CONTENTS

1 Introduction 1
  1.1 Scheme Location and Description 1
  1.2 Current Stage of the Project 1
  1.3 Other Reports 1
  1.4 Purpose of the Report 2

2 Challenges and Issues 3
  2.1 Strategic Case 3
  2.2 Transport Objectives 4
  2.3 Other Objectives 5

3 Transport Modelling 6
  3.1 Existing Knowledge and Data 6
  3.2 Scale of Impact 9
  3.3 Constraints 9
  3.4 Additional Data Requirements 10
  3.5 Proposed Methodology 10

4 Economic Assessment 14
  4.1 Existing Knowledge and Data 14
  4.2 Constraints 14
  4.3 Scale of Impact 14
  4.4 Additional Data Requirements 14
  4.5 Proposed Methodology 14

5 Operational Assessment 17
  5.1 Existing Knowledge and Data 17
  5.2 Constraints 17
  5.3 Scale of Impact 17
  5.4 Additional Data Requirements 17
  5.5 Proposed Methodology 17

6 Environment 18
  6.1 Noise 18
  6.2 Air Quality 20
  6.3 Greenhouse Gases 23
  6.4 Landscape and Townsape 24
  6.5 Historic Environment 26
  6.6 Biodiversity 28
  6.7 Water Environment 31

7 Project Management 33
  7.1 Communication Strategy 33
  7.2 Programme 33
  7.3 Risks 33
  7.4 Change Log 33

8 Appraisal Specification Summary 34
  8.1 Overview 34
  8.2 Economy 34
8.3 Environmental 34
8.4 Social 35
8.5 Public Account 36

9 Glossary 37

TABLES
Table 3-A – RSI Site List 7
Table 3-B – Traffic Count Sites 8

FIGURES
Figure 1 – Location Plan 38
Figure 2 – Newton Abbot Base Model Study Area 39
Figure 3 – Location of Existing RSI Sites 40
Figure 4 – Location of Existing Count Sites 43
Figure 5 – Location of Existing Journey Time Routes 46
Figure 6 – Split Between Simulation and Buffer Coding 47
Figure 7 – Location of Listed Buildings 48

APPENDICES
Appendix 1 – T&E Programme 49
Appendix 2 – T&E Risk Register 51
Appendix 3 – Appraisal Specification Summary Table (ASST) 53
1 Introduction

1.1 Scheme Location and Description

1.1.1 The A382 corridor improvements scheme is located to the west of Newton Abbot between the Drumbridges Roundabout on the A38 and Jetty Marsh Road in Newton Abbot. A location plan is provided as Figure 1.

1.1.2 The current route is of substandard width and alignment with many sections featuring trees, hedges and stone walls right up to the carriageway edge. The route delivers a poor level of service due to a combination of poor alignment and high traffic flows resulting in it being close to capacity.

1.1.3 The scheme proposes improvements to the A382 to straighten both the horizontal and vertical alignment, widen the highways carriageway to 10 metres and increase visibility thereby increasing speed and capacity. Also proposed is a new route (Jetty Marsh II) connecting Whitehill’s Cross on the A382 to Jetty Marsh Road near the new Hospital site and also isolated widening improvements to Old Exeter Road.

1.1.4 Additionally, the scheme will deliver improved pedestrian and cycle links between Newton Abbot, Drumbridges and proposed developments via a dedicated pedestrian and cycle way along the entire route of the A382 and Old Exeter Road. This would link to pedestrian and cycle improvements as part of the Drumbridges scheme connecting to Heathfield and also serve a park and change site as part of the A382 corridor scheme.

1.2 Current Stage of the Project

1.2.1 The requirement for improvements to the A382 has been identified in strategic traffic modelling of Teignbridge Local Plan developments. The Local Plan specifies that improvements to the A382 are necessary in policy HT1 Heart of Teignbridge – Movement: “To improve connectivity and accessibility within the Heart of Teignbridge the following proposals will be supported” … “(c) widening the A382 Bovey Tracey road between Newton Abbot and Drumbridges roundabout at the A38 and separate cycle lanes”.

1.2.2 The scheme has also been considered in the “West of Newton Abbot Option Assessment Report”. The scheme has been shown to be the most appropriate combination of measures to deliver growth and promote sustainable travel.

1.3 Other Reports

1.3.1 This report forms part of a family of documents which support the Value for Money (VfM) assessment of the A382 scheme. These reports will require scrutiny by the Independent Technical Advisor (ITA). The reports (in chronological order) are as follows:

- Option Assessment Report – identifies the need for the scheme, its objectives and the process for generating options. Also provided is the methodology for assessing alternatives and the recommendations on the scheme(s) to be taken forward to detailed appraisal.
• Appraisal Specification Report - compiled to inform decision makers and stakeholders on how the economic, environmental, social and operational assessments will be undertaken and how they will be supported by the traffic modelling work, taking account of budgetary and environmental constraints.

• Data Collection Report – details the collection and analysis of all data supporting the study.

• Local Model Validation Report – provides the methodology and results for construction of the base year traffic model.

• Forecasting Report – documents the methodology and results of the future year traffic forecasts.

• Economic Assessment Report – details the approach taken to assess the monetised costs and benefits of the scheme. Benefits will include Transport Economic Efficiency (TEE) during construction, maintenance and under typical conditions; also reliability and accidents. Costs include costs associated with construction and maintenance.

• AST Report – The methodology for completing the AST tables and the source for all entries. This will also include an analysis of Social and Distributional Impacts (SDIs).

1.4 Purpose of the Report

1.4.1 This report has been compiled to inform decision makers and stakeholders on how the economic, environmental and operational assessments will be undertaken and how they will be supported by the traffic modelling work, taking account of budgetary, political, environmental and spatial constraints.

1.4.2 The report also provides an early indication of significant risks and will be used to inform the development of appropriate options taking account of the identified constraints.

1.4.3 The report will:

• define the scope, methodology, assumptions and associated risks of the transport assessment, including traffic/transport modelling;

• define the scope and content of the environmental assessment;

• identify the data and outstanding survey requirements; and set out the consultation processes for appropriate stakeholder engagement.

• Identify any technical reports which will require scrutiny by the Independent Technical Advisor (ITA).
2 Challenges and Issues

2.1 Strategic Case

2.1.1 The existing A382 is not built to modern design standards horizontally or vertically, or in terms of visibility or ability to incorporate future junctions and has no facilities for pedestrians or cyclists.

2.1.2 Hedges, trees and stone walls abut the carriageway and create an enclosed environment. This restricts visibility in places and results in a constrained road space.

2.1.3 Current traffic flows on the A382 are in the region of 19,000 vehicles per day (2-way) with flows in excess of 900 vehicles per hour southbound in the PM peak. As such the route is operating close to capacity due to the low design standard of the road which is estimated to have a capacity of about 1,100 vehicles per hour. Current average speeds in the off-peak are less than 40mph despite the road being subject to national speed limit (60mph). The average speed southbound in the PM peak is 26mph.

2.1.4 In addition, the section of the A382 into Newton Abbot town centre from Churchill’s Roundabout to the Highweek Street signalised junction is busy and slow moving at peak times. Delays are experienced on the A382 and A383 corridors, primarily due to blocking back from the Highweek Street signalised junction. Old Exeter Road connects Newton Abbot and Kingsteignton to the west carrying a two way flow of approximately 500 vehicles in the AM peak. It has a low capacity as it is narrow and includes a listed structure, the Causeway.

2.1.5 It is expected that the situation will increasingly deteriorate due to the significant housing and employment development (6,000 dwellings and 11,000 jobs) proposed in the Newton Abbot and Kingsteignton area. It is forecast that traffic flows on the A382 could increase to 1,500 vehicles per hour northbound during the AM peak and southbound during the PM peak by 2033. Old Exeter Road will reach capacity with a predicted two way flow of 700 vehicles during peak times by 2033. The Causeway structure will become more vulnerable to vehicles colliding with the parapets on narrow sections.

2.1.6 Whilst the A383 provides an alternative route for A38 southbound traffic, there is no easy alternative for A38 northbound traffic without travelling through Newton Abbot.

2.1.7 The objective of the proposed scheme is therefore to increase capacity on the A382 and Old Exeter Road, provide relief to Churchill’s roundabout and improve the structural stability of the Causeway, to a level which can accommodate the predicted demand from the high level of residential and employment growth within Newton Abbot.

2.1.8 The proposed Jetty Marsh II connection would provide relief for Churchill’s roundabout by providing a better alternative for traffic travelling between the A382 and Jetty Marsh Road (Balls Corner).

2.1.9 Proposed improvements to the Causeway structure on Old Exeter Road would provide additional capacity to accommodate predicted future flows, in particular trips from new developments to the west of Kingsteignton accessing the new
employment site at Forches Cross. These could be in the form of isolated widening to create a passing place at the narrowest point of the Causeway

2.1.10 The scheme will increase the capacity of the A382 corridor and therefore improve access between Newton Abbot and the A38. The A382 improvements alone would increase capacity and allow more traffic to reach Newton Abbot but without Jetty Marsh II this traffic would get held up at Churchill’s Roundabout. The Jetty Marsh II scheme will route some traffic directly to Balls Corner thus allowing the additional traffic enabled by the A382 to access the town centre.

2.1.11 The scheme also aims to deliver improved pedestrian and cycle links between Newton Abbot, Drumbridges, Kingsteignton and proposed developments via a dedicated pedestrian and cycle way along the entire route of the A382 and along Old Exeter Road. This would link to pedestrian and cycle improvements as part of the Drumbridges scheme connecting to Heathfield and also the Wray Valley Trail connecting Newton Abbot with Bovey Tracey.

2.1.12 The design of the route will be challenging for reasons such as the length of route, which means a number of land owners will be affected and also the presence of two listed structures – Stover Bridge and the Causeway on Old Exeter road.

2.2 Transport Objectives

2.2.1 The primary objectives of the scheme are (aligned with the Devon and Torbay LTP3):

- to deliver development to the west of Newton Abbot;
- to improve journey times to the west of Newton Abbot; and
- to improve safety on the A382.

2.2.2 There is a secondary objective of encouraging the use of sustainable modes.

Fit with wider transport and government objectives

2.2.3 The scheme will enable economic growth, reduce congestion and allow people to continue to access employment via A38 northbound to locations such as Exeter. Access to employment in Newton Abbot will also be assisted by reducing delays.

2.2.4 Bus access along this corridor will be improved for existing buses (currently rural services to surrounding locations Bovey Tracey, Chudleigh, Heathfield, Trago Mills) and also for future bus services associated with the Houghton Barton development.

2.2.5 The scheme will provide facilities for pedestrians and cyclists by introducing a new off-road shared path that connects the new Houghton Barton development with employment locations at Heathfield and Newton Abbot.

2.2.6 The A382 improvements complement proposals at the Drumbridges junction of the A382 with the A38. Work on the Drumbridges scheme will commence in 2015, with funding secured from the Highways Agency Pinch Points fund.
These improvements include signalisation and an increase in capacity of the junction.

2.2.7 This scheme features on-line improvements and therefore makes best use of existing infrastructure.

Local Transport Plan

2.2.8 The scheme contributes to Local Transport Plan objectives as follows:

- **Deliver and support new development and economic growth** by bringing forward around 2,500 new houses and employment land at Houghton Barton, Whitehill and Newton Abbot town centre and 800 new houses to the west of Kingsteignton.

- **Make best use of the transport network and protect the existing transport asset by prioritising maintenance** by making better use of available road space and increase capacity.

- **Work with communities to provide safe, sustainable and low carbon choices** by delivering improved cycle and pedestrian facilities on a key link.

- **Strengthen and improve the public transport network** by reducing delay on principle County Bus Routes towards Newton Abbot.

- **Make Devon the 'Place to be naturally active'** by improving pedestrian and cycle facilities which will build on existing walking and cycle network and encourage access between Heathfield, Newton Abbot and proposed housing developments.

Teignbridge District Council Local Plan ‘Plan Teignbridge’

2.2.9 The scheme also contributes to the Teignbridge Local Plan as follows:

- **Policy S10: The function of the existing transport network and facilities will be protected** – Without the scheme the operation of the A382 would significantly worsen.

- **Supporting more sustainable transport modes and other measures to reduce carbon emissions** – The scheme features new pedestrian and cycle facilities and will also improve journey times for buses.

- **Improvements to air quality** – The scheme will improve journey times and reduce congestion thus resulting in improvements to air quality.

2.3 Other Objectives

2.3.1 An additional objective of the scheme is to turn the A382 into a “gateway” for Newton Abbot. The existing road is not considered an appropriate entrance to an expanding town along a growth corridor. The road standard should be high, the view welcoming and give a feeling of economic growth.
3 Transport Modelling

3.1 Existing Knowledge and Data

Existing Models

3.1.1 In 2012 as part of Devon County Council’s work to better understand the transport implications and infrastructure requirements of the developments included in the Teignbridge Local Plan, the Newton Abbot model was developed. The study area for the Newton Abbot model is provided in Figure 2. The full Local Model Validation Report (LMVR) is available online at http://www.devon.gov.uk/index/transportroads/devon_local_transport_plan/tp-documents.htm

3.1.2 The Newton Abbot model is a multi-modal demand model, with a highway assignment model developed in SATURN software, a public transport model developed in PT-SATURN software and a demand model in DIADEM software.

3.1.3 The demand model allows trips to alter their destination and to change mode between car and public transport or cycle.

3.1.4 The Newton Abbot highway assignment model was built using data from a variety of roadside interviews collected up to and including 2011. Where OD data was not available, movements were infilled using journey to work data, employment data and school data. The model is calibrated to a base year of 2011, and represents a typical neutral AM peak hour (08:00-09:00). Highway assignment was undertaken for car employers business, car commute, car other, LGV and HGV.

3.1.5 The public transport model included a detailed representation of the rail and bus networks within Newton Abbot. Model demands were calculated using data from a variety of sources, including passenger surveys, journey to work data and National Rail Travel Survey data.

Roadside Interview Data

3.1.6 Data from a total of 14 Roadside Interviews (RSI) was used for the development of the 2011 Newton Abbot model. These were carried out over a 13 year period for a variety of purposes and projects.

3.1.7 Eight of the RSIs used were conducted in and around Newton Abbot during 2004/2005 for the development of a traffic model as part of the South Devon Link Road (SDLR) Major Scheme Bid. Two RSIs were conducted on strategic routes into Newton Abbot in 2011 to fill gaps in existing data and better understand traffic movements to the west of Newton Abbot. One RSI used was conducted in Totnes to better understand traffic movements through the town. Three RSIs used were conducted in Exeter to observe movements into the city and have previously been used in the development of models for the East of Exeter Major Scheme Bid.

3.1.8 The most recent RSIs were carried out in 2011 on the A382 and A383 which are the two most significant routes for the A382 corridor improvements.
3.1.9 The location, date and direction of each RSI are provided in Table 3-A. The locations of each site are also shown in Figure 3.

<table>
<thead>
<tr>
<th>No</th>
<th>RSI</th>
<th>Direction</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St Marychurch Road</td>
<td>Northbound</td>
<td>13/06/2005</td>
</tr>
<tr>
<td>2</td>
<td>A380 Torquay Road</td>
<td>Southbound</td>
<td>15/06/2005</td>
</tr>
<tr>
<td>3</td>
<td>Kingskerswell Road</td>
<td>Southbound</td>
<td>16/06/2005</td>
</tr>
<tr>
<td>4</td>
<td>Abbrooks Quarry</td>
<td>Southbound</td>
<td>28/06/2004</td>
</tr>
<tr>
<td>5</td>
<td>Ware Cross</td>
<td>Eastbound</td>
<td>28/06/2004</td>
</tr>
<tr>
<td>6</td>
<td>Lindridge Road</td>
<td>Southbound</td>
<td>29/06/2004</td>
</tr>
<tr>
<td>7</td>
<td>West Golds</td>
<td>Southbound</td>
<td>29/06/2004</td>
</tr>
<tr>
<td>8</td>
<td>Racecourse</td>
<td>Southbound</td>
<td>30/06/2004</td>
</tr>
<tr>
<td>9</td>
<td>A382</td>
<td>Northbound</td>
<td>05/07/2004</td>
</tr>
<tr>
<td>10</td>
<td>A383</td>
<td>Westbound</td>
<td>16/06/2011</td>
</tr>
<tr>
<td>11</td>
<td>Totnes</td>
<td>Eastbound</td>
<td>12/03/2008</td>
</tr>
<tr>
<td>12</td>
<td>Alphington Cross</td>
<td>Northbound</td>
<td>22/06/2004</td>
</tr>
<tr>
<td>13</td>
<td>Peamore</td>
<td>Northbound</td>
<td>21/06/2004</td>
</tr>
<tr>
<td>14</td>
<td>J30 NB Off slip</td>
<td>Northbound</td>
<td>12/03/1998</td>
</tr>
</tbody>
</table>

Table 3-A – RSI Site List

Traffic Flows

3.1.10 Extensive count data collected between 2004 and 2012 was used during model development. This consisted of Manual Classified Counts (MCC), Automatic Traffic Counts (ATC) and Urban Traffic Control (UTC) counts obtained from DCC systems and ATC data from the Highways Agency TRADS system. The locations of these count sites, and the availability of data is provided in Table 3-B. The locations of these sites are also shown in Figure 4.

<table>
<thead>
<tr>
<th>Count No</th>
<th>Count Location</th>
<th>Year</th>
<th>Link/ Turn</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A38 Ashburton</td>
<td>2011</td>
<td>Link</td>
<td>TRADS</td>
</tr>
<tr>
<td>2</td>
<td>A38 Chudleigh</td>
<td>2011</td>
<td>Link</td>
<td>TRADS</td>
</tr>
<tr>
<td>3</td>
<td>A38 Cold East</td>
<td>2011</td>
<td>Link</td>
<td>TRADS</td>
</tr>
<tr>
<td>4</td>
<td>A38 Kennford</td>
<td>2011</td>
<td>Link</td>
<td>TRADS</td>
</tr>
<tr>
<td>5</td>
<td>A38 Totnes</td>
<td>2011</td>
<td>Link</td>
<td>TRADS</td>
</tr>
<tr>
<td>6</td>
<td>A380 Ideford</td>
<td>2011</td>
<td>Link</td>
<td>ATC</td>
</tr>
<tr>
<td>7</td>
<td>Ware Barton</td>
<td>2004</td>
<td>Turn</td>
<td>MCC</td>
</tr>
<tr>
<td>8</td>
<td>B3183 Clay Lane</td>
<td>2006</td>
<td>Link</td>
<td>MCC</td>
</tr>
<tr>
<td>9</td>
<td>Balls Corner</td>
<td>2006</td>
<td>Turn</td>
<td>MCC</td>
</tr>
<tr>
<td>10</td>
<td>A383 Bickington</td>
<td>2011</td>
<td>Link</td>
<td>ATC</td>
</tr>
<tr>
<td>11</td>
<td>Bradley Lane</td>
<td>2011</td>
<td>Link</td>
<td>UTC</td>
</tr>
<tr>
<td>12</td>
<td>Drumbridges</td>
<td>2008</td>
<td>Turn</td>
<td>MCC</td>
</tr>
<tr>
<td>13</td>
<td>East Street</td>
<td>2011</td>
<td>Link</td>
<td>ATC</td>
</tr>
<tr>
<td>14</td>
<td>Exeter Road</td>
<td>2011</td>
<td>Link</td>
<td>MCC</td>
</tr>
<tr>
<td>15</td>
<td>Exeter Road/ Jetty Marsh (Churchill's Roundabout)</td>
<td>2009</td>
<td>Turn</td>
<td>MCC</td>
</tr>
<tr>
<td>16</td>
<td>Exeter Road/ Strap Lane</td>
<td>2006</td>
<td>Turn</td>
<td>MCC</td>
</tr>
<tr>
<td>17</td>
<td>Gestridge Road</td>
<td>2011</td>
<td>Link</td>
<td>ATC</td>
</tr>
<tr>
<td>18</td>
<td>Gestridge Road/Broadway</td>
<td>2010</td>
<td>Turn</td>
<td>MCC</td>
</tr>
</tbody>
</table>
### Table 3-B – Traffic Count Sites

3.1.11 Where available, data was chosen for the month of June. For counts not undertaken in 2011, the available data was factored to represent 2011 values by applying a ratio calculated from the nearest comparable ATC site. Where a comparable site was not identified, an average scaling factor was applied calculated from a number of sites in Newton Abbot.

Journey Times

3.1.12 Automatic Number Plate Recognition data was available from DCC providing information on journey times on key routes in Newton Abbot. Data was extracted for term-time weekdays in the period January to October 2011 (all available 2011 data) between 08:00-09:00. The journey time routes are shown in Figure 5.
Planning Data

3.1.13 Planning data was provided by Teignbridge District Council in November 2012 and reflects the development set out in the Submission Local Plan up to 2033. This data included the expected build rate for all housing developments in the Local Plan, including committed development and sites currently under construction.

3.1.14 Assumptions for new employment and retail development were taken from the Submission Local Plan which details the expected size and type of development at each location.

3.2 Scale of Impact

3.2.1 Future development will push the A382 over capacity therefore improvements are required to accommodate growth. Current capacity is estimated at 1,100 vehicles per hour per direction, with predicted future flows of 1,500 vehicles per hour which would not be achievable without any improvements.

3.2.2 The scheme is expected to significantly resolve forecast issues by increasing capacity to 1,600 vehicles per hour. Initial analysis suggests that the Jetty Marsh II link will provide effective relief to the Churchill’s Roundabout by removing 600 trips in each direction from the roundabout in the AM peak hour.

3.2.3 There is potential for further impact on the A383, B3193 and Newton Abbot town centre.

3.3 Constraints

Existing models

3.3.1 The existing Newton Abbot model only covers the AM peak. PM and interpeak models will be required to develop the economic case for the scheme and to ensure the model follows advice in WebTAG.

3.3.2 The existing AM peak model represents the year 2011. This is already 3 years old therefore the new model will be updated/created to represent a base year of 2013. This will be done using ATC data to derive a growth factor(s) from 2011 to 2013 and applying this to the base matrix then re-calibrating to 2013 count data.

Data

3.3.3 Turning count data exists for the junctions at either end of the scheme, however no other junctions along the A382 have any data currently available.

3.3.4 A count does exist at Churchill’s Roundabout however this was conducted in February 2009. There are concerns regarding the integrity of this data and it will be over five years old at the time of submission of the business case. In addition, the new Hospital site in Newton Abbot which is accessed from Jetty Marsh Road and therefore Churchill’s Roundabout, only opened in January 2009 just before the count was carried out. Traffic movements may have changed while demands from the hospital establish themselves over time.
3.3.5 The age of the RSI data is considered satisfactory for the purposes of the study. The most significant routes for the A382 corridor improvements are the A382 and A383 which were surveyed in 2011. All of the older sites are a substantial distance from the immediate study area and so the age of the data is not of significant concern.

3.3.6 The RSIs provide good coverage and allow a large proportion of observed trips to be incorporated into matrix building. Whilst there are some gaps in the RSI data, namely the A381 and movements between the A380 and Newton Abbot via Penn Inn, there is supplementary data along these corridors to reduce the number of unobserved movements. No new RSIs are proposed given their expense and that they would not significantly improve the model.

3.3.7 The ANPR journey time data used in the existing model is not very flexible in terms of defining new routes or changing the start/end points. TrafficMaster journey time data is available which is much more detailed and covers all principle roads in Newton Abbot. In particular this data covers the A382 and A383 which the ANPR data does not. Therefore the current ANPR data used to validate the model will be superseded by TrafficMaster data for use in model development.

Programme

3.3.8 The traffic and economic work fits within a wider programme of work required to produce a Transport Business Case for the A382 scheme. The programme identifies the traffic and economic work as a critical path item, therefore any overrun in programme will lead to a delay in delivery of the scheme.

3.4 Additional Data Requirements

3.4.1 Updated traffic count and journey time data will be required for 2013 in order to update the current 2011 AM peak model and to produce the new PM and interpeak models.

3.4.2 Additional classified junction counts will be required for the operational assessment at the junctions of the A382, as discussed further in Section 5.

3.4.3 It is proposed that Public Transport will not be modelled and hence no additional Public Transport surveys will be required. The modelling of public transport is discussed further in paragraph 3.5.25.

3.5 Proposed Methodology

Study Area

3.5.1 The study area of the existing model has extensive detail in Newton Abbot, with notional extensions into Cornwall and the rest of the country as shown in Figure 2. This study area captures the scale of impact discussed in 4.3 and is therefore considered appropriate for the A382 scheme models.

3.5.2 The detail surrounding the A382 may require refinement, in particular a zone will be required for Stover School. A more disaggregated zone system may be required for new developments and realistic loading points will be necessary in the Do Minimum and Do Something scenarios.
Modelled Years

3.5.3 A base year of 2013 will be assumed to reflect that of the existing traffic conditions. Forecast models will be required for the scheme opening year 2019 and opening year plus 15 years 2034 (which also relates to the Local Plan horizon year).

Time periods

3.5.4 Analysis of traffic count data will be carried out to determine the time periods most appropriate to model. Three time periods will be modelled and it is anticipated that these will be AM peak hour (08:00-09:00), PM peak hour (17:00-18:00) and average Interpeak hour (10:00-16:00).

3.5.5 The choice of model time periods will be confirmed in the Local Model Validation Report (LMVR). The Data Collection Report will contain a thorough analysis of traffic flows across a typical neutral day and an analysis of journey purposes from RSIs. Time periods will be chosen where flows and journey purposes can be shown to be consistent and where the performance of the road network is similar.

User classes

3.5.6 The user classes in the existing model are considered sufficient to carry out a robust economic analysis of the scheme. These user classes are as follows:

- Car Commute
- Car Employer’s Business
- Car Other
- LGV
- HGV

Base Model Demand

3.5.7 The methodology for creating the interpeak and PM base demand matrices will generally follow that of the existing AM peak model. This is defined in the existing Local Model Validation Report [http://www.devon.gov.uk/index/transportroads/devon_local_transport_plan/tp-documents.htm](http://www.devon.gov.uk/index/transportroads/devon_local_transport_plan/tp-documents.htm)

3.5.8 Where travel to work census data has been used it is proposed to reverse the AM trips to represent travel in the PM peak and use a combination of the AM and PM trips for the interpeak. The interpeak journey purposes will be derived from RSI data. No school data will be included in the interpeak or PM models.

Split between simulation and buffer network

3.5.9 The existing split between simulation and buffer coding is shown in Figure 6. The area of simulation coding shown will allow for an accurate representation of changes in delay brought about by the A382 corridor improvements.
Calibration and validation

3.5.10 The count data will be divided into sites for calibration and sites for validation.

3.5.11 Vehicle class (car, LGV, HGV) flows will initially be assessed against screenlines to assess the validity of the demand matrix. Where flows are not within established bounds, the demand model will be interrogated and adjusted if necessary to ensure screenline flows are correct.

3.5.12 All-vehicle flows will be checked against observations on links and on key junctions within the study area. Adjustments to model network (junction coding and fixed speeds) will be made where appropriate if it is felt that routing problems in the model are the cause of poor link and junction calibration. The locations of calibration points in the model will be documented in the LMVR.

3.5.13 The model will be validated against an independent set of link count data and to journey times to ensure the model is recreating these observations correctly.

3.5.14 It should be noted that the split between calibration and validation link flows will not be biased towards any particular data source. The aim will be to ensure equally robust data is used for both calibration and validation.

3.5.15 Routing across the model will be checked for important movements to ensure it is plausible. Further checks will be made on V/C and Q/S, and any unreasonable results corrected.

3.5.16 Sector analysis at RSI sites will be carried out to evaluate the impact of any matrix changes made during model calibration.

Demand Forecasting - Uncertainty

3.5.17 All forecasts will be completed in line with the WebTAG guidance on uncertainty given in Unit M4. Local development information will be collected and classified according to the certainty that the development is likely to come forward. Only ‘near certain’ and ‘more than likely’ developments will be included in the core scenario. Sensitivity tests will be completed for high and low development scenarios. Constraint will be applied over the model area (as opposed to the district level with core scenario).

3.5.18 Further sensitivity tests will be completed to cover uncertainty in demographic, economic and behavioural trends. These will comprise of forecasts scenarios using an appropriate range about the core scenario growth forecast of +/- 2.5% for traffic forecasts one year ahead of the model base year, rising with the square root of the number of years to ±15% for forecasts 36 years ahead.

Demand Forecasting – Reference Forecasts

3.5.19 Local development data will be assigned to relevant zones in the model using trip rates derived from TRICS. The distribution of trips will be derived from a gravity model calibrated against trip lengths derived from the traffic model.

3.5.20 Growth will be constrained at the district level as follows:

- Trips from key development sites to be point loaded to appropriate zones where it is felt they will have an impact on the Scheme. These
developments are likely to include Houghton Barton (including Hele Park), Whitehill, Mile End, Newcross, Rackerhayes and Wolborough strategic development sites.

- If this development is greater than that assumed in TEMPRO then TEMPRO will be set to base year levels.
- Elsewhere in the model, background growth will be added using TEMPRO for cars and LGV personal trips. Use of the ‘alternative planning assumptions’ will be made within TEMPRO to ensure that growth is constrained to national projections.
- For goods vehicle traffic a uniform growth factor will be applied across the matrix.

Supply Forecasting – Reference Forecasts

3.5.21 As with the demand forecasts, all transport improvements which are either ‘certain’ or ‘more than likely’ to come forward will be included in the core scenario network for the without scheme (DM or Do Minimum) and with scheme scenario (DS or Do Something).

Supply Forecasting – Uncertainty

3.5.22 If appropriate, further networks will be coded for high and low infrastructure scenarios, the schemes coded will be consistent between DM and DS.

Variable Demand Modelling (VDM)

3.5.23 It is not anticipated that Variable Demand Modelling will be undertaken however tests for the requirement for VDM will be completed to justify this decision.

3.5.24 A test for frequency and distribution responses will be carried out by analysing the changes in journey time brought about by the scheme. This will consider journey cost changes between base year and forecast year and journey cost changes between with-scheme and without-scheme in the forecast year.

3.5.25 Analysis of Census Journey to Work (JTW) data shows that public transport usage is less than 10% in Newton Abbot and Kingsteignton. This is likely to be significantly lower on the A382 and A383 corridors due to the frequency and destinations of services. There are no specific bus improvements included in the scheme so the difference in car and public transport costs will stay fixed, thus maintaining current mode splits. As such it is not proposed to include modelling of the mode choice response.

3.5.26 A test for time period choice will be carried out by analysing the difference in journey times between peak periods and the interpeak, in the base year and forecast year.
4 Economic Assessment

4.1 Existing Knowledge and Data

4.1.1 Economic assessment to date has been based on Journey times and utilised the Highway Agency PAR spreadsheet.

4.1.2 The economic assessment of the A382 corridor improvement project will take place using outputs from the model developed as outlined in section 3.5. The majority of benefits are likely to come from transport economic efficiency (TEE) benefits, more specifically travel time savings arising from the reduction in congestion on the A382 and bypassing Churchill’s Roundabout. There are also expected to be additional benefits in terms of accident savings.

4.1.3 The details of the assessment of TEE benefits and other benefits are outlined in the following section. The assessments will be unique to this project but use established methodologies as laid out in WebTAG by the DfT.

4.2 Constraints

4.2.1 The methodologies proposed in this section are well understood by the T&E team and therefore no constraints are anticipated over and above those discussed in section 3.2.

4.3 Scale of Impact

4.3.1 The main economic impacts of the scheme are expected to be journey time benefits due to the increased capacity of the A382 corridor and reduction in traffic at Churchill’s roundabout. There are also expected to be accident benefits due to the improved standard of road and the observation that most incidents currently occur mid-link and not at junctions.

4.4 Additional Data Requirements

4.4.1 Income data for output areas in the south west will be obtained from the Office for National Statistics website in order to undertake an analysis of Social and Distributional Impacts (SDIs).

4.4.2 It is anticipated that this scheme will generate accident benefits so accident data for the past five years will be required to determine accident rates.

4.5 Proposed Methodology

4.5.1 Standard economic software TUBA will be used to assess journey time benefits and COBA-LT to assess accident benefits. The disbenefits experienced during construction and maintenance will be assessed by modelling the maintenance regime in SATURN and using TUBA to identify the disbenefits resulting from increased journey times.

4.5.2 The standard Appraisal Summary Table and supporting information will be completed which covers: Transport economic efficiency (TEE), Public Accounts (PA), Analysis of Monetised Costs and Benefits (AMCB), Social and Distributional Impacts.
Transport Economic Efficiency

4.5.3 Transport economic efficiency (TEE) will be assessed using the TUBA programme with matrix inputs (trips, time and distance) taken from the highway assignment model.

4.5.4 The benefits calculated by TUBA will be checked in several ways, these are laid out as follows:

- Analysis of all warnings reported by TUBA – each individual warning will be investigated and corrected if necessary or commentary provided where it is felt that the benefits are realistic;
- The benefits will be disaggregated using a sectoral analysis to show that benefits are accrued in areas of the model which are realistic.

Accidents

4.5.5 Accidents will be assessed using the COBA-LT programme to represent the A382 between Drumbridges and Newton Abbot. The widening and realignment improvements on the A382 are expected to reduce the accident rate of the road. The link accident classification will be upgraded from an Older S2 A road to a Modern WS2 Road.

Reliability

4.5.6 Reliability will be assessed in line with WebTAG Unit A1. The A382 is a single carriageway outside an urban area and therefore the assessment of changes in reliability are based on changes in ‘stress’, the ratio of the annual average daily traffic (AADT) flow to the Congestion Reference Flow (CRF).

4.5.7 The CRF of a link is given in DMRB Volume 5 Section 1 part 3 by the formula:

\[ CRF = \text{CAPACITY} \times \text{NL} \times \text{Wf} \times 100/\text{PkF} \times 100/\text{PkD} \times \text{AADT}/\text{AAWT} \]

Where:
- CAPACITY is the maximum hourly lane throughput*;
- NL is the Number of Lanes per direction;
- Wf is a Width Factor*;
- PkF is the proportion (percentage) of the total daily flow (2-way) that occurs in the peak hour;
- PkD is the directional split (percentage) of the peak hour flow;
- AADT is the Annual Average Daily Traffic flow on the link;
- AAWT is the Annual Average Weekday Traffic flow on the link.

* more detail given in DMRB

Delays During Construction and Maintenance

4.5.8 Delays during construction and maintenance will be assessed using the highway assignment model. The construction and maintenance scenarios will be coded for opening and design year in both the without-scheme and with-scheme scenarios. The model results will be fed into dedicated TUBA models. In order to implement this approach, several simplifying assumptions will be made:
• Construction: a shorter appraisal period (2 years) will be employed. A construction regime network will be assessed against the without-scheme network.

• Maintenance: works will be assumed to be undertaken in each year in both scenarios. The duration of the works will be shortened by application of reduced annualisation factors.

• Maintenance: duration of the works in the without-scheme scenario will be equal to the with-scheme scenario.

Social and Distributional Impacts

4.5.9 An assessment of the social and distributional impacts (SDIs) for business users, transport providers, commuting and other users will be completed in line with WebTAG Unit A4. WebTAG highlights a staged approach for the assessment of SDIs – it is anticipated that all stages will be completed and travel time benefits will be disaggregated into a seven point scale.

4.5.10 The risk of accidents for vulnerable groups will be reduced with the Scheme in place. Cyclists and pedestrians will benefit from an off-road shared pedestrian/cycle path where currently there is nothing. In particular, there was a fatality involving a pedestrian in 2012.
5  Operational Assessment

5.1 Existing Knowledge and Data

5.1.1 Data exists for the junctions at either end of the scheme, Drumbridges was surveyed in 2011 and Churchill's Roundabout surveyed in 2009. However it is proposed to survey Churchill’s Roundabout again to be included in the base traffic model. No other junctions along the route have any data currently available. Journey time data is available for the entire route.

5.2 Constraints

5.2.1 The key constraint is time. The Operational Assessment is not however a requirement in WebTAG and so may be carried out after the economic business case is complete. It should however be completed before any public enquiry.

5.2.2 There may also be uncertainty over design details regarding future junctions connecting to new developments. The preliminary scheme design should be complete but detailed design is likely to still be underway when the operational assessment is carried out.

5.3 Scale of Impact

5.3.1 The main impacts of the scheme will be to improve travel conditions for vehicles on the main carriageway. Vehicles accessing side roads may experience some disbenefit which is to be quantified during the operational assessment.

5.4 Additional Data Requirements

5.4.1 Additional classified junction counts will be required for the operational assessment at the junctions of the A382 with: Trago Mills, Stover School, Greycoat Lane / Staplehill Road, Ringslade Road and Whitehill Road / Exeter Road. In addition a count will be required at the roundabout of Jetty Marsh Road and West Golds Way, where Jetty Marsh II will connect.

5.5 Proposed Methodology

5.5.1 Individual junction models appropriate to the junction type will be created for each junction along the route. These will be assessed for performance and delay, using predicted traffic flows from the transport modelling exercise.
6 Environment

6.1 Noise

Existing knowledge and data

6.1.1 In order to give an indication of existing noise levels in the vicinity of Drumbridges Roundabout, a noise survey was undertaken by Jacobs in July 2013, the results of which are reported in the following report:


6.1.2 However, this survey was undertaken in support of proposed improvement works at Drumbridges Roundabout and as such, does not cover the majority of the proposed A382 Improvement scheme.

Key sources of noise

6.1.3 Based on a review of mapping, road traffic is considered to be the dominant noise source in the area. There are also two active clay works located immediately adjacent to the A382 (Ringslade Ball Clay Works and Stover Pit) which could be potential sources of background noise.

Likely scale of impacts

6.1.4 The proposed scheme will affect the alignment of the existing A382 and will also result in changes in traffic flows and speeds. It may also be likely to lead to changes in distribution of road traffic on the local network. As such, there is the potential for the project to have an effect on the noise climate of the area, affecting nearby sensitive receptors such as residential properties and schools.

Data requirements

6.1.5 In order to complete a WebTAG appraisal no additional baseline noise monitoring is proposed as it is not an explicit requirement of the WebTAG approach.

6.1.6 Consultation will be undertaken with Teignbridge District Council to discuss the existing information and whether the baseline data provided within the EAR above is sufficient to interpret the likely existing background noise environment for a TAG appraisal for this scheme. It is anticipated that if additional baseline monitoring is required that long term (24 hours) measurements would be taken at two locations, with short-term attended measurements undertaken at up to a further three locations using the Shortened Measurement Procedure, as detailed in Calculation of Road Traffic Noise, 1988. This would provide sufficient additional data.

6.1.7 To complete the noise appraisal, outputs will be provided from the highway assignment models. Following receipt of the traffic data, the extent of the calculation area will be determined (see section "Proposed methodology and study area" for more information about how the calculation area will be determined).
Proposed methodology and study area

6.1.8 The assessment of potential noise impacts will be undertaken following the guidance contained within DMRB Volume 11, Section 3, Part 7 HD 213/11 Revision 1 (HD 213/11) and the five step approach in WebTAG Unit A3.

6.1.9 The appropriate level of assessment will be determined following a scoping assessment which will include a review of traffic data associated with the scheme. At this stage, it is anticipated that a Simple Assessment (as defined in HD 213/11) will be undertaken. The following steps will be included in the assessment:

- Analysis of traffic data to define the study area and affected routes;
- A desk-based exercise to identify NSRs within the study area. This would include both existing and any planned future receptors that have received planning permission (e.g. new housing developments);
- A computer based noise propagation model will be used to complete noise calculations at all NSRs with the DMRB defined ‘Calculation Area’ using the Calculation of Road Traffic Noise, 1988 (CRTN) guidance;
- The noise predictions at NSRs (from the HD 213/11 Simple Assessment) will feed into the WebTAG Noise Workbook analysis to determine the Net Present Value (NPV) of the proposed scheme and the change in noise annoyance for the population affected by the scheme;
- The numbers of residential receptors exceeding 55 dB L_{Aeq,8hr} at night for the design year, both with and without scheme in place, will be determined to evaluate the night noise impact;
- Noise contour maps for change in noise level in the short-term (baseline year) and long-term (future year) will be produced, which may be used in the distribution analysis (if required); and
- Appropriate entries for the Appraisal Summary Tables (ASTs) for the scheme will be provided, based on the guidance in WebTAG Unit A3.

6.1.10 The study area for the scheme can only be defined on receipt of appropriate final traffic data. In determining the study area, reference will be made to the guidance in HD 213/11, as follows:

i. Identify the start and end points of the physical works associated with the road project;
ii. Identify the existing routes that are being bypassed or improved and any proposed new routes between the start and end points. For this scheme, it is assumed that there would be no bypassed routes as a result of the road widening;
iii. Define a boundary one kilometre from the carriageway edge of the routes identified in (ii) above;
iv. Define a boundary 600 m from the carriageway edge around each of the routes identified in (ii) above and also 600 m from any other affected routes within the boundary defined in (iii) above. This area is called the model ‘calculation area’;
v. Identify any affected routes beyond the boundary defined in (iii) above;
vi. Define a boundary 50 m from the carriageway edge of the routes identified in (v) above.

6.1.11 An affected route is where there is a predicted noise change of 1 dB L_{A10,18hr} or more in the short term (on scheme opening) or 3 dB L_{A10,18hr} or more in the long term (typically 15 years after opening).
6.1.12 It is not considered possible to conclusively determine whether distribution analysis should be undertaken at this stage. This will be confirmed on completion of the noise assessment.

Summary of the Relevant Areas of the Communication Strategy

6.1.13 The Teignbridge District Council Environmental Health Department will be consulted regarding the requirement for baseline noise monitoring and the results of the noise assessment.

Work programme

6.1.14 The assessment and report will be produced within eight weeks of receipt of all final traffic data and mapping/other data.

Summary of risks added to the project risk register

6.1.15 In the event that baseline noise monitoring is required, it is weather dependent and should not be performed during school holiday periods. Whilst every effort would be made to perform any required noise surveys within the stated eight week period, there is the potential for any noise surveys to require a longer programme.

6.1.16 There is a risk that agreement is not reached with Teignbridge District Council regarding requirement for baseline noise monitoring and results of the noise assessment.

6.2 Air Quality

Existing knowledge and data

6.2.1 The proposed scheme falls under the jurisdiction of Teignbridge District Council (TDC). In 2005, TDC declared four Air Quality Management Areas (AQMAs) for nitrogen dioxide ($\text{NO}_2$), which includes an AQMA in Newton Abbot town centre located to the south of the scheme.

6.2.2 The following provides a summary of the assessments and monitoring carried out for the scheme to date.

- An Updating and Screening Assessment (USA) was undertaken in 2012 and a Review and Assessment was completed in 2013. Both of these assessments were reported within a combined report\(^1\) in 2013. The combined report concludes that there is no need to proceed to a Detailed Assessment for carbon monoxide, benzene, 1,3-butadiene, lead and sulphur dioxide. However, indicative monitoring of fine particles (PM10) has predicted elevated concentrations and following consultation with Defra, TDC has elected to conduct a detailed assessment in the vicinity of the BCT factory site in Heathfield Industrial Estate.
- TDC operates two continuous monitors for $\text{NO}_2$ at the junction of Highweek Street/Halcyon Road/Bradley Lane in Newton Abbot and

\(^1\) Teignbridge District Council, 2012 Air Quality Updating and Screening Assessment and 2013 Air Quality Review and Assessment Progress Report for Teignbridge District Council, November 2013.
Bitton Park Road in Teignmouth. Both analysers are located within existing AQMAs. TDC is also responsible for a network of NO\textsubscript{2} diffusion tubes across the district. The diffusion tube results for 2012 identified numerous exceedances of the annual mean objective within the existing AQMAs, confirming that the existing AQMAs are justified. There was one exceedance outside the AQMA, however, it was deemed that there is no relevant exposure in the area and TDC propose to remove this location at the end of 2013.

- In relation to proposed improvement works at Drumbridges Roundabout, Jacobs carried out a six month NO\textsubscript{2} diffusion tube survey between July 2013 and January 2014\textsuperscript{2}. The monitoring shows that between these dates, NO\textsubscript{2} levels were below Air Quality Objectives of the AQMA near the Drumbridges roundabout.

- The A383 Jetty Marsh Road, Exeter Road and A383 Ashburton Road roads are modelled in the Pollution Climate Mapping (PCM) reported by Defra to the European Commission.

6.2.3 The anticipated changes in vehicle flow and speeds and associated effects cannot be quantified without reviewing traffic model data, as such further assessment is required to determine the impact on local air quality within Newton Abbot AQMA and on the wider network.

Likely scale of impacts

6.2.4 The proposed scheme has the potential to change vehicle flow and composition and this could impact air quality locally and across the wider network, including PCM modelled roads, the Newton Abbot AQMA and designated ecological sites in close proximity to the scheme.

6.2.5 Improvements in traffic movements also have the potential to reduce the effect of NO\textsubscript{x} concentrations locally. However, if the scheme also leads to an increase in traffic flow then there would also be the potential for an overall increase in emissions and concentrations.

6.2.6 The anticipated changes in vehicle flow and speeds and associated effects cannot be quantified without reviewing traffic model data, as such further assessment would be required to determine the impact on local air quality and designated sites.

6.2.7 The DMRB HA207/07\textsuperscript{3} screening criteria will be applied to available traffic to determine 'affected' roads and see Section 3.4 "Proposed methodology and study area". If no roads meet the criteria for affected roads, quantitative WebTAG Unit A3 local air quality can be scoped out.

Data requirements

6.2.8 In order to undertake the air quality appraisal the requirements for traffic data will be based on the Design Manual for Roads and Bridges (DMRB) guidance (Volume 11, Section 3, Part 1 HA 207/07).

\textsuperscript{2} Jacobs, Draft A38 Drumbridges Roundabout Improvements: Environmental Assessment Report, 2014

\textsuperscript{3} Highways Agency, Design Manual for Roads and Bridges, Volume 11, Section 3, Part 1, Air Quality (HA 207/07), 2007.
6.2.9 The study area for the air quality appraisal will be defined by the DMRB 'affected' roads screening criteria. The traffic modelling should identify what changes would be likely between the DM and DS scenarios and then the roads that meet the criteria will require a quantitative assessment. As a minimum, the traffic model should include road links with existing local air quality monitoring.

Proposed methodology and study area

6.2.10 The assessment of potential air quality impacts will be undertaken following guidance contained within WebTAG unit A3.3 using the five step approach and in accordance with the assessment methodology set out in DMRB HA 207/07, Interim Advice Notes (IAN 170/12⁴, 174/13⁵ and 175/13⁶) and with reference to Defra’s LAQM. TG (09)⁷ guidance where required.

6.2.11 The WebTAG approach does not lend itself to the air quality model verification process required for DMRB as concentrations are predicted for defined distance bands rather than specific roadside locations. The WebTAG assessment in A3.3 recognises this, and makes allowance for non-verified WebTAG calculations where necessary.

6.2.12 For local air quality impacts the effects on the road network will be screened using the following DMRB HA 207/07 criteria for defining ‘affected’ roads:

- Road alignment change by ≥ 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.

6.2.13 At this stage, it is not possible to conclusively determine whether distribution analysis should be undertaken for the scheme. This will be confirmed on completion of the air quality assessment.

Summary of the Relevant Areas of the Communication Strategy

6.2.14 Teignbridge District Council will be consulted regarding the results of the WebTAG air quality appraisal and DMRB local assessment if this is required.

Work programme

6.2.15 The quantitative air quality WebTAG appraisal will take approximately six weeks to complete following receipt of suitable traffic data.

---

⁴ Highways Agency, Interim Advice Note 170/12v3 - Updated air quality advice on the assessment of future NOx and NO2 projections for users of DMRB Volume 11, Section 3, Part 1 ‘Air Quality’, June 2013.
⁵ Highways Agency, Interim Advice Note 174/13 - Updated air quality advice for evaluating significant local air quality impacts; for users of DMRB Volume 11, Section 3, Part 1 ‘Air Quality’, June 2013.
Summary of risks added to the project risk register

6.2.16 Receipt of finalised and correctly formatted traffic data is critical to the quantitative air quality assessment programme. Any delays or revisions to the traffic would result in delays and re-working.

6.2.17 There is a risk that agreement is not reached with Teignbridge District Council regarding results of the air quality appraisal.

6.3 Greenhouse Gases

Existing knowledge and data

6.3.1 There is no existing baseline data on greenhouse gases currently available. The existing level of congestion along the A382 is likely to contribute to elevated levels of CO₂.

Likely scale of impacts

6.3.2 The proposed scheme will result in changes in vehicle flow and composition that have the potential to impact greenhouse gas emissions from the affected road network.

6.3.3 The DMRB HA207/07 screening criteria will be applied to available traffic data to determine 'affected' roads and define the study area.

Data requirements

6.3.4 The data required for the WebTAG Air Quality Unit A3.3 will also be suitable for the greenhouse gas assessment.

Proposed methodology and study area

6.3.5 The study area will be defined using the guidance in WebTAG Unit A3.4, based on traffic data.

6.3.6 If no roads meet the criteria for affected roads, quantitative WebTAG greenhouse gases assessments can be scoped out.

6.3.7 For the roads that meet the criteria an appraisal will be undertaken using the four step approach defined in WebTAG unit 3A. An estimate of the change in carbon dioxide emissions from road-based fuel consumption will be part of the economic assessment of wider benefits. Carbon dioxide CO₂e emissions for both 'with the scheme' and 'without scheme' would be proportionate to the number of litres of burnt fuel. In accordance with WebTAG Unit A3 the economic appraisal will include the net present value of the difference in emissions under a 'without scheme' scenario and a 'with scheme' scenario and their monetary value

Summary of the Relevant Areas of the Communication Strategy

6.3.8 Teignbridge District Council will be consulted regarding the results of the greenhouse gas assessment.
Work programme

6.3.9 This assessment will be completed within four weeks after the model results are provided.

Summary of risks added to the project risk register

6.3.10 Receipt of finalised and correctly formatted traffic data is critical to the quantitative air quality assessment programme. Any delays or revisions to the traffic will result in delays and re-working.

6.3.11 There is a risk that agreement is not reached with Teignbridge District Council regarding results of the greenhouse gas assessment.

6.4 Landscape and Townscape

Existing knowledge and data

6.4.1 Dartmoor National Park is situated approximately 1.5km to the west of the scheme at the nearest point. Any potential visual impacts from higher ground within the National Park are considered to be negligible because the proposals would be viewed at a significant distance and within the context of the existing highway infrastructure.

6.4.2 The scheme falls within the South Devon National Character Area (Natural England). Teignbridge District Landscape Character Assessment 2009 (Teignbridge District Council) analyses the landscape character at a district scale. The scheme falls within the Bovey Basin Landscape Character Area. Extensive woodland areas and major roads are identified as key characteristics which are relevant to the site. Road improvements and the resulting loss of tranquility and erosion of rural character are identified as future land pressures.

6.4.3 Stover Park is situated immediately adjacent and to the east of the northern part of the scheme, and is listed as Grade II on the Register of Historic Parks and Gardens held by English Heritage for its special historic interest. Aside from Stover School grounds, part of Stover Park closest to Drumbridges roundabout is owned and managed by Devon County Council as Stover Country Park. There are also a number of listed buildings and structures located in close proximity to the scheme, as well as three listed structures within the footprint of the scheme (refer to section 6.1).

6.4.4 The Templer Way, a promoted long-distance walking route that links Haytor on Dartmoor to the coast at Teignmouth, crosses Drumbridges Roundabout, and runs along the A382 for a short distance before entering Stover Park. South of Stover Park, the route follows the Stover Canal and crosses Old Exeter Road.

6.4.5 The A382 is surrounded by mature native vegetation, Stover Golf Course, agricultural land and clay pits. Old Exeter Road is also surrounded by agricultural land and clay pits while the Jetty Marsh II section of the scheme runs adjacent to the Orleigh Cross residential development and Newton Abbot Community Hospital.

---

6.4.6 Visual receptors would potentially include people within surrounding residential properties, people walking on the Templer Way, pupils and staff at Stover School, visitors to Stover Park, people using Stover Golf Course and visitors to and staff at Newton Abbot Community Hospital.

**Likely scale of impacts**

6.4.7 Straightening and widening the existing carriageway and the introduction of a new section of road (Jetty Marsh II) would increase the prominence of highway infrastructure within the landscape, albeit within the context of the existing A382 and the urban extent of Newton Abbot. Vegetation loss is likely, which would further exacerbate the visual prominence of the highway infrastructure. There is also potential for impacts to the settings of a number of listed buildings and Stover Park Registered Historic Park and Garden. Where possible, landscaping and planting would reduce this impact, although direct impacts to the causeway structure on Old Exeter Road would be unavoidable.

**Data requirements**

6.4.8 Detailed design and other information needed to inform the assessment includes:

- Total scheme footprint resulting from all aspects of scheme implementation and mitigation;
- Details of drainage requirements;
- Details of noise mitigation;
- Topographical survey (already collected) and proposed changes to topography;
- Details of ecological mitigation;
- Finishes and materials to be used in the structure;
- Details of lighting;
- Tree survey and details of Tree Preservation Orders.
- Details of tree and vegetation loss; and
- Mitigation planting/landscape design.

**Proposed methodology and study area**

6.4.9 A Detailed Assessment in accordance with Interim Advice Note 135/10 Landscape and Visual Effects (Highways Agency 2010) will be carried out to inform the qualitative landscape/townscape appraisals. The assessment will be undertaken for both day and night time and these will be compared against the situation that would exist if the project were not to proceed (i.e. the ‘Do Minimum’), using the following scenarios:

- During construction;
- In the winter of the year of opening (to represent a maximum effect situation, before any planted mitigation can take effect), taking account of the completed project and the traffic using it; and
- In the summer of the fifteenth year after project opening, (to represent a least effect scenario, where any planted mitigation measures can be expected to be reasonably effective), taking account of the completed project and the traffic using it.

6.4.10 The study area will be broadly defined by the Zone of Theoretical Visibility (ZTV), which is the extent to which the proposals would be visible.
6.4.11 A qualitative appraisal will be completed for impacts on both landscape and townscape using WebTAG Unit A3.

Summary of the relevant areas of the Communication Strategy

6.4.12 The proposed methodology, key viewpoints and mitigation planting and landscape design will be discussed and agreed with the Landscape Officer at Teignbridge District Council.

Work programme

6.4.13 The Detailed Assessment and landscape/townscape WebTAG appraisal input will take approximately six weeks.

Summary of risks added to the project risk register

6.4.14 There is a risk that the Landscape Officer at Teignbridge District Council does not agree with methodology and further work is required.

6.5 Historic Environment

Existing knowledge and data

6.5.1 The proposed scheme does not lie within a Conservation Area or near a Scheduled Monument.

6.5.2 Works are proposed along the causeway structure on Old Exeter Road. The causeway and 3 sets of flood arches over the flood plain of the River Teign are Grade II Listed. The causeway consists of an elevated masonry structure carrying the C120 (Old Exeter Road) between Newton Abbot and Kingsteignton, located within the flood plain of the River Teign. The structure is approximately 300 m long with several flood arches located at irregular intervals along its length. At the eastern end of the Causeway, the road bridge over the canal is also Grade II Listed (Bridge at Teignbridge Crossing, Teignbridge Crossing). The A382 also passes directly over the Bridge over Liverton Brook, East of Stover Golf Clubhouse (Stover Bridge), which is a Grade II listed structure.

6.5.3 In addition, the following listed buildings are located within 200m of the scheme:

- Blatchford Farmhouse – Grade II, located approximately 80m from the A382.
- Milestone Approximately 375 metres North-West of Stover Bridge – Grade II, located directly adjacent to the A382.
- Pump and Trough near Junction of Bovey Tracey Road and Forches Cross – Grade II, located approximately 30m from the A382.
- Stover Park Ice House Approximately 80 metres North West of Higher Lodge – Grade II, located approximately 30m from the A382.
- Clock House, Stover School – Grade II*, located approximately 70m from the A382.
- Higher Lodge – Grade II, located directly adjacent to the A382.
- Former Teignbridge Clay Cellars at Teignbridge Crossing – Grade II, located adjacent to Old Exeter Road.
- Railway Crossing Keeper's Cottage – Grade II, located adjacent to Old Exeter Road.
- Canal Building approximately 12m West of West Abutment of Stover Canal Bridge – Grade II, located adjacent to Old Exeter Road.

6.5.4 A map showing the location of the listed buildings noted above is provided in Figure 7.

6.5.5 The Grade II listed Stover Park Registered Historic Park and Garden is also located immediately east of the A382 and south of the A38. The Park covers 46.15 hectares.

6.5.6 The Country Park formed part of the large estate acquired by James Templer, a Devonian entrepreneur, in 1765. Templer undertook a landscaping scheme which significantly influenced the appearance of the area and the present day layout of the Park is based on this landscaping of the grounds.

Likely scale of impacts

6.5.7 There is potential for direct impacts to a number of listed buildings, particularly the causeway structure on Old Exeter Road, the Stover Park Registered Historic Park and Garden, as well as impacts to the setting of these designated assets. In addition there is the potential for buried archaeology.

Data requirements

6.5.8 Local historic records from the Site and Monuments Record will be required for the WebTAG appraisal and site investigation may be required depending on the consultation advice received from English Heritage and the County Archaeologist. Design information will be provided detailing all below ground works and the total extent of the scheme footprint including construction areas. In addition, any measures incorporated within the proposed scheme for mitigating historic environment impacts will inform the WebTAG appraisal.

Proposed methodology and study area

6.5.9 A qualitative historic environment appraisal will be undertaken in relation to the impacts on designated historic assets. The appraisal will follow the five step approach recommended in WebTAG Unit A3. This will be informed by an assessment consistent with the guidance in DMRB 11.3.2.

6.5.10 The study area will include the development site (including construction footprint and working area) and a buffer zone of 500m.

Summary of the relevant areas of the Communication Strategy

6.5.11 Consultation will be undertaken with the County Archaeologist on the outcome of the qualitative assessment.

Work programme

6.5.12 The WebTAG appraisal input will take approximately four weeks.

Summary of risks added to the project risk register

6.5.13 There is a risk that the County Archaeologist does not agree with methodology and further work is required.
6.6 **Biodiversity**

*Existing knowledge and data*

The area of the proposed scheme around Jetty Marshes comprises wetland and marshy areas between pastoral land and blocks of deciduous woodland. The area of the proposed scheme between Trago Mills and Whitehill is semi-rural, supporting extensive clay workings between agricultural land, and small blocks of mixed plantation woodland.

6.6.1 The proposed scheme is located approximately 3.2km from South Hams Special Area of Conservation (SAC) at its closest point. One qualifying interest of this SAC is the greater horseshoe bat, and the proposed scheme lies within the South Hams SAC ‘greater horseshoe bat consultation zone’. The *South Hams SAC Greater Horseshoe Bat Consultation Zone Planning Guidance* (Natural England, 2010)\(^9\) identifies important strategic flyways and key foraging/sustenance zones for greater horseshoe bats in South Devon which include the A382 corridor.

6.6.2 The proposed scheme is located approximately 3.2km from South Hams Special Area of Conservation (SAC) at its closest point. One qualifying interest of this SAC is the greater horseshoe bat, and the proposed scheme lies within the South Hams SAC ‘greater horseshoe bat consultation zone’. The *South Hams SAC Greater Horseshoe Bat Consultation Zone Planning Guidance* (Natural England, 2010)\(^9\) identifies important strategic flyways and key foraging/sustenance zones for greater horseshoe bats in South Devon which include the A382 corridor.

6.6.3 Stover Park Site of Special Scientific Interest (SSSI) and Local Nature Reserve (LNR) lies adjacent to and east of the existing A382, south of the A38. The proposed scheme is located within the Stover Park ‘SSSI Impact Risk Zone’. The risk zone extends to areas around the SSSI according to the particular sensitivity of its wetland and woodland features. Four Unconfirmed Wildlife Sites (UWS) abut the scheme and may be affected (Gavrick Plantation, Icehouse Copse and Stover School, Berry Knowles and Bovey Tracey West Golds Mine Marsh UWS’s). Part of the scheme footprint immediately east of the Exeter Road, overlaps with an area of reedbed, stream, ponds and scrub within the West Golds and Jetty Marshes County Wildlife Site (CWS), and some of these habitats within the CWS may be lost to development.

6.6.4 The following fieldwork has been carried out and reported on for the proposed scheme:

- Extended Phase 1 Habitat Survey along A382 between Trago Mills and Whitehills Cross conducted over several visits between the 7th and 12th October 2013 (SLR Consulting Ltd., 2013) ; and

6.6.5 With a few exceptions (discussed in the next paragraph), all further detailed species survey work recommended by the above survey reports, was nearing completion at the time of writing this WebTAG appraisal in October 2014. The further surveys will form part of the Environmental Impact Statement to be delivered in 2015. Consultation with the survey team has confirmed the following ongoing and/or completed surveys:

---

- Full season of bat surveys in accordance with the Bat Conservation Trust's 2012 guidelines;
- Hedgerow Surveys to enable a full appraisal in line with the Hedgerow Regulations (1997);
- Invasive species surveys;
- Great Crested Newt surveys;
- Dormouse surveys; and
- Reptile surveys.

6.6.6 The following additional surveys had yet to be commenced, but are likely to inform the Environmental Impact Assessment in 2015:

- Repeat badger and otter surveys;
- Barn owl surveys, particularly of South Orleigh Farm.

6.6.7 Of additional but indirect relevance to the proposed A382 scheme is survey work carried out by Jacobs' for improvement works at the Drumbridges roundabout, located to the north of the A382 scheme:

- Draft A38 Drumbridges Roundabout Improvements: Environmental Assessment Report (Jacobs, 2014a); and
- A38 Drumbridges Roundabout Improvements: Assessment of Implications on European Sites (AIES) – Stage 1 Screening Assessment of Likely Significant Effects (Jacobs, 2014b).

6.6.8 These Drumbridges reports contain valuable information in relation to greater horseshoe bat activity in the wider area of the A382 scheme based on a record obtained during a full season’s bat surveys. This will be useful in the compilation of the Assessment of Implications on European Sites (AIES) – Stage 1 Screening Report for the proposed A382 scheme, currently being drafted in consultation with Devon County Council. The Drumbridges bat surveys identified no greater horseshoe bat roosts and low foraging/commuting activity for the species within the Drumbridges scheme footprint and immediate surrounding area. It is understood that the AIES is likely to conclude that there are no likely significant effects on the South Hams SAC or any other European sites, provided mitigation measures are implemented from the Drumbridges Roundabout Improvements scheme.

Likely scale of impacts

6.6.9 In the absence of the reported findings/recommendations of the further detailed species surveys there is uncertainty over the exact nature of the potential impacts on protected species however, the following ecological features of significant value may be potentially impacted by the proposed scheme:

- Bat habitat features and individual bats potentially associated with the South Hams SAC greater horseshoe bat population as already described;
- Habitats within the Stover Park ASSI/LNR and West Golds and Jetty Marshes County CWS which overlap the proposed scheme;
- Habitats within Gavrick Plantation, Icehouse Copse and Stover School, Berry Knowles and Bovey Tracey-West Golds Mine Marsh UWS’s which abut the scheme;
- Bat habitat features and individual bats potentially associated with the Bovey Wood Colony Foraging and Commuting Zone (within the scheme
footprint) and Bovey Woods Individual Foraging Zone (adjacent to the footprint), both designated for barbastelle bats;

- Habitats of significant value located outside designated sites including small areas of wet woodland, hedge banks, streams, ponds, reedbeds, and lowland mixed deciduous woodland; and
- Populations of protected species confirmed to be present and not associated with designated sites including several other bat species, otter, dormouse and Great Crested Newt (all European Protected Species); and other species of national importance potentially or confirmed present including badger, nesting birds, and several reptile species.

6.6.10 It is likely that mitigation measures can be developed regarding these potential impacts and therefore, overall, following implementation of mitigation, the scheme is likely to have:

- Negligible impacts (“no significant effects”) to European designated sites;
- Slight adverse impacts to the nationally designated Stover Park ASSI, locally designated Stover Park LNR, West Golds and Jetty Marshes County CWS, and four UWS’s;
- Slight or moderate adverse impacts to Dormouse, taking account of cumulative impacts associated with other development in the locality; and
- Slight adverse impacts to a range of habitats and protected species associated with undesignated sites

Data requirements

6.6.11 In order to complete the WebTAG qualitative appraisal the following information would be needed:

- The AIES for the A382 Improvement scheme;
- Details of the Natural England response to the AIES;
- The survey results of the proposed surveys detailed above; and
- Design information.

Proposed methodology and study area

6.6.12 A qualitative WebTAG assessment will be undertaken for Biodiversity for the A382 scheme. The five step methodology defined in WebTAG unit 3A will be used to determine an overall assessment score using the staged approach detailed in DMRB Volume 11, Section 3, and Part 4 and having regard for the DMRB Interim Advice Note 130/10 and other relevant guidance including the Guidelines for Ecological Impact Assessment in the UK, (IEEM, 2006). Work equivalent to Stages 1, 2, and 3 of the DMRB methodology has been undertaken. This would need to be supplemented with updated baseline surveys to complete the appraisal as set out above.

Summary of the relevant areas of the Communication Strategy

6.6.13 The scope and survey methodologies applied to the completed and ongoing EIA surveys and assessments are being informed by consultation with Natural England and through consultation with Devon County Council. Further consultation is likely to be required with Natural England in 2015 throughout the
pre-EIA phase in relation to potential impacts on the South Hams SAC, Stover Park SSSI. This would inform the qualitative biodiversity WebTAG assessment.

**Work programme**

6.6.14 The qualitative assessment would take approximately four weeks following receipt of the information outlined above. The delivery of the additional information will be constrained by appropriate survey periods and so there would be likely to be a delay while this information was being collected before the WebTAG assessment could be commenced. In particular:-

- badger and otter surveys can be carried out any time of the year but are best conducted in winter or early spring;
- ‘Stage 1’ barn owl surveys (as per the methodology in Shawyer, 2011) could be undertaken in spring, autumn or winter over a number of days. ‘Stage 2’ barn owl surveys are likely to be required for some sites identified during the Stage 1 surveys, and can be carried out at any time of year. However Stage 3 surveys need to coincide with late summer. In addition Stage 2 and 3 surveys require a license which itself would have a programme implication.

**Summary of risks added to the project risk register**

6.6.15 There is likely to be a risk of delay due to seasonal survey requirements of outstanding surveys.

6.6.16 There is a risk that Natural England could object to the conclusions of the assessments or that survey findings lead to additional work/surveys.

**6.7 Water Environment**

**Existing knowledge and data**

6.7.1 Within the scheme area, the A382 crosses two watercourses (Liverton Brook and Blatchford Brook), both of which flow to the River Teign which is also crossed by Old Exeter Road. The South West River Basin Management Plan currently grades all three watercourses as having “moderate” ecological quality. The area where the A382 crosses the watercourses, as well as a section of the Jetty Marsh II scheme and a large proportion of Old Exeter Road within the area of the proposals, are identified as being within Flood Zone 3 and having a 1 in 100 annual probability of river flooding (1%).

6.7.2 There are also a number of water bodies within 500m of the proposed development including streams, ditches, ponds (including ponds associated with adjacent clay works), Stover Lake within Stover Park SSSI and LNR, and Stover Canal. Stover Lake is part of the Stover Park SSSI. The lake was originally created as part of a landscape scheme in the grounds of Stover House and to supply water to the Stover Canal. However it was designated as a SSSI in part because it supported a rich assemblage of invertebrates. The South West River Basin Management Plan currently grades the lake as having “moderate ecological potential”. However, the Lake part of the SSSI has suffered significant habitat degradation over the past decade and recently been assessed by Natural England as ‘unfavourable, no change’ due to water pollution. There are several possible sources of the water pollution including off-road vehicles in local recreational businesses, acid water run-off from nearby
forestry plantations, overflows, misconnections and discharges from residential areas, foul water discharges into feeder streams and highway drainage.

6.7.3 The project is not within a groundwater source protection zone. However, the site is underlain by a ‘Secondary A’ aquifer as well as superficial deposits and bedrock. These are capable of supporting water supplies at a local level and could be an important source of base flow to rivers.

6.7.4 The increased area of road surface would create additional impermeable surfaces and drainage will be managed through the design of the project including Sustainable Drainage Systems (SuDS).

Likely scale of impacts

6.7.5 In the operation period, there may be a slight negative impact in terms of flood risk and water quality due to an increase in impermeable surfaces. An assessment of flood risk will be required.

6.7.6 There is also potential for impacts to the quality of receiving water bodies from runoff.

Data requirements

6.7.7 The following additional information will be needed:

- Details of the footprint of the scheme including additional areas of hard surfaces;
- Predictions regarding run off; and
- Proposed drainage plans including any Sustainable Drainage Systems e.g. soakaways.

Proposed methodology and study area

6.7.8 A qualitative WebTAG assessment will be undertaken for the Water Environment. An assessment will be carried out in accordance with the DMRB Volume 11, Section 3, Part 10 (HD 45/09) Road Drainage and the Water Environment. This will take account of the following methods set out therein:

i) Methods A and B – Effects of Routine Runoff on Surface Waters;

ii) Method C – Effects of Routine Runoff on Groundwater;

iii) Method D – Pollution Impacts from Accidental Spillages; and


Summary of the relevant areas of the Communication Strategy

6.7.9 Consultation will be required with the Environment Agency.

Work programme

6.7.10 A Flood Risk Assessment will take approximately six weeks to complete.

Summary of risks added to the project risk register

6.7.11 There is a risk that the Environment Agency will find issues with the methodology or results of the Flood Risk Assessment.
7 Project Management

7.1 Communication Strategy

7.1.1 Progress meetings will be held on a weekly basis between DCC officers and Jacobs staff to discuss progress on tasks, team availability and share experience/knowledge. This will also provide opportunities to feed important wider project information back to the team.

7.1.2 Programme, resource and risk management will be monitored by the T&E team leader and reported to the overall Project Board on a six-weekly basis. Updates will be provided in report format and via progress meeting to communicate key changes over the intervening period.

7.1.3 T&E reports will be produced in draft by the T&E team, checked by T&E deputy team leader and reviewed by the T&E team leader. Reports will be accepted by either the Head of Planning and Transportation, the Transportation Studies Manager or the Transportation Manager for Devon County Council.

7.1.4 All reports will be issued to the Independent Transport Advisor for comment 2 weeks prior to a detailed meeting to ensure that the modelling approach is acceptable, discuss the conclusions at the end of each stage of work and to take forward any recommendations to the next stage.

7.1.5 All reports will be uploaded to the LTB website upon publication of the Transport Business Case (TrBC) for scheme, prior to a four month consultation exercise for the TrBC.

7.2 Programme

7.2.1 A programme for the documents required to produce a Transport Case for the A382 Corridor Improvements scheme is provided in Appendix 1.

7.3 Risks

7.3.1 Risks have been identified in a risk register, this is included in Appendix 2. The risk register includes information on the likelihood and the impact of each risk, and the steps being taken to manage each risk.

7.4 Change Log

7.4.1 A change log will be maintained throughout the project. This will outline any changes made to the traffic model following comments by the ITA and key stakeholders. Furthermore, reports will be archived following each stage of external review / approval, allowing changes to be tracked throughout the life of the project.
8 Appraisal Specification Summary

8.1 Overview

8.1.1 A summary of the appraisal methodology is given in the Appraisal Specification Summary Table in Appendix 3. This section provides additional detail where required under each heading.

8.2 Economy

Business Users & Transport Providers

8.2.1 Business users and transport providers benefits will be assessed using the highway assignment model outlined in section 3.5 and the TUBA model detailed in paragraph 4.5.1, 4.5.3, 4.5.4 and 4.5.8 (60 year appraisal + construction period). An assessment of social and distributional impacts will also be included.

Reliability Impact on Business Users

8.2.2 An assessment of reliability will be completed as detailed in paragraph 4.5.6.

Regeneration and Wider Impacts

8.2.3 No assessment is proposed under either wider impacts or regeneration headings.

8.3 Environmental

Noise

8.3.1 The assessment of noise is detailed in section 6.1. A quantitative assessment of noise impacts will be assessed in line with WebTAG Unit A3.2 and DMRB Volume 11, Section 3, Part 7 HD 213/11. The study area will be confirmed when output from the highway assignment models are available.

8.3.2 The requirement for an assessment of social and distributional impacts will be determined once the noise assessment has been completed.

Air Quality

8.3.3 The assessment of air quality is detailed in section 6.2. A quantitative assessment of air quality impacts will be assessed in line with WebTAG Unit A3.3 and DMRB Volume 11, Section 3, Part 1 HA 207/07. The study area will be confirmed when output from the highway assignment model are available.

8.3.4 The requirement for an assessment of social and distributional impacts will be determined once the air quality assessment has been completed.

Greenhouse Gases

8.3.5 The assessment of greenhouse gases is detailed in section 6.2.17. A quantitative assessment of greenhouse gases will be completed in line with
WebTAG Unit A3.4, using outputs from the highway assignment and TUBA models.

**Landscape**

8.3.6 The assessment of landscape is detailed in section 6.3.11. A qualitative assessment in line with WebTAG Unit A3.6 and a Detailed Assessment in accordance with Interim Advice Note 135/10 Landscape and Visual Effects (Highways Agency 2010) will be completed.

**Townscape**

8.3.7 The assessment of townscape is detailed in section 6.3.11. A qualitative assessment in line with WebTAG Unit A3.7 will be completed.

**Heritage of Historic resources**

8.3.8 The assessment of cultural heritage is detailed in section 6.5. A qualitative assessment in line with WebTAG Unit A3.8 will be completed.

**Biodiversity**

8.3.9 The assessment of biodiversity is detailed in section 6.5.13. A qualitative assessment in line with WebTAG Unit A3.9 will be completed.

**Water**

8.3.10 The assessment of water is detailed in section 6.7. A qualitative assessment will be carried out in accordance with the DMRB Volume 11, Section 3, Part 10 (HD 45/09).

**Social**

8.4 **Reliability Impact on Commuting and Other Users**

8.4.1 Commuting and other users benefits will be assessed using the highway assignment model outlined in section 3.5 and the TUBA model detailed in paragraph 4.5.1, 4.5.3, 4.5.4 and 4.5.8 (60 year appraisal + construction period). An assessment of social and distributional impacts will also be included.

**Reliability Impact on Business Users**

8.4.2 As assessment of reliability will be completed as detailed in paragraph 4.5.6.

**Physical Activity**

8.4.3 A qualitative assessment only is proposed for the assessment of physical activity which will include an estimate of the number of people impacted. The scheme includes improvements to walking and cycling facilities and, whilst these are expected to impact positively on physical activity, the size of these benefits will be small in relation to the overall Value for Money.
Journey Quality

8.4.4 Due to the modest impacts on journey quality due to reduced queuing, only a qualitative assessment will be completed in line with WebTAG A4-1.

Accidents

8.4.5 An assessment of accidents will be undertaken using outputs from the highway model and using COBALT software as discussed in paragraph 4.5.5.

Security

8.4.6 The scheme provides a new walking and cycling route which may be separate from the main carriageway at locations. This will be determined as design progresses. Security on the A382 therefore could be affected with the scheme in place and in this instance an assessment in line with WebTAG Unit A4 would be completed.

Access to Services

8.4.7 The access to services heading will be assessed in line with WebTAG Unit A1. An assessment of social and distributional impacts will also be made if the screening shows a need for it.

Affordability

8.4.8 The affordability heading will be assessed in line with WebTAG Unit A4. An assessment of social and distributional impacts will also be made if the screening shows a need for it.

Severance

8.4.9 Severance on the A382 will be reduced with the scheme in place and therefore an assessment in line with WebTAG Unit A4 will be completed.

Option Values

8.4.10 No assessment of option values is proposed and the scheme will be scored as 'neutral'.

8.5 Public Account

Cost to Broad Transport Budget

8.5.1 The latest Quantified Cost Estimate will be provided by Devon County Council and converted in line with WebTAG unit A1 to a 2010 price base in 2010 prices.

8.5.2 Risk will be applied at 15% of the total cost estimate and optimism bias of 44% applied

Indirect Tax Revenues

8.5.3 Indirect tax revenues will be calculated using outputs from the highway assignment model and TUBA software detailed in 4.5.1, 4.5.3, 4.5.4 and 4.5.8 (60 year appraisal + construction period)
9  Glossary

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>Annual Average Daily Traffic</td>
</tr>
<tr>
<td>ATC</td>
<td>Automatic Traffic Counter</td>
</tr>
<tr>
<td>COBA-LT</td>
<td>Cost Benefit Analysis – Light Touch</td>
</tr>
<tr>
<td>DCC</td>
<td>Devon County Council</td>
</tr>
<tr>
<td>DfT</td>
<td>Department for Transport</td>
</tr>
<tr>
<td>HGV</td>
<td>Heavy Goods Vehicle</td>
</tr>
<tr>
<td>ITA</td>
<td>Independent Technical Advisor</td>
</tr>
<tr>
<td>LGV</td>
<td>Light Goods Vehicle</td>
</tr>
<tr>
<td>LTB</td>
<td>Local Transport Board</td>
</tr>
<tr>
<td>LTP</td>
<td>Local Transport Plan</td>
</tr>
<tr>
<td>MCC</td>
<td>Manual Classified Count</td>
</tr>
<tr>
<td>RSI</td>
<td>Roadside Interview</td>
</tr>
<tr>
<td>SDLR</td>
<td>South Devon Link Road</td>
</tr>
<tr>
<td>TEMPRO</td>
<td>Trip End Model Program</td>
</tr>
<tr>
<td>TUBA</td>
<td>Transport User Benefit Appraisal</td>
</tr>
<tr>
<td>UTC</td>
<td>Urban Traffic Control</td>
</tr>
<tr>
<td>WebTAG</td>
<td>Web Transport Analysis Guidance</td>
</tr>
<tr>
<td>LMVR</td>
<td>Local Model Validation Report</td>
</tr>
</tbody>
</table>
Figure 1 – Location Plan

Key
- Park and Change
- A382
- Jetty Marsh Phase III
- Old Exeter Road
- Drumbridges
- Employment
- Residential

Contains Ordnance Survey data © Crown copyright and database right 2014
Figure 2 – Newton Abbot Base Model Study Area
Figure 3 – Location of Existing RSI Sites

<table>
<thead>
<tr>
<th>No</th>
<th>RSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>St Marychurch Road</td>
</tr>
<tr>
<td>2</td>
<td>A380 Torquay Road</td>
</tr>
<tr>
<td>3</td>
<td>Kingskerswell Road</td>
</tr>
<tr>
<td>4</td>
<td>Abbrooks Quarry</td>
</tr>
<tr>
<td>5</td>
<td>Ware Cross</td>
</tr>
<tr>
<td>6</td>
<td>Lindridge Road</td>
</tr>
<tr>
<td>7</td>
<td>West Golds</td>
</tr>
<tr>
<td>8</td>
<td>Racecourse</td>
</tr>
<tr>
<td>9</td>
<td>A382</td>
</tr>
<tr>
<td>10</td>
<td>A383</td>
</tr>
<tr>
<td>11</td>
<td>Totnes</td>
</tr>
<tr>
<td>12</td>
<td>Alphington Cross</td>
</tr>
<tr>
<td>13</td>
<td>Peamore</td>
</tr>
<tr>
<td>14</td>
<td>J30 NB Off slip</td>
</tr>
</tbody>
</table>
Newton Abbot RSI Sites

KEY
- **RSI group 1**
- **RSI group 2**
- **RSI group 3**
- **RSI group 4**

Contains Ordnance Survey data © Crown copyright and database right 2012
Figure 4 – Location of Existing Count Sites

<table>
<thead>
<tr>
<th>Count No</th>
<th>Count Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A38 Ashburton</td>
</tr>
<tr>
<td>2</td>
<td>A38 Chudleigh</td>
</tr>
<tr>
<td>3</td>
<td>A38 Cold East</td>
</tr>
<tr>
<td>4</td>
<td>A38 Kennford</td>
</tr>
<tr>
<td>5</td>
<td>A38 Totnes</td>
</tr>
<tr>
<td>6</td>
<td>A380 Ideford</td>
</tr>
<tr>
<td>7</td>
<td>Ware Barton</td>
</tr>
<tr>
<td>8</td>
<td>B3183 Clay Lane</td>
</tr>
<tr>
<td>9</td>
<td>Balls Corner</td>
</tr>
<tr>
<td>10</td>
<td>A383 Bickington</td>
</tr>
<tr>
<td>11</td>
<td>Bradley Lane</td>
</tr>
<tr>
<td>12</td>
<td>Drumbridges</td>
</tr>
<tr>
<td>13</td>
<td>East Street</td>
</tr>
<tr>
<td>14</td>
<td>Exeter Road</td>
</tr>
<tr>
<td>15</td>
<td>Exeter Road/Jetty Marsh (Churchill’s Roundabout)</td>
</tr>
<tr>
<td>16</td>
<td>Exeter Road/Strap Lane</td>
</tr>
<tr>
<td>17</td>
<td>Gestridge Road</td>
</tr>
<tr>
<td>18</td>
<td>Gestridge Road/Broadway</td>
</tr>
<tr>
<td>19</td>
<td>Halcyon Road</td>
</tr>
<tr>
<td>20</td>
<td>Halcyon Road, Highweek Street</td>
</tr>
<tr>
<td>21</td>
<td>Highweek Street</td>
</tr>
<tr>
<td>22</td>
<td>Jetty Marsh</td>
</tr>
<tr>
<td>23</td>
<td>A380 Kingskerswell</td>
</tr>
<tr>
<td>24</td>
<td>Kerswell Gardens</td>
</tr>
<tr>
<td>25</td>
<td>Kingskerswell Road</td>
</tr>
<tr>
<td>26</td>
<td>Newton Road</td>
</tr>
<tr>
<td>27</td>
<td>Old Exeter Road</td>
</tr>
<tr>
<td>28</td>
<td>Penn Inn</td>
</tr>
<tr>
<td>29</td>
<td>Riviera Way, Scott’s Bridge</td>
</tr>
<tr>
<td>30</td>
<td>St Marychurch Road</td>
</tr>
<tr>
<td>31</td>
<td>Station Road</td>
</tr>
<tr>
<td>32</td>
<td>A382 Stover</td>
</tr>
<tr>
<td>33</td>
<td>Tesco Roundabout</td>
</tr>
<tr>
<td>34</td>
<td>The Avenue</td>
</tr>
<tr>
<td>35</td>
<td>Torquay Road</td>
</tr>
<tr>
<td>36</td>
<td>Wolborough Street</td>
</tr>
<tr>
<td>37</td>
<td>Vicarage Hill</td>
</tr>
<tr>
<td>38</td>
<td>Shaldon Road</td>
</tr>
<tr>
<td>39</td>
<td>Ley Lane</td>
</tr>
<tr>
<td>40</td>
<td>Longford Lane, Fairwaters</td>
</tr>
<tr>
<td>41</td>
<td>Longford Lane, Warecroft Road</td>
</tr>
<tr>
<td>42</td>
<td>Ringslade Road</td>
</tr>
<tr>
<td>43</td>
<td>Rydon Road</td>
</tr>
</tbody>
</table>
### Count No | Count Location
--- | ---
44 | A381 Ipplepen
45 | Ashburton Road/Exeter Road (Dyrons Roundabout)
46 | Colley Lane
47 | Ashburton Road
48 | Chudleigh Road
49 | Coach Road

**KEY**
- **Green**: Link Calibration Counts
- **Yellow**: Link Validation Counts
- **Orange**: Junction Calibration Counts
- **Dotted Line**: Outer Cordon
- **Solid Blue**: Inner Cordon
- **Dashed Line**: North-South Screenline
- **Purple**: East-West Screenline

*Contains Ordnance Survey data © Crown copyright and database right 2012*