginal External Cost (MEC) method, based on the forecast reduction in car kilometres as a result of the scheme.

4.3.17 The estimated reduction in car km is then used to calculate the MEC benefits using figures outlined in WebTAG Data Book Table A 5.4.2.

Wider Economic Benefit

4.3.18 Research suggests that cycling benefits the local economy. A national study carried out by the London School of Economics in 2011 concluded that each cyclist contributes a Gross Cycling Product (GCP) of £230 per year to the economy. This research was supported by a European wide study which found that cycling delivers wider economic benefits in terms of supporting jobs and driving tourism – with the cycling industry sub-sector having greater employment intensity than any other transport sub-sectors.

BENEFIT COST RATIO

4.3.19 The present value of all assessed benefits and costs will be compared to derive a Benefit Cost Ratio for the proposed scheme for both SBC and RBWM.

4.3.20 A separate benefit cost ratio including wider economic benefit estimates will be reported separately.

4.4 FINANCIAL CASE

INTRODUCTION

4.4.1 The Financial Case will set out the sources of funding by SBC and RBWM for the scheme, including an assessment of the affordability and financial risks involved.

FINANCIAL RISK MANAGEMENT

4.4.2 This section will identify the key financial risks associated with the project and how these been quantified, if relevant. The proposed strategy to manage the financial risks will be presented.

FUNDING SOURCES

4.4.3 The funding sources to provide all capital and associated project costs will be presented along with any funding bid processes that are required to secure third party funding.

4.5 COMMERCIAL CASE

4.5.1 The commercial case will detail the procurement strategy for the project and will consider the following aspects:

- → Is the risk transfer process clearly defined?
- → Who is taking marginal risk, including on planning consent?
- → How was the proposed procurement approach developed?
- → What is the level of confidence that appropriate contractual/ commercial arrangement can be defined to make the structure and risk transfer work in practice?
- → Is the proposed risk allocation consistent with the cost estimate?

4.6 MANAGEMENT CASE

4.6.1 The management case will detail how the scheme will be delivered by SBC and RBWM.

PROGRAMME

4.6.2 The project programme for both SBC and RBWM will be presented, setting out the envisaged key stages in project delivery.

RESOURCING

4.6.3 A detailed resource plan will be produced at the outset of the project delivery process, which will be managed and updated as changes to the requirements occur.

4.6.4 Appropriate additional resources will be acquired where forecast resource need is greater than available resource need.

4.6.5 Senior staff within the project team should be maintained over the lifetime of the project to provide continuity and development of skills and experience. This is important to effectively managing the shifting political landscape against which the project needs to be delivered.

RISK

4.6.6 Building on the risk review presented in Table 2-2 of this ASR, a risk review will identify the key project/programme dependencies and the main issues which are likely to affect project delivery and implementation.

BENEFITS REALISATION

4.6.7 This section will present the proposed monitoring and evaluation strategy for the project as well as the key go/no go decision points. The proposed reporting and approval process will also be summarised.

STAKEHOLDER MANAGEMENT

4.6.8 All key stakeholders involved in the project approval, funding and delivery process will be identified together with the proposed stakeholder management strategy.

5 SUMMARY & CONCLUSIONS

5.1 SUMMARY

5.1.1 This ASR has presented the proposed content and appraisal methodology for undertaking and producing the full Business Case to support both SBC and RBWM in the delivery of their sections of the proposed A4 corridor cycle improvement scheme.

5.1.2 In accordance with WebTAG guidance, all five key sections of the full Business Case have been reviewed in turn, namely:

- → The Strategic Case
- → The Economic Case
- → The Financial Case
- → The Commercial Case
- → The Management Case

5.1.3 The ASR has also presented a review of the project risks and mitigation measures as well as the transport modelling methodology.

5.1.4 Building on the Option Assessment Summary Tables presented in the accompanying OAR, an Appraisal Specification Summary Table has been produced to summarise proposed appraisal methodology.

5.1.5 Assessment areas where no or negligible effects are predicted to be returned by the Options Assessment Report (OAR) have been scoped out from further assessment in the full Business Case appraisal. All of the criteria have been presented in the Appraisal Specification Summary Table, shown inTable 5-1 below.

5.2 CONCLUSIONS

5.2.1 Based on the methodology outlined in this document, a robust appraisal method will be undertaken for both the SBC and RBWM sections of the proposed A4 corridor cycle improvement scheme. The results of this appraisal process will be presented in the full Business Case report.

Table 5-1: Appraisal Specification Summary Table

Impacts	Sub-impacts	Estimated Impact in OAR	Level of uncertainty in OAR	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/ Qualitative/ Monetary/ Distributional)
Economy	Business users & transport providers	Negligible	Low	N/A	N/A	N/A
	Reliability impact on Business users	Neutral	Moderate	To be assessed by Web Tag Data Book Table A 1.3.1 with input from the WHO's 'Physical Activity Fact Sheet' & and Annual Survey of Hours and Earnings Data	The 'Physical Activity Fact Sheet' provides the findings of a research undertaken by WHO on Physical Activity	Quantitative & Monetary
	Regeneration	Slight benefit	Moderate	Qualitative review of existing and proposed conditions.	Maidenhead Town Centre Area Action Plan	Qualitative
	Wider Impacts	Slight benefit	Moderate	Research has concluded that cycling contributes a Gross Cycling Product of £230 per year to the economy. This figure will be applied to the forecast increase in cycle demand.	The GCP has been obtained the Gross Cycling Product Report which provides a detail analysis on the extent of cycling's contribution to the British economy	Quantitative & Monetary
Environmental	Noise	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Noise	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Greenhouse gases	Positive monetary benefit	Moderate	To be assessed using the Marginal External Cost (MEC) Savings Methodology & Web Tag Data Book Table A 5.4.2	MEC method is based on the forecast reduction in car journeys as a result of the scheme.	Quantitative & Monetary

Impacts	Sub-impacts	Estimated Impact in OAR	Level of uncertainty in OAR	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/ Qualitative/ Monetary/ Distributional)
Environmental (Cont.)	Landscape	Negligible	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Townscape	Negligible	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Heritage of Historic resources	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Biodiversity	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Water Environment	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
Social	Commuting and Other users	Beneficial	Moderate	To be assessed using Web Tag Table A 1.3.1	To be assessed using Web Tag Table A 1.3.1	Quantitative & Monetary
	Physical activity	Beneficial	Low	To be assessed using the World Health Organisation's Health Economic Assessment Tool (HEAT)	HEAT calculates the economic benefits of preventing early mortality by increasing the number of people regularly exercising through cycling.	Quantitative & Monetary
	Journey quality	Beneficial	Low	To be assessed using TAG Data Book A 4.1.67		Quantitative & Monetary
	Accidents	Beneficial	Moderate	To be assessed by forecasting change in cycling collisions and using Web TAG Table A 4.1.3	Accident data can be obtained from SBC/RBWM or STATS 19	Quantitative & Monetary
	Security	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
	Access to services	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.
Social (Cont.)	Affordability	Neutral	Low	Further appraisal scoped out.	Further appraisal scoped out.	Further appraisal scoped out.

Impacts	Sub-impacts	Estimated Impact in OAR	Level of uncertainty in OAR	Proposed proportionate appraisal methodology	Reference to evidence and rationale in support of proposed methodology	Type of Assessment Output (Quantitative/ Qualitative/ Monetary/ Distributional)
	Severance	Slight positive	Low	Qualitative review of existing and proposed conditions.	N/A	Qualitative
Public Accounts	Cost to Broad Transport Budget	N/A	N/A	Reporting of scheme costs	N/A	N/A
	Indirect Tax Revenues	Revenue reduction	Low	To be assessed using the Marginal External Cost (MEC) Savings Methodology & Web Tag Data Book Table A 5.4.2	MEC method is based on the forecast reduction in car journeys as a result of the scheme.	Quantitative & Monetary

Appendix A

OPTIONS ASSESSMENT REPORT

Appendix B

SURVEY SPECIFICATION PLANS

Route overview

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Slough section

ATC counter

Location: 3 locations
Duration/periods: One continuous week, 24 hours a day.
Measurement: traffic flow to be summarised by hourly totals and classified as follows:
- Car
- Motorcycle/Scooter
- Van/LGV
- Bus
- HGV
- Cycle (IF POSSIBLE, OTHERWISE SEPARATE CYCLE COUNTS ON CARRIAGEWAY INCLUDED IN CYCLE SURVEY AS BELOW)

Cycle counter

Location: 3 locations
Duration/periods: One continuous week, 7am-7pm (IF MANUAL/VIDEO COUNTS), otherwise 24hour counts (IF AUTOMATIC COUNTS).
Measurement: bi-directional flow

PARSONS BRINCKERHOFF

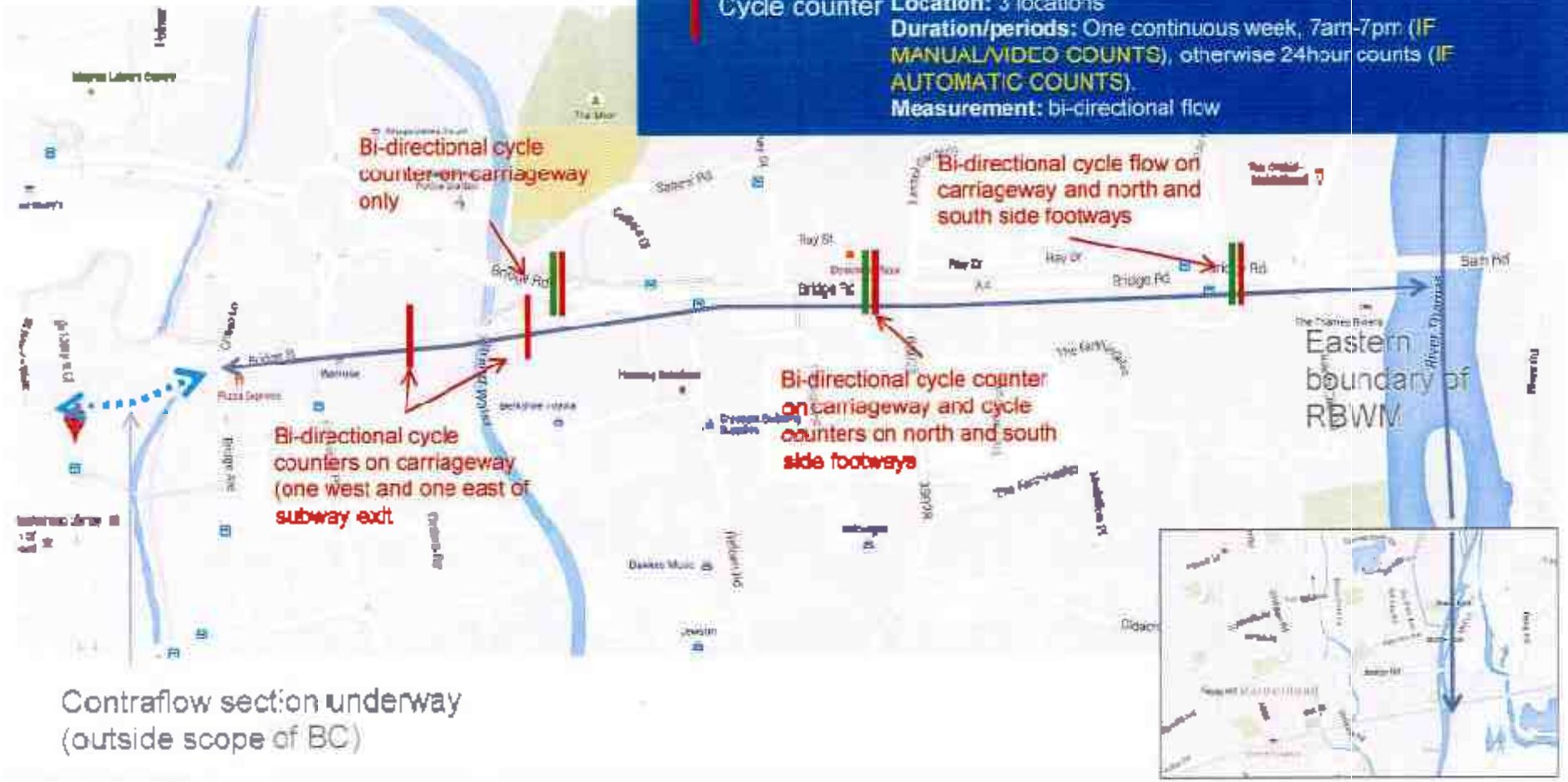
RBWM section

ATC counter

Location: 3 locations
Duration/periods: One continuous week, 24 hours a day.
Measurement: traffic flow to be summarised by hourly totals and classified as follows:
- Car
- Motorcycle/Scooter
- Van/LGV
- Bus
- HGV
- Cycle (IF POSSIBLE, OTHERWISE SEPARATE CYCLE COUNTS ON CARRIAGEWAY INCLUDED IN CYCLE SURVEY AS BELOW)

Cycle counter

Location: 3 locations
Duration/periods: One continuous week, 7am-7pm (IF MANUAL/VIDEO COUNTS), otherwise 24hour counts (IF AUTOMATIC COUNTS).
Measurement: bi-directional flow



Contraflow section underway (outside scope of BC)

PARSONS BRINCKERHOFF

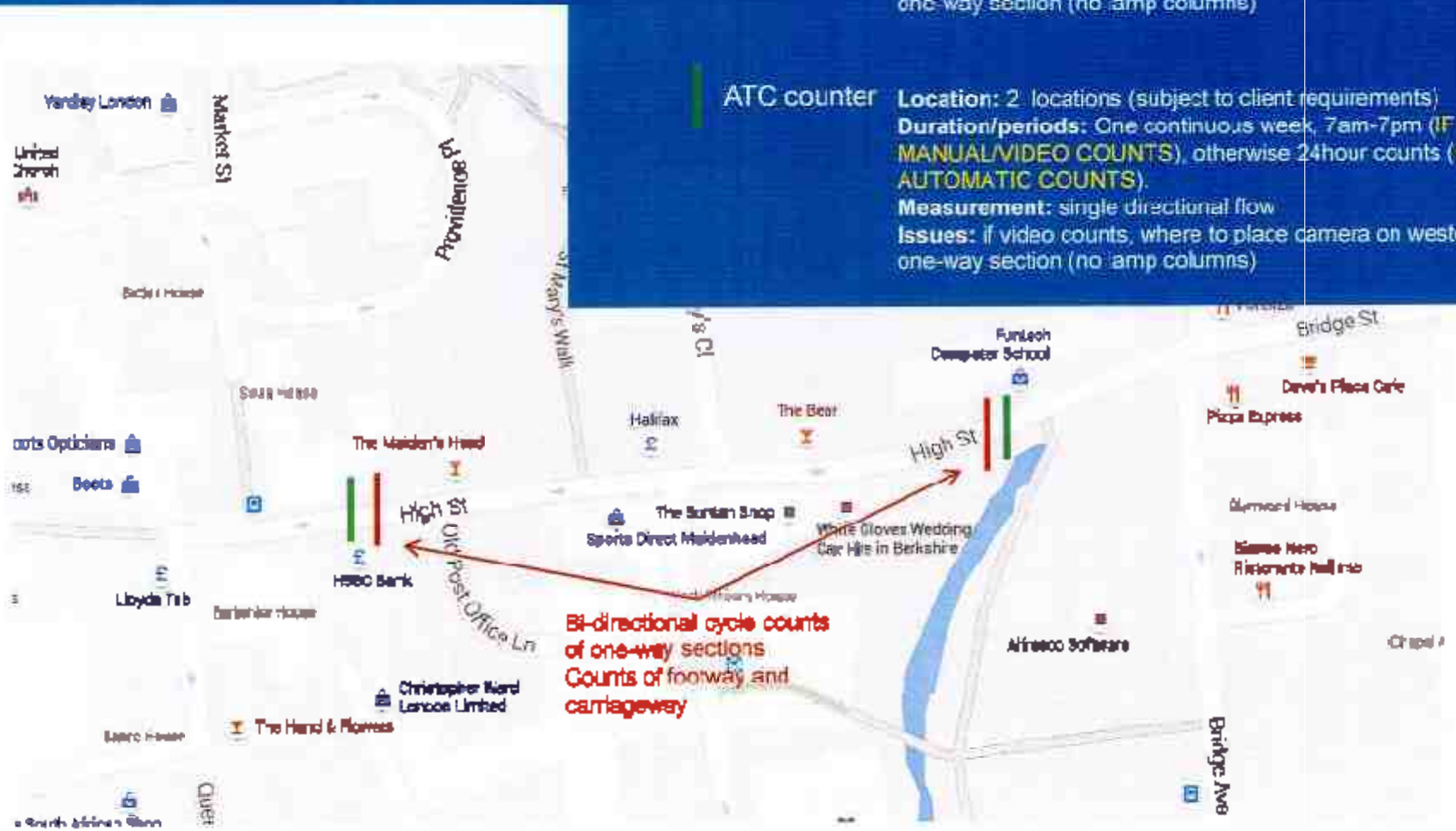
Maidenhead High Street

Cycle counter

Location: 2 locations
Duration/periods: One continuous week, 7am-7pm (IF MANUAL/VIDEO COUNTS), otherwise 24hour counts (IF AUTOMATIC COUNTS).
Measurement: bi-directional flow
Issues: if video counts, where to place camera on western one-way section (no lamp columns)

ATC counter

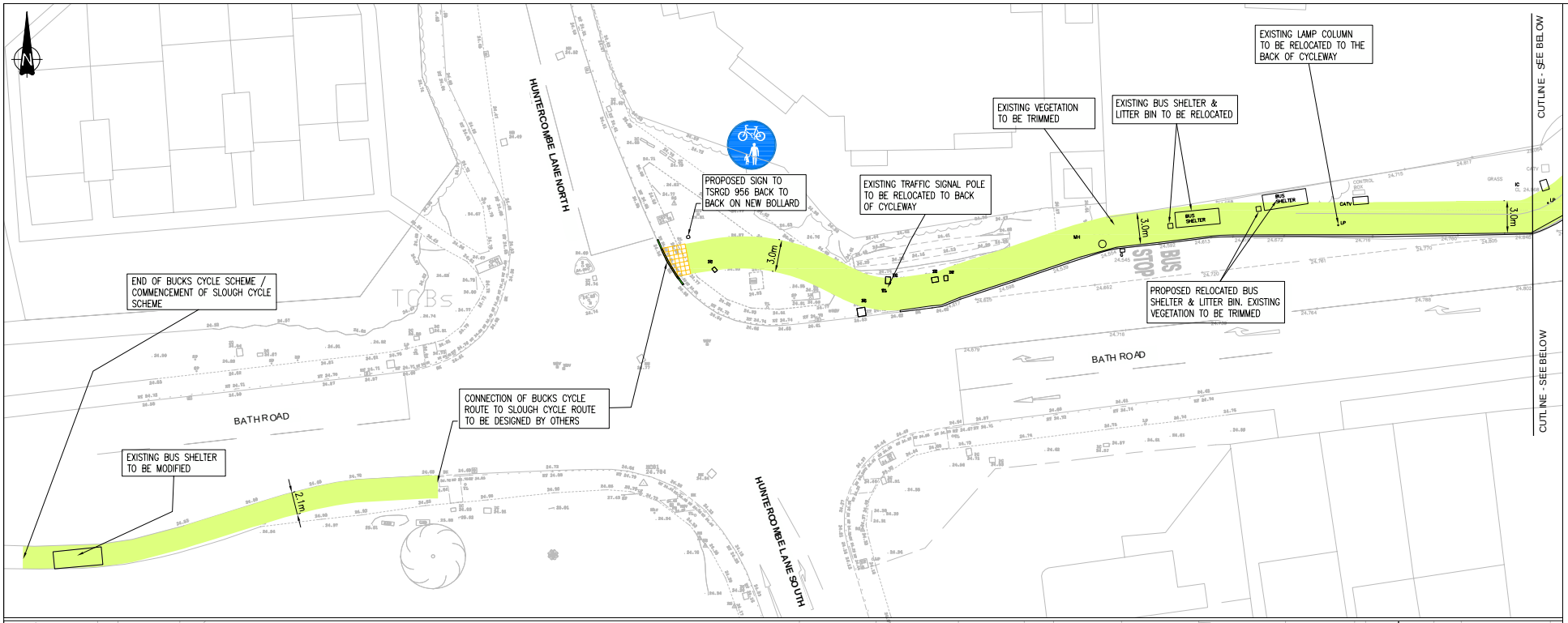
Location: 2 locations (subject to client requirements)
Duration/periods: One continuous week, 7am-7pm (IF MANUAL/VIDEO COUNTS), otherwise 24hour counts (IF AUTOMATIC COUNTS).
Measurement: single directional flow
Issues: if video counts, where to place camera on western one-way section (no lamp columns)

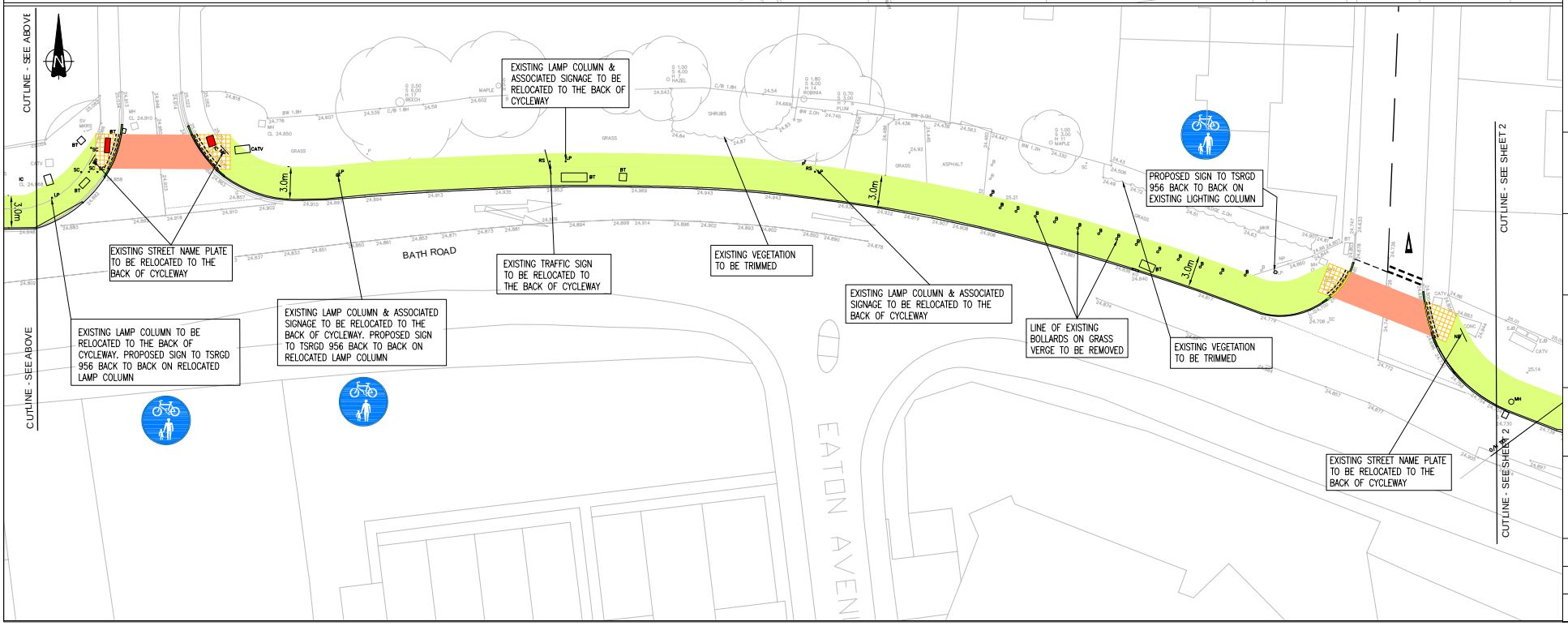


PARSONS BRINCKERHOFF

Appendix III

SBC Section - Assessed Design Proposals





KEY

- EXISTING KERB
- EXISTING GULLY
- EXISTING SERVICE COVERS
- PROPOSED BUFF BLISTER TACTILE PAVING
- PROPOSED CYCLE ROUTE
- INDICATIVE CYCLE ROUTE ACROSS EXISTING ROAD/ ENTRANCES. ENTRANCES ARE NOT TO BE MARKED.
- PROPOSED DROPPED KERBS
- PROPOSED TRANSITION KERBS
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (CYCLIST)
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (VEHICLES)
- PROPOSED EDGE OF CARRIAGEWAY MARKING TO TSRGD DIAGRAM 1009
- PROPOSED LANE LINES TO TSRGD DIAGRAM 1004
- PROPOSED GIVE WAY TRIANGLE TO TSRGD DIAGRAM 1023
- PROPOSED BOLLARDS
- PROPOSED INFILL COVERS
- PROPOSED UNSEGREGATED SHARED ROUTE SIGN TO TSRGD 956

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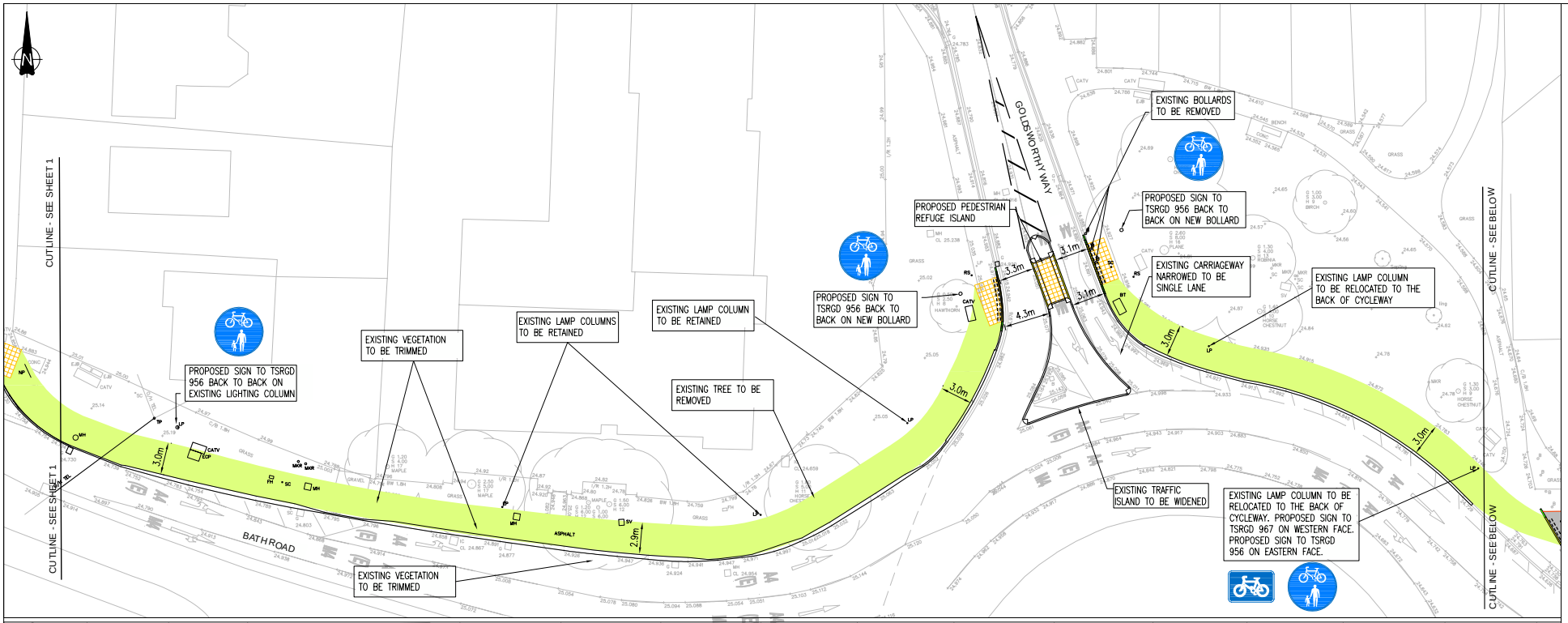
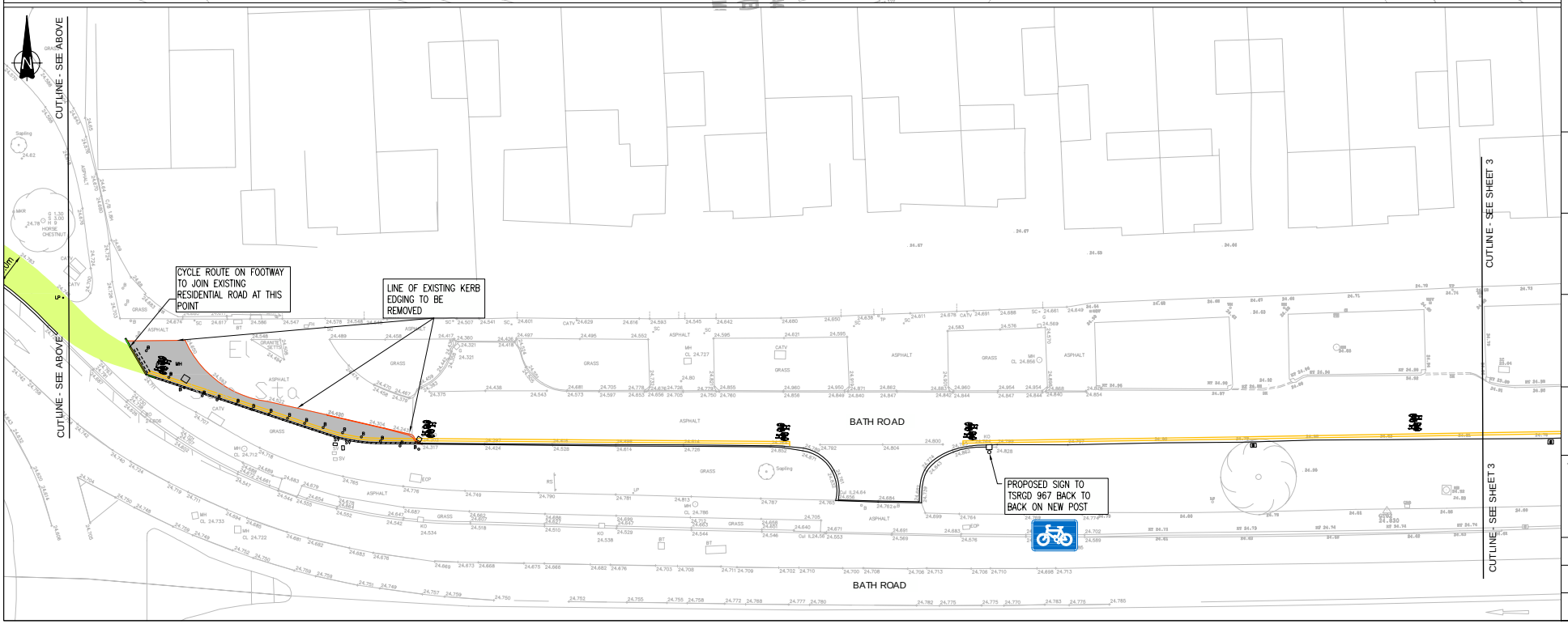
Title
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION
PRELIMINARY CYCLE ROUTE
DESIGN - SHEET 1

Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		





KEY

- EXISTING KERB
- EXISTING GULLY
- EXISTING SERVICE COVERS
- EXISTING GRASS VERGE AREA TO BE CONVERTED INTO CARRIAGEWAY
- PROPOSED BUFF BLISTER TACTILE PAVING
- PROPOSED CYCLE ROUTE
- INDICATIVE CYCLE ROUTE ACROSS EXISTING ROAD/ ENTRANCES. ENTRANCES ARE NOT TO BE MARKED.
- PROPOSED NEW KERBS
- PROPOSED DROPPED KERBS
- PROPOSED TRANSITION KERBS
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (CYCLIST)
- PROPOSED CYCLE SYMBOL TO TSRGD DIAGRAM 1057
- PROPOSED YELLOW LINING TO TSRGD DIAGRAM 1018
- PROPOSED BOLLARDS
- PROPOSED UNSEGREGATED SHARED ROUTE SIGN TO TSRGD 956
- PROPOSED CYCLE ONLY SIGN TO TSRGD 967

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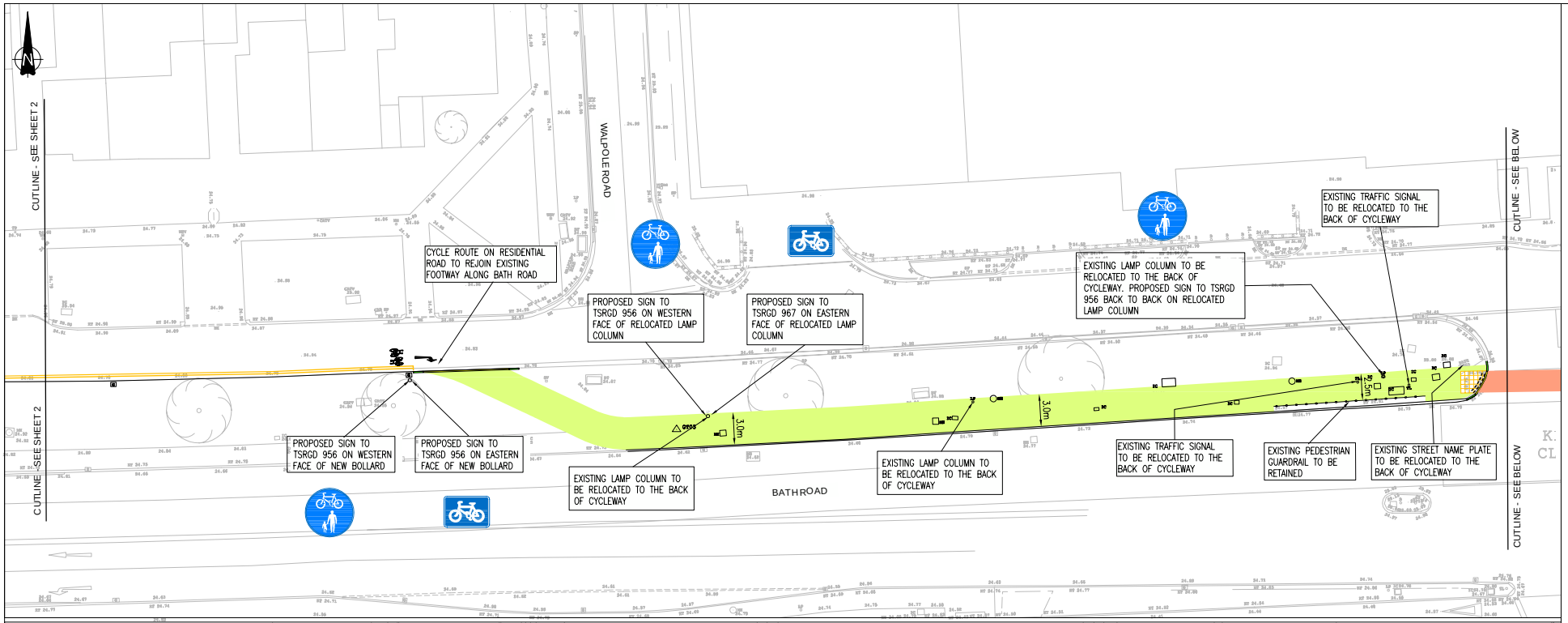
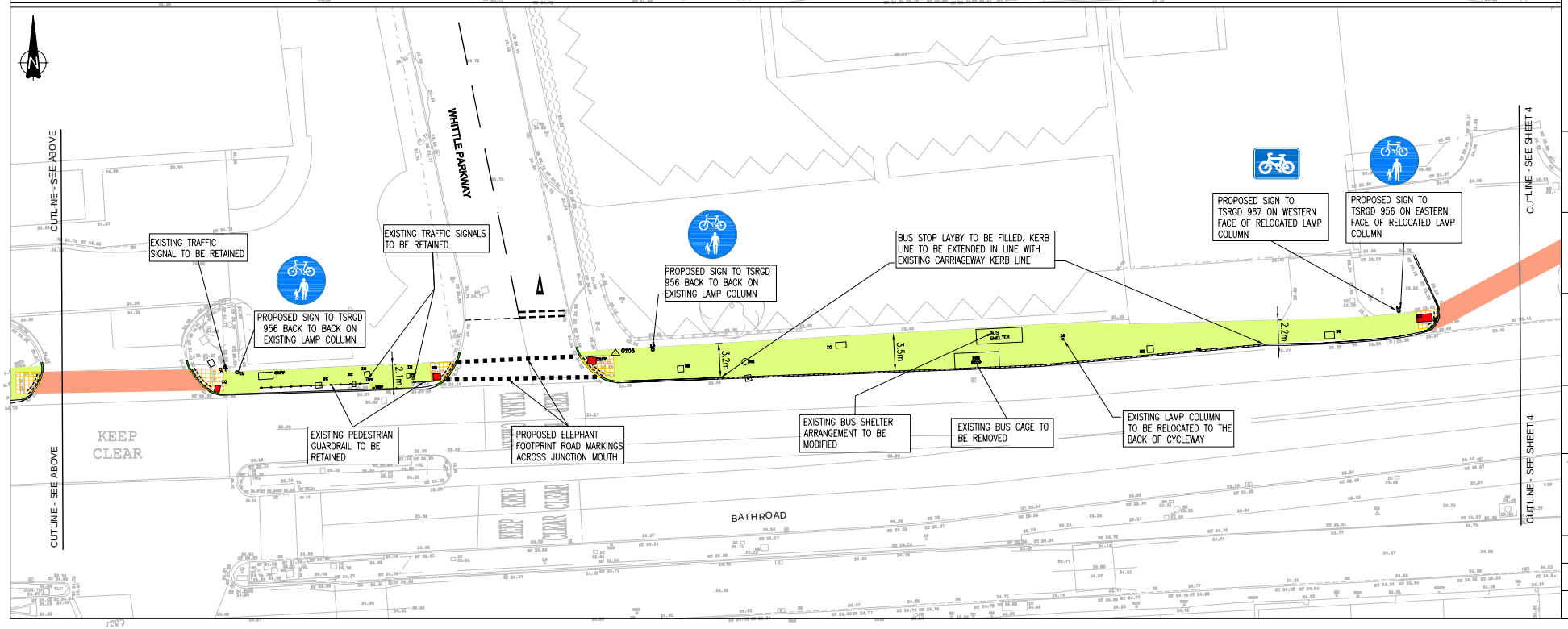
Department of Resources, Housing and Regeneration
ST MARTINS PLACE
51 Bath Road,
SLOUGH, SL1 3UF

Title
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION PRELIMINARY CYCLE ROUTE DESIGN - SHEET 2

Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		





KEY

- EXISTING KERB
- EXISTING GULLY
- EXISTING SERVICE COVERS
- PROPOSED BUFF BLISTER TACTILE PAVING
- PROPOSED CYCLE ROUTE
- INDICATIVE CYCLE ROUTE ACROSS EXISTING ROAD/ ENTRANCES. ENTRANCES ARE NOT TO BE MARKED.
- PROPOSED DROPPED KERBS
- PROPOSED TRANSITION KERBS
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (CYCLIST)
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (VEHICLES)
- PROPOSED EDGE OF CARRIAGEWAY MARKING TO TSRGD DIAGRAM 1009
- PROPOSED LANE LINES TO TSRGD DIAGRAM 1004
- PROPOSED GIVE WAY TRIANGLE TO TSRGD DIAGRAM 1023
- PROPOSED CYCLE SYMBOL TO TSRGD DIAGRAM 1057
- PROPOSED CYCLE LANE ARROW TO TSRGD DIAGRAM 1059
- PROPOSED YELLOW LINING TO TSRGD DIAGRAM 1018
- PROPOSED BOLLARDS
- PROPOSED INFILL COVERS
- PROPOSED UNSEGREGATED SHARED ROUTE SIGN TO TSRGD 956
- PROPOSED CYCLE ONLY SIGN TO TSRGD 967

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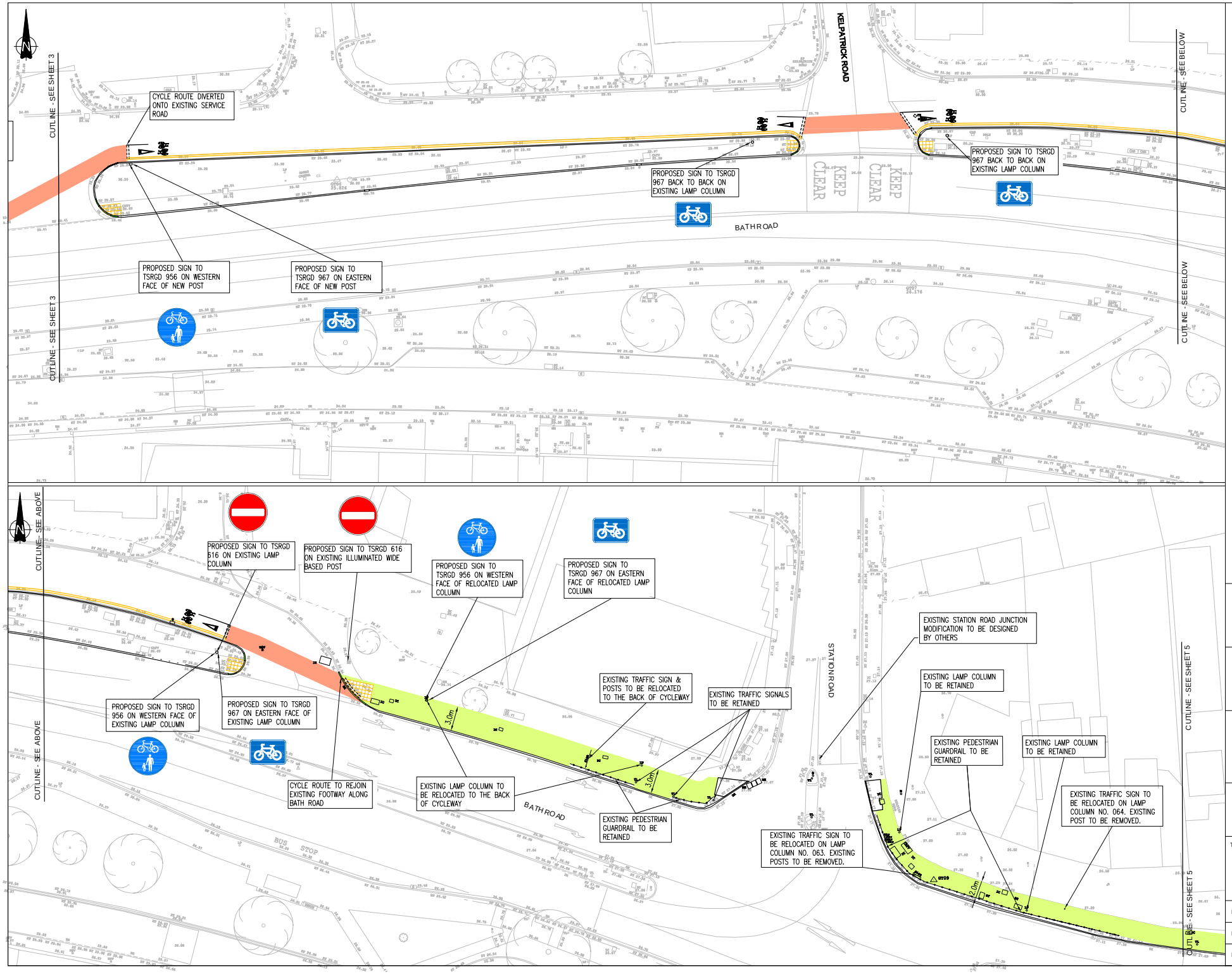
Title
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION PRELIMINARY CYCLE ROUTE DESIGN - SHEET 3

Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		



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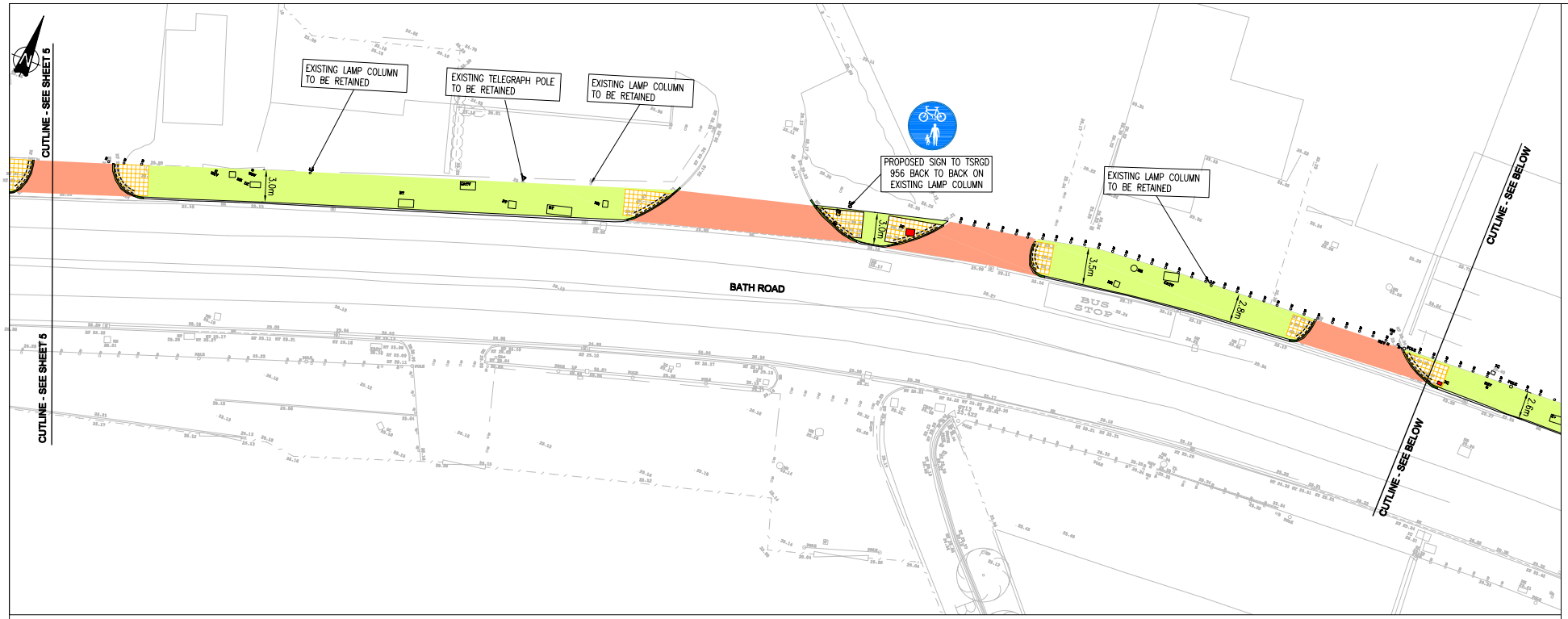
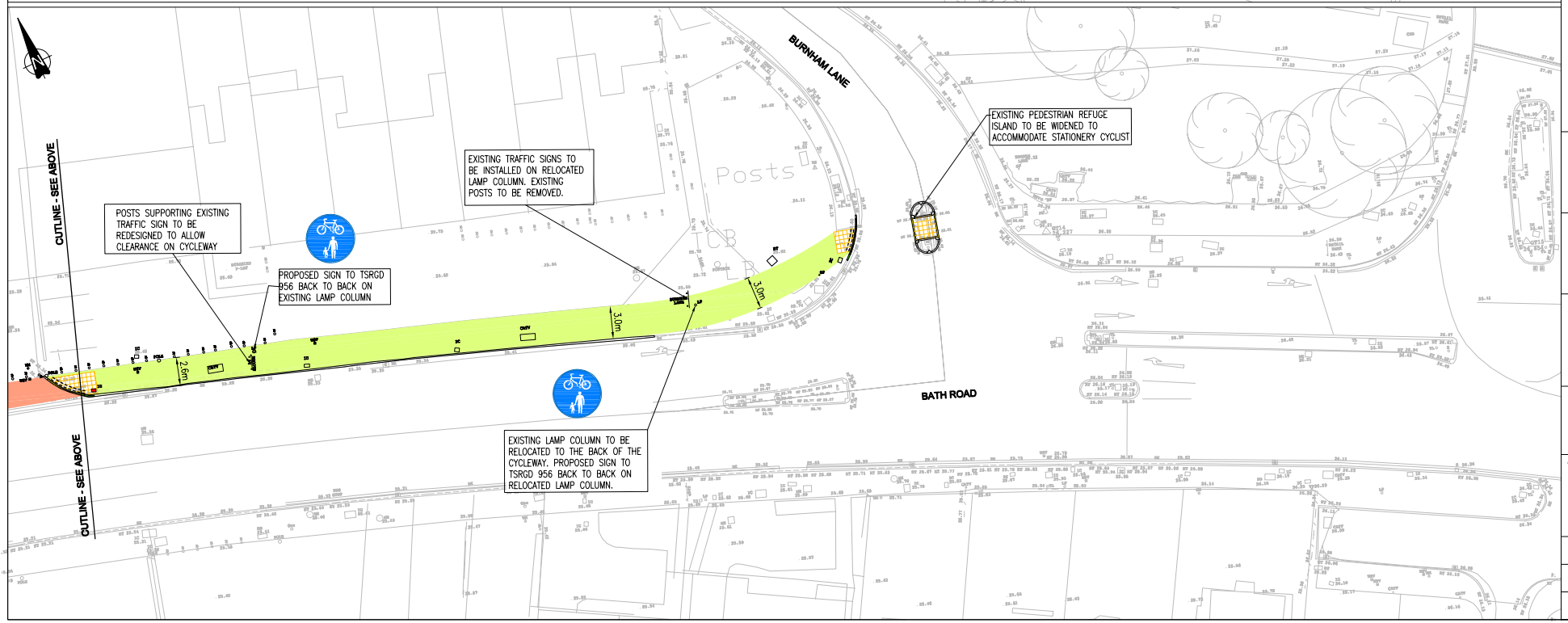
Title
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION PRELIMINARY CYCLE ROUTE DESIGN - SHEET 4

Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		





KEY

- EXISTING KERB
- EXISTING SERVICE COVERS
- PROPOSED BUFF BLISTER TACTILE PAVING
- PROPOSED CYCLE ROUTE
- INDICATIVE CYCLE ROUTE ACROSS EXISTING ROAD/ ENTRANCES. ENTRANCES ARE NOT TO BE MARKED.
- PROPOSED DROPPED KERBS
- PROPOSED TRANSITION KERBS
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (CYCLIST)
- PROPOSED BOLLARDS
- PROPOSED INFILL COVERS
- PROPOSED UNSEGREGATED SHARED ROUTE SIGN TO TSRGD 956

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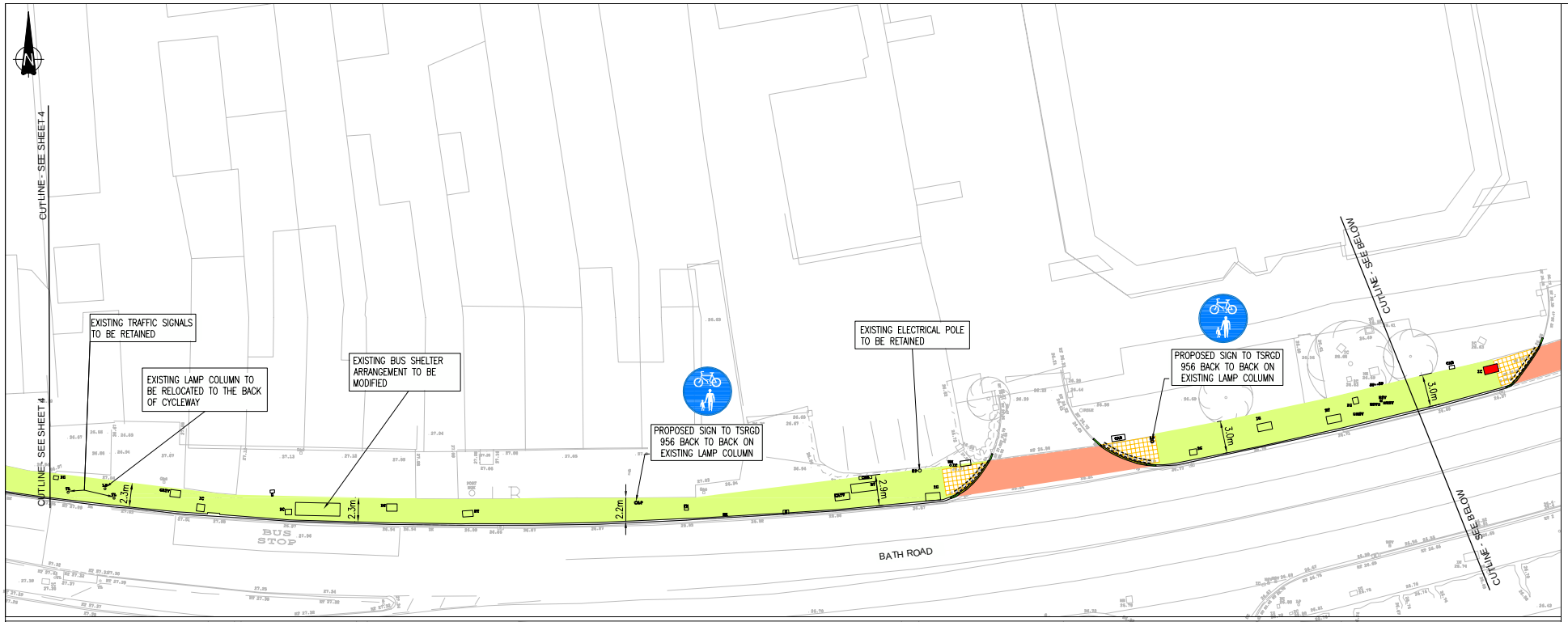
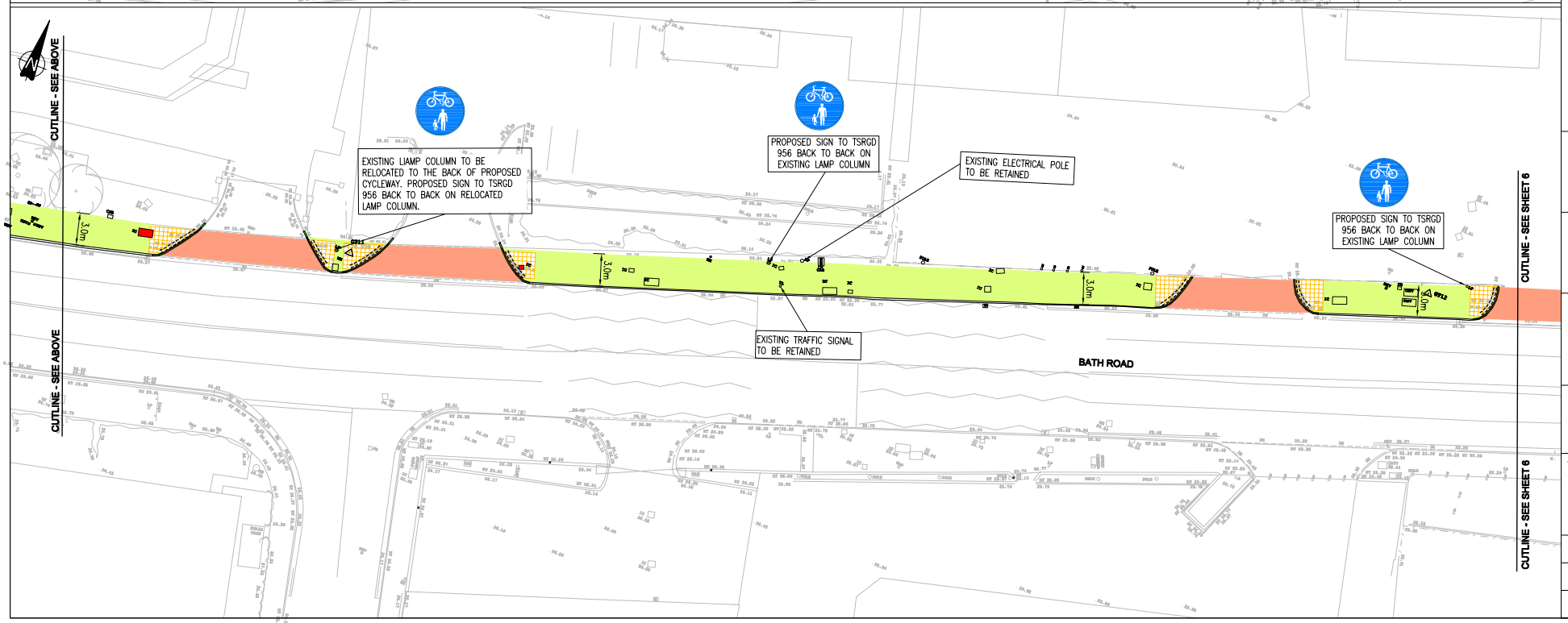
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION PRELIMINARY CYCLE ROUTE DESIGN - SHEET 6

Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		





KEY

- EXISTING KERB
- EXISTING GULLY
- EXISTING SERVICE COVERS
- PROPOSED BUFF BLISTER TACTILE PAVING
- PROPOSED CYCLE ROUTE
- INDICATIVE CYCLE ROUTE ACROSS EXISTING ROAD/ ENTRANCES. ENTRANCES ARE NOT TO BE MARKED.
- PROPOSED DROPPED KERBS
- PROPOSED TRANSITION KERBS
- PROPOSED GIVE WAY LINE TO TSRGD DIAGRAM 1003 (CYCLIST)
- PROPOSED BOLLARDS
- PROPOSED INFILL COVERS
- PROPOSED UNSEGREGATED SHARED ROUTE SIGN TO TSRGD 956

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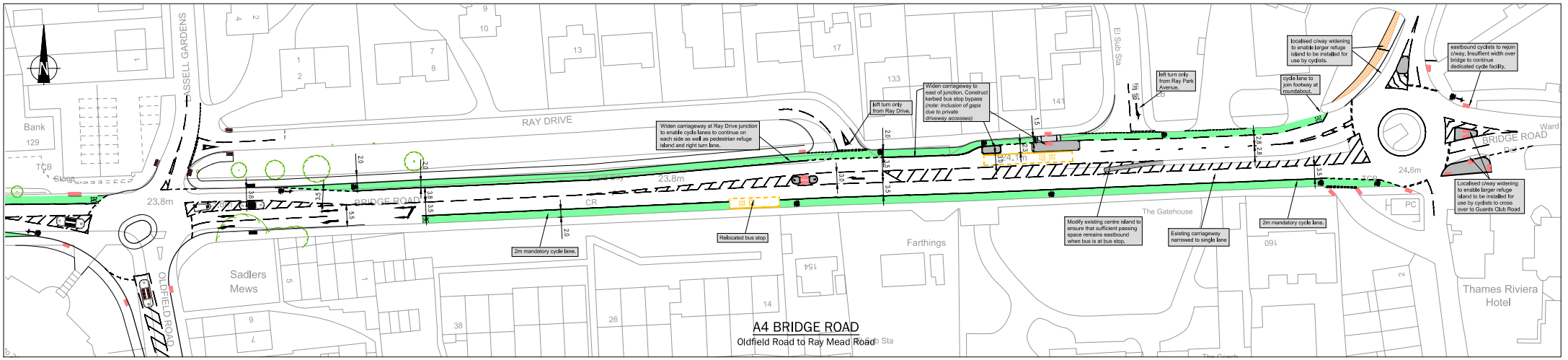
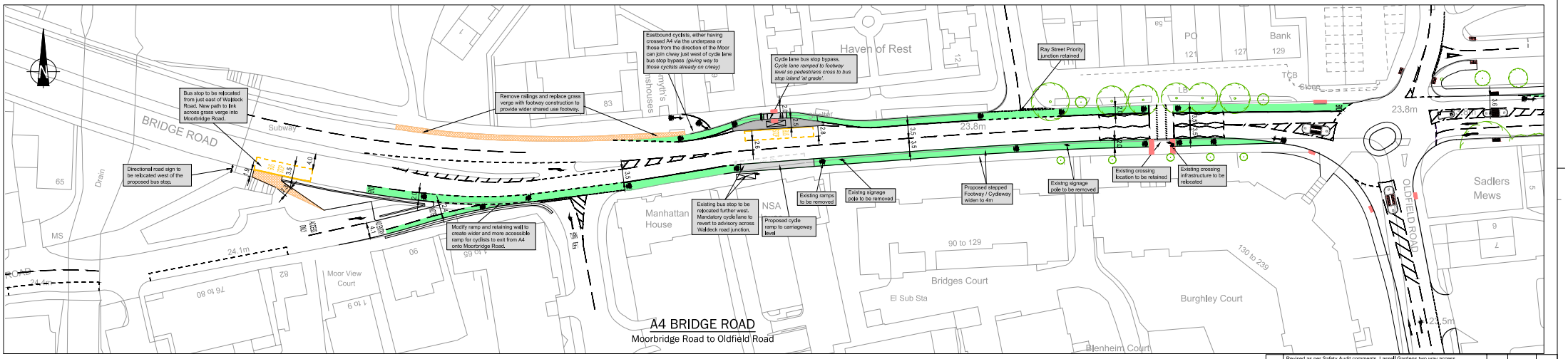
Title
A4 BURNHAM LANE TO HUNTERCOMBE LANE JUNCTION PRELIMINARY CYCLE ROUTE DESIGN - SHEET 5

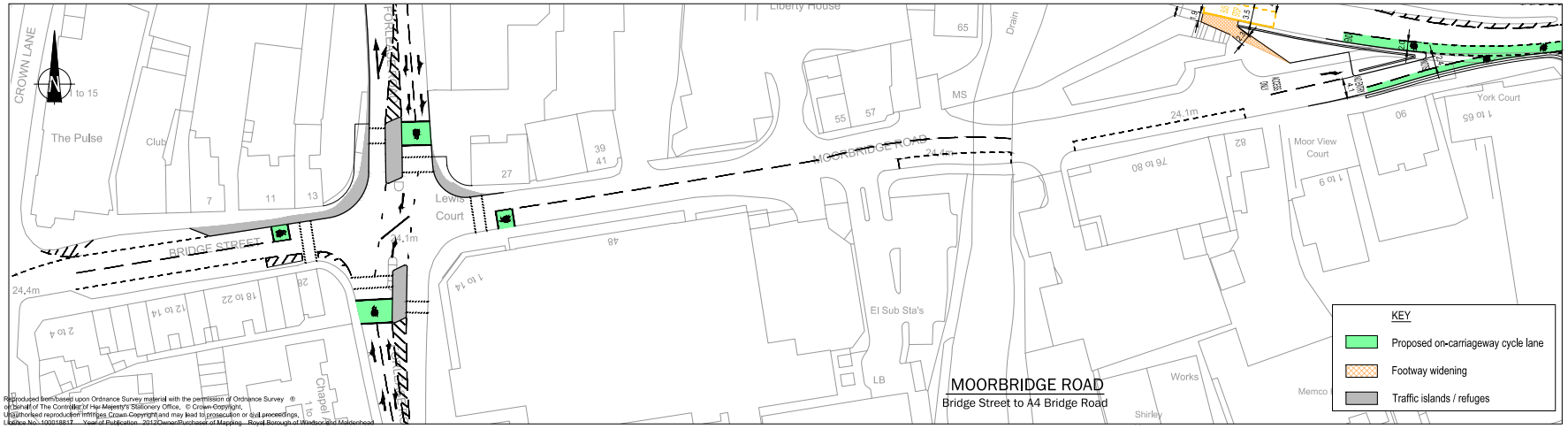
Date	24/08/2015	Scale	1:200
Drawn	TE	Checked	AK
Dwg. No.	SBC/T/IT/00274		

Appendix IV

RBWM Section - Assessed Design Proposals







Mark	Revision	Drawn	Date	Chkd
D	Revised as per Safety Audit comments, Lassell Gardens two way access incorporated	REM	08.05.15	
C	Alternative layout removed and minor ammendments to cycle lane	JH	13.01.15	PB
B	Revised scheme as per RBWM comments of 02.01.2015	JH	09.01.15	PDB
A	Scheme amendments as per RBWM comments of 28.03.2014	REM	24.04.14	PDB

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status
DRAFT FOR DISCUSSION

A4 Bridge Road, Maidenhead Bridge to Forlease Road
Outline cycle facility designs

Client
THE ROYAL BOROUGH OF WINDSOR AND MAIDENHEAD

Date of 1st Issue: 11.11.13	Drawn by: REM
A1 Scale: 1:500	Checked by: AR
Drawing Number: 29524/001/001	Revision: D

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Appendix V

Appraisal Summary Tables

Appraisal Summary Table

Date produced:	5	11	2015

Contact:	
Name	R. Beremauro
Organisation	Slough BC
Role	Promoter/Official

Name of scheme:	A4 Corridor Cycle Scheme - Slough Borough Council Section Only
Description of scheme:	New off-carriageway cycle route, running along the north side of the A4 between Burnham Lane and the Huntercombe Lane junction. The scheme will support commuting and utility trips.

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on business users. The potential reduction in congestion would also benefit transport providers through reduced and more consistent journey times. A proportion of new cycling trips is expected to shift from existing public transport services which would have an impact on fare revenue for transport providers. Overall, the impacts are predicted to be negligible. Due to the scale of the increase in cycling trips as a proportion of all journey modes, a quantitative assessment of the direct economic impacts on business users and transport providers is not necessary.	N/A	Negligible change	N/A	N/A
	Reliability impact on Business users	As above, the scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a potentially positive benefit on journey time reliability. The scale of potential impact is predicted to be negligible. Due to the scale of the proposed development a quantitative assessment of the direct economic impacts on business users and transport providers has not be undertaken.	N/A	Negligible change	N/A	
	Regeneration	The proposed scheme is not linked to specific regeneration policies or strategy. The extent of works proposed are not predicted to result in a significant change in the existing character of the area or unlock new development opportunities.	N/A	Neutral	N/A	
	Wider Impacts	Research by the London School of Economics (2011) concluded that each cyclist contributes a Gross Cycling Product (GCP) of £230 per year to the economy. Based on the scheme proposals, and associated changes in cycling levels, a wider economic benefit of £235,285 will be generated over the 10 year scheme life.	Wider economic benefit estimated at £235,285 across the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£235,285	
Environmental	Noise	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme is predicted to be below the levels where a significant change in noise levels would be detected by receptors. Therefore, a detailed assessment of noise impacts is not necessary.	N/A	Neutral	N/A	N/A
	Air Quality	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme are predicted below the levels where a significant change in air quality levels would be detected. Therefore, a detailed assessment of air quality impacts is not necessary.	N/A	Neutral	N/A	N/A
	Greenhouse gases	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on greenhouse gas emissions. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on greenhouse gas emissions related to a reduction in total vehicle kilometres. Based on the scheme proposals, and predicted changes in cycling levels, the Marginal External Benefit of £12,443 across the 10 year scheme life (discounted to 2010 prices).	Marginal External Benefit of £12,443 across the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£12,443	
	Landscape	The landscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions and minimal signage strategy. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Townscape	The townscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions and minimal signage strategy. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Historic Environment	It is noted that there are Grade 2 listed milestone at the Bath Road / Station Road junction (1321974). The scheme proposal is located on the opposite side of the A4 carriageway and will not to impact on this historic feature.	N/A	Neutral	N/A	
	Biodiversity	All infrastructure will be provided within the extent of the adopted highway. No significant biodiversity impacts are predicted to result from the scheme. A detailed ecology assessment is not necessary.	N/A	Neutral	N/A	
	Water Environment	There is predicted to be no change to the highway drainage requirements or to the means of discharge, and there would be no significant change to the volume and quality discharged. A detailed assessment of flood risk or drainage impact is not necessary.	N/A	Neutral	N/A	
Social	Commuting and Other users	The proposed scheme is predicted to result in improvements to existing journey time and journey quality for commuting and utility cycling trips. The monetised benefits have been based on the coefficients of utility changes for cycling facilities set out in WebTAG A5.1. The value of the journey time savings for cyclists is estimated at £82,042 over the 10 year scheme life (discounted to 2010 prices).	The value of the cycle journey time savings is estimated at £82,042 over the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£82,042	N/A
	Reliability impact on Commuting and Other users	Improvements to overall cycling journey time reliability along scheme section of the A4 corridor are predicted. The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips. The journey time benefits for cyclists are described above. The resultant potential reduction in congestion would also benefit vehicular transport users on the A4. However, a detailed assessment of impacts on non-cycling journeys is not necessary due to the scale of change in traffic levels predicted.	N/A	Slight beneficial	N/A	
	Physical activity	The additional cycling journeys encouraged by the proposed scheme will result in improvements to the physical fitness of users. Particularly positive will be the impact on those transitioning from less active lifestyles. The WHO's HEAT tool has been used to quantify the potential monetised benefits of the estimated increase in physical activity. The WHO HEAT calculation indicates a total physical activity-related health benefit of £434,000 over the 10 year scheme life (discounted to 2010 prices).	The WHO HEAT calculation indicates a total physical activity-related health benefit of £434,000 over the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£434,000	
	Journey quality	There is predicted to be a beneficial impact on journey quality by providing a more coherent and direct route for cyclists with a greater level of separation from motorised vehicle traffic. The monetised benefits of the change in journey quality has been estimated using the values as presented in TAG Data Book A4.1.67. The journey quality benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £330,044 over the 10 year scheme life (discounted to 2010 prices).	Journey quality benefits of £330,044 over the 10 year scheme life (discounted to 2010 prices) are predicted.	Moderate beneficial	£330,044	
	Accidents	There is predicted to be a beneficial impact on accident rates by providing a greater level of separation for cyclists from motorised vehicle traffic. The monetised benefits of accident reduction have been calculated using the TAG Data Book A 4.1.3. Monetising these benefits using values detailed in the TAG Data Book A 4.1.3 produces a forecast monetised benefit of £40,881 across the 10 year scheme life (discounted to 2010 prices).	A forecast benefit of £40,881 across the 10 year scheme life (discounted to 2010 prices) is predicted.	Slight beneficial	£40,881	N/A
	Security	There is predicted to be no change to the likely incidence of crime, or fear of crime, related to road users (including non-motorised) as a result of the proposed scheme. A detailed assessment of security impacts is not necessary.	N/A	N/A	N/A	N/A
	Access to services	There is predicted to be no change in the routes served by the public transport system or accessibility to services. A detailed assessment of the change in level of access to services is not necessary.	N/A	N/A	N/A	N/A
	Affordability	The proposed scheme has not been designed to address affordability of access to transport services. An assessment of affordability is not necessary.	N/A	N/A	N/A	N/A
	Severance	There is predicted to be a slight positive change in severance for cyclists resulting from the implementation of the scheme due to the proposed improvements in the level of access for cyclists.	N/A	Slight beneficial	N/A	N/A
	Option and non-use values	The scheme does not include measures that will "substantially change the availability of transport services within the study area" (assessment criterion set out in WebTAG Unit A4.1) therefore an assessment of this social impact is not necessary.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The present value of costs is £873,602 (discounted to 2010 prices).	N/A	N/A	-£873,602	
	Indirect Tax Revenues	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby reducing the tax revenue derived from motor fuel purchases. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on tax revenues related to a reduction in total vehicle kilometres. A Marginal External Cost of £77,413 across the 10 year scheme life (discounted to 2010 prices) is predicted.	Marginal External Cost of £77,413 across the 10 year scheme life (discounted to 2010 prices).	Slight adverse	-£77,413	

Appraisal Summary Table 2

Date produced:	5	11	2015

Contact:	
Name	G. Oliver
Organisation	RBWM
Role	Promoter/Official

Name of scheme:	A4 Corridor Cycle Scheme - Royal Borough of Windsor and Maidenhead section only
Description of scheme:	The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. Additional measures are included at key locations including bus stops, to prevent conflicts between cyclists and other road users.

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on business users. The potential reduction in congestion would also benefit transport providers through reduced and more consistent journey times. A proportion of new cycling trips is expected to shift from existing public transport services which would have an impact on fare revenue for transport providers. Overall, the impacts are predicted to be negligible. Due to the scale of the increase in cycling trips as a proportion of all journey modes, a quantitative assessment of the direct economic impacts on business users and transport providers is not necessary.	N/A	Negligible change	N/A	N/A
	Reliability impact on Business users	As above, the scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a potentially positive benefit on journey time reliability. The scale of potential impact is predicted to be negligible. Due to the scale of the proposed development a quantitative assessment of the direct economic impacts on business users and transport providers has not be undertaken.	N/A	Slight beneficial	N/A	
	Regeneration	The Maidenhead Area Action Plan identifies the link to the Town Centre from the A4 as a key route to be enhanced to support accessibility and regeneration objectives. The proposed scheme is therefore predicted to have a slight positive benefit on the regeneration related objectives.	N/A	Slight beneficial	N/A	
	Wider Impacts	Research by the London School of Economics (2011) concluded that each cyclist contributes a Gross Cycling Product (GCP) of £230 per year to the economy. Based on the scheme proposals, and associated changes in cycling levels, a wider economic benefit of £132,077 will be generated over the 10 year scheme life.	Wider economic benefit estimated at £132,077 across the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£132,077	
Environmental	Noise	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme is predicted to be below the levels where a significant change in noise levels would be detected by receptors. Therefore, a detailed assessment of noise impacts is not necessary.	N/A	Neutral	N/A	N/A
	Air Quality	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme are predicted below the levels where a significant change in air quality levels would be detected. Therefore, a detailed assessment of air quality impacts is not necessary.	N/A	Neutral	N/A	N/A
	Greenhouse gases	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on greenhouse gas emissions. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on greenhouse gas emissions related to a reduction in total vehicle kilometres. Based on the scheme proposals, and predicted changes in cycling levels, the Marginal External Benefit of £6,985 across the 10 year scheme life (discounted to 2010 prices).	Marginal External Benefit of £6,985 across the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£6,985	
	Landscape	The landscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Townscape	The townscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Historic Environment	It is noted that Maidenhead Bridge is Grade 1 listed (1117619). There is also a Grade 2 listed milestone on Morebridge Road (1319372) by the bridge parapet. The scheme proposals are not predicted to impact on these historic features.	N/A	Neutral	N/A	
	Biodiversity	All infrastructure will be provided within the extent of the adopted highway. No significant biodiversity impacts are predicted to result from the scheme. A detailed ecology assessment is not necessary.	N/A	Neutral	N/A	
	Water Environment	There is predicted to be no change to the highway drainage requirements or to the means of discharge, and there would be no significant change to the volume and quality discharged. A detailed assessment of flood risk or drainage impact is not necessary.	N/A	Neutral	N/A	
Social	Commuting and Other users	The proposed scheme is predicted to result in improvements to existing journey time and journey quality for commuting and utility cycling trips. The monetised benefits have been based on the coefficients of utility changes for cycling facilities set out in WebTAG A5.1. The value of the journey time savings for cyclists is estimated at £20,691 over the 10 year scheme life (discounted to 2010 prices).	The Value of the journey time savings is estimated at £20,691 over the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£20,691	N/A
	Reliability impact on Commuting and Other users	Improvements to overall cycling journey time reliability along scheme section of the A4 corridor are predicted. The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips. The journey time benefits for cyclists are described above. The resultant potential reduction in congestion would also benefit vehicular transport users on the A4. However, a detailed assessment of impacts on non-cycling journeys is not necessary due to the scale of change in traffic levels predicted.	N/A	Slight beneficial	N/A	
	Physical activity	The additional cycling journeys encouraged by the proposed scheme will result in improvements to the physical fitness of users. Particularly positive will be the impact on those transitioning from less active lifestyles. The WHO's HEAT tool has been used to quantify the potential monetised benefits of the estimated increase in physical activity. The WHO HEAT calculation indicates a total physical activity-related health benefit of £242,000 over the 10 year scheme life (discounted to 2010 prices).	The WHO HEAT calculation indicates a total physical activity-related health benefit of £242,000 over the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£242,000	
	Journey quality	There is predicted to be a beneficial impact on journey quality by providing a more coherent and direct route for cyclists with a greater level of separation from motorised vehicle traffic. The monetised benefits of the change in journey quality has been estimated using the values as presented in TAG Data Book A4.1.67. The journey quality benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £115,426 over the 10 year scheme life (discounted to 2010 prices).	The journey quality benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £115,426 over the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£115,426	
	Accidents	There is predicted to be a beneficial impact on accident rates by providing a greater level of separation for cyclists from motorised vehicle traffic. The monetised benefits of accident reduction have been calculated using the TAG Data Book A 4.1.3. Monetising these benefits using values detailed in the TAG Data Book A 4.1.3 produces a forecast monetised benefit of £47,694 across the 10 year scheme life (discounted to 2010 prices).	Monetising these benefits using values detailed in the TAG Data Book A 4.1.3 produces a forecast monetised benefit of £47,694 across the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£47,694	N/A
	Security	There is predicted to be no change to the likely incidence of crime, or fear of crime, related to road users (including non-motorised) as a result of the proposed scheme. A detailed assessment of security impacts is not necessary.	N/A	N/A	N/A	N/A
	Access to services	There is predicted to be no change in the routes served by the public transport system or accessibility to services. A detailed assessment of the change in level of access to services is not necessary.	N/A	N/A	N/A	N/A
	Affordability	The proposed scheme has not been designed to address affordability of access to transport services. An assessment of affordability is not necessary.	N/A	N/A	N/A	N/A
	Severance	There is predicted to be a slight positive change in severance for cyclists resulting from the implementation of the scheme due to the proposed improvements in the level of access for cyclists.	N/A	Slight beneficial	N/A	N/A
	Option and non-use values	The scheme does not include measures that will "substantially change the availability of transport services within the study area" (assessment criterion set out in WebTAG Unit A4.1) therefore an assessment of this social impact is not necessary.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The present value of costs is £600,601 (discounted to 2010 prices).	N/A	N/A	-£600,601	
	Indirect Tax Revenues	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby reducing the tax revenue derived from motor fuel purchases. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on tax revenues related to a reduction in total vehicle kilometres. A Marginal External Cost of £43,456 across the 10 year scheme life (discounted to 2010 prices) is predicted.	Marginal External Cost of £43,456 across the 10 year scheme life (discounted to 2010 prices).	Slight adverse	-£43,456	

Appraisal Summary Table 3

Date produced:	5	11	2015

Contact:	
Name	R. Beremauro & G. Oliver
Organisation	SBC & RBWM
Role	Promoter/Official

Name of scheme:	A4 Corridor Cycle Scheme - Slough Borough Council (SBC)and Royal Borough of Windsor and Maidenhead (RBWM) sections both implemented.
Description of scheme:	SBC Section: The finalised option includes the provision of new off-carriageway cycle route, running along the north side of the A4 between Burnham Lane and the Huntercombe Lane junction. RBWM Section: The finalised option includes the provision of 2 metre wide cycle lanes on both sides of the A4. The proposed new cycle lanes would be a combination of off-carriageway pedestrian / cycleways and on-carriageway segregated with-flow cycle lanes. Additional measures are included at key locations including bus stops, to prevent conflicts between cyclists and other road users.

Impacts		Summary of key impacts	Assessment			
			Quantitative	Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on business users. The potential reduction in congestion would also benefit transport providers through reduced and more consistent journey times. A proportion of new cycling trips is expected to shift from existing public transport services which would have an impact on fare revenue for transport providers. Overall, the impacts are predicted to be negligible. Due to the scale of the increase in cycling trips as a proportion of all journey modes, a quantitative assessment of the direct economic impacts on business users and transport providers is not necessary.	N/A	Negligible change	N/A	N/A
	Reliability impact on Business users	As above, the scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a potentially positive benefit on journey time reliability. The scale of potential impact is predicted to be negligible. Due to the scale of the proposed development a quantitative assessment of the direct economic impacts on business users and transport providers has not be undertaken.	N/A	Slight beneficial	N/A	
	Regeneration	The SBC section of the proposed scheme is not linked to specific regeneration policies or strategy. However, the Maidenhead Area Action Plan identifies the link to the Town Centre from the A4 as a key route to be enhanced to support accessibility and regeneration objectives. The proposed scheme is therefore predicted to have a slight positive benefit on the regeneration related objectives.	N/A	Slight beneficial	N/A	
	Wider Impacts	Research by the London School of Economics (2011) concluded that each cyclist contributes a Gross Cycling Product (GCP) of £230 per year to the economy. Based on the scheme proposals, and associated changes in cycling levels, a wider economic benefit of £402,901 will be generated over the 10 year scheme life.	Wider economic benefit estimated at £402,901 across the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£402,901	
Environmental	Noise	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme is predicted to be below the levels where a significant change in noise levels would be detected by receptors. Therefore, a detailed assessment of noise impacts is not necessary.	N/A	Neutral	N/A	N/A
	Air Quality	The change in traffic flows and speeds on the A4 corridor resulting from the proposed scheme are predicted below the levels where a significant change in air quality levels would be detected. Therefore, a detailed assessment of air quality impacts is not necessary.	N/A	Neutral	N/A	N/A
	Greenhouse gases	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby having a positive benefit on greenhouse gas emissions. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on greenhouse gas emissions related to a reduction in total vehicle kilometres. Based on the scheme proposals, and predicted changes in cycling levels, the Marginal External Benefit of £147,257 across the 10 year scheme life (discounted to 2010 prices).	Marginal External Benefit of £147,257 across the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£147,257	
	Landscape	The landscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Townscape	The townscape impacts are predicted to be negligible due to proposed scale of infrastructure interventions. A detailed assessment of landscape impacts is not necessary.	N/A	Negligible change	N/A	
	Historic Environment	It is noted that Maidenhead Bridge is Grade 1 listed (1117619). There are also Grade 2 listed milestones at Bath Road / Station Road junction (1321974) and on Morebridge Road (1319372) – by bridge parapet. The scheme proposals do not impact on these historic features.	N/A	Neutral	N/A	
	Biodiversity	All infrastructure will be provided within the extent of the adopted highway. No significant biodiversity impacts are predicted to result from the scheme. A detailed ecology assessment is not necessary.	N/A	Neutral	N/A	
	Water Environment	There is predicted to be no change to the highway drainage requirements or to the means of discharge, and there would be no significant change to the volume and quality discharged. A detailed assessment of flood risk or drainage impact is not necessary.	N/A	Neutral	N/A	
Social	Commuting and Other users	The proposed scheme is predicted to result in improvements to existing journey time and journey quality for commuting and utility cycling trips. The monetised benefits have been based on the coefficients of utility changes for cycling facilities set out in WebTAG A5.1. The value of the journey time savings for cyclists is estimated at £20,691 over the 10 year scheme life (discounted to 2010 prices).	The Value of the journey time savings is estimated at £20,691 over the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£20,691	N/A
	Reliability impact on Commuting and Other users	Improvements to overall cycling journey time reliability along scheme section of the A4 corridor are predicted. The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips. The journey time benefits for cyclists are described above. The resultant potential reduction in congestion would also benefit vehicular transport users on the A4. However, a detailed assessment of impacts on non-cycling journeys is not necessary due to the scale of change in traffic levels predicted.	N/A	Slight beneficial	N/A	
	Physical activity	The additional cycling journeys encouraged by the proposed scheme will result in improvements to the physical fitness of users. Particularly positive will be the impact on those transitioning from less active lifestyles. The WHO's HEAT tool has been used to quantify the potential monetised benefits of the estimated increase in physical activity. The WHO HEAT calculation indicates a total physical activity-related health benefit of £741,000 over the 10 year scheme life (discounted to 2010 prices).	The WHO HEAT calculation indicates a total physical activity-related health benefit of £741,000 over the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£741,000	
	Journey quality	There is predicted to be a beneficial impact on journey quality by providing a more coherent and direct route for cyclists with a greater level of separation from motorised vehicle traffic. The monetised benefits of the change in journey quality has been estimated using the values as presented in TAG Data Book A4.1.67. The journey quality benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £607,078 over the 10 year scheme life (discounted to 2010 prices).	The journey quality benefit values were applied to the existing and additional cycling trips along the scheme route. The results of this indicate a journey quality benefit of £607,078 over the 10 year scheme life (discounted to 2010 prices).	Moderate beneficial	£607,078	
	Accidents	There is predicted to be a beneficial impact on accident rates by providing a greater level of separation for cyclists from motorised vehicle traffic. The monetised benefits of accident reduction have been calculated using the TAG Data Book A 4.1.3. Monetising these benefits using values detailed in the TAG Data Book A 4.1.3 produces a forecast monetised benefit of £88,575 across the 10 year scheme life (discounted to 2010 prices).	Monetising these benefits using values detailed in the TAG Data Book A 4.1.3 produces a forecast monetised benefit of £88,575 across the 10 year scheme life (discounted to 2010 prices).	Slight beneficial	£88,575	N/A
	Security	There is predicted to be no change to the likely incidence of crime, or fear of crime, related to road users (including non-motorised) as a result of the proposed scheme. A detailed assessment of security impacts is not necessary.	N/A	N/A	N/A	N/A
	Access to services	There is predicted to be no change in the routes served by the public transport system or accessibility to services. A detailed assessment of the change in level of access to services is not necessary.	N/A	N/A	N/A	N/A
	Affordability	The proposed scheme has not been designed to address affordability of access to transport services. An assessment of affordability is not necessary.	N/A	N/A	N/A	N/A
	Severance	There is predicted to be a slight positive change in severance for cyclists resulting from the implementation of the scheme due to the proposed improvements in the level of access for cyclists.	N/A	Slight beneficial	N/A	N/A
	Option and non-use values	The scheme does not include measures that will "substantially change the availability of transport services within the study area" (assessment criterion set out in WebTAG Unit A4.1) therefore an assessment of this social impact is not necessary.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The present value of costs is £1,474,203 (discounted to 2010 prices).	N/A	N/A	-£1,474,203	
	Indirect Tax Revenues	The scheme proposals are predicted to result in a modal shift from private vehicle trips to cycle trips, thereby reducing the tax revenue derived from motor fuel purchases. The Marginal External Costs method set out in TAG Data Book Table A 5.4.2 includes a monetary assessment of impacts on tax revenues related to a reduction in total vehicle kilometres. A Marginal External Cost of £169,062 across the 10 year scheme life (discounted to 2010 prices) is predicted.	Marginal External Cost of £169,062 across the 10 year scheme life (discounted to 2010 prices).	Slight adverse	-£169,062	