Yeovil Western Corridor
Major Scheme Business Case

Appraisal Specification Report

February 2014

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Highways and Transport Commissioning, Somerset County Council, C7, County Hall, Taunton, TA1 4DY
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1 Introduction

1.1 Purpose of the report

The Appraisal Specification Report (ASR) seeks to identify appropriate methodologies for the various elements of appraisal required for a Major Scheme Business Case (MSBC). It will provide a basis and reference for the work undertaken and ensure that all parties (including Somerset County Council (SCC), the Local Transport Board (LTB), the Independent Transport Advisor (ITA) and Consultants undertaking work) are aware of methods, assumptions, timescales and risks.

At this stage the ASR focuses on the Outline Business Case. It will be updated prior to work on the Full Business Case.

Consistent with WebTAG Unit 2.1.1 (For Consultation), the ASR identifies a proportionate approach to appraisal, consistent with:

- the scale and severity of impacts identified in the OAR;
- the level of uncertainty about estimated impacts; and
- the focus of the local objectives, reflecting the need for intervention.

This approach can then be agreed with all parties.

At the time of writing the Project is underway, consistent with the previously issued Draft ASR. It is intended that the ASR will be reviewed and refined throughout the development of the MSBC.

The methodologies outlined in the report are drawn from, and intended to be consistent with, WebTAG – the DfT’s online guidance on the conduct of transport studies1. The structure of this report is based on the Highways Agency’s Interim Advice Note 176/13: Guidance Note for the Production of an Appraisal Specification Report2. Although intended for Highways Agency schemes it is considered equally applicable to other Major Schemes. The content is also considered to be consistent with the principles of WebTAG3; in a few specific cases deviation from the detail WebTAG is proposed and justified.

1.2 Scheme Location and Description

The Yeovil Western Corridor (see Figure 1) is a critical part of Yeovil’s highway network, providing access to key employment and residential areas. The southern part of the corridor is part of the A30 / A3088 route which provides Yeovil and the wider area with access to the strategic road network (A303) to the northwest.

This scheme delivers improved pedestrian and cycling links along the Yeovil Western Corridor, as well as junction enhancements to improve traffic flow. This

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3 WebTAG Unit 2.1.2 (For Consultation) (Step 9)
scheme will improve journey times, reduce congestion and provide safer links for pedestrians and cyclists along this corridor.

1.3 Current Stage of the Project
The Yeovil Western Corridor is one of five schemes currently supported by the Heart of the South West LTB as part of its major scheme programme for the period from 2015 to 2019. A business case is being developed to secure funding for the scheme as set out in the LTB assurance framework.

1.4 Overall Project Programme
A detailed project programme will be produced and refined during the development of the outline and detailed business case submissions. Relevant key dates are highlighted below:

- Appraisal Specification Report submission: November 2013
- Options Assessment Report submission: November 2013
- ASR agreed by LTB: March 2014
- Outline Business Case submission: March 2014
- Consultation begins: March 2014
- LTB Approval: July 2014
- Full Business Case submission: Mid 2015
- Construction start date: Mid 2015
- Construction finish date: End 2017

Detailed delivery dates are provided Appendix A.

1.5 Consultation with statutory environmental bodies
Consultation with the following bodies are underway as of February 2014, with the ASR issued to:
- Environment Agency
- English Heritage
- Natural England
2 Challenges and issues

2.1 Strategic Case

Existing Land Uses
The Yeovil Western Corridor is critical in providing access to key employment sites and residential areas. Major trip generators on the Western Corridor include two large residential areas on the eastern side of Western Ave and at the southern end of the corridor. Houndstone Business Park and Lufton Trading Estate in the northwest and AgustaWestland and the Lynx Trading Estate in the southeast are key employment sites with direct access from the Western Corridor. ASDA supermarket on Preston Road and Yeovil Town Football Club are located very close to the corridor.

Pedestrian/Cycle Issues
Pedestrian facilities along the Western Corridor are fairly minimal and severance issues are significant. Footway is provided on the eastern side of the corridor for its entire length but on the western side there is only one short stretch of footway on Bunford Lane between Preston Rd and Bluebell Rd. There are a number of refuge crossings provided for pedestrians including three across Western Avenue towards the northern end and two across the entrances to Copse Rd and Stourton Way (North). However, heavy traffic flows can make using these facilities unpleasant and, potentially, unsafe. There are also some lengths of disconnected off-road cycle path that run between the houses in the residential area east of Western Avenue, making use of the river valley path and other rights of way. Otherwise no cycling facilities exist on the Western Corridor north of Preston Rd.

Proposed Development
South Somerset District Council’s proposed submission Local Plan (2011-2028) identifies a number of developments that will be served directly by the Western Corridor. A total of 1,547 dwellings will be delivered by residential developments at Brimsmore (830) and Lufton (717). A 16 hectare site at Bunford Park has planning permission for B1 employment but requires improvements along this corridor to release the full development potential. The corridor will also serve a 4.5 hectare site of predominately B1 employment at Lufton which also has planning permission. Improvements are required on the Western Corridor to enable these developments to be delivered.

Network Operation without Intervention
The biggest increases in morning peak traffic resulting from the development proposals would be at the northern end of the corridor with the junctions at Thorne Lane, Copse Rd, Houndstone Retail Park and Preston Rd seeing growth in traffic of 20-25%. In the evening peak Preston Rd, Bluebell Rd and Lysander Rd roundabouts would see the growth of around 12-15%.
Analysis predicted that increased congestion in the Western Corridor would add over four minutes to the northbound journey from the A30/West Coker Road junction to Thorne Lane in both peak hours. This would increase the journey time from about five minutes to over nine minutes. In the southbound direction, increased congestion would add five minutes to the journey in the AM peak hour, increasing the current time from about six minutes to over 11 minutes. Much of the delay would occur on the southbound approach to Westland’s roundabout. The PM peak hour journey time would increase by about two minutes.

**Conclusion**

Based on consideration of existing traffic conditions, severance issues caused by a lack of pedestrian crossing issues, the presence of key employment sites and the impact of planned future development it is considered that there is a strong case for intervention.

### 2.2 Scheme Objectives

The objectives of the Yeovil Western Corridor have been developed based on an understanding of the current situation, future situation and the need for intervention.

The broad objectives below are as given in the Options Appraisal Report, but details have been added to ensure that they are Specific, Measurable, Accepted, Realistic and Time defined.

It will also need to be shown that the scheme supports local and national policy objectives. Although not explicitly part of the Appraisal Summary Table and thus not discussed in detail in this ASR, the Business Case will consider the ‘Integration’ sub-objectives on links to land use and other government policies, ensuring that policy integration is sound.

#### 2.2.1 Transport Objectives

- Reduce peak hour congestion compared to a non-intervention scenario along the Western Corridor
  - Specifically, improve AM (0700-1000) and PM (1530-1830) north-south/south-north journey times by a statistically significant amount through the Western Corridor in comparison to a Do Minimum scenario.\(^4\)

- Improve facilities for pedestrians and cyclists along the Western Corridor;
  - Specifically, provide safer links for pedestrians and cyclists along and across the Western Corridor, increasing the number of people using these modes in comparison with a Do Minimum Scenario and reducing the number of accidents involving them in comparison with current levels.

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\(^4\) It is expected that benefits will also accrue at busy times outside of these periods, but the ‘SMART’ objective focuses on peak hours for evaluation purposes.
2.2.2 Other Objectives

- Support the economy in Yeovil by supporting the delivery of employment and residential sites
  
  - Specifically, provide the transport links required to release and support the delivery of employment land (19.5 hectares) and residential land (1460 dwellings) at Brimsmore, Lufton and Bunford Park in Yeovil. This is detailed in South Somerset District Council’s proposed submission Core Strategy 2011 to 2028\(^5\).

- Reduce carbon emissions, compared to a Do Minimum scenario, across modelled area.
  
  - As estimated using the proxy of traffic flows and speeds.

2.3 Options

A number of transport intervention options have been considered in order to develop the scheme that best meets the objectives of the Western Corridor study. An Option Assessment Report has been produced that describes the options considered and the methodology used for appraising options.

2.4 Transport and Road Infrastructure Deliverables

The deliverables consist of works to five junctions, pedestrian/cycle crossings, and a series of cycleway and footway schemes. Scheme improvements include:

- ‘Copse Road’ Roundabout (Western Avenue/Copse Road);
- ‘Preston Road’ Roundabout (Preston Road/Bunford Lane/Lufton Way/Western Avenue);
- ‘Bluebell’ Roundabout (Bluebell Road/Bunford Lane);
- ‘Westlands’ Roundabout (A3088 Cartgate Link/Bunford Lane/Western Relief Road);
- ‘Lysander Road’ Roundabout (Watercombe Lane/Lysander Road/Western Relief Road); and
- A number of footway and cycleway schemes within the Western Corridor.

3 Transport Modelling

3.1 Likely Scale of impacts
It is considered that the majority of the impact will be within the Western Corridor itself, with some changes in traffic patterns across the wider urban area (particularly alternative routes to/from the town centre such as Preston Road and Lysander Road). It is also possible that some effect will be seen on routing to/from the A303 along the A3088, A37, A359 and, conceivably, the unclassified Tintinhull Road.

Zoning of the model is consistent with WebTAG\(^6\). The Western Corridor, along with the remainder of the town itself, is contained as 179 zones within the ‘Area of Detailed Modelling’. The ‘Rest of the Fully Modelled Area’ contains the A303 and the alternative routes described above, surrounding villages, the town of Sherborne, and the significant routes between those areas (see Figure 2). This latter area is made up of 48 zones.

The ‘External Area’ (much of the rest of the UK) is incorporated as 56 very large zones with appropriate connections onto the local network.

3.2 Existing knowledge and data
Previous work on this scheme has used versions of the Yeovil SATURN Traffic Model (YTM1 and YTM2), which were validated against 2002 and 2007 traffic data respectively. Those models were agreed with the Highways Agency (HA). A third version of this model, the Third Yeovil Strategic Traffic Model (YSTM3) is currently under construction; a validated base model has been completed as of January 2014 and forecasting is underway. The methodology for the validated model was agreed with the HA. Details of the modelling are given in Section 3.5.

3.3 Additional data requirements
The validated model has been constructed using data collected in 2010 and 2011, and hence is well within the maximum age of six years indicated by DMRB (Volume 12, Section 1, Part 1). The data collection exercise included a large number of turning and link counts, ‘floating observer’ journey time surveys, car park interviews and a comprehensive series of Roadside Interviews covering all major routes into the town. Data Collection and Data Collation reports are provided in Appendix B. It is not considered that any additional transport data collection will be required except for information regarding future developments (see below).

3.4 Constraints
Modelling will be undertaken ensuring consistency with WebTAG in order to appropriately inform subsequent appraisal.

There is currently a level of uncertainty with regards to the location (although not the scale) of future development. It is currently proposed to undertake one sensitivity test in order to account for the above issue.

\(^6\) WebTAG Unit 3.19, para. 2.2.5
3.5 Proposed methodology, including:

3.5.1 Base model
The YSTM3 base model has been finalised subject to agreement with the ITA. Full details on its development are provided in the appended Draft Local Model Validation Report; the techniques used are summarised below and have been agreed with the Highways Agency.

Study area
The immediate study area consists of the Western Corridor, as defined previously. The network of the YSTM3 SATURN model covers the town of Yeovil and the surrounding area, including a stretch of the A303 (see Figure 2). The zoning structure is detailed within the town itself, and slightly less detailed in the hinterland (with villages, for example, consisting of a single zone). Zone plans can be seen in the Local Model Validation Report (LMVR) (Appendix C).

Time Periods
The model will cover three periods. The AM and PM Peaks were identified from ATC data. The most representative interpeak hour was identified by examining the hours from 11:00 – 15:00 (where flows are reasonably constant (within +/- 4%) and selecting the hour with flows closest to the average for that period.

- AM Peak 08:00 – 09:00
- Interpeak 13:00 – 14:00
- PM Peak 17:00 – 18:00

This selection method is consistent with WebTAG7.

User Classes
In the validated base model there are five user classes:

1) Car – commute (1 passenger car unit per vehicle)
2) Car – employer’s business (1 pcu/veh)
3) Car – other (1 pcu/veh)
4) Light Goods (1 pcu/veh)
5) Heavy Goods (1.9 pcu for OGV1; 2.9 pcu for OGV2)

Matrix development
The matrix building methodology is broken down to 3 key steps: development of trip ends, distribution of trips and final adjustments.

The trip ends have been derived using the same methodology as the National Trip End Model (NTEM) (WebTAG Unit 3.15.2) because it has been possible to make

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7 WebTAG Unit 3.19, Section 2.5
direct use of the NTEM software engine to rerun the model with a disaggregated set of zones across the area of model coverage. The disaggregation of the NTEM zone data has necessitated a detailed study of the population and land uses located in each YSTM3 zone which has led to a detailed and logical set of trip ends.

The distribution of trips to and from central and peripheral sectors has been synthesised by a gravity model. Two gravity models have been used to distribute different parts of the matrix, primarily due to variation in the level of confidence attributed to the observation of different movements. Trips between external model zones have not been synthesised but instead informed directly by RSI survey or traffic count data.

A final series of adjustments has been made to the prior matrix including adjustment of the synthesised matrix to observed RSI survey data (by purpose), allocation of trips to car park zones (by purpose), addition of car trips to the railway stations (commuting trips only) and incorporation of an observed school escort trip matrix. In this final stage non-synthesised matrix components such as external-to-external car trips and freight movements have also been incorporated into the matrix. Full details are provided in the LMVR.

**Network coding**

The entire modelled network is represented with simulation coding. The level of network detail is highest within the built-up area of Yeovil (‘area of detailed modelling’) where a majority of links and junctions are modelled (Figure 3). Throughout this area only minor residential links have been omitted from the network.

Within the area surrounding Yeovil there are numerous rural links, and judgement has been used to determine a subset of links for inclusion in the model. The included links represent the key routes which are most likely to be used by the majority of traffic travelling through the surrounding area (Figure 4). Minor rural links which would not be able to carry any significant traffic flow have not been included in the network.

All links that have been included in the model, including those near to the edge of the modelled area, will represent full traffic flows.

Despite being coded in simulation, all modelled links also incorporate speed flow curves. These speed flow curves have been retained from the existing version of the model in order to provide a better representation of link speed in accordance with assigned flows.

**Calibration procedure**

The following step-by-step process has been adopted to calibrate the model:

1. Assign prior matrix
2. Optimise traffic signals timings (selected sites only)
3. Undertake initial network calibration using journey time survey data
4. Make manual matrix adjustments based on comparison between assigned and observed trip distributions at RSI sites.
Step 5 - Manual matrix calibration based on comparison between observed and modelled traffic flows (including further network adjustments where required).

During steps 3-5 an iterative process has been adopted where data from the model is output and compared to observed data such as traffic flows or journey times in order to identify problems and solutions. Adjustments are made to the network and trip matrix to improve the fit between the model and the observed data.

Validation

Details of the validation results will be provided in the final LMVR when available. Validation will be against independent data (not used in calibration) as far as possible and will be reported against DMRB/WebTAG criteria.

3.5.2 The proposed assessment/modelling approach

The YSTM3 SATURN model is a highway model. Due to current travel patterns within the town it is not considered necessary or appropriate to develop a full variable demand model (VDM).

After discussion with the ITA the following criteria thresholds for the requirement for VDM are considered appropriate.

Cost

Historically VDM has been considered appropriate where the capital cost is greater than £5 Million. This is however an old figure; based on the analysis of removal of risk and optimism bias, and conversion to 2002 prices a new threshold of £7.5 Million capital cost (2015 prices) has been set. Above this level consideration should be given to VDM. The Yeovil Western Corridor Scheme, at £9.0 Million, falls just above that threshold.

Frequency, Distribution and Time Period

Two (approximate) thresholds at which VDM might be required are:

- 95% of generalised cost changes between base and forecast year are less than 5 minutes
- 95% of generalised cost changes between with- and without-scheme models are less than 5 minutes
- 95% of generalised cost changes between peak and interpeak for base and forecast years are less than 5 minutes

Tests have been undertaken which demonstrate that the Yeovil model meets the criteria in nearly all cases, but not quite meeting the 95% threshold for changes from base to forecast. This is illustrated in the tables below, where figures under 300 seconds represent a ‘pass’ using the above criteria.

It can be seen that the majority of tests undertaken are within the five minute threshold, whilst even those which fail are within a 6-7 minute threshold. This is consistent with the nature of the scheme: the economic benefits are derived from a high number of vehicles gaining benefits of around five minutes or less. Similarly few if any journeys further from the scheme will derive such large benefits.
Mode Choice

It is considered extremely unlikely that, for a given journey, the scheme would result in a significant change between generalised cost for buses and cars, given that the scheme does not include bus priority measures.

In any case the extremely low bus mode share in Yeovil means that even a fairly sizeable proportional increase in bus use would have no significant effect on car journeys. Similarly, increases cycling and walking are expected but unlikely to affect car use to an extent which would affect modelling results. This approach is also considered to be consistent with DMRB\(^8\) which notes that this will be sufficient where “common sense and judgement” indicate that other modes are unlikely to provide significant modal shift.

In summary, it is concluded that the use of Variable Demand Modelling (VDM) would be disproportionate to the size of the scheme given that changes in frequency and distribution are likely to be very small whilst modal shift as a result of the scheme would be negligible (insofar as the modelling would be affected) in the context of a very large car mode share.

\(^8\) DMRB Volume 12, Section 1 Part 1, paragraph 17.3.
3.5.3 The forecast approach

Scenarios

For the appraisal of the Western Corridor scheme it will be necessary to develop peak hour (and Interpeak) forecasts for the scheme opening year and a scheme design year. The assumption is that the completion of the scheme will be in 2018, and the first forecast will be for that year. WebTAG\(^9\) allows for some flexibility in choosing an appropriate second forecast year, noting that 10-15 years after opening is typical. Given the nature of the scheme (which is relatively localised) and the availability of planning assumptions (the period of the draft Local Plan) a design year of 2028 (10 years after opening) will be assumed. AM Peak, Interpeak and PM Peak models will be developed for each forecast year (consistent with WebTAG Unit 3.1).

These forecasts will be the reference case forecasts input into the demand model and will include a number of factors affecting demand and supply for transport (such as developments and highway improvements).

As discussed above, it is currently unclear whether the proposed location for an urban extension will be adopted under South Somerset’s Core Strategy. WebTAG\(^10\) indicates that reference cases should generally only include development considered “near certain” or “more than likely”). The Core Scenario will thus include only consented/funded (“near certain”/“more than likely”) development and highway schemes, with additional growth in Yeovil allowed for through town-wide growth applied from TEMPRO (as per WebTAG 3.15.2), constrained to TEMPRO forecasts by deducting committed development modelled explicitly.

Based on this Core Scenario a ‘Do Minimum’ model will be developed for each forecast year. An additional ‘Do Something’ model will be developed for each forecast year which will include the Western Corridor scheme.

Notwithstanding the uncertainty discussed above, it is felt appropriate to provide a ‘High Growth’ sensitivity test which allows for the bulk of future growth to be located at South Somerset District Council’s preferred location. This will use the proposed locations and level of development currently being consulted upon as the best estimate as of December 2013. A ‘Low Growth’ scenario will also be undertaken. This is consistent with WebTAG Unit 3.15.5. Sensitivity testing is discussed further below.

It is arguable that according to the WebTAG definition schemes which are dependent on the Western Corridor should be considered only “reasonably foreseeable”\(^11\). However it is considered that, should the scheme not proceed, development could still proceed on an ad-hoc basis, with minor but unlinked network improvements. This is consistent with the National Planning Policy Framework, under which development could not be held back unless the impacts were considered “severe”.

Given the locations, the need for these ad-hoc improvements, and that each site provides a suitable access, and given also the potential for dispersion within Yeovil, it is considered likely that whilst there would be a substantial detrimental impact on the wider network it may not be possible to consider the impact as “severe” even

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\(^9\) WebTAG Unit 3.5.4 para. 4.2.4
\(^10\) WebTAG Unit 3.15.5, para. 1.5.6
\(^11\) WebTAG Unit 3.15.5, para. 1.4.5
though it would be considered to be beyond “a reasonable level of service” as defined in WebTAG A2.3.

The Uncertainty Log, outlining supply and demand assumptions, is provided in Appendix D.

**Development of Reference Case Forecasts**

The forecasting models will use five user classes, as follows:

- Commute (car)
- Employers business (car)
- Other (car)
- LGV
- HGV

The reference case forecast represents the unrestrained forecast of travel demand in the future year being modelled. Therefore it is necessary to base growth on forecasts obtained from TEMPRO (i.e. the National Trip End Model - NTEM) which provides a growth rate if generalised travel costs were to remain the same.

Development trip ends for explicitly modelled development will be added to the appropriate zones. Additional background growth will then be added to the matrix as a whole.

Trip ends for development zones (where explicitly modelled and point loaded in the network) will be based on trip generation estimates agreed in Transportation Assessments, or worked up using TRICS trip rates if existing estimates are not available or are not based on generic trip rates. An adjustment will be made to the NTEM database to reduce the forecast level of households and jobs in line with the extent of development that will be explicitly modelled. This is equivalent to using the Alternative Planning Assumptions facility within TEMPRO to avoid double counting growth, as required by WebTAG\(^\text{12}\). As also recommended by WebTAG, a review will be undertaken of whether the forecast increase in households and jobs for the NTEM zones covered by the modelled study area are suitable estimates and should be modified in this way.

Once a set of future year trip ends has been derived, the growth will be incorporated into the model by furnessing the base year matrix to the future year trip ends. Where new development zones have been added to the model, and do not have a trip distribution in the base year matrix, it will be necessary to incorporate a trip distribution for the development trips, using the existing gravity model that was used to develop the base year trip matrices.

\(^{12}\) WebTAG Unit 3.15.2
Treatment of Heavy Goods Vehicles

The approach to generating the reference case forecast outlined above applies only to light vehicle trips within the matrix. Growth in heavy goods vehicle trips will be derived separately, by adjusting the base year heavy goods vehicle matrix with growth factors derived from Department for Transport road traffic forecasts.

Model Integrity Checks

It will be necessary to undertake checks and analysis of the reference case model assignments to ensure that there are no assignment issues or matrix preparation errors.

Examples of matrix checks -

- Total amount of growth in each future year trip matrix (compared to base);
- Analysis of change in sector-to-sector demand (compared to base);
- Check of development traffic generation and distribution.

Examples of assignment checks -

- Change in traffic flow across the network (compared to base);
- Change to turning movements at observed junctions (compared to base);
- Change to origins and destinations of traffic using key links in the network on a sector basis, compared to base);
- Analysis of significant delays to ensure realistic;
- Check of all over-capacity turning movements to ensure realistic;
- Change to journey time profiles and whole route times (compared to base);
- Check of assignment convergence to ensure models are fully converged.

Convergence, Realism and Sensitivity Tests

Convergence

WebTAG outlines that high levels of convergence should be achieved for any assignment modelling and emphasises that changes due to convergence can have an impact to traffic flows and ultimately influence the travel time savings and benefits attributed to an assessment scheme.

WebTAG outlines target levels for both assignment convergence and demand/supply convergence, and these will be used as a benchmark when preparing the future year models.

Details of level of convergence achieved will be provided in the Forecasting Report.
Sensitivity Tests

Sensitivity tests will be carried out in accordance with the guidance in WebTAG\textsuperscript{13} in order to determine the potential range of outputs that could be forecast by the model for differing inputs.

Specifically, a ‘High Growth’ sensitivity test will be undertaken which includes explicitly modelled developments at the locations currently proposed in the Main Modifications to South Somerset’s Local Plan. A ‘Low Growth’ sensitivity test will reduce the growth assumptions to forecast years. This second scenario will use reduced growth factors for background growth to and from existing zones (as opposed to simply making different land use assumptions) and thus reflects possible changes in demography, economic factors or individuals’ behaviour which could result in lower levels of traffic growth across the town.

Details of the sensitivity tests undertaken will be reported in the Forecasting Report.

3.6 Communication Strategy

On completion of the modelling it will need to be approved by relevant stakeholders prior to significant additional work which relies upon it taking place.

The documents and files listed below (3.7) will be supplied for agreement by (in order):

- Somerset County Council (Technical Lead, Traffic Modelling)
- Highways Agency (or their consultant)
- Local Transport Board (Independent Transport Advisor)

It is noted that significant time will need to be allowed for review by these stakeholders.

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

3.7 Work programme and deliverables

The modelling deliverables are defined below together with the current understanding of completion dates:

- Up-to-Date ASR (January 2014 and updates if required)
- Traffic Data Collection Report (see Appendix B)
- Local Model Validation Report (March 2014)
- Forecasting Report (March 2014)
- Economic Assessment Report (or relevant part of main Report (March 2014))
- SDI (or relevant part of main Report (March 2014))

\textsuperscript{13} WebTAG Unit 3.10.4
• AST (or relevant part of main Report (March 2014))

3.8 Summary of risks added to the Project Risk Register
Traffic modelling forms the early part of the critical path for the Appraisal Project, and delay to completion of the forecasting would have a knock-on impact on the project as a whole. Similarly, delay in signing off modelling work by interested parties (including the Local Transport Board’s Independent Transport Advisor and the Highways Agency) would have a knock-on impact on the project as a whole.

• Mitigation of risks will require regular updates/communication between the relevant parties, identifying any delays at an early stage.

3.9 Change log
Draft: RWS 27/08/2013
Draft: RWS 02/10/2013 Updates based on feedback from IB
Draft: RWS 24/10/2013 Updates based on feedback from IB
Final Draft: RWS 24/10/2013
Clarification: RWS 07/11/2013 Minor clarifications to ‘scenarios’ section
Revision: RWS 21/01/2014 Removal of requirement for VDM
Revision: RWS 30/01/2014 Update programme
Revision: RWS 27/02/2014 Revision of tests for VDM
4 Economic Assessment

4.1 Likely scale of impacts
Economic costs due to construction will be limited to the Western Corridor Study Area (Figure 1).

Disbenefits due to congestion resulting from construction will occur within the Western Corridor and may extend beyond it due to reassignment of traffic.

Economic benefits are expected to be greatest within the Western Corridor itself, where journey times will reduce (especially during peak hours). There may also be benefits elsewhere in the town due to traffic routing via the (less congested) Western Corridor.

It is conceivable that, if traffic increases through the Western Corridor as a result of increased capacity, some traffic on particular journeys in the vicinity of the corridor may suffer disbenefits in terms of journey time compared with the Do Minimum.

All of the above (including construction, discussed further below) will be incorporated within the TUBA model, which will have the same geographical scope as the SATURN model.

Other costs and benefits which can be monetised are generally limited to the study area, and are discussed in more detail below.

4.2 Existing knowledge and data
An initial assessment of the economic benefits of this scheme was undertaken for the scheme prioritisation pro-forma. This assessment used model data from the previously undertaken Western Corridor Study, analysed using the Highways Agency’s PAR Spreadsheet. Benefits were derived from peak hour journey time savings. An initial estimate of the likely reduction in accidents was also made, using standard assumptions from the DfT’s COBA Manual\(^{14}\). Optimism bias was applied at 59%, which is considered particularly robust where some elements of the scheme are worked up in some detail. On this basis, over 60 years and discounted to 2010 prices, the estimated economic results were:

- Present Value of Costs: £14,712,953
- Present Value of Benefits: £59,797,119
- Benefit to Cost Ratio: 4.1

4.3 Constraints
Assessment of the transport benefits/disbenefits will use TUBA and the standard WebTAG methodology. For some elements (such as cycling/pedestrians) the methodology is less well developed and/or will require disproportionate data collection and analysis to undertake, as described in the relevant sections below.

\(^{14}\) DMRB Volume 13
Impacts on the wider economy are much more difficult to quantify, and are not generally included in the Transport Economic Efficiency Table. It is also recognised that there are some benefits (or disbenefits) which cannot be monetised and hence cannot be included in any economic assessment.

4.4 Additional data requirements

It is not foreseen that any additional data collection will be required, except for consideration of the impact on pedestrians and cyclists.

Suitable income data (or a proxy) will need to be identified for the SDI analysis (see 4.5.6 below).

4.5 Proposed methodology

The economic assessment will be derived in large part from a TUBA assessment, which will inform the Transport Economic Efficiency (TEE) Table. Other economic benefits/disbenefits will be derived from additional work, including that undertaken under other objectives, specifically:

- Regeneration
- Wider Economic Impacts
- Noise (if applicable; see Section 6)
- Air Quality (if applicable; see Section 7)
- Greenhouse Gases (see Section 8)
- Physical Fitness (see Section 15)
- Accidents and Highway Safety (See Section 17)
- Public Accounts (Indirect Tax Revenues and Cost to Broad Transport Budget)

Note that whilst guidance recently issued by DfT suggests that it is possible to calculate the benefits (or disbenefits) of journey time Reliability and Landscape it is not considered that doing so is proportionate in this case. This is explained in more detail below (4.5.4).

4.5.1 Study area

The SATURN network for the scheme will cover Yeovil and the surrounding area, as described elsewhere. The zoning structure is detailed within the town itself, and slightly less detailed in the hinterland (with villages, for example, consisting of a single zone). The TUBA assessment uses demand and travel cost (time and distance) matrices with the same zoning structure, and hence will have the same geographical coverage.
4.5.2 The proposed assessment/modelling approach - TEE

As per WebTAG\textsuperscript{15}, assessment of economic benefits to users, as presented in the Transport Economic Efficiency Table (TEE), focuses on changes in travel time and vehicle operating costs. For this scheme user charges are not relevant.

Having carried out SATURN modelling as described in Section 9, above, final (post-variable demand) matrices (disaggregated by traveller type), along with time and distance matrices, will be exported from the model for use in TUBA. TUBA (Transport User Benefit Appraisal) is software developed by DfT for economic appraisal. The software operates in accordance with WebTAG\textsuperscript{16}, using the input matrices, scheme costs, and various defined parameters to calculate the overall scheme benefits over the assessment period.

Economic Parameters

The appropriate values of all parameters will be applied, consistent with WebTAG\textsuperscript{15}. The use of multiple user classes (see ‘Modelling’) will allow detailed treatment of journey purpose, and hence allowing a distinction to be made between commuting, business, and ‘other’ car trips as well as costs and benefits for freight movements.

Scheme Specific Inputs

Data will be input for the Do Minimum, Do Something and sensitivity tests.

Output

Output will be presented in the form of a Transport Economic Efficiency Table (TEE). TUBA Outputs, including errors, will be provided. Time saving-related benefits will be broken down into six bands\textsuperscript{17}.

Note that benefits from a change in accident patterns are calculated outside of TUBA; see the relevant section below.

4.5.3 The forecast approach - TEE

The appraisal period will be 60 years from opening (i.e. 2018-2077)\textsuperscript{18}. Benefits beyond the final traffic model forecast year will be extrapolated within TUBA\textsuperscript{19}.

Whilst maintenance costs will be included for the appraisal period, it is assumed that any difference between the “Do Minimum” and “Do Something” will be negligible. This is because maintenance costs assumed in appraisal are typically derived from the QUADRO Manual; these costs are specified for particular road types with

\textsuperscript{15} WebTAG Unit 3.5.2
\textsuperscript{16} WebTAG Unit 3.5.4
\textsuperscript{17} WebTAG Unit 3.5.3 (para. 3.1.17)
\textsuperscript{18} WebTAG Unit 3.5.4 (para. 5.2.3)
\textsuperscript{19} WebTAG Unit 3.5.4 (para. 5.4)
junctons not being considered and therefore it is not possible to make a significant
distinction between the ‘Do Minimum and Do Something’

Scheme costs will be the latest available at the time of the assessment. These will
be treated as indicated in WebTAG. Increases in construction costs above inflation
will be considered, A mean risk-adjusted cost estimate will be derived and used in
the appraisal. Optimism bias will also be applied. It is currently assumed that at the
time of the economic assessment the level of scheme development will be
equivalent to the “Conditional Approval” stage corresponding to a 15% optimism bias. Should elements of the scheme be at a different stage of development then
they will be subjected to a different optimism bias.

Annualisation will be undertaken following the principles laid out in the TUBA
Guidance document. ATC data for the corridor will be reviewed to ensure that
appropriate data is used for each time slice. Initial testing has shown that weekend
and bank holiday benefits would be very small due to the nature of the corridor, and
so zero benefits will be assumed for these periods.

<table>
<thead>
<tr>
<th>Section of Week</th>
<th>Hours/Year</th>
<th>Hours/Day</th>
<th>Time Period</th>
<th>TUBA Time Period</th>
<th>Hours/Year</th>
<th>TUBA Annualisation Factor</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekday Off-Peak</td>
<td>12 hrs/day</td>
<td>3036 hrs/yr</td>
<td>Off-peak</td>
<td>0</td>
<td>0</td>
<td>Assume zero benefit</td>
<td></td>
</tr>
<tr>
<td>Weekday Pre-AM</td>
<td>1 hour/day</td>
<td>253 hrs/yr</td>
<td>AM Shoulder</td>
<td>253</td>
<td>253</td>
<td>Modelled Interpeak</td>
<td></td>
</tr>
<tr>
<td>Weekday AM Peak</td>
<td>1 hour/day</td>
<td>253 hrs/yr</td>
<td>AM Peak</td>
<td>253</td>
<td>253</td>
<td>Modelled AM Peak</td>
<td></td>
</tr>
<tr>
<td>Weekday Interpeak</td>
<td>8 hours/day</td>
<td>2024 hrs/yr</td>
<td>Inter-Peak</td>
<td>2024</td>
<td>2024</td>
<td>Modelled Interpeak</td>
<td></td>
</tr>
<tr>
<td>Weekday PM Peak</td>
<td>1 hour/day</td>
<td>253 hrs/yr</td>
<td>PM Peak</td>
<td>253</td>
<td>253</td>
<td>Modelled PM Peak</td>
<td></td>
</tr>
<tr>
<td>Weekday Post-PM</td>
<td>1 hour/day</td>
<td>253 hrs/yr</td>
<td>PM Shoulder</td>
<td>253</td>
<td>253</td>
<td>Modelled Interpeak</td>
<td></td>
</tr>
<tr>
<td>Weekend Peak</td>
<td>8 hrs/week</td>
<td>416 hrs/yr</td>
<td>Weekend</td>
<td>416</td>
<td>416</td>
<td>Assume Zero Benefit</td>
<td></td>
</tr>
<tr>
<td>Weekend Off-Peak</td>
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<td>2080 hrs/yr</td>
<td>None</td>
<td>0</td>
<td>0</td>
<td>Assume Zero Benefit</td>
<td></td>
</tr>
<tr>
<td>Bank Holidays</td>
<td>8 days/year</td>
<td>192 hrs/yr</td>
<td>None</td>
<td>0</td>
<td>0</td>
<td>Assume Zero Benefit</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.1: Indicative TUBA annualisation factors

20 It is not expected that the tested scheme will incorporate a dualled section. Should this change then
costs may differ slightly and this will be included in the assessment.
21 WebTAG Unit 3.5.9
22 WebTAG Unit 3.5.9 (para. 3.3.17)
23 WebTAG Unit 3.5.9, Tables 8 and 9
This is considered to be a robust approach, subject to refinement using ATC data, since is likely to understate the benefit (since weekends and bank holidays will be ignored).

**Construction and maintenance delays**

SATURN Model runs incorporating traffic management-related delays at each junction in the programme will be undertaken and fed into TUBA. This will enable these costs to be factored in to economic calculations.

For periods during which maintenance is profiled (see 4.5.3) delay costs will be adjusted such that there is assumed to be zero scheme benefit during these periods.

**Sensitivity testing**

Sensitivity testing can also be undertaken to demonstrate the level of benefit (seconds per vehicle passing through the study area) at which the BCR would be reduced to 1.0, and to thresholds at which the Value for Money category would change. A similar assessment can be carried out to consider changes in costs.

**4.5.4 Other economic factors**

**Reliability**

After discussion with the ITA it has been decided not to undertake an assessment of journey time reliability. Whilst these benefits can typically be 5-10% of the overall scheme value, they are relatively difficult to quantify accurately. Since they are not expected to affect the Value for Money categorisation it is not intended to quantify them.

**Regeneration**

WebTAG indicates that a Regeneration Report should be prepared “in all cases where the proposal may impact on the economic activity of a regeneration area”\(^{25}\).

The Western Corridor does not impact on such an area, and therefore a Regeneration Report is not deemed necessary.

**Wider Economic Impacts**

**Labour supply**

WebTAG recommends that this Wider Impact be assessed for all schemes (although it is not mandatory). It is considered likely that the effect on labour supply due to changes in transport costs will be beneficial (due to reduced generalised costs) but small in comparison to the length of typical commuting trips. The data collection and analysis required for a detailed quantitative study is considered disproportionate, but a semi-quantitative assessment will be carried out which considers typical changes

\(^{25}\) WebTAG Unit 2.8 (para. 4.1.1)
in commuting costs in the context of existing and proposed employment sites within the study area.

**Output change in imperfectly competitive markets**

Unlike the other wider benefits, the methodology in WebTAG is relatively straightforward for this element. The impact of decreased or increased output for a given forecast year is simply 10% of the benefits to business users in terms of time, money and reliability. It is therefore proposed to calculate this figure based on TEE results.

**Agglomeration impacts**

Whilst seeking to improve journey times and accessibility within the Western Corridor, it is not considered that it results in a step change “in an area in sufficient proximity to an economic centre”. In particular it does not fall within a “Functional Urban Area” for which an agglomeration impact assessment is considered essential.

**Move to more or less productive jobs impact**

It is not considered that the proposed scheme represents a step change in the accessibility of jobs to workers. Furthermore, no Land Use Transport Interaction (LUTI) model is available. It is thus considered that such an assessment would be both unnecessary and disproportionate to the scale of the scheme.

**Noise**

If found to be significant, this will be assessed as discussed in Section 6.

**Air Quality**

If found to be significant, this will be assessed as discussed in Section 7.

**Greenhouse Gases**

Assessed as discussed in Section 8.

**Landscape**

Recent DfT Guidance provides a methodology for monetising Landscape benefits or disbenefits. It is considered however that, in this case, Landscape will be largely unaffected (see Section 9). The BCR is likely to be unaffected by any landscape assessment, and hence detailed analysis is considered disproportionate.

**Impact on Cyclists and Pedestrians**

WebTAG\(^{26}\) indicates that an assessment of the impact on non-motorised users should be included. It indicates\(^{27}\) that, for preference, this assessment should be informed by the numbers of pedestrians and cyclists affected by the scheme.

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\(^{26}\) WebTAG Unit 1.5 (para. 1.5)
Although observed data will be collected prior to scheme opening for monitoring purposes, this will not be available in time to inform the Outline Business Case. Data is however available from the 2011 Census\(^{28}\) and there is some evidence that this can cautiously be used as an indicator for travel behaviour in general, which in turn enhances their value for evaluating transport interventions implemented at the local or regional level\(^{29}\). This will be combined with the analyst's judgement (including a site visit)\(^{30}\) to derive an assessment score.

**Accidents**

See separate Section 17 (Social – Accidents) for how these will be calculated.

**Public Accounts**

Indirect Tax Revenues and Cost to Broad Transport Budget are calculated as part of the preparation of the TEE.

### 4.5.5 Justification for the chosen approach

This approach is considered to be consistent with the relevant WebTAG unit for appraisal of a Major Scheme (specifically Unit 3.5). It is also considered to be consistent with appropriate use of TUBA and COBALT software.

Given the relatively ‘light touch’ semi-quantitative approach outlined above it is not considered necessary to use the DfT’s Wider Impacts software.

This approach is considered to be proportionate.

### 4.5.6 Social and Distributional Impacts

Based on work undertaken to date, it is assumed that there will be benefits that need to be considered (Cf. WebTAG 3.5.3 Para. 7.4 regarding ‘Initial Screening’). That being the case, and given that a SATURN and TUBA model will be available, the following process\(^{31}\) will be followed:

- **Step 1** - identification of the area impacted by changes in user benefits;
  - The area of impact to be that covered by the TUBA model, which in turn will have been derived as above.

- **Step 2** - analysis of the demographic profile in the area impacted by changes in user benefits;
  - Characteristics of transport users will be broken down into the user classes defined within ‘Modelling’, above.

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\(^{27}\) WebTAG Unit 3.5.5 (para. 1.1.4)

\(^{28}\) Accessed via NomisWeb: [http://www.nomisweb.co.uk/](http://www.nomisweb.co.uk/)


\(^{30}\) WebTAG Unit 3.5.5 (para. 1.1.5)

\(^{31}\) WebTAG Unit 3.5.3 (para. 7.4.6)
Impacts on social characteristics will be limited to income distribution\textsuperscript{32}.

- **Step 3 - a screening process, to confirm if it is appropriate to undertake analysis of the changes in user benefits and the approach to be taken;**
  - The screening process is unnecessary. WebTAG\textsuperscript{33} indicates that whenever User Benefits of intervention have been quantified, an SDI analysis should be undertaken for these.

- **Step 4 - the core user benefits SDI analysis**
  - TUBA will be set up and run\textsuperscript{34} allowing outputs to be analysed by model zone or, where necessary, ‘sector’.
  - Mapping of income data from the Annual Survey of Hours and Earnings (Resident Analysis)\textsuperscript{35} and the English Indices of Deprivation\textsuperscript{36} to each zone will be carried out using the MapInfo GIS software.

- **Step 5 - the collation and presentation of the outputs from the user benefits SDI analysis.**
  - A comparison of the benefits presented by TUBA and the income data will be tabulated\textsuperscript{37} to show the implied share of user benefits in relation to the proportion of the population in each income quintile and income deprivation quintile.
  - From this data the overall grading of Transport User Benefits SDIs for each social group will be presented\textsuperscript{38}, these scores will then be reported in the SDI matrix.

This approach is considered to be consistent with WebTAG guidance on SDIs (Unit 3.17).

### 4.6 Communication Strategy

On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Technical Lead: Traffic Modelling or other officer to be determined)
- Somerset County Council (Service Commissioning Manager: Transport Policy)
- Local Transport Board (Independent Transport Advisor)

\textsuperscript{32} WebTAG Unit 3.17 (Table 2)
\textsuperscript{33} WebTAG Unit 3.17 (para. 2.5.13)
\textsuperscript{34} WebTAG Unit 3.5.3 (para. 7.4)
\textsuperscript{35} From: NomisWeb: \url{http://www.nomisweb.co.uk/}
\textsuperscript{36} From: \url{https://www.gov.uk/government/collections/english-indices-of-deprivation}
\textsuperscript{37} WebTAG Unit 3.5.3 (Table 1)
\textsuperscript{38} WebTAG Unit 3.5.3 (para. 7.6.10)
All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

4.7 Work programme and deliverables

Programme
SCC’s Consultant will undertake the majority of this work.

The construction of the TUBA model can be begun alongside the traffic modelling. The final TUBA runs will be undertaken in March 2014.

Deliverables

- TUBA Output (including error log)
- Up-to-Date ASR
- Relevant modelling reports (for background information)
- Economic Assessment Report (appending relevant TAG worksheets)
- Draft TEE containing completed elements
- Draft Appraisal Summary Table containing completed elements
- Draft SDI Report containing completed elements

4.8 Summary of risks added to the Project Risk Register

TUBA assessment entails more time than planned, and/or requires changes to the traffic model.

- Most of the development of the TUBA model can be carried out in parallel with model development.
- Run TUBA model with preliminary model results to flag any obvious concerns.

Sufficiently detailed cost estimate and Quantitative Risk Assessment not available in time.

- Ensure time and suitable deadlines included in the Project Plan.
- Begin risk assessment at early stage, reviewing as scheme design progresses.

Changes in guidance

- Changes in the most recent versions of WebTAG (adopted January 2014) have, in general, been adopted where relevant. Consistent with the new WebTAG guidance on the ‘Proportionate Update Process’\(^{39}\) it is not expected that significant changes will be made to the methodology following any revisions to guidance unless there is strong justification for doing so.

\(^{39}\) WebTAG (January 2014 Edition): TAG Proportionate Update Process
4.9 Change log

Draft: RWS 2/9/2013
Draft: RWS 16/9/2013 Update ‘Other Economic Impacts’
Draft: RWS 18/09/2013 Update ‘Regeneration’
Draft: RWS 19/09/2013 Update ‘Constraints’
Draft: RWS 01/10/2013 Updates based on feedback from IB
Draft: RWS 18/10/2013 Updated SDIs and Programme
Final Draft: RWS 24/10/2013
Revision RWS 30/01/2013 Revision to methodology to reflect ITA comments
Revision: RWS 30/01/2014 Update programme
5 Operational Assessment

This section summarises the existing knowledge on the expected operation of the scheme, along with a summary of proposed methodology for detailed junction modelling.

5.1 Scale of Impact

The benefits of the scheme will be focused on the corridor itself, with benefits to journey times particularly north-south and south-north along the corridor. There is however expected to be some impact across Yeovil due to re-routing traffic.

5.2 Existing Knowledge and Data

The most comprehensive assessment to date is contained in the 2006 Western Corridor Study. Additional design work has since been undertaken on individual junctions.

5.3 Constraints

The re-design of junctions is heavily constrained by land availability, including land ownership and in some cases vertical alignment issues.

5.4 Additional Data Requirements

The traffic data required for modelling is already available and/or will be derived from SATURN modelling (see below). Detailed designs will be required before modelling is undertaken, and before costs can be estimated.

5.5 Proposed Methodology

5.5.1 Junction capacity

The detailed design of each junction will be incorporated into an appropriate ARCADY (for roundabouts) or LinSig (for signalised junctions) model to ensure it represents the capacity improvements required. Turning counts will be extracted from the SATURN model, although care will need to be taken to ensure that the SATURN model junction capacity is comparable to junction models so that the counts are appropriate. Noting the caution on use of traffic model flows in the Design Manual for Roads and Bridges (DMRB) these will be sense-checked against committed development and observed turning counts.

All junction modelling will be audited internally, and results tabulated for presentation.

42 DMRB Volume 12 Section 1 Part 1, pp. 13-21
5.5.2 Link capacity
Forecast hourly link flows will be checked against DMRB capacity ranges for urban roads, tabulated for those which increase significantly.

5.6 Communication Strategy
On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Technical Lead: Traffic Modelling or other officer to be determined)
- Somerset County Council (Major Projects Manager)
- Local Transport Board (Independent Transport Advisor)

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

5.7 Work Programme and deliverables

Programme
Design and junction modelling will be undertaken largely by SCC in-house, with some support from external consultants. There is likely to be some iteration between design and network modelling but preliminary design was completed in January 2014 for feeding into the forecast SATURN modelling.

This programme will be updated in each iteration of the ASR.

Deliverables
- Report including
  - Summary of junction modelling results
  - Appendices with detailed model output
  - Summary of link flows against link capacities
  - Conclusions

5.8 Risks
Issues with junction design (including land availability)

- Undertake review of current design status to highlight any issues immediately.
- Allow appropriate risk/optimism bias values where junction design remains less certain.

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43 DMRB Volume 5 Section 1 Part 3
• Prioritise those junctions on which significant work has already been undertaken.

Risk that junction improvements do not provide sufficient benefits
• Undertake early review of capacity benefits and consider alternatives if necessary

Changes in guidance
• Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

5.9 Change Log
Draft: RWS 18/09/2013
Draft: RWS 01/10/2013 Updates based on feedback from IB
Draft: RWS 01/10/2013 Updates based on feedback from IB
Draft: RWS 03/10/2013 Risk added
Final Draft RWS 18/04/2013
Revision: RWS 30/01/2014 Update programme
6  Environment – Noise

6.1  Identify likely scale of impacts

The proposed scheme has the potential to result in noise and vibration impacts from changes in traffic volume and changes to the road infrastructure (junction arrangements, alignment/widening, etc). The extent and scale of potential impacts will be determined following a scoping assessment to identify any roads which are predicted to experience an increase in traffic flow greater than 25% or a decrease greater than 20%.

6.2  Existing knowledge and data

The existing noise levels within the vicinity of the proposed scheme are expected to be dominated by traffic noise and local industrial sources. The Yeovil Aerodrome, to the southern end of the scheme is also expected to be a significant noise source.

6.3  Brief evaluation of topic-related constraints

It is not anticipated that the proposed scheme will result in noise and vibration impacts which would result in constraints to the scheme. As part of the assessment process, suitable mitigation measures would be identified for any significant predicted impacts.

6.4  Additional data requirements and survey approach

Traffic data requirements are based on the DMRB (Volume 11, Section 3, Part 7 HD213/11) guidance. Data is required for each of the following scenarios:

- Current year, or the year in which noise surveys are undertaken
- Baseline Year Do Minimum (DM), defined as the year of opening of the scheme
- Baseline Year Do Something (DS)
- Future assessment year DM, typically defined as the 15th year after the opening year
- Future assessment year DS

Information should be provided as to the assumptions regarding committed developments which have been included in the traffic data for the scenarios listed above.

The following bi-directional traffic data for each major traffic link within approximately 1km of the scheme is required. The bi-directional traffic data should be based on ‘most likely’ traffic growth figures:

- Annual average weekday traffic, 06:00 – 00:00 (AAWT,18hour) and night-time traffic figures
• Average speed (or speed limit if this is not available)
• % HGVs (the % vehicles whose unladen weight is more than 1,525 kg which is defined by the OGV1, OGV2 and PSV user classes).

Data is required to be geo-referenced and in a format which is compatible with the noise modelling software (e.g. shapefiles, excel spreadsheets).

6.5 Proposed methodology, including:

6.5.1 Study area
In accordance with DMRB, the study area for the noise and vibration assessment will extend to an area 1 km from the carriageway edge of the scheme.

Following a review of the traffic data, where there are routes predicted to experience a significant change in traffic flow outside of the study area defined above, a 50 m corridor either side of these routes will also be included in the study area.

6.5.2 The proposed assessment/modelling approach
The assessment of potential noise and vibration impacts will be undertaken following the guidance contained within DMRB Volume 11, Section 3, Part 7 HD 213/11. The appropriate level of assessment will be determined following a scoping assessment which will include a review of traffic data associated with the scheme. For a Simple Assessment, the following steps will be undertaken:

• The study area and affected routes will be defined
• A desk-based study to identify Noise Sensitive Receptors (NSRs) within the study area. This will include both existing and any planned future receptors (e.g. new housing developments)
• Baseline noise surveys will be undertaken at locations to be agreed with the Environmental Health Officer (EHO) at South Somerset District Council in accordance with CRTN guidance
• Using a three dimensional noise propagation model, noise calculations will be undertaken at all NSRs with the DMRB defined ‘Calculation Area’
• A qualitative assessment of the noise and vibration impacts at NSRs within the study area but outside of the calculation area will be undertaken
• Noise contour maps for change in noise level the short-term (baseline year), long-term (future year) will be produced
• Assessment tables comparing the DM in the baseline year with the DS in the baseline year and future assessment year will be produced.
• Residential receptors which met the threshold value of 55 dB L_{night,outside} will be identified
• Using the DMRB significance criteria, the impact arising from the predicted noise changes will be assessed
• Where required, suitable mitigation measures for the scheme’s operational impacts will be provided

If a Detailed Assessment is required, the following additional steps will be undertaken:

• Noise contour maps for change in noise level the DM year will be produced
• Noise contour maps for change in noise level during the night-time period for the long-term and DM scenarios will be produced
• Assessment tables comparing Traffic Noise Nuisance and Airborne Traffic Vibration Nuisance in the baseline year and future assessment year will be produced

6.5.3 A consideration of cumulative effects

The cumulative assessment of noise and vibration impacts will consider the in-combination impacts with other environmental topic specific impacts (e.g. air quality, landscape) upon NSRs.

The cumulative impact of the proposed scheme with other road projects will also be considered. The traffic data used in the assessment will include committed development with the area.

6.5.4 The proposed approach to considering Social and Distributional Impacts

The assessment of the potential social and distributional impacts of changes in noise levels resulting from the scheme will be undertaken in accordance with WebTAG guidance units 3.17 and 3.2. The input data required for the assessment will be produced as part of the DMRB assessment methodology outlined above.

In addition to the traffic data requirements outlined in Section 6.4, the Index of Multiple Deprivation (IMD) will be required for the NSRs within the study area.

6.6 Summary of the relevant areas of the Communication Strategy

South Somerset District Council will be consulted regarding the outcomes of the noise assessment.

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

6.7 Work programme

The noise assessment work will be completed with 6 weeks of receiving all the required data as outlined in the section of the ASR. This is reliant on forecast modelling, which has been completed in February 2014. The Noise Assessment will thus be completed around mid-March 2014.
This programme will be updated in each iteration of the ASR.

6.8 Summary of risks added to the Project Risk Register

Poor communication with consultant
- Clear brief
- Discuss any issues at early stage

Changes in guidance
- Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

Information provided by the Transport Planning Team will not be in a format which the noise specialists can input into their model or there are delays in providing that information. This can lead to delays in the programme.
- This can be addressed through communicating their requirements appropriately to the relevant parties.

6.9 Change log

Draft: RWS 18/9/2013 Cumulative effects section only
Final Draft: RWS 20/10/2013
Revision: RWS 30/01/2014 Update programme
7 Environment – Air Quality

7.1 Identify likely scale of impacts
The main pollutant of concern will be from vehicular emissions namely nitrogen dioxide (NO$_2$) and particulate matter (PM$_{10}$). The extent and scale of the potential impacts will be determined following a scoping assessment to identify any affected roads. It is considered that the majority of the impact from vehicular emissions will be along the Western Corridor out to 200m from the roadside.

7.2 Existing knowledge and data
The assessment of baseline air quality will consist of information contained within the reports produced by South Somerset District under the Local Air Quality Management (LAQM) regime and background air quality maps provided by Defra.

Air quality in South Somerset is generally good, although the annual mean objective for nitrogen dioxide continues to be exceeded at one roadside location around Yeovil. South Somerset Council has therefore declared an Air Quality Management Area (AQMA) across the whole of Yeovil to help manage air quality at these roadside locations. Currently, the monitored roadside concentrations of nitrogen dioxide only exceed the objective (40µg/m$^3$) at one location within Yeovil, all annual mean nitrogen dioxide concentrations are below the air quality objectives. The exceedence is however, well above the objective and shows no sign strong trend over time.

South Somerset Council does not undertake air quality monitoring within the Western Corridor. However, the diffusion tube data provided within Yeovil is deemed sufficient for assessment purposes.

Defra provides mapped background pollutant concentrations at 1km resolution for the UK. Background pollutant concentrations in the study area, obtained from the Defra LAQM website, are low and well within their respective standards for the protection of human health.

7.3 Brief evaluation of topic-related constraints
It is not anticipated that the proposed scheme will result in a change in pollutant concentrations that will significantly affect the scheme or the Yeovil AQMA.

7.4 Additional data requirements and survey approach
The traffic requirements will be based on the DMRB guidance (Volume 11, Section 3, Part 1 HA207/07) and TAG Unit 3.3.3 (The Local Air Quality Sub-objective). Data will be required for the following scenarios:

- Baseline year (current year)
- Baseline Do-minimum (DM) - opening year of the scheme without the scheme

44 laqm.defra.gov.uk, accessed 21st June 2011, Local Air Quality Management Support Pages
• Baseline Do-Something (DS) – opening year with the scheme
• Future year DM – Opening year plus 10 years, without the scheme
• Future year DS - Opening year plus 10 years, with the scheme

Traffic data required will have:
• Two-way flows
• Year of assessment
• Vehicle flow rate as an annual average daily traffic (24hr AADT) flow
• Average vehicle speed (km/hr)
• Proportion of heavy duty vehicles as a percentage
• Road type
• The traffic data should extend out 1km from the scheme.
• Data is required in excel spreadsheet format.

Maps detailing the changes will be provided, as well as OS Mastermaps detailing individual house along the scheme for property count.

Information should be provided as to which committed developments are included in the traffic model for the scenarios listed above.

7.5 Proposed methodology, including:

7.5.1 Study area

The study area for the air quality assessment will comprise a 200m corridor, or series of corridors, along all roads potentially affected by changes in traffic associated with the proposed scheme.

For local air quality impacts, DMRB (HA207/07) provides the following guideline criteria for defining roads affected by a scheme:
• A change in road alignment of ≥ 5m; or
• Change in daily traffic flows of ≥ 1000 AADT; or
• Change in Heavy Duty Vehicle (HDV) flows of ≥ 200 AADT; or
• Change in daily average speed of ≥ 10 km/hr; or
• Change in peak hour speed of ≥ 20 km/hr.

Based on the available traffic information, the study area is currently limited to the 200m corridor along the proposed scheme itself, and major roads up to 1km from the scheme. Any subsequent revisions to the traffic data may necessitate a re-evaluation of the extent of the study area.
7.5.2 The proposed assessment/modelling approach

The assessment of potential air quality impacts will be undertaken following guidance contained within TAG unit 3.3.3 (The Local Air Quality Sub-objective) and the DMRB Air Quality Screening method spreadsheet (HA207/07 DMRB 11.3.1).

7.5.3 A consideration of cumulative effects

The cumulative assessment of air quality impacts will consider cumulative impacts from other committed schemes through the inclusion of these schemes in the future year traffic models.

This appraisal is based on a proportionate interpretation of WebTAG\textsuperscript{45}. Although that unit is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - groups within the population or parts of the geographical study area (for example environmental elements, resources, ecosystems and species) affected by the air quality sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised.

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

7.5.4 Determination of significance

In line with DMRB guidance, significance criteria are not applied to DMRB air quality assessments. It is left to the judgement of the air quality specialist to determine and justify the significance of the predicted impacts. However, in this instance the significance criteria used in the air quality assessment will be based on the EPUK guidance\textsuperscript{46}.

7.5.5 The proposed approach to considering Social and Distributional Impacts

The assessment of the potential social and distributional impacts of changes in air pollutant concentrations resulting from the scheme will be undertaken in accordance with WebTAG guidance Units 3.1.1 and 3.3.3. The input data required is as specified above. In addition to the traffic data requirements, the Index of Multiple Deprivation (IMD) will be required for the LSOAs within the study area.

\textsuperscript{45} WebTAG Unit 2.11

\textsuperscript{46} Development Control: Planning for Air Quality (2010 Update) EPUK
7.6 Summary of the relevant areas of the Communication Strategy

South Somerset District Council will be consulted regarding the outcomes of the air quality assessment.

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

7.7 Work programme

Air Quality assessment is reliant on forecast modelling, which was completed in February 2014. The Noise Assessment will thus be completed around mid-March 2014.

This programme will be updated in each iteration of the ASR.

7.8 Summary of risks added to the Project Risk Register

Poor communication with consultant

- Clear brief
- Discuss any issues at early stage

Changes in guidance

- Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

Information provided by the Transport Planning Team will not be in a format which the noise specialists can input into their model or there are delays in providing that information. This can lead to delays in the programme.

- This can be addressed through communicating their requirements appropriately to the relevant parties.

7.9 Change log

Draft: RWS 18/9/2013 Cumulative effects section only
Draft: IB 17/9/2013
Final Draft RWS 24/10/2013
Revision: RWS 30/01/2014 Update programme
8 Environment – Greenhouse Gases

An estimate of the change in carbon dioxide emissions from road-based fuel consumption will be part of the economic assessment of wider benefits, as described in Section 4. In accordance with TAG Unit 3.3.5 the economic appraisal program TUBA will be used to estimate the net present value of the difference in emissions under a 'without scheme' scenario and a 'with scheme' scenario and their monetary value. These are presented as automatic outputs of the TUBA program; the methodology used is described in Section 4.5.3.

8.1 Change log
Draft: JCO 18/09/2013
Final Draft: RWS 24/10/2013

9 Environment – Landscape

No further appraisal required

“Assumed neutral” in accordance with WebTAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

No likely impact due to the lack of landscape features in the study area and the low level of interaction with the intervention likely to occur. Additional work to be undertaken in accordance with WebTAG has been commissioned to confirm that this is a valid conclusion; further details will be added to the ASR as they become available.

9.1 Change log
Draft: JCO 11/09/2013
Draft: RWS 17/10/2013 (Info regarding additional information forthcoming)
Final Draft: RWS 24/10/2013
10 Environment – Townscape

No further appraisal required

“Assumed neutral” in accordance with WebTAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

No likely impact due to the low townscape character of the study area and the low level of interaction with the intervention likely to occur. Additional work to be undertaken in accordance with WebTAG has been commissioned to confirm that this is a valid conclusion; further details will be added to the ASR as they become available.

10.1 Change log
Draft: JCO  11/09/2013
Final Draft  RWS  24/10/2013

11 Environment – Heritage or Historic Resources

No further appraisal required

“Assumed neutral” in accordance with WebTAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

No likely impact due to the lack of heritage features in the study area and the low level of interaction with the intervention likely to occur. Additional work to be undertaken in accordance with WebTAG has been commissioned to confirm that this is a valid conclusion; further details will be added to the ASR as they become available.

11.1 Change log
Draft: JCO  11/09/2013
Draft: RWS  17/10/2013 (info regarding additional information forthcoming)
Final Draft  RWS  24/10/2013
12 Environment – Biodiversity

No further appraisal required

“Assumed neutral” in accordance with WebTAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

No likely impact due to the lack of biodiversity resources (habitat, area or species) in the study area and the low level of interaction with the intervention likely to occur. Additional work to be undertaken in accordance with WebTAG has been commissioned to confirm that this is a valid conclusion; further details will be added to the ASR as they become available.

12.1 Change log

Draft: JCO 11/09/2013
Draft: RWS 17/10/2013 (info regarding additional information forthcoming)
Final Draft RWS 24/10/2013

13 Environment – Water Environment

No further appraisal required

“Assumed neutral” in accordance with WebTAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

No likely impact due to the lack of significant water features in the study area and the low level of interaction with the intervention likely to occur. A small section of the A3088 Western Relief Road is at risk (greater than 1% each year)\(^\text{47}\) of flooding from a water course under the highway but the proposal is not considered to significantly change this.

Additional work to be undertaken in accordance with WebTAG has been commissioned to confirm that this is a valid conclusion; further details will be added to the ASR as they become available.

13.1 Change log

Draft: JCO 11/09/2013
Draft: JCO 16/09/2013 Flood information added
Draft: RWS 17/10/2013 (Info regarding additional information forthcoming)
Final Draft RWS 24/10/2013

[Accessed 16/09/2013]
14 Social – Commuting and Other Users – Economics and Reliability

These are dealt with under Section 4, Economic Assessment.

14.1 Change log

Draft: RWS 16/09/2013
Final Draft RWS 24/10/2013
15 Social – Physical Fitness

15.1 Identify likely scale of impacts
The impacts will extend beyond the study area. Based on ‘rule of thumb’ figures quoted in PPG13\(^{48}\) walking can be considered a realistic mode choice up to 2km and cycling up to 5km for non-leisure purposes. It is reasonable to assume that, depending on the direction of travel, changes may affect individuals within approximately those radii.

15.2 Existing knowledge and data
There is no observed data on pedestrian or cyclist movements within the study area, although it is anticipated that a survey will be carried out before the end of 2014. Other useful data will include Census Travel to Work and School Travel Plan data on mode share. In combination with national (DfT) data on travel habits this should give a reasonable indication of journey numbers and lengths.

15.3 Brief evaluation of topic-related constraints
Limits on available data – observing pedestrian and cycling movements in detail is very difficult. No observed data is expected to be available for the Outline Business Case, although it will provide additional information which can inform the Full Business Case.

15.4 Additional data requirements and survey approach
No observed data is available at present.
As part of the monitoring work, it is anticipated that observed baseline cycling and walking data will be collected in 2014/15. The approach proposed is to count all pedestrians and cyclists. Current classification is:

- Cyclists
- Pedestrians
- Mobility scooter and wheelchair users

Practical difficulties in estimating age, particularly in poor light, means that it is not proposed to break down these categories by age. Although useful (for SDI Analysis) to understand current use for children, it is considered that this can be more reliably estimated using Travel to School data.

Counts will be undertaken which count all cyclists and pedestrians which cross (in either direction) two screenlines. The approximate positions (subject to consideration of the practical issues by SCC’s Data Collection Team) are marked in Figure 3. The screenlines have been chosen so that they will be crossed by the vast majority of

\(^{48}\) Department for Communities and Local Government, 2006. Planning Policy Guidance 13: Transport. London, DCLG Publications. Paragraphs 74 and 77. Although not a current guidance document, these figures are considered appropriate.
those who benefit from the scheme (Toucan crossings along Western Avenue and north-south cycling infrastructure). For monitoring purposes surveys will be undertaken twice a year, between 08:00 and 18:00 on two weekdays and a Saturday. Days on which a football match takes place at the nearby Huish Park will be avoided. It is likely that for the purposes of this appraisal only one set of data will be available.

Whilst WebTAG\textsuperscript{49} indicates that more detailed data should be collected for monitoring (which would require interviews to be undertaken) it is considered that this is disproportionate to the scale of the scheme and that sample sizes would be too small to reach any meaningful conclusions.

15.5 Proposed methodology, including:

15.5.1 Study area

The immediate Western Corridor Study Area (Figure 1) will be used, and in particular two perpendicular screenlines spanning the area will be used for counts in the future. Whilst some trips which benefit from the scheme will start and/or finish outside of the study area, it is considered that most will travel through it and a substantial proportion will cross at least one screenline.

15.5.2 The proposed assessment/modelling approach

It is not proposed to carry out any detailed work, as whilst a benefit is expected this is likely to be very small in proportion to the overall benefits of the scheme.

15.5.3 The forecast approach

The methodology set out in WebTAG Unit 3.14.1 allows for monetisation of the health benefits of walking and cycling schemes, which in the case of the Western Corridor will make up the vast majority of the physical fitness benefits.

A baseline estimate of cycling and pedestrian numbers will be made using Census data. An estimated proportional increase will be derived using case study evidence from elsewhere. Depending on the available evidence it may be appropriate to calculate high and low estimates based on different levels of increased use.

For the full business case this evidence will be supplemented using observed counts.

Similarly, it may be possible to use evidence from case studies on whether improvement of infrastructure results in an increase in average journey length. If not then current average journey lengths (from Census Travel to Work and/or DfT data) will be used assuming no change.

WebTAG\textsuperscript{50} then provides a methodology for estimating the monetary value of reduced mortality benefits associated with walking and cycling.

\textsuperscript{49} WebTAG Unit 3.14.1 (para. 1.11.7)

\textsuperscript{50} WebTAG Unit 3.14.2 (para. 1.8.7 onwards and Appendix B)
Any monetised benefits calculated will be presented alongside a qualitative written summary assessment. Monetised benefits and the estimated level of impact will be presented in the AST.

15.5.4 A consideration of cumulative effects

This appraisal is based on a proportionate interpretation of WebTAG\textsuperscript{51}. Although that unit is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - groups within the population or parts of the geographical study area (for example environmental elements, resources, ecosystems and species) affected by the physical fitness sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised.

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

15.5.5 Justification for the chosen approach

The approach is considered to be consistent with WebTAG\textsuperscript{52}, and proportionate to the scale of the scheme and the significance of the benefits.

15.5.6 The proposed approach to considering Social and Distributional Impacts

Not required for Physical Fitness

15.6 Summary of the relevant areas of the Communication Strategy

On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Sustainable Transport Officer)
- Somerset County Council (Technical Lead: Traffic Modelling or other officer to be determined)
- Somerset County Council (Service Commissioning Manager: Transport Policy)

\textsuperscript{51} WebTAG Unit 2.11
\textsuperscript{52} WebTAG Units 3.3.12 and 3.14.1
• Local Transport Board (Independent Transport Advisor)

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

15.7 Work programme and deliverables

Programme
This work has been drafted.

Deliverables
• Relevant section of Appraisal Report incorporating:
  o Qualitative Discussion (if Preferred Approach used)
  o Methodology and Results (if Alternative Approach used)
• Relevant section of SDIs report
• Relevant section of AST

15.8 Summary of risks added to the Project Risk Register

There is a risk that observed data on pedestrians and cyclists will not be available in time to carry out the analysis for the Full Business Case, perhaps due to resourcing issues or adverse weather conditions.

• Should the Alternative Approach be applied, census data could be used in the Full Business Case.

Changes in guidance

• Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

15.9 Change log

Draft: RWS 05/09/2013
Draft: RWS 18/9/2013 Data collection and cumulative effects
Draft: RWS 19/9/2013 Risks
Draft: RWS 02/10/2013 Communication/Deliverables
Draft: RWS 18/10/2013 Methodology revised based on comments from IB.
Final Draft RWS 24/10/2013
Revision RWS 05/12/2013 Revision to methodology to reflect ITA comments
Revision: RWS 30/01/2014 Update programme
Revision: RWS 27/02/2014 Clarification of methodology for Outline MSBC
16 Social – Journey Quality (Ambience)

16.1 Identify likely scale of impacts
Impacts will be largely within the study area, although some elements (such as stress, which is partly dependent on journey time) may also be affected outside of the corridor.

16.2 Existing knowledge and data
Largely anecdotal evidence, particularly for pedestrians and cyclists, supplemented by data on accidents and journey times which may contribute to stress.

16.3 Brief evaluation of topic-related constraints
Journey ambience consists of those factors which influence the ‘quality’ of a journey but which cannot be quantified in the same way as (in particular) journey times and reliability. WebTAG\textsuperscript{53} notes that journey ambience (for road users) is affected by facilities, information, views of the surrounding land/townscape and stress induced by frustration, fear of accidents, and route uncertainty. Other factors play a part, but are not directly related to a highway scheme.

The most likely factors to be considered here are stress (including coherence of the road layout and risk of accidents) and ‘traveller care’, with the latter being particularly relevant to cyclists and pedestrians.

16.4 Additional data requirements and survey approach
The data required can largely be derived from drawings and model data. A site visit will also be required to understand existing conditions.

16.5 Proposed methodology, including:

16.5.1 Study area
Western Corridor study area (see Figure 1).

16.5.2 The proposed assessment/modelling approach
WebTAG\textsuperscript{53} identifies three elements to journey ambience, which are discussed briefly in turn below.

- Traveller care (cleanliness/facilities/information/environment)
  - Road traffic: it is likely that these will be largely unchanged
  - Cyclists/pedestrians: the scheme will seek to improve these

- Travellers’ Views

\textsuperscript{53} WebTAG Unit 3.3.13
- Likely to be largely unchanged

- Traveller Stress (Frustration/fear of potential accidents/route uncertainty)
  - The scheme will seek to reduce stress

A simple and proportionate approach will be to complete the WebTAG Worksheet provided for 3.3.13.

### 16.5.3 The forecast approach

The WebTAG worksheet will be completed using the relevant sections of DMRB\(^{54}\) and WebTAG\(^{55}\), with reference to traffic model data, expected improvements for all modes, and site observations.

### 16.5.4 A consideration of cumulative effects

This appraisal is based on a proportionate interpretation of WebTAG\(^{56}\). Although the relevant unit (2.11) is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - which are part of the geographical study area (in particular any environmental issues) affected by the journey quality sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised. Particular social groups are unlikely to be specifically affected by this sub-objective (noting that consideration of SDIs is not required).

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

### 16.5.5 Determination of significance

Based on the ‘Approach’ section above it is anticipated that (because this scheme largely follows existing routes) most effects will be neutral except with regard to stress where a small benefit is likely. There are expected to be some benefits to cyclists and pedestrians in terms of traveller care.

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\(^{54}\) DMRB Volume 11 Section 3 Part 9

\(^{55}\) WebTAG Unit 3.3.13

\(^{56}\) WebTAG Unit 2.11
16.5.6 Justification for the chosen approach
This approach is considered to be fully consistent with WebTAG\textsuperscript{55}.
It is considered that the required data collection and forecasting to put a monetary estimate on this element of walking and cycling schemes (as per WebTAG\textsuperscript{57}) would be disproportionate to the size of the scheme and would provide relatively little supporting information.

16.5.7 The proposed approach to considering Social and Distributional Impacts
Not required for this sub-objective

16.6 Summary of the relevant areas of the Communication Strategy
On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Sustainable Transport Officer)
- Somerset County Council (Technical Lead: Projects and Studies)
- Somerset County Council (Service Commissioning Manager: Transport Policy)
- Local Transport Board (Independent Transport Advisor)

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

16.7 Work programme and deliverables

Programme
This work has been drafted.

Deliverables

- Relevant section of Appraisal Report incorporating:
  - Methodology
  - Results
  - Appended WebTAG Worksheet
- Relevant section of AST

\textsuperscript{57}WebTAG Unit 3.13.1 (para. 1.7.2 onwards)
16.8 Summary of risks added to the Project Risk Register

This section is largely qualitative. Provided that traffic model data is available where necessary, drawings of the scheme are available, and that a transport planner is able to undertake a suitable site visit, specific risks are considered to be minimal.

- Mitigation largely relates to ensuring completion of traffic modelling, considered elsewhere.

Changes in guidance

- Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

16.9 Change log

Draft: RWS 16/09/2013
Draft: RWS 18/9/2013 Cumulative effects section
Draft: RWS 19/9/2013 Risks
Draft: RWS 02/10/2013 Communication/Deliverables
Final Draft RWS 24/10/2013
Revision: RWS 30/01/2014 Update programme
17 Social – Accidents

17.1 Identify likely scale of impacts
Prior to construction of the COBALT spreadsheet the SATURN model output will be reviewed to identify the required extent of the accident analysis, with the area included where flows vary by +/-5% between either pair of ‘Do Minimum’ and either of the ‘Do Something’ (core and sensitivity cases) unless this difference is considered to be spurious ‘noise’ or the absolute numbers involved are very low.

It is anticipated that the modelled area is likely to include much of the Yeovil Urban area, albeit perhaps with a simplified structure, and extend to the A303.

17.2 Existing knowledge and data
Detailed information on personal injury accidents on the highway is available from the Road Safety Partnership.

17.3 Brief evaluation of topic-related constraints
WebTAG\textsuperscript{58} outlines the ‘standard processes’ for forecasting changes in the numbers of accidents and casualties, and monetising this on the basis of a ‘willingness to pay’ approach. The values associated with accidents, particularly fatal accidents, are significant in comparison to the cost of the scheme and hence a robust assessment is considered to be an important element of the appraisal.

It should be noted that the appraisal of accidents is distinct from the safety audit process which looks at the design of the scheme components in detail and which is not considered further here.

17.4 Additional data requirements and survey approach
The data required for a COBALT analysis is a combination of traffic data from SATURN model runs and data regarding junctions already coded into SATURN and also available from GIS mapping.

17.5 Proposed methodology, including:

17.5.1 Study area
As described above, the study area for highway safety will be confirmed after running of the SATURN modelling.

The study area for pedestrian/cyclist safety assessment will be limited to the Western Corridor itself.

\textsuperscript{58} WebTAG Unit 3.4.1
17.5.2 The proposed assessment/modelling approach

COBALT, a new spreadsheet-based model available from the DfT, will be used for the road traffic accident analysis.

It is not proposed to undertake a detailed assessment relating specifically to cyclists and pedestrians. Based on the available evidence it is assumed that there will be a slight beneficial effect of the scheme in this regard to the provision of mid-block puffin crossings\(^{59}\).

17.5.3 The forecast approach

Forecast years and network will match the SATURN modelling. Flows will be derived from the modelled periods, factored up to Annual Average Daily Flows using local automatic traffic count (ATC) data.

Economic assumptions such as discounting will be consistent with the TUBA analysis.

17.5.4 A consideration of cumulative effects

This appraisal is based on a proportionate interpretation of WebTAG\(^{60}\). Although that unit is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - groups within the population affected by the accidents sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised. It is unlikely that accidents will contribute to a cumulative impact in any parts of the geographical study area (environmental elements, resources, ecosystems and species) but should any receptors be identified these will be considered.

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

17.5.5 Determination of significance

It is fully anticipated that an overall benefit to highway safety will be demonstrated. Should the assessment show a detrimental effect (at any level) a review of the scheme will need to be undertaken.

\(^{59}\) [http://www.konsult.leeds.ac.uk/private/level2/instruments/instrument017/l2_017c.htm](http://www.konsult.leeds.ac.uk/private/level2/instruments/instrument017/l2_017c.htm)

\(^{60}\) WebTAG Unit 2.11
17.5.6 Justification for the chosen approach

The approach to assessment of safety for motorised traffic is considered to be consistent with WebTAG\textsuperscript{61} and the COBALT Manual.

The approach to assessment of safety for pedestrians and cyclists is considered to be consistent with WebTAG\textsuperscript{62}.

Both elements are considered to be proportionate to the scale of the scheme and the importance of highway safety.

17.5.7 The proposed approach to considering Social and Distributional Impacts

Based on work undertaken to date, it is assumed that there is likely to be a net benefit with regard to accidents in relation to all road users in the area, although this will be subject to review during the appraisal. The process outlined in WebTAG\textsuperscript{63} will be follows; steps 1 to 3 will be carried out as a screening process, with 4 and 5 following if particular groups are identified as an issue.

- **Step 1** - identification of the area impacted by changes in user benefits;
  - The area of impact will be derived from TUBA modelling (for motor traffic) and be within the Western Corridor Study Area (for cyclists and pedestrians).

- **Step 2** - analysis of the demographic profile in the area impacted by changes in user benefits;
  - Available data (e.g. Census Travel to Work, IMD and any economic data obtained for the Economic SDI assessment) will be considered to determine if local road users disproportionately fall into particular class/income/age groups or use particular modes.

- **Step 3** - a screening process, to confirm if it is appropriate to undertake analysis of the changes in user benefits and the approach to be taken;
  - Analysis of accident data will identify whether there are a disproportionate number of accidents involving pedestrians, motorcyclists and/or cyclists, children, young males, older people within the study area.

- **Step 4** - the core user benefits SDI analysis
  - Should Step 3 identify particular groups as an issue, more detailed analysis will be undertaken to consider the impacts of the scheme and whether the group gains benefits or suffers disbenefits as a result of the proposal.

- **Step 5** - the collation and presentation of the outputs from the user benefits SDI analysis.

\textsuperscript{61} WebTAG Unit 3.4.1
\textsuperscript{62} WebTAG Unit 3.14.1
\textsuperscript{63} WebTAG Unit 3.4.1 (para. 4.3 onwards)
Results will be presented as per Table 8 of WebTAG Unit 3.4.1
A summary will be presented in the AST.

17.6 Summary of the relevant areas of the Communication Strategy
On completion of the COBALT modelling, the documents and files listed below (17.7) will be supplied for agreement by (in order):

- Somerset County Council (Technical Lead, Traffic Modelling)
- Highways Agency (or their consultant)
- Local Transport Board (Independent Transport Advisor)

It is assumed that the Highways Agency will want to review accident-related work only if there are significant changes to traffic patterns on the A303 and its junctions; this will be confirmed during initial consultation.

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

17.7 Work programme and deliverables

Programme
This work is programmed for completion by the end of March 2013.

Deliverables
- Relevant section of Appraisal Report incorporating:
  - Summary of existing conditions
  - Methodology
  - Results
  - Appended COBALT results
- Relevant section of SDIs report
- Relevant section of AST
- Relevant section of TEE

17.8 Summary of risks added to the Project Risk Register
Delays in completing the COBALT Analysis
- Begin construction of model in parallel with other modelling work
Issues in obtaining existing accident data
- Liaise with Road Safety team at earliest opportunity
Delays to modelling or TUBA analysis have knock-on impact
• See mitigation associated with those work packages

Issues obtaining relevant economic/census data for SDI Analysis

• This work should be begun early in the programme, allowing time for data to be obtained or alternative approaches to be agreed.

Changes in guidance

• Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

17.9 Change log

Draft: RWS 27/08/2013
Draft: RWS 03/09/2013 SDI Added
Draft: RWS 16/09/2013 Risks Added:
Draft: RWS 18/09/2013 Cumulative effects section
Draft: RWS 01/10/2013 Updates based on feedback from IB (inclusion of COBALT); Communication and Deliverables
Draft: RWS 17/10/2013 Updates based on feedback from IB (ped/cyclist accidents)
Final Draft RWS 24/10/2013
Revision: RWS 30/01/2014 Updated to consider COBALT rather than COBA for analysis.
18 Social – Personal Security

18.1 Identify likely scale of impacts
The impact on personal security will be limited to the Western Corridor Study Area (Figure 1).

18.2 Existing knowledge and data
Little existing knowledge beyond anecdotal evidence.

18.3 Brief evaluation of topic-related constraints
WebTAG gives some context to how security applies to highway schemes. Importantly it includes perception as well as actual risk of injury, theft of vehicles and property. There are three highway locations:

- on the road itself (e.g. being attacked whilst broken down);
- in service areas, car parks and so on (e.g. vehicle damage while parked at a service station, being attacked while walking to parked car); and,
- at signals or junctions (e.g. smash and grab incident while queuing at lights).

Of these, signals/junctions will need to be considered as to a certain extent will the road itself (although this is unlikely to see significant change).

In addition, security of cyclists and pedestrians will need to be considered, both on the road and on existing and proposed cycleways and footways.

18.4 Additional data requirements and survey approach
Data will need to be collected during a site visit. The site visit will pay particular attention to areas changed by the scheme, particularly along existing footpaths away from roads.

If available, crime statistics will be obtained for the area to identify any patterns relevant to transport.

18.5 Proposed methodology, including:

18.5.1 Study area
Data will be collected within the study area as described above.

18.5.2 The proposed assessment/modelling approach
Worksheet 1 of WebTAG 3.4.2 will be completed for four modes, based on data collected on-site and the scheme proposals:

- Road traffic
- Cyclists
- Pedestrians
18.5.3 A consideration of cumulative effects

This appraisal is based on a proportionate interpretation of WebTAG\(^64\). Although that unit is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - groups within the population or parts of the geographical study area (for example environmental elements, resources, ecosystems and species) affected by the personal security sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised.

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

18.5.4 Determination of significance

It is fully anticipated that an overall benefit will be achieved, particularly for pedestrians and cyclists. Should this prove not to be the case a review of the proposals will be undertaken as personal security is considered to be important.

18.5.5 Justification for the chosen approach

The approach is considered to be consistent with WebTAG\(^65\), and proportionate to the scale of the scheme and the importance of personal security.

18.5.6 The proposed approach to considering Social and Distributional Impacts

The process outlined in WebTAG\(^66\) will be followed; steps 1 to 3 will be carried out as a screening process, with 4 and 5 following if particular groups are identified as an issue.

- Step 1 - identification of the area impacted by changes in user benefits;
  - This will be the Western Corridor study area itself.
- Step 2 - analysis of the demographic profile in the area impacted by changes in user benefits;

\(^{64}\) WebTAG Unit 2.11

\(^{65}\) WebTAG Unit 3.4.2

\(^{66}\) WebTAG Unit 3.4.2 (para. 3.3 onwards)
Available data (e.g. Census, IMD) will be considered to determine if local road users disproportionately fall into groups such as those identified in para. 3.2.1: women, teenagers, older people, people with disabilities, or Black and Minority Ethnic communities.

- Step 3 - a screening process, to confirm if it is appropriate to undertake analysis of the changes in user benefits and the approach to be taken;
  - Using Step 2, data from the site visit and the scheme proposals an analysis will identify whether any particular groups will be affected.

- Step 4 - the core user benefits SDI analysis
  - Should Step 3 identify particular groups as an issue, more detailed analysis will be undertaken to consider the impacts of the scheme and whether the group gains benefits or suffers disbenefits as a result of the proposal. This will be done using Worksheet 2

- Step 5 - the collation and presentation of the outputs from the user benefits SDI analysis.
  - Results will be presented in a format similar to Worksheet 2 of WebTAG Unit 3.4.2.
  - A summary will be presented in the AST.

18.6 Summary of the relevant areas of the Communication Strategy

On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Sustainable Transport Officer)
- Somerset County Council (Technical Lead: Traffic Modelling or other officer to be determined)
- Somerset County Council (Service Commissioning Manager: Transport Policy)
- Local Transport Board (Independent Transport Advisor)

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

18.7 Work programme and deliverables

Programme

This work has been drafted.

Deliverables

- Relevant section of Appraisal Report incorporating:
  - Summary of existing conditions
  - Methodology (with WebTAG worksheets appended)
Results

- Relevant section of SDIs report (with worksheets appended)
- Relevant section of AST

18.8 Summary of risks added to the Project Risk Register

This section is largely based on existing data. Provided that a transport planner is able to undertake a suitable site visit, the main risk is that schemes are not worked up in sufficient detail to consider some elements of the impact.

Changes in guidance

- Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

18.9 Change log

Draft: RWS 03/09/2013
Draft: RWS 18/09/2013 Cumulative effects section
Draft: RWS 19/09/2013 SDIs; Constraints
Draft: RWS 02/10/2013 Communication and Deliverables
Final Draft: RWS 24/10/2013
19 Social – Access to services

No further appraisal required

“Assumed neutral” in accordance with TAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

WebTAG Unit 3.6.3 paragraph 1.2.5 advises that the appraisal of accessibility should focus on public transport. The Western Corridor scheme is likely to have an indirect but slightly beneficial impact on bus services (in terms of slightly improved journey time and journey time reliability). These will be considered in the context of general traffic and there is not considered to be a need to undertake further analysis.

Appraisal will be undertaken of the following wider aspects of accessibility under separate sub-objectives:

- Journey Quality;
- Accidents;
- Personal Security; and
- Severance.

19.1 Change log
Draft: JCO 16/09/2013
Final Draft: RWS 24/10/2013

20 Social – Affordability

No further appraisal required

“Assumed neutral” in accordance with TAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

There are no potential changes in personal affordability in the use of transport as a result of the proposed interventions, other than slight positive changes in vehicle fuel costs. There is therefore no need to undertake further analysis, in accordance with WebTAG Unit 3.6.4 paragraph 2.2.3.

20.1 Change log
Draft: JCO 11/09/2013
Final Draft: RWS 24/10/2013
21 Social – Severance

21.1 Identify likely scale of impacts
A slight to moderate reduction in severance (between residential development to east and employment to west of Western Avenue) is expected.

21.2 Existing knowledge and data
There is little existing knowledge beyond anecdotal evidence. However the lack of crossings on Western Avenue is a significant concern locally.

21.3 Brief evaluation of topic-related constraints
The sub-objective applies to non-motorised users (especially pedestrians)\textsuperscript{67}. WebTAG indicates that the impact should normally be assessed for pedestrians only\textsuperscript{68}, with only qualitative discussion provided with regard to cyclists\textsuperscript{69}. However it is considered appropriate in this case to apply a similar methodology to both modes.

21.4 Additional data requirements and survey approach
Estimation of numbers of pedestrians potentially or actually affected by existing severance under do-minimum and do-something scenarios will be required. This will be based largely on analysis of census and travel to school data. For the later Full Business case survey data may be available to supplement this (see 15.4).

21.5 Proposed methodology, including:

21.5.1 Study area
The Western Corridor study area, with data collected along screenlines, as indicated in Figure 3.

21.5.2 The proposed assessment/modelling approach
The assessment will follow guidance in WebTAG 3.6.2 (which in turn references DMRB Volume 11 Section 3 Part 8). In brief, the number of people affected is estimated and the effects of severance in the ‘Do Minimum’ and ‘Do Something’ scenarios are determined.

\textsuperscript{67} WebTAG Unit 3.6.2 (para. 1.1.1)
\textsuperscript{68} WebTAG Unit 3.6.2 (para. 1.1.3)
\textsuperscript{69} WebTAG Unit 3.6.2 (para. 2.2.5)
21.5.3 The forecast approach
The net change in severance will be determined using Worksheet 1 and Table 1 of WebTAG Unit 3.6.2. Forecast traffic flows will be extracted from the model to classify the change in severance.

21.5.4 A consideration of cumulative effects
This appraisal is based on a proportionate interpretation of WebTAG\textsuperscript{70}. Although that unit is intended for wider plans rather than individual schemes, the principles are considered to be useful.

The assessment (including consideration of SDIs) will identify any particular ‘receptors’ - groups within the population or parts of the geographical study area (for example environmental elements, resources, ecosystems and species) affected by the severance sub-topic. These will be tabulated and cross-referenced against all objectives and sub-objectives appraised.

Where only a single objective/sub-objective has an impact on a particular receptor this should be fully appraised within that topic. However where multiple effects impact on a particular receptor it will be necessary to consider the way in which they interact and whether they combine to form a benefit or disbenefit greater than the sum of the parts. This will be carried out in the context of information known (or gathered) regarding the receptor, and wider policies applicable to the study area. If shown to be necessary any alterations to the scheme or other mitigation will be considered or, conversely, any options to further build on compound benefits will be reviewed.

21.5.5 Justification for the chosen approach
The approach is considered to be consistent with WebTAG Unit 3.6.2, and proportionate to the scale of the scheme. The appraisal of the impact of severance on both walking and cycling trips is essential in view of the local objective of encouraging both walking and cycling.

21.5.6 The proposed approach to considering Social and Distributional Impacts
Based on work undertaken to date, it is assumed that there is likely to be a net benefit with regard to severance for all groups of cyclists and pedestrians. The process outlined in WebTAG\textsuperscript{71} will be follows; steps 1 to 3 will be carried out as a screening process, with 4 and 5 following if particular groups are identified as an issue.

- Step 1 - identification of the area impacted by changes in severance;
  - This is likely to be the Western Corridor study area (Figure 1)
- Step 2 - analysis of the demographic profile in the area impacted by changes in user benefits;

\textsuperscript{70} WebTAG Unit 2.11
\textsuperscript{71} WebTAG Unit 3.4.1 (para. 4.3 onwards)
Available data (e.g. Census Travel to Work, and Travel to School) will be analysed to identify any particular vulnerable groups.

- **Step 3** - a screening process, to confirm if it is appropriate to undertake analysis of the changes in user benefits and the approach to be taken;
  - Analysis of observed pedestrian and cycling data will be undertaken. In particular, it will be determined whether there are a disproportionate number of young or old (over 65) pedestrians and cyclists, or wheelchair/mobility scooter users.
  - Step 2 data will be compared with this analysis.

- **Step 4** - the core user benefits SDI analysis
  - Should Step 3 identify particular groups as an issue, more detailed analysis will be undertaken to consider the impacts of the scheme and whether the group gains benefits or suffers disbenefits as a result of the proposal.
  - Catchment analysis (as described in WebTAG\textsuperscript{72} may be used, but unless very significant issues are identified is likely to be unnecessary.

- **Step 5** - the collation and presentation of the outputs from the user benefits SDI analysis.
  - Results will be presented as per Table 2/Worksheet 2 of WebTAG Unit 3.6.2.
  - A summary will be presented in the AST.

### 21.6 Summary of the relevant areas of the Communication Strategy

On completion by SCC and their consultant this work will need to be reviewed and agreed by:

- Somerset County Council (Sustainable Transport Officer)
- Somerset County Council (Technical Lead to be determined)
- Somerset County Council (Service Commissioning Manager: Transport Policy)
- Local Transport Board (Independent Transport Advisor)

All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

\textsuperscript{72} WebTAG Unit 3.6.2 (para. 3.4.8 onwards)
21.7 Work programme and deliverables

Programme
The majority of this work has been drafted. A small amount is dependent on model data and will be completed in January 2014.

Deliverables
- Relevant section of Appraisal Report incorporating:
  - Summary of existing conditions
  - Methodology (with WebTAG worksheet/table appended)
  - Results
- Relevant section of SDIs report with worksheets appended
- Relevant section of AST

21.8 Summary of risks added to the Project Risk Register
There is a risk that observed data on pedestrians and cyclists will not be available in time to carry out the analysis for the Full Business Case.
- Census data could provide an alternative.

Changes in guidance
- Agree with LTB that current methodology, following current version of WebTAG as defined in ASR, is acceptable regardless of future changes.

21.9 Change log
Draft: JCO 11/09/2013
Draft: RWS 18/9/2013 Cumulative effects section
Draft: RWS 19/9/2013 SDI plus revisions
Draft RWS 02/10/2013 Communication and Deliverables
Final Draft RWS 24/10/2013
22 Social – Option values

No further appraisal required

“Assumed neutral” in accordance with TAG Unit 2.1.2 paragraphs 1.12.11 and 1.12.21.

The improvements to cycling and pedestrian infrastructure are not likely to result in a significant step-change in the quality of service offered within these modes. There is therefore no need to undertake further analysis, in accordance with WebTAG Unit 3.6.1, paragraphs 1.2.11 and 2.2.1.

22.1 Change log

Draft: JCO 16/09/2013
Final Draft RWS 24/10/2013

23 Public Accounts – Cost to broad transport budget

Considered as part of the Economic Assessment (Section 4)

23.1 Change log

Draft: RWS 16/09/2013
Final Draft RWS 24/10/2013

24 Public Accounts – Indirect tax revenues

Considered as part of the Economic Assessment (Section 4)

24.1 Change log

Draft: RWS 16/09/2013
Final Draft RWS 24/10/2013
25 Costs

25.1 Level of design feeding into costs
At Programme Entry stage the level of design will vary depending on the element of the project, with some elements being more advanced that others, i.e. Bluebell Roundabout, nearing completion of detailed design, whilst Copse Road junction will only be at feasibility design stage.

In general it is considered appropriate to apply optimism bias using WebTAG rates\textsuperscript{73} at 15% (see Section 4.5.3). There may be individual elements of the scheme which will be at an earlier feasibility stage and so a higher rate (44%) will be applied, and some may be close to completion of detailed design so that a 3% figure is appropriate. These distinctions are considered reasonable because the individual junctions are designed independently albeit within an overall corridor strategy.

Sensitivity testing on the costs will be undertaken as part of the economic assessment (see Section 4.5.3).

At Full Business Case stage all elements of the project will be fully designed and a 3% optimism bias will be applied.

25.2 Methodology for putting together costs
The methodology for estimating costs for the Outline Business Case will be consistent with WebTAG 3.5.9. They will be derived as set out below:

a) Construction costs – based on historic construction costs associated with similar projects to which an appropriate level of inflation will be added. This will be compared against a value obtained from current schedule of rates using approximate quantities. An independent review of the estimated construction costs will also be undertaken.

b) Design fees- based on historic costs of design for similar projects with an allowance for inflation.

c) Land costs - based on estimates provided either by Somerset County Council’s Property Services department or District Valuer’s office if internal resources are not available.

d) Utility costs – based on cost estimates obtained from affected utility companies with an appropriate allowance for risk based on level of design available.

For the full Business Case these costs will be refined as set out below

a) Construction costs – based on tender returns with the additional of an allowance to cover remaining Risks

b) Design fees- actual design costs will be known, Site Supervision / Contract Administration costs will be estimated based on resource required and planned duration of construction.

\textsuperscript{73} WebTAG Unit 3.5.9, Table 9
c) Land costs - based on actual land costs together with an updated estimate provided either by Somerset County Council’s Property Services department or District Valuer’s office if internal resources are not available. The updated estimate will cover any land acquisition which had not been completed at time of Full Approval and also any potential Part 1 Compensation Claims.

d) Utility costs – based on updated cost estimates obtained from affected utility companies.

Maintenance costs are not considered to be part of the initial funding requirement and are treated as part of the economic assessment. They will be derived from QUADRO as explained in Section 4.5.3. However it is noted that the nature of the scheme means that there will be little difference between ‘Do Minimum’ and ‘Do Something’ maintenance costs.

25.3 Treatment of risk

A Risk Log will be established and all Risks identified associated with the design / construction of this scheme will be recorded. The Risk Log will be subject to regular review by the Project Team.

An owner will be identified for each of the Risks contained on the Risk Log, and the owner will seek to identify measures which will reduce the impact of the Risk. Regular Risk Reduction meetings will be held with the Project team members.

Prior to Programme Entry submission a Quantitative Risk Assessment will be undertaken. This will be based upon the Risks contained within the Risk Log at the time of the QRA being undertaken.

During the detailed design process the Risk Log will be maintained and where possible measures will be identified to minimise the impact of any Risks identified.

Immediately prior to Full Approval submission a further QRA will be undertaken which will take into account any remaining risks which are still contained within the Risk Log.

25.4 Communication Strategy

A Communication Strategy will be developed which will identify Key Stakeholders and Key Milestones during the scheme development and implementation.

The communication Strategy will utilise, press releases, Web sites and Public Meetings / Exhibitions to keep members of the Public informed of progress on the development and implementation of the project.

The communication strategy will be reviewed on a regular basis to ensure that it is fit for purpose.

During the implementation phase of the project regular updates on construction progress will be issued to all Stakeholders and the Public to ensure that the travelling public are fully aware of any potential delays associated with construction works.
All individual reports and the business case documents will be uploaded to an appropriate webpage where they will be available for viewing by the general public and other stakeholders or interested parties.

25.5 Work Programme and deliverables

A work programme will be developed which will set out the programme of design / tendering from scheme development through to completion of construction. The programme will set out Key Milestones at which various activities must be completed. Within the programme allowance will be made for the approval process including the timescales required for the ITA turnaround.

The Work Programme will include an overall programme for the construction of the project, but will leave the detailed programme for the construction of the various elements of the project to the successful construction contractor to determine.

25.6 Risks

Each discipline within the Project Team will be expected to identify Risks within their specific discipline. These Risks will be entered into the Risk Log and reviewed by all members of the Project Team, to ensure that all members of the team are aware of all Risks identified.

During the construction phase of the project regular Risk Reduction meetings will be held, these will be attended by the Contractor and the Site Supervisor / Client.

25.7 Change Log

Draft RGN 30-09-2013
Draft RWS 17/10/2013
Final Draft RWS 24/10/2013
## Appraisal Specification Summary Table (ASST)

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Sub-impacts</th>
<th>Estimated Impact in OAR</th>
<th>Level of Uncertainty in OAR/Scheme Entry Pro-Forma</th>
<th>Proposed proportionate appraisal methodology</th>
<th>Reference to evidence and rationale in support of proposed methodology</th>
<th>Type of Assessment Output (Quantitative/Qualitative/Monetary/Distributional)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Economy</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business users &amp; transport providers</td>
<td>Beneficial</td>
<td>Medium</td>
<td>(originally low but modelling is out-of-date)</td>
<td>Standard WebTAG TEE (see 4.5.2)</td>
<td>See 4.5.5</td>
<td>TEE – Monetary (see 4.5.3)</td>
</tr>
<tr>
<td>Reliability impact on Business users</td>
<td>Beneficial</td>
<td>Medium</td>
<td>(not previously assessed)</td>
<td>Brief qualitative assessment</td>
<td>See 4.5.4</td>
<td>Qualitative</td>
</tr>
<tr>
<td>Regeneration</td>
<td>Neutral (not within FUR)</td>
<td>Low</td>
<td></td>
<td>None</td>
<td>Not required in this area (4.5.4 and WebTAG Unit 2.8)</td>
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<tr>
<td>Wider Impacts</td>
<td>Beneficial (enables new employment and residential development)</td>
<td>Low</td>
<td></td>
<td>Brief qualitative assessment (preferred)</td>
<td>See 4.5.4 and WebTAG Unit 2.8</td>
<td>Preferred: qualitative Alternative: Labour supply: semi-quantitative Output Change: Quantitative</td>
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<tr>
<td><strong>Environmental</strong></td>
<td>Noise</td>
<td>Slight beneficial</td>
<td>(reduction in congestion will outweigh any slight amount of induced traffic)</td>
<td>Medium</td>
<td>See Section 6.5</td>
<td>Quantitative</td>
</tr>
<tr>
<td></td>
<td>Air Quality</td>
<td>Slight beneficial</td>
<td>(due to reduction in congestion)</td>
<td>Medium</td>
<td>See Section 7.5</td>
<td>Quantitative</td>
</tr>
<tr>
<td></td>
<td>Greenhouse gases</td>
<td>Beneficial</td>
<td>(slight – reduction in congestion leads to improved fuel economy)</td>
<td>Low</td>
<td>TUBA Output (see Section 8)</td>
<td>Quantitative and monetised</td>
</tr>
<tr>
<td></td>
<td>Landscape</td>
<td>Assumed Neutral</td>
<td>Low (not previously assessed)</td>
<td>No detailed appraisal required</td>
<td>See Section 9</td>
<td>Brief qualitative</td>
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<tr>
<td></td>
<td>Townscape</td>
<td>Assumed Neutral</td>
<td>Low (not previously assessed)</td>
<td>No further appraisal required</td>
<td>See Section 10</td>
<td>Brief qualitative</td>
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<td>Heritage of Historic resources</td>
<td>Assumed Neutral</td>
<td>Low (not previously assessed)</td>
<td>No further appraisal required</td>
<td>See Section 11</td>
<td>Brief qualitative</td>
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<tr>
<td></td>
<td>Biodiversity</td>
<td>Assumed Neutral</td>
<td>Low (not previously assessed)</td>
<td>No detailed appraisal required</td>
<td>See Section 12</td>
<td>Brief qualitative</td>
</tr>
<tr>
<td></td>
<td>Water Environment</td>
<td>Assumed Neutral</td>
<td>Low (not previously assessed)</td>
<td>No detailed appraisal required</td>
<td>See Section 13</td>
<td>Brief qualitative</td>
</tr>
<tr>
<td></td>
<td>Social</td>
<td>Beneficial</td>
<td>Medium (originally low but</td>
<td>Standard WebTAG TEE (see 4.5.2)</td>
<td>See 4.5.5</td>
<td>TEE – Monetary (see 4.5.3)</td>
</tr>
<tr>
<td>Impacts</td>
<td>Sub-impacts</td>
<td>Estimated Impact in OAR</td>
<td>Level of Uncertainty in OAR/Scheme Entry Pro-Forma</td>
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<tr>
<td>Other Users</td>
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<td></td>
<td></td>
<td></td>
<td>WebTAG Unit 3.5.7 (3.3.3)</td>
<td>Brief qualitative</td>
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<tr>
<td>Commuting and Other users</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical activity</td>
<td>Beneficial (improved crossing facilities and cycle routes will encourage use of walking and cycling)</td>
<td>Medium</td>
<td>Assess some aspects, where this is proportionate. Detailed in 15.5.</td>
<td>Consistent with WebTAG Units 3.3.12 and 3.14.1, whilst remaining proportionate.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Journey Quality</td>
<td>Beneficial (slight, mainly for non-motorised users)</td>
<td>Low</td>
<td>Complete relevant WebTAG Worksheet (see 16.5)</td>
<td>Consistent with WebTAG Unit 3.13.1 whilst remaining proportionate</td>
<td>Qualitative</td>
<td></td>
</tr>
<tr>
<td>Accidents</td>
<td>Beneficial (Improved crossing facilities; signalisation of junctions)</td>
<td>Medium</td>
<td>COBALT Alternative: COBA (Accident-Only). See 17.5. For either: Pedestrians and cyclists considered as per WebTAG Unit 3.14.1</td>
<td>Consistent with relevant WebTAG units. See 17.5.6.</td>
<td>Qualitative and monetised</td>
<td></td>
</tr>
<tr>
<td>Security</td>
<td>Possible slight beneficial</td>
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<td>No further appraisal required</td>
<td>See Section 19</td>
<td>Brief qualitative</td>
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<td>See Section 20</td>
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<td>As per WebTAG Unit 3.6.2/DMRB Vol. 11 S 3 Pt 8. See 21.5.</td>
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<td>Level of Uncertainty in OAR/Scheme Entry Pro-Forma</td>
<td>Proposed proportionate appraisal methodology</td>
<td>Reference to evidence and rationale in support of proposed methodology</td>
<td>Type of Assessment Output (Quantitative/Qualitative/Monetary/Distributional)</td>
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Note that the Submission Document used a three-point (adverse/neutral/beneficial) scale for most elements.

**Table 25.1: Appraisal Specification Summary Table**
Figures
Figure 1: Western Corridor - Study Area
Figure 3: Cycle and pedestrian screenlines

Screenline for N-S movements

Screenline for E-W movements
Appendix A: Project timescales

YEVEL WESTERN CORRIDOR  
MAJOR SCHEME BUSINESS CASE

Date of Last Update: 16/10/2013

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Appendix B: Data Collection and Data Collation Reports
Appendix C: Local Model Validation Report
Appendix D: Uncertainty Log