

# Huntingdon and St Ives Transport Study

## Strategic Outline Case

Cambridgeshire and Peterborough Combined Authority

16th December 2021

Second Issue

# Notice

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# 1. Introduction

Atkins has been commissioned by the Cambridgeshire and Peterborough Combined Authority (CPCA) to undertake the Huntingdon and St Ives Transport Study, including the development of a Strategic Outline Case (SOC).

## 1.1. Context

The CPCA Local Transport Plan (2020)<sup>1</sup> recognises that there is a “*need for investment to help create faster, more reliable journeys for cars*” and identifies capacity issues as a threat to local growth as congestion increases journey times, reduces journey reliability and worsens air quality. Alongside this, the Huntingdonshire Local Plan identifies the need for 20,100 new homes and 14,400 new jobs<sup>2</sup> in the period to 2036, which are to be located across four spatial planning areas, two of which are Huntingdon and St Ives. The CPCA Local Transport Plan states that such future development is “*dependent on securing significant upgrades to the region’s highway and public transport infrastructure*”<sup>3</sup>.

Levels of car ownership in Huntingdonshire are high, which works against achieving the Government’s target of ‘net-zero’ carbon emissions by 2050. It is evident that significant improvement in the sustainable transport network in the area is required.

## 1.2. Background

This study follows on from previous work undertaken by Skanska<sup>4</sup> on behalf of Cambridgeshire County Council (CCC) and Atkins on behalf of the CPCA. Prior to commencing the SOC, the A141 Huntingdon Northern Bypass Study and the St Ives Transport Study were running concurrently but as separate studies. Given the close proximity of the study areas and the shared transport network (which means that changes occurring in one area will impact the performance of the network in the other), the two studies have been combined and will continue as one study from this point forwards. Figure 1-1 shows an overview of the Huntingdon and St Ives Transport Study to date and where this SOC sits in the process. Figure 1-2 shows the combined study area for the project.

The background to this study is captured in the following reports, which should be read in conjunction with this SOC:

- The A141 Existing Conditions Report (ECR)<sup>5</sup>;
- The St Ives Existing Conditions Report (ECR)<sup>6</sup>;
- The A141 Engagement Report<sup>7</sup>;
- The St Ives Engagement Report<sup>8</sup>; and
- The Huntingdon and St Ives Transport Study Options Appraisal Report (OAR).<sup>9</sup>

This SOC, which covers the Huntingdon and St Ives transport network, builds upon the OAR to articulate the need for change and assess potential transport options across the network. It should be noted that in terms of

<sup>1</sup> Cambridgeshire and Peterborough Combined Authority (2020) *The Cambridge and Peterborough Local Transport Plan* Page 109 Para 3.106

<sup>2</sup> Huntingdonshire District Council (2019) *Huntingdonshire’s Local Plan to 2036*, Page 31

<sup>3</sup> Cambridgeshire and Peterborough Combined Authority (2020) *The Cambridge and Peterborough Local Transport Plan*, Page 106 Para 3.98

<sup>4</sup> Skanska (2020) A141 and St Ives Transport Study Option Assessment Report  
Skanska (2019) Stage 1 Existing Conditions and Data Collection Report

<sup>5</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Existing Conditions Report*

<sup>6</sup> Atkins (2021) *St Ives Transport Study Existing Conditions Report*

<sup>7</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Transport Study Pre-Consultation Engagement Analysis Report*

<sup>8</sup> Atkins (2021) *St Ives Transport Study Pre-Consultation Engagement Analysis Report*

<sup>9</sup> Atkins (2021) *Huntingdon and St Ives Transport Study Options Appraisal Report*

progressing the study beyond the SOC, it is likely that the Huntingdon areas of the scheme will progress before the St Ives areas, however it is important that both elements are considered holistically at this stage.

**Figure 1-1 - Huntingdon and St Ives Transport Study Overview**

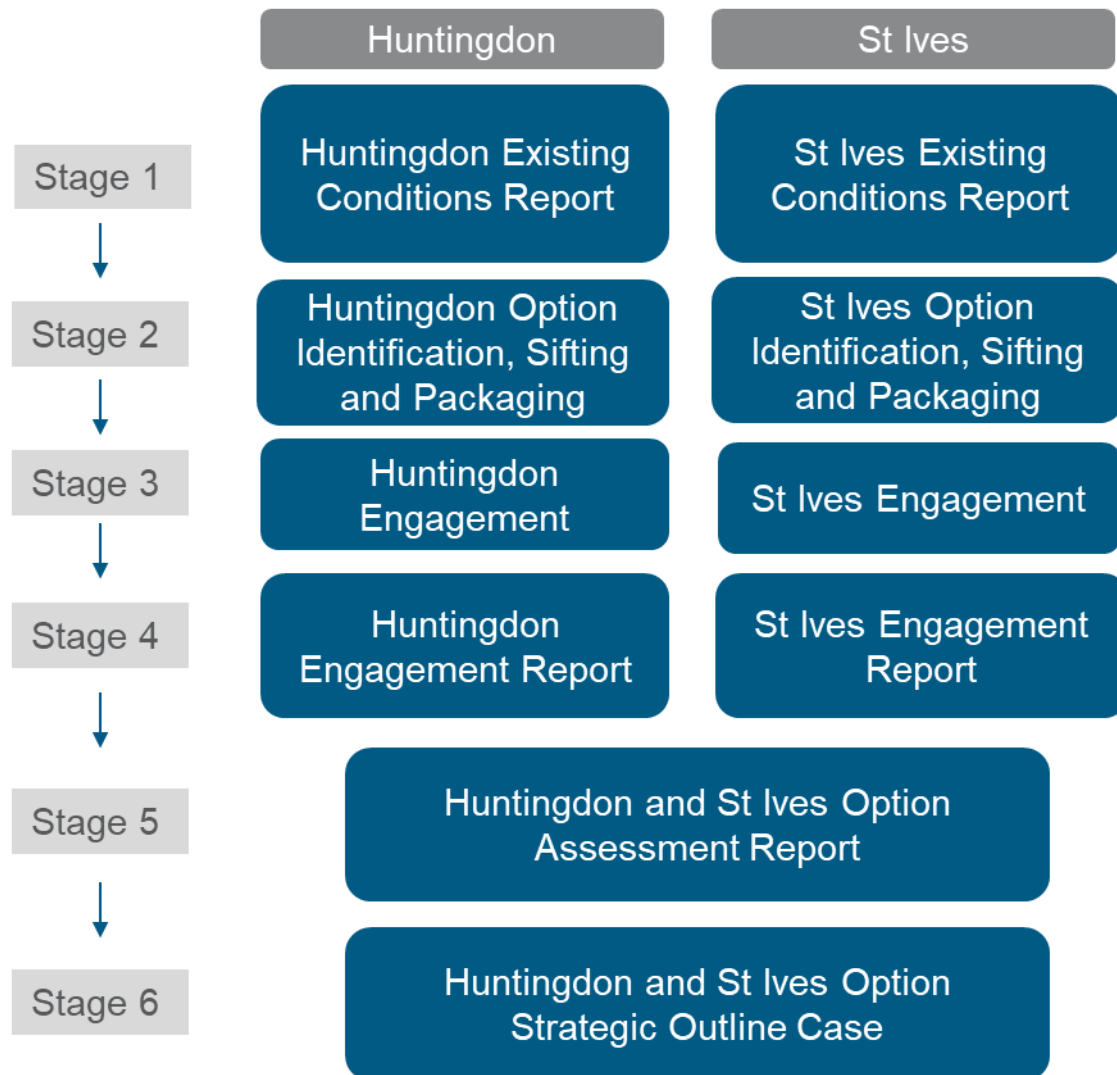
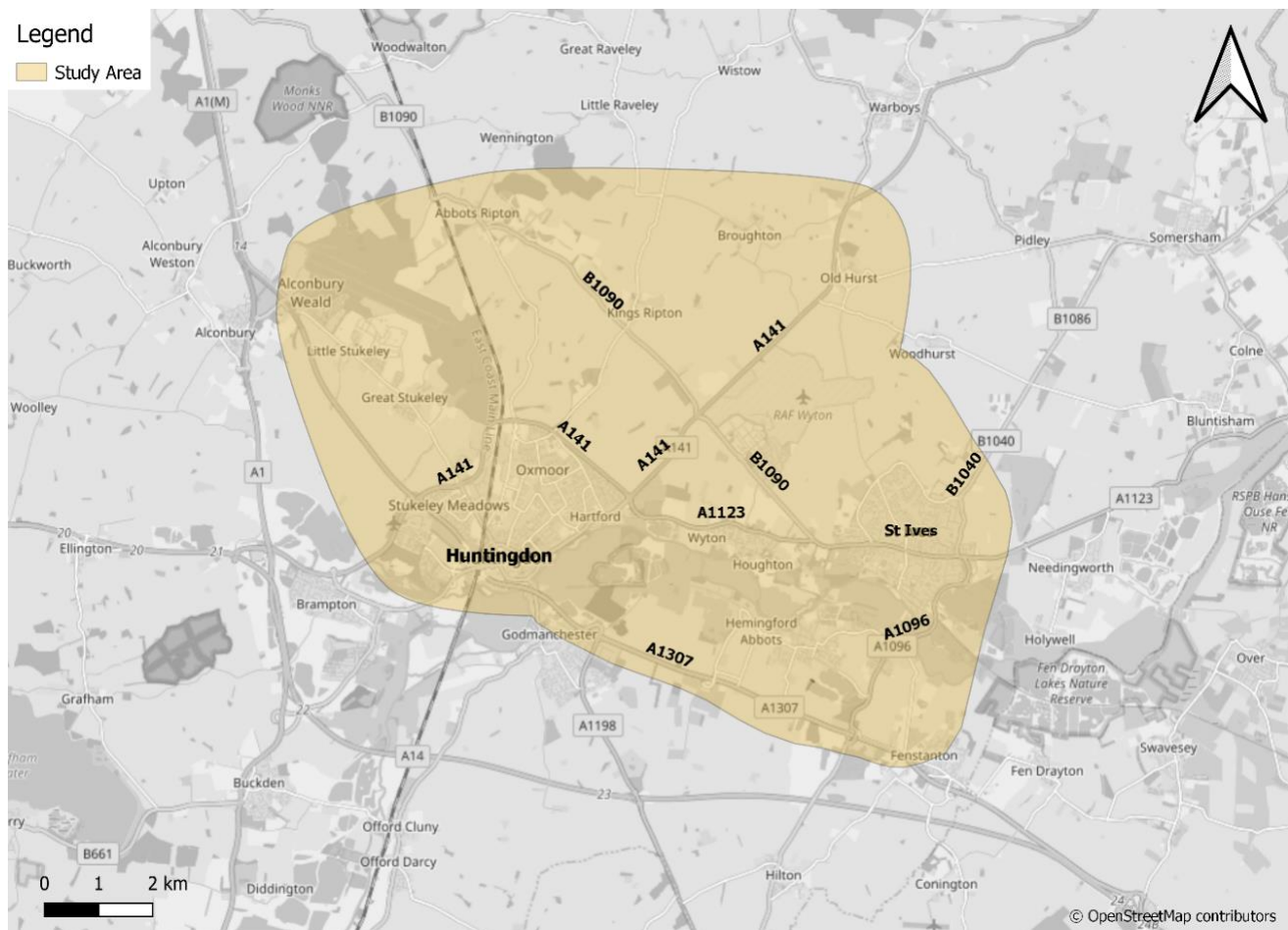




Figure 1-2 - Study Area



### 1.3. Purpose of the SOC

The SOC is the first phase of the Business Case process. The SOC has been produced in accordance with the Department for Transport (DfT) three-phased decision-making procedure for investment in transport infrastructure. The SOC *“establishes the potential scope of the transport proposal. This sets out the rationale for intervention (the case for change) and confirms how the investment will further the organisation’s priorities and wider government ambitions (the strategic fit) to determine the ‘preferred way forward’”*<sup>10</sup>.

The DfT Business Case Guidance was updated in August 2021 to reflect the 2020 Green Book Review and emphasises the *“importance of maintaining strong strategic coherence throughout the entirety of the business case; developing investment proposals that contribute to achieving our strategic priorities; the need to undertake distributional analysis and assessing place-based impacts for transport.”*<sup>11</sup>

At this stage, the information presented in and the assessments undertaken for the SOC are proportional with the stage of the project. An economic appraisal has been provided in line with TAG guidance. Given the number of uncertainties in the study area (such as the impact of the A14 upgrade scheme and proposed development, both committed and aspirational), the value for money assessment is considered to be indicative and subject to change as the study progresses but does indicate the relative performance between options under the current set of assumptions.

<sup>10</sup> [The Transport Business Cases, Department for Transport, Stage 1: the strategic outline case](#) (23 August 2021)

<sup>11</sup> [The Transport Business Cases, Department for Transport, Foreword](#) (23 August 2021)

The Financial, Management and Commercial Dimensions have also been provided in line with Transport Business Case guidance. At SOC stage these Dimensions are at an early level of development and are included to give an initial indication into cost, management strategies and procurement strategies.

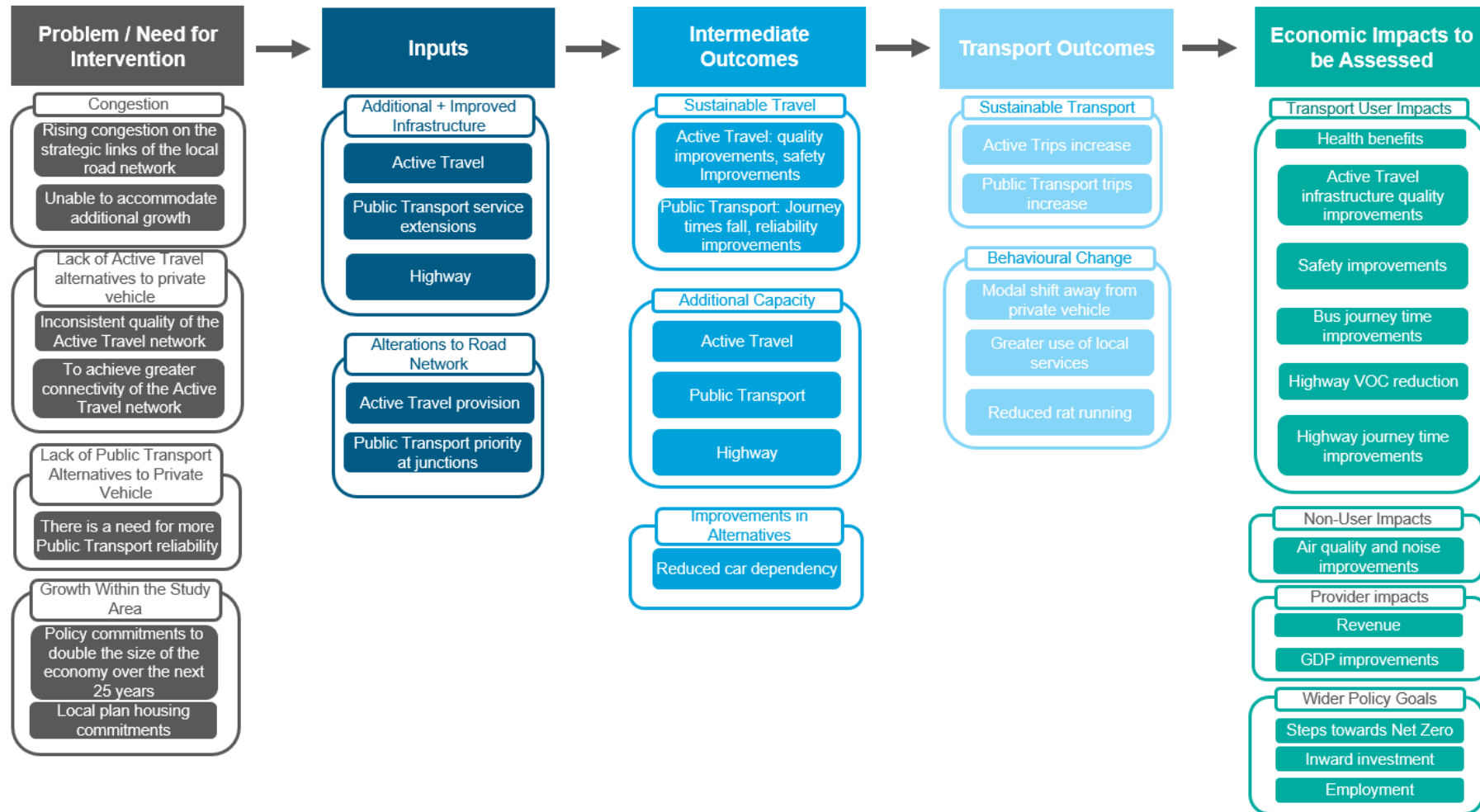
With the above in mind, the primary aim of this document is to **demonstrate the need for the scheme** which is supported by initial economic assessment. The process for determining the need for investment and identifying and assessing measures to do so is set out in the logic map in Figure 1-3. This sets out the key themes and messages within the SOC and has been used throughout the development and assessment of the scheme.

## 1.4. Structure of this Document

The document structure is as follows:

- Chapter 3 outlines the Strategic Dimension;
- Chapter 4 outlines the Economic Dimension;
- Chapter 5 outlines the Financial Dimension;
- Chapter 6 outlines the Commercial Dimension;
- Chapter 7 outlines the Management Dimension; and
- Chapter 8 provides conclusions and recommended next steps.

Figure 1-3 - SOC Logic Map



## 2. Strategic Dimension

As defined in the DfT Transport Business Case Guidance, the objective of the Strategic Dimension is to **provide evidence that an investment is required, either now or in the future**. Table 2-1 shows how the contents of this chapter map to the DfT Guidance at SOC stage.

**Table 2-1 - Strategic Dimension Structure and Guidance**

This Strategic Dimension Contents	Adherence to DfT Strategic Dimension Guidance	Status at SOC Stage
Business Strategy	Organisational Overview – an outline of the strategic priorities and responsibilities of the organisation responsible for the proposal Business Strategy and Wider Strategies – determine the strategic fit of the proposal to the priorities of relevant organisations, the government and the regional, combined and local authorities in scope. Business Needs and Service Gaps – determine the organisations business needs	Complete
Problem Identified	Existing Arrangements – provide a clear picture of the current service model that serves as the baseline from which to measures future improvements.	Complete
Impact of not Changing	The impact of not changing – what is the impact of not intervening?	Complete
Summary of Problems and the Need for Intervention	Problem identification – describe the problem(s) identified to determine the rationale: what is the evidence base underpinning the problem? Does it justify the need for a transport intervention?	Complete
Scheme Objectives	SMART spending objectives – establish SMART objectives for what the investment sets out to achieve.	Complete
Scheme Outcomes	Measures of success and planning for delivery – set out what constitutes a successful delivery of the SMART objectives. Strategic Benefits – describe the strategic benefits this proposal will provide through achieving the SMART Objectives.	Outline
Scheme Scope	Scope – explain the scope of the intervention: what will it deliver? What is out of scope?	Complete
Constraints	Risks and Constraints – Specify the main risks to achieving the SMART Objectives. Outline the constraints that could impact the successful delivery of the proposal.	Outline
Interdependencies	Interdependencies – set out the strategic portfolios, programmes and projects that the investment may interact with or link to.	Complete
Option Development including More Detailed Assessment	Strategic Assessment of Investment Options – evaluate the long-list and shortlist of options against the SMART objectives and assess their impact on wider strategic priorities. Options that do not contribute to achieving these priorities should be discounted.	Outline
Stakeholders and Engagement Outcomes	Stakeholders' views and requirements – outline the main stakeholder groups and their contribution to the development of the proposal, including their views and any conflicts between groups.	Outline

## 2.1. Business Strategy

This section details the overall CPCA policy and strategy context setting the strategic direction of the Huntingdon and St Ives Transport Study, which has been used to identify and develop scheme specific objectives and outcomes.

### 2.1.1. The role of the Cambridgeshire and Peterborough Combined Authority

The CPCA devolution deal has meant that certain powers and funding from central Government have been granted to the local area. The CPCA is made up of representatives from the seven local councils and is led by the Mayor. This devolution deal signifies a new approach to the relationship between local authorities and the central government:

*“The transfer of significant resources and powers for infrastructure, housing, economic development, employment and skills, that will positively impact on the lives of residents by helping create more jobs, improving the skills and employment prospects of residents and boosting the productivity of Cambridgeshire and Peterborough”<sup>12</sup>*

The CPCA’s key ambitions for the combined authority are as follows:

- Doubling the size of the local economy;
- Accelerating house building rates to meet local and UK need;
- Delivering outstanding connectivity in terms of transport and digital links;
- Providing the UK’s most technically skilled workforce;
- Transforming public service delivery to be resilient and responsive to local need;
- Growing international recognition for its knowledge-based economy; and
- Improving the quality of life by tackling areas suffering from deprivation.

Government funding distributions to allow CPCA to deliver these ambitions are as follows:

- £170 million to deliver new homes over a five-year period including affordable, rented, and shared ownership housing; and
- £20 million yearly funding over the next 30 years to boost growth across the region<sup>13</sup>.

In 2018, the Cambridgeshire and Peterborough Independent Economic Commission, on behalf of the CPCA and Cambridge Ahead, published the Cambridge and Peterborough Independent Economic Review (CPIER). The CPIER creates a single strategic position to help the CPCA to consider the case for greater fiscal devolution and powers to unlock the delivery of major infrastructure. It provides an economic overview of the CPCA area<sup>14</sup> and sets out findings for the future of the district, framed by the CPCA’s growth target of doubling Gross Value Added (GVA) over 25 years. For St Ives, this means increasing the area’s output from £399m in 2017 to over £1bn per annum<sup>15</sup> and for Huntingdon increasing their output by over £1bn per annum from £1.22bn GVA in 2017<sup>16</sup>.

The further objectives of the CPCA are detailed in the subsequent sections.

### 2.1.2. CPCA Overarching Objectives

The CPCA has set out three overarching objectives within the Cambridgeshire and Peterborough Local Transport Plan to provide a direct framework for investment. These objectives provide the basis upon which to develop options for the Huntingdon and St Ives Transport Study:

<sup>12</sup> Ministry of Housing, Communities & Local Government (2017) - *Cambridgeshire and Peterborough Devolution Deal*, page 4.

<sup>13</sup> [What we deliver - Cambridgeshire & Peterborough Combined Authority \(cambridgeshirepeterborough-ca.gov.uk\)](https://www.cambridgeshirepeterborough-ca.gov.uk) (27 September 2021)

<sup>14</sup> CPCA area consists of Peterborough, Fenland, Huntingdonshire, East Cambridgeshire, South Cambridgeshire, and Cambridge.

<sup>15</sup> Metro Dynamics – *St Ives: A Prospectus for Growth*, page 3.

<sup>16</sup> Metro Dynamics - *Huntingdon: A Prospectus for Growth*, page 3.



- **“Economy:** *Deliver economic growth and opportunity for all our communities”;*
- **“Society:** *Provide an accessible transport system to ensure everyone can thrive and be healthy”;* and
- **“Environment:** *Preserve and enhance our built, natural, and historic environment and implement measures to achieve net zero carbon”<sup>17</sup>.*

CPCA are currently engaging on their new Local Transport and Connectivity Plan (LTCP), which will define the area’s transport strategy for the future. It is expected that the scheme will align to the LTCP. However, at OBC, a review will be undertaken to ensure that the scheme objectives and the new LTCP are aligned.

### 2.1.3. CPCA Transport Objectives

The Combined Authority’s Local Transport Plan is *“to deliver a world-class transport network for Cambridgeshire and Peterborough’s that supports sustainable growth and opportunity for all”*. This vision is reflected within the CPCA’s ambitions to provide:

- **“A world-class transport network** – *Cambridgeshire and Peterborough aspire to create a transport system of the highest quality on a global stage, which meets the needs of residents, businesses, and visitors”;*
- **“Sustainable growth** – *the network will support the delivery of future economic and housing growth across the region that enhances overall quality of life, supports the transition to a net zero carbon economy and protects or enhances the environment”;* and
- **“Opportunity for all** – *the network should support access to jobs, services, and education for all, irrespective of income, age, ability, location, or access to a car”.*

In order to provide a world-class transport network, and subsequently enable sustainable growth and opportunity for all, CPCA has developed a future transport network for the Combined Authority Area, shown in Figure 2-1.

### 2.1.4. Independent Commission on Climate

Since the finalisation of the Existing Conditions Reports for Huntingdon and St Ives, the Cambridgeshire and Peterborough Independent Commission on Climate have published their recommendations report, ‘Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough’<sup>18</sup>. The findings presented follow on from the initial recommendations made in March 2021 and include considerations following community engagement. They emphasise the urgent requirement to reduce the regions greenhouse gas emissions and recognise that the transition to net-zero must be delivered in a balanced way that is fair to all communities and is beneficial to the environment.

The report identifies that the CPCA has a significant role to play given its local government powers in transport, planning and borrowing. Transport is of particular importance due to the regions’ high reliance on the private car and because transport emissions are well above the national average<sup>19</sup>.

Following the initial findings in March 2021, the CPCA formed a Climate Working Group to coordinate a local response. As part of their work, CPCA are refreshing their Local Transport Plan<sup>20</sup>, including more of a focus on digital improvements.

The October 2021 report makes reference to this update in that the Interim Report *“was critical of CPCA plans to reduce car use. Without action, the planned growth in housing and employment across the region will be accompanied by a huge increase in car use and road building that is entirely incompatible with meeting the*

<sup>17</sup> [Local Transport Plan - Cambridgeshire & Peterborough Combined Authority \(cambridgeshirepeterborough-ca.gov.uk\)](https://www.cambridgeshirepeterborough-ca.gov.uk), page 11, (27/09/2021)

<sup>18</sup> Cambridgeshire and Peterborough Independent Commission on Climate (October 2021) [Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough](#)

<sup>19</sup> Cambridgeshire and Peterborough Independent Commission on Climate (October 2021) *Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough*. Page 10

<sup>20</sup> To be renamed as the ‘Local Transport and Connectivity Plan’.

region's climate goals. The Commission is therefore delighted that its recommendation to review and revise the Local Transport and Connectivity Plan is being taken forward"<sup>21</sup>

The October 2021 report sets out priorities for the transport sector:

- *“the rollout of electric vehicle charging infrastructure, which provides a ‘right to charge’ for residents, workers and visitors to the region. This should start with bringing those districts with low provision up towards the levels of the best;*
- *A transition towards zero emission bus and taxi fleets by 2030;*
- *Measures to reduce car miles driven, including improvements to public transport, trials of on-demand electric buses and infrastructure for walking and cycling; and*
- *Exclusion of diesel vans and trucks from urban centres by 2030”<sup>22</sup>.*

In relation to reduction in car miles driven, the report recommends a target of a 15% reduction by 2030.

Key to the success of the region is a careful balance in delivery and enabling growth in a way that is cognisant to the net-zero agenda and is fair to all. Therefore, this study has a key role to play in achieving the balance in recognising the role that the highway network plays in the region, both now and in the future, whilst ensuring that, where feasible, short and medium distance journeys are easily able to occur sustainably.

### 2.1.5. Business Needs and Service Gaps

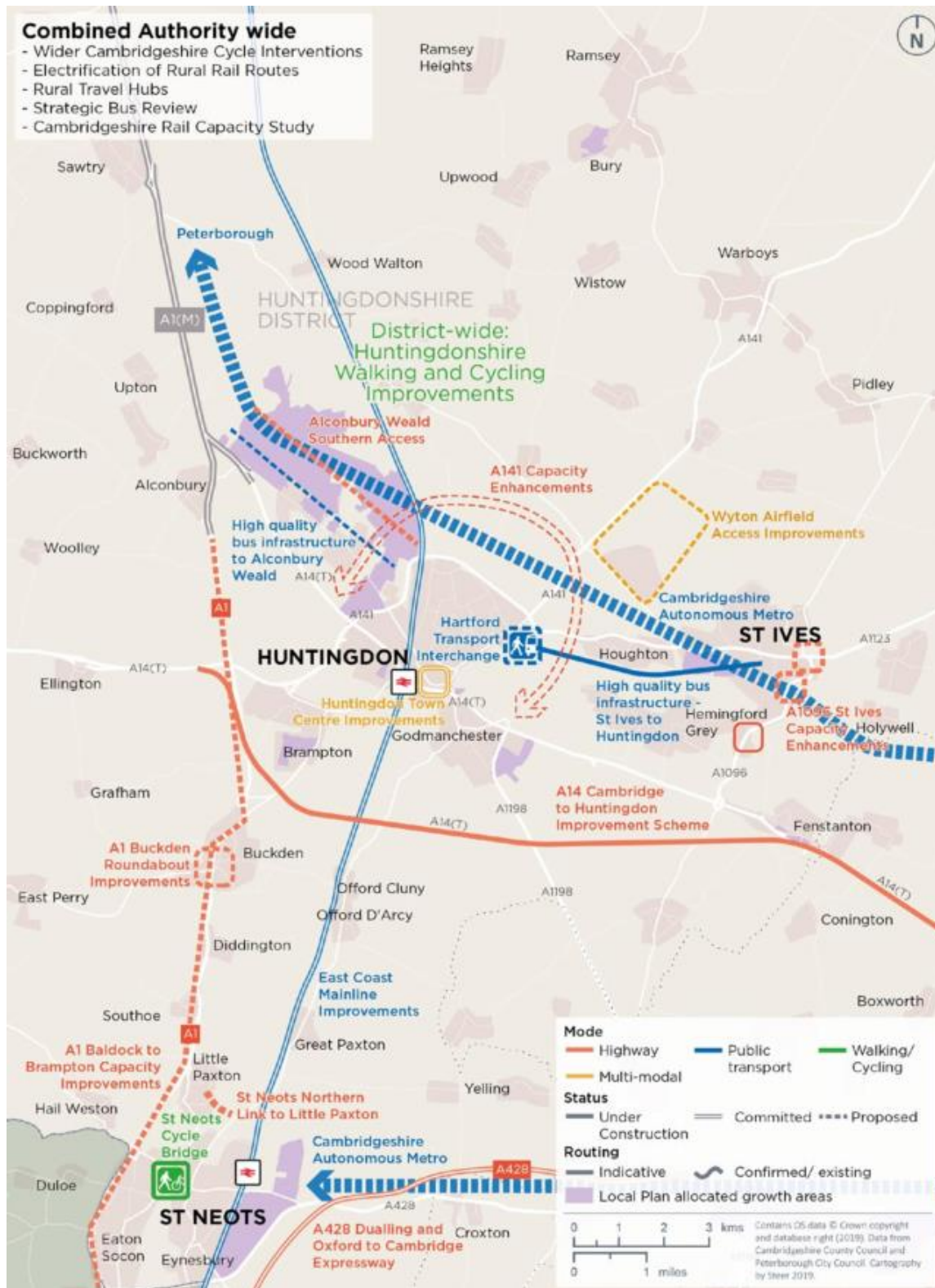
There is no specific business change element associated with this study. This Strategic Dimension sets out the problems associated with the existing transport network, as outlined in the Logic Map in Figure 1-3 and detailed further in section 2.2. These existing problems currently compromise the CPCA's ability to deliver their overarching objectives and transport objectives.

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<sup>21</sup> Cambridgeshire and Peterborough Independent Commission on Climate (October 2021) *Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough*. Page 89

<sup>22</sup> Cambridgeshire and Peterborough Independent Commission on Climate (October 2021) *Fairness, nature and communities: addressing climate change in Cambridgeshire and Peterborough*. Page 15

Figure 2-1 - Summary of Key Projects in Huntingdonshire<sup>23</sup>





## 2.2. Problem Identified

The ECRs for Huntingdon and St Ives set out in detail the existing and future transport network and the policy context for the area, including the committed, planned and aspirational growth in the region. These present a clear evidence base to start building up a picture of the need for intervention within the study area. The following sections summarise the problems identified within the study area.

### 2.2.1. Highway Network Delays

#### Huntingdon

The Huntingdonshire Local Plan identifies congestion on the A141 as a significant challenge to accessing local routes and connections to the strategic road network<sup>24</sup>. Highway congestion, as a result of the high levels of car dependency in the region, leads to **significant delays** and therefore **increased journey times** on the A141.

Table 2-2 shows the average journey time difference between Spittals Interchange and the A141 / Sawtry Way Roundabout (by RAF Wyton) for the AM and PM peak hours, compared to the average inter-peak journey time for the same route. This shows that there are long delays, particularly in the PM peak hour. Delays on the A141 also lead to **rat-running** through villages, including Abbots Ripton and Kings Ripton, to the north of the study area.

**Table 2-2 - Journey Time Delay on A141**

Direction	AM Peak Delay (08:00 – 09:00)	PM Peak Delay (17:00 – 18:00)
Eastbound	+23 seconds	+ 5 minutes 22 seconds
Westbound	+ 3 minutes 18 seconds	+ 4 minutes 44 seconds

#### St Ives

The ECR for St Ives identified that **congestion** on the St Ives highway network, particularly the A1096 and its junction with the A1123 and B1040, causes **rat-running** and **delays** in St Ives Town Centre. Analysis presented in the St Ives ECR shows that during the AM peak, approximately 22% of traffic turning into Ramsey Road from the A1123 is travelling to the A1096, possibly to access the A11307 further east. This is increasing traffic along Ramsey Road and through the town centre by almost a quarter compared to if traffic were to remain on the A1123 and A1096 as the main through routes. The rat running in turn leads to congestion for both cars and public transport vehicles in the town centre, specifically around East Street, West Street, The Quadrant and Meadow Lane, and consequently increased journey times and reliability issues for public transport services<sup>25</sup>.

Journey time analysis presented within the St Ives ECR shows that journey times on the A1124 Houghton Road to the west of St Ives, the B1040 and the A1096 were more than **double the journey times expected in free-flow conditions**. Figure 2-2 and Figure 2-3 show congestion heatmaps at 08:30 and 17:15 respectively, where red/orange shading indicates the highest level of congestion These show:

- Severe congestion in St Ives town centre during the AM peak hour in the vicinity of The Quadrant, East Street, Globe Place and North Road;
- Congestion at the A1096 Harrison Way / Meadow Lane junction during the AM and PM peak hours;
- Severe congestion on the northbound approach to the A1123 / A1096 Harrison Way roundabout in the PM peak hour;
- Severe congestion on the eastbound approach to the A1123 / B1040 Somersham Road roundabout in the PM peak hour; and

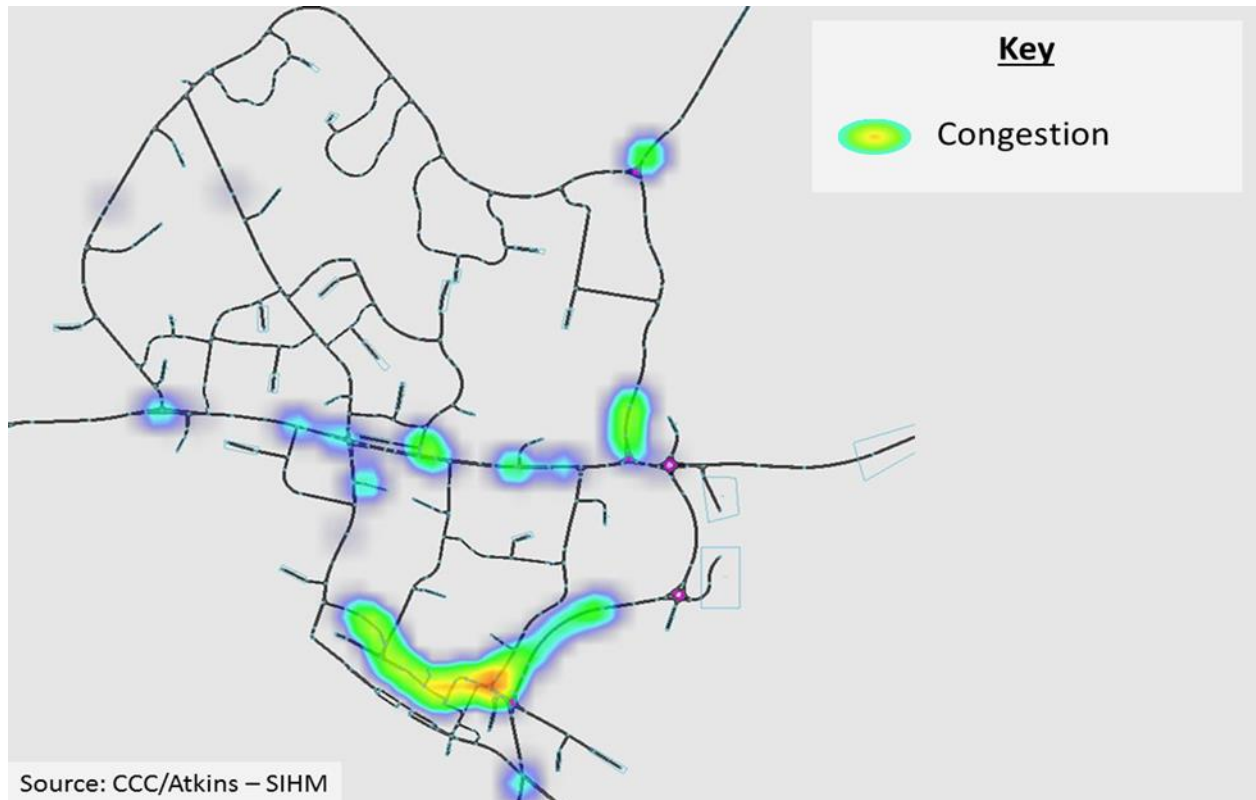
<sup>23</sup> CPCA (2020) Local Transport Plan (Figure 3.3, page 110). It should be noted that the Cambridge Autonomous Metro shown in Figure 2-1 is currently under review and the position on this scheme will be updated as this project progresses.

<sup>24</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Existing Conditions Report*, page 12 Table 2-1.

<sup>25</sup> Skanska (May 2019) Stage 1: Existing Conditions and Data Collection Report, St Ives Area Transport Study, page 45/46.

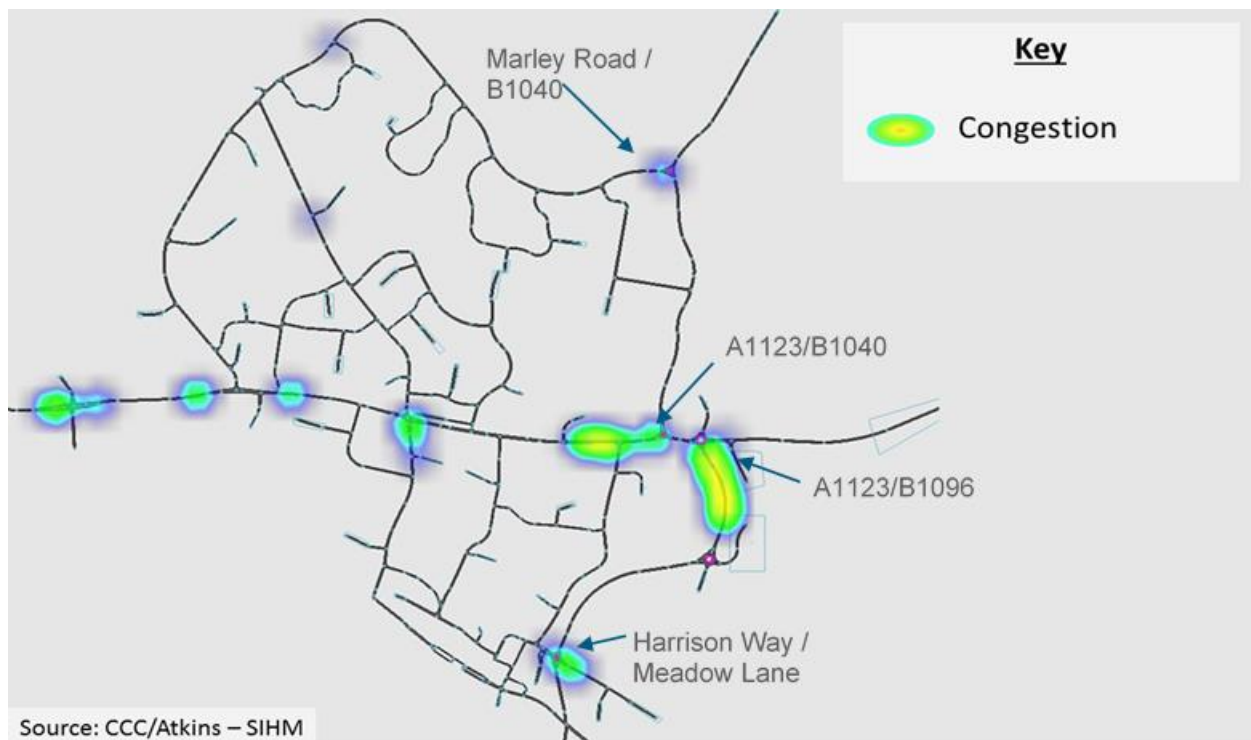
- Congestion at the B1040 Somersham Road / Marley Road roundabout in the PM peak hour and severe congestion during the AM peak hour.

**Figure 2-2 - Congestion on the St Ives Road Network at 0830 on a Typical Weekday<sup>26</sup>**



<sup>26</sup> Skanska (May 2019) *Stage 1: Existing Conditions and Data Collection Report, St Ives Area Transport Study*, Section 5.6.2 page 69

Figure 2-3 - Congestion on the St Ives Road Network at 1715 on a Typical Weekday<sup>27</sup>



## 2.2.2. Lack of Sustainable Travel Alternatives

### Public Transport

Bus services within Huntingdonshire offer good local connections to local neighbouring towns and villages. However, there are no bus priority measures on the A141 or A1123 therefore bus services are subject to the same **congestion and delays** that lead to **unreliable journey times** as general traffic.

St Ives is connected by public transport to Cambridge directly via the Cambridgeshire Guided Busway. This provides segregated bus priority to Cambridge from St Ives Bus Station and Park and Ride. Busway services are connected to Huntingdon, Peterborough and other towns and villages in Huntingdonshire including Chatteris and Somersham. However, as described in section 2.2.1, congestion on the highway network leads to **delays for public transport** making the services **unreliable and uncompetitive** for local trips compared to the private car. For example, feedback from Stagecoach and Whippet, collected as part of the Skanska St Ives Town Centre Parking Review<sup>28</sup>, suggested that AM peak congestion in St Ives town centre on North Street and East Street often leads to delays for Cambridge bound services of over 20 minutes.

Feedback received during engagement on this project (see section 2.10.4) also highlighted issues as perceived by survey respondents. Similar themes were identified across the Huntingdon and St Ives networks and key issues reported were as follows:

- Lack of well-connected public transport services, particularly from rural communities connecting with the Cambridgeshire Guided Busway and rail services;
- Lack of bus priority – respondents particularly mentioned along Ramsey Road in St Ives and the B1514 into and out of Huntingdon; and
- The need for more flexible services.

<sup>27</sup> Skanska (May 2019) Stage 1: Existing Conditions and Data Collection Report, St Ives Area Transport Study, Section 5.6.2 page 70

<sup>28</sup> Skanska (2020) St Ives Town Centre Parking Review, page 9.

## Active Travel

Active Travel infrastructure is provided across the study area, however there are a number of areas where provision is absent, poor quality, or does not meet the desire lines of pedestrians and cyclists.

### Huntingdon

Overall, where walking and cycling infrastructure is provided along the A141, it consists of shared-use footways of reasonable quality alongside carriageways. There are, however, a number of areas **where no provision is made for active modes** including between the Washingley Road / Latham Road roundabout and the Huntingdon Road / B1514 roundabout.

Employees working to the north of the A141 on the Ermine Business Park can access their place of work via the pedestrian refuge area located on the splitter island, adjacent to the A141 / Ermine Street / B1044 roundabout, however there is **no signalised crossing** in this location.

The East Coast Mainline runs north-south through Huntingdon, between St Peters Road and the Stukeley Meadows Industrial Estate. Between the A141 to the north of Huntingdon and Ermine Street, near the town centre, there is **only one crossing of the railway line for pedestrians and cyclists**, off the Kings Ripton Road roundabout. This presents a **significant severance issue** for pedestrians and cyclists travelling between the east and west of the railway line, which is likely to discourage travel by these modes and lead to potentially **unnecessary short single occupancy vehicle trips**.

There is also no dedicated cycling infrastructure provision along the A141 corridor itself.

### St Ives

Walking and cycling infrastructure “*along the main corridors within St. Ives is **fragmented** with the odd section of poorly maintained marked cycle lane and sections of shared use footway. These routes are often fragmented with small sections of on road or shared footway cycling infrastructure, such as on sections of the A1123*”<sup>29</sup>.

Pedestrian and cycle wayfinding signage around St Ives is **limited and inconsistent**.

## 2.2.3. Growth and Development

Huntingdonshire Local Plan identifies the need for an **additional 20,100 new houses** to meet population forecasts between 2011 and 2036, coupled with **14,400 additional jobs** by 2036. The region also has ambitious economic growth plans, centred around doubling the size of the Cambridgeshire and Peterborough economy over 25 years<sup>30</sup>.

The study area has been identified as a key area in which to contribute towards this growth. The locations of planned allocations are shown in Figure 2-4.

- Strategic Expansion Location at Alconbury Weald consisting of:
  - Former Alconbury Airfield and Grange Farm (SEL 1.1) – 5,000 homes and at least 290,000m<sup>2</sup> of employment floorspace;
  - RAF Alconbury (SEL 1.2) – 1,680 homes;
- Ermine Street (HU 1) – 1,440 homes;
- St Ives West (SI 1) – 400 homes; and
- Giffords Farm (SI3) – floorspace for up to 600 jobs.

<sup>29</sup> Skanska (May 2019) *Stage 1: Existing Conditions and Data Collection Report, St Ives Area Transport Study*, section 4.5.3 page 38

<sup>30</sup> CPIER – Section 2.1 Continued High Economic Growth (Page 33)



Figure 2-4 - Location of Key Allocation/Policy Sites



The devolution settlement between Central Government and the CPCA is based on the commitment for the CPCA to **double the size of the economy over the next 25 years**<sup>31</sup>. The CPIER, published in September 2018, recognised that in order to achieve this economic growth, development in the area would need to go beyond what is currently envisaged in the Local Plans. Based on this, the CPCA aims to deliver higher growth than is currently set out in the Huntingdonshire Local Plan.

The committed and planned development sites located with the study area would **increase transport demand** once built out. Given the conditions of the existing highway network and the current lack of sustainable alternatives to the private car outlined in sections 2.2.1 and 2.2.2 respectively, this growth, if allowed to occur without significant changes to the transport network to relieve existing issues would only **exacerbate the congestion and delays**.

### 2.3. Impact of Not Changing and the Need for Intervention

Huntingdonshire is growing rapidly and local policy documents, particularly the Local Plan and CPIER, identify the need for further significant growth in housing and the local economy to 2036 and beyond. The Local Transport Plan identifies the need for transport infrastructure to enable this growth, as well as to alleviate the existing problems of congestion on the highway network and a lack of sustainable alternatives to the private car for travelling around the region.

<sup>31</sup> CPIER - Section 2.1 Continued High Economic Growth (Page 33)

### 2.3.1. Growth and Development

As set out in the Huntingdonshire Local Plan and CPCA Local Transport Plan, the St Ives and Huntingdon transport network has a significant role to play in delivering growth in both housing and the economy.

#### Impact of Committed and Planned Developments on the Transport Network

The OAR sets out the future forecast year (2036) road network conditions including the Local Plan Growth and the completed A14 Cambridge to Huntingdon Improvement Scheme, as documented in previous study work<sup>32</sup>.

The 2036 projections are based on modelling carried out using the Cambridge Sub-Regional Model 2 (CSRM2) and the base year of 2015, which predicts:

- an increase in vehicles on the A141 between Spittals Interchange and the B1090 Sawtry Way Roundabout of 33% during the AM peak hour and 29% in the PM peak hour;
- an increase in demand at key junctions including the A141 Spittals Way / Kings Ripton Road and the A141 / A1123 Houghton Road / B1514 Main Street, leading to increased delay at these junctions; and
- An increase in journey times between Spittals Interchange and the B1090 Sawtry Way Roundabout by up to 45% in both directions in the AM and PM peak hours by 2036<sup>33</sup>.

Within St Ives, 2036 projections indicate:

- increased demand at key junctions during peak hours;
- an increase in traffic volumes of 56% on Harrison Way travelling southbound during PM peak hour;
- an increase in journey times on Harrison Way by up to 40% (or 9 minutes) northbound and 8% (or 2 minutes) southbound during the PM peak hour<sup>34</sup>; and
- an increase in traffic volumes on the B1040 Somersham Road and A1123 St Audrey Lane with a 74% increase in traffic volume on A1123 St Audrey Lane eastbound in the AM peak hour.

Increases in delay and congestion across the study area predicted in 2036 will lead to increased carbon emissions which will therefore likely worsen air quality across the study area.

#### Impact of Higher Growth Aspirations on the Transport Network

The OAR also set out the higher growth aspirations of Huntingdonshire in response to the commitment made within the CPIER to double the size of the economy over the next 25 years<sup>35</sup>. Using trip generation assumptions from existing Transport Assessments<sup>36</sup> in the area, it is possible to estimate the likely number of vehicle trips generated by such aspirational growth should the transport offering in the area remain as it is now. Based on these assumptions, the aspirational growth could generate up to 5,800 additional vehicle trips across each peak hour once all the development is built out. This additional increase in vehicle trips within each peak hour would have a significant adverse impact on the local highway network over and above the impacts identified based on the committed and planned developments. This would lead to unprecedented congestion caused by a lack of highway network capacity, a lack of sustainable alternatives to the private vehicle coupled with unsustainable growth in the region.

### 2.3.2. Highway Network Delays

Delays to travellers and the movement of goods across St Ives and Huntingdon makes it harder for people to get around, increases costs to businesses, and reduces the area's attractiveness to investment. This therefore presents a problem for the existing network, but also to the delivery of future sustainable growth. Without investment and with planned growth in the region, delays on the transport network are only set to worsen (see 2.3.1) and carbon emissions increase. This in turn has a knock-on impact on productivity and the ability of the area to attract investment.

<sup>32</sup> Skanska/Capita (2020) *Options Assessment Report A141 St Ives Transport Study*

<sup>33</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Existing Conditions Report*, page 46

<sup>34</sup> Atkins (2021) *St Ives Transport Study Existing Conditions Report*, page 47

<sup>35</sup> CPIER - Section 2.1 Continued High Economic Growth (Page 33)

<sup>36</sup> WSP (March 2020) *Washingley Farm Huntingdon Transport Assessment*

Local policy documents identify the section of the A141 around Huntingdon as having some of the longest delays and highest levels of congestion<sup>37</sup> in the district. This congestion is forecast to increase in the future with planned and committed developments.

There is therefore a clear need to improve journey times and reduce delay, especially during peak periods, along this route. The highway network around Huntingdonshire, particularly the A141, A1123 and A1096, carries a significant proportion of strategic and HGV traffic (8-10% of all traffic on the A141) travelling from the Midlands via the A14, into North Huntingdonshire, Fenland and Norfolk. For this reason, the highway network is a vital part of the solution to enable growth in the region and therefore needs to be maintained and congestion reduced.

This is supported by the CPCA Local Transport Plan which states that ‘*Improving journey times, both by road and rail, and reliability is important for businesses to access their markets, collaborators and supply chains. Improving journey times will also help to increase the geographical catchment from which to draw growing workforces, helping businesses to realise their full potential for growth.*’<sup>38</sup>

### 2.3.3. Lack of Sustainable Travel Alternatives

Public transport and active mode infrastructure can provide sustainable alternatives to the private car for short and middle-distance trips. However, evidence<sup>39</sup> has shown that cars are being used for short journeys within and around Huntingdon and St Ives. This is as a result of a fragmented active travel network and public transport services that experience delays on the highway network that erode their competitiveness when compared to the private car. In general, poorly maintained or on-road cycle infrastructure is often perceived to be dangerous and in-direct routes (away from desire lines) can lead to cycling being seen as less convenient than the private car, both of which can discourage use.

As discussed in the previous section, the region will always have a need to accommodate strategic and rural traffic on the highway network, therefore highway intervention is needed. However, highway delays and associated emissions within the towns, which could ultimately stifle desired growth, could be partly alleviated by providing attractive sustainable infrastructure and services that offer a viable alternative to the private car for short and medium distance journeys. Therefore, significant investment in sustainable transport is also required to encourage these trips and help enable sustainable growth within the Huntingdon and St Ives.

### 2.3.4. Need for Intervention

The evidence has clearly identified that intervention will indeed be needed in order to unlock the further growth beyond that identified within the Local Plan. The evidence presented above shows that there are already significant challenges in terms of congestion and delay on the highway network and barriers to travelling by sustainable modes. The impact of Local Plan developments on the transport network shows that without intervention these developments would lead to significantly increased delay and journey times on key routes including the A141, A1123 and B1096. This in turn is likely to lead to an increase in emissions and worsening air quality within the study area.

The area has significant ambitions for growth beyond that identified within the Local Plan, which, without investment in the transport networks would only exacerbate the existing and future problems on the transport network. Significant levels of congestion and delay may make the area unattractive for businesses, which would further stifle investment.

Therefore, there is a need for a significant intervention to accommodate planned and aspiration growth without worsening delay, congestion and emissions on the existing highway network.

## 2.4. Summary of Problems and the Need for Intervention

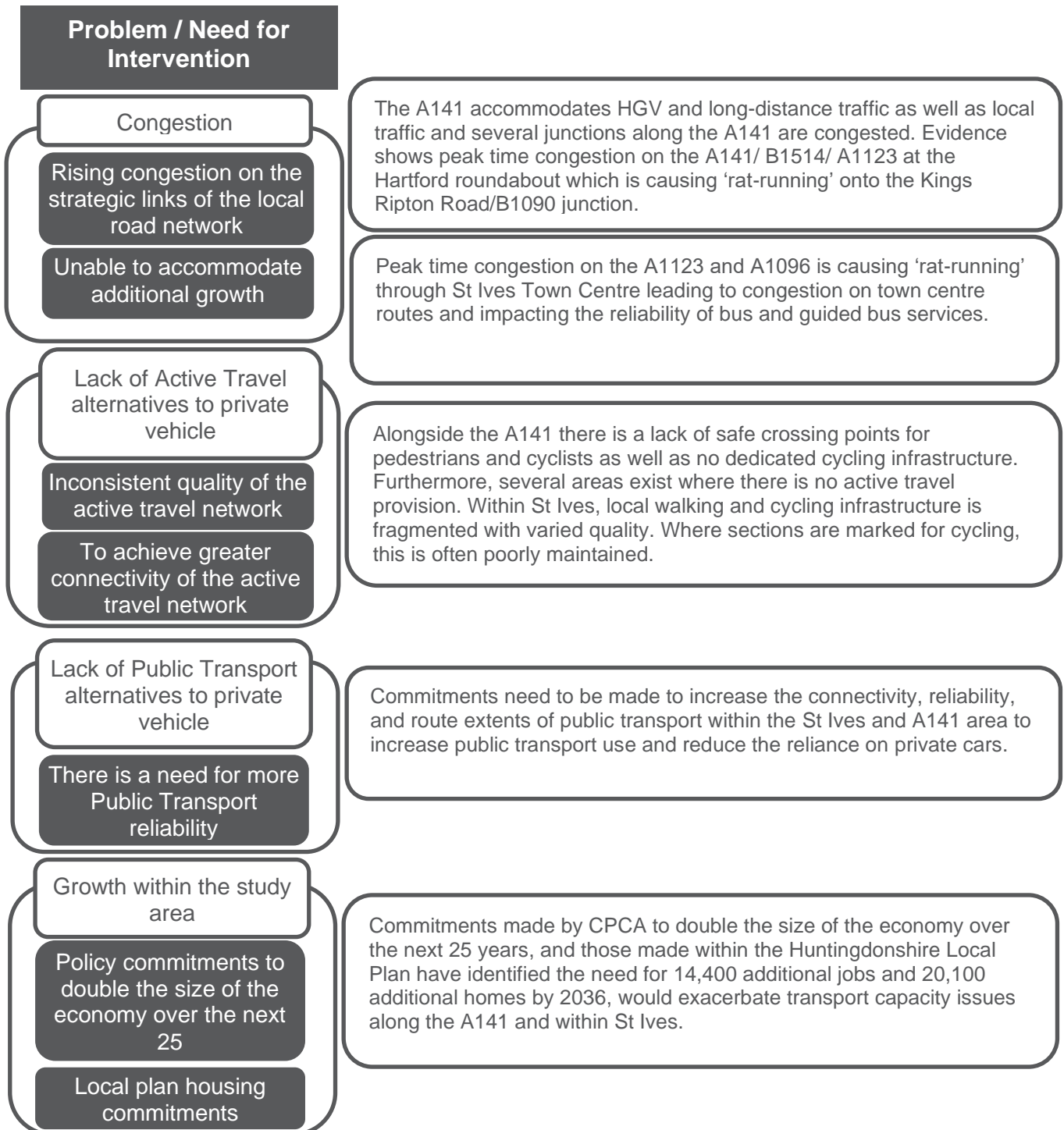
Figure 2-5 summarises the key challenges facing Huntingdon and St Ives and further demonstrates the need for intervention.

<sup>37</sup> Huntingdonshire Local Plan – Strategic Transport Strategy Section 3.6.

<sup>38</sup> Cambridgeshire and Peterborough Combined Authority (2020) *The Cambridgeshire & Peterborough Local Transport Plan*. Page 12.

<sup>39</sup> Census 2011 analysis undertaken via Datashine for commuting trips from St Ives and Huntingdon.

**Figure 2-5 - Summary of key challenges and need for intervention**





## 2.5. Scheme Objectives

The existing problems on the transport network and the need for intervention presented in the previous section helped define the objectives for the scheme. These objectives were developed by CPCA at the start of the study and link back to relevant policies in section 2.1.3 following a review of early study work to identify the problems and challenges within the study area.

The scheme specific objectives set by CPCA are as follows:

1. Address current congestion and delay in the study area, thus reducing journey times and improving reliability, and relieving local routes affected by traffic re-routing from the A141 and A1096/A1123;
2. Ensure sufficient transport capacity to accommodate transport demand in the study area from new growth sites in the region;
3. Contribute to improving connectivity and quality for walking and cycling along and across the study area, by incorporating appropriate provision within the scheme and/or enabling the existing A141 and St Ives transport network to better support these modes;
4. Contribute to improving bus service routing, access, and reliability across the corridor and through St Ives Town Centre; and
5. Ensure any future route of strategic public transport infrastructure is taken into consideration.

The scheme objectives were used to guide the option identification and development stages of the study (stage 2). The option development process was not restricted to options which would meet all 5 objectives, options which partially meet the objectives were also been considered (as they could be packaged with other options to develop a scheme which meets all of the scheme objectives). The objectives were reviewed at the start of the OAR (stage 5) to combine the two studies and ensure that the objectives still reflected the key problems and the need for intervention.

The performance of the scheme against its' objectives is reviewed in section 3.3.5. SMART objectives will be defined at OBC in order to capture changes in policy which are currently ongoing (see section 2.1.2).

## 2.6. Scheme Outcomes

For the purposes of assessing options for this study, the scheme objectives have been developed in more detail into a set of outcomes based on wider policy goals.

1. Socio-economic outcomes:
  - a. Provide conditions that encourage inward investment in higher-value employment sectors;
  - b. Improve access around Huntingdon, to/from the strategic road and rail networks and to/from London; and
  - c. Reduce spatial inequalities across Cambridgeshire, by sharing and expanding the benefits of Greater Cambridge's success.
2. Transport outcomes:
  - a. Contribute to a coordinated package of investment in the area to increase capacity, reliability and speed for public transport, pedestrians, cyclists and equestrians;
  - b. Minimise the amount of rat-running;
  - c. Maintain traffic levels at or below 2018 levels;
  - d. Minimise vehicle mileage whilst providing for increased travel demand; and
  - e. Intercept or substitute car trips with alternative transport modes.
3. Environmental outcomes:
  - a. Contribute to the reduction of emissions to 'net-zero' by 2050, to minimise the impact of transport and travel on climate change.

## 2.7. Scope of the scheme

Having identified that there is a strong case for change, the scope of the scheme, to help achieve the objectives and outcomes, is to provide multi-modal transport solutions for the Huntingdon and St Ives area to alleviate existing constraints on the transport network and help facilitate additional growth. The interventions considered must ensure that employment and housing growth can be accommodated without increasing congestion on the transport network. Solutions must also accommodate local trips within the Huntingdon and St Ives area,

including between the two market towns, as well as to/from significant trip attractors such as Cambridge. This accommodation should be by sustainable modes where possible and should alleviate congestion on those routes used by strategic trips to enable growth in the local and wider regional economy. The scheme can be delivered in isolation to other transport improvements in the area but would benefit from coordination and joined-up thinking with other ongoing schemes, including the St Ives schemes (see St Ives ECR section 6), LCWIP schemes (see OAR section 3.4.3) and transport infrastructure bought forward as part of planned growth<sup>40</sup>.

## 2.8. Constraints

When considering potential transport options, the following key constraints need to be considered:

**Engineering constraints**, including:

- Severance issues caused by existing highways, the River Great Ouse, the East Coast Mainline, and active travel routes;
- The presence of Grade Listed buildings and Scheduled Monuments in and near to the corridor; and
- Highway and footway width issues for bus prioritisation and active travel prioritisation.

**Environmental Constraints**, including:

- Nitrogen Dioxide (NO<sub>2</sub>) levels continuing to exceed the objective level for the Huntingdonshire District;
- A functioning flood plain (Flood Zone 3b) between Huntingdon and St Ives that is affected regularly during winter or high flows;
- Land next to the River Great Ouse susceptible to flooding;
- Existing habitats for protected and notable species; and
- Sites of Special Scientific Interest (SSIs) within and near to the corridor.

These lists are not exhaustive. The A141 Existing Conditions Report<sup>41</sup> and St Ives Existing Conditions Report<sup>42</sup> provides a more comprehensive breakdown of the constraints within the study area. The optioneering phase considered the engineering and environmental constraints identified in the Existing Conditions Report, these are discussed in detail in the OAR<sup>43</sup>. Once the impacts of potential schemes upon environmental constraints are known, then suitable mitigation will be developed.

## 2.9. Interdependencies

Major dependencies that could impact the Strategic Dimension, and that were taken into account during option development are summarised in Table 2-3.

**Table 2-3 - Major Dependencies impacting the Strategic Dimension**

Project	Dependency
St Ives Greenway	A planned 12-mile active travel route with 4.6 miles of additional path between Cambridge North Railway Station and St Ives. Developed by the Greater Cambridge Partnership, it is currently in the process of detailed design <sup>44</sup> . The Greenway aims to provide an active route for walkers, cyclists, and horse riders. The Greenway will broadly follow the existing busway but will also include new links to local centres, thus providing sustainable transport connections to St Ives and the surrounding areas.
Huntingdonshire Local Cycling and Walking	The Huntingdonshire LCWIP is a strategic approach to developing high standard active travel routes across the district. There are 16 routes that Cambridgeshire County Council are looking to improve, of which five pass through St Ives and three interact with the A141.

<sup>40</sup> Engagement with CCC and Developers has been ongoing throughout the scheme development to date.

<sup>41</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Existing Conditions Report*, section 4, page 36.

<sup>42</sup> Atkins (2021) *St Ives Transport Study Existing Conditions Report*, section 4, page 40.

<sup>43</sup> Atkins (2021) *Huntingdon and St Ives Transport Study Options Appraisal Report*

<sup>44</sup> As of 23<sup>rd</sup> July 2021

Project	Dependency
Infrastructure Plan (LCWIP)	A full list of the LCWIP schemes of relevance to this study is presented in the OAR.

## 2.10. Option Development

This section summarises the work reported in the OAR<sup>45</sup> and outlines the methodology employed and the findings of the option identification, sifting and assessment processes. The process had six stages, run separately for each of the Huntingdon and St Ives areas (shown in Figure 2-6 overleaf):

The following sections summarise the outcomes from this process.

### 2.10.1. Option Identification

The option identification stage was informed by, but not constrained to, the previous studies outlined in the ECRs, the location of proposed developments and driven by existing policy.

An options identification workshop was held by the internal project team and outcomes shared with the client.

All options with the potential to meet the transport objectives were considered, including consideration of all transport modes; maximising the use of existing infrastructure; providing new infrastructure; and demand management.

However, the practicality of delivery did lead to the immediate discounting of some interventions including a third crossing of the River Great Ouse which was considered out of the scope of this study.

The approach identified a wide range of options that fell into a number of broad categories, as summarised in Table 2-4.

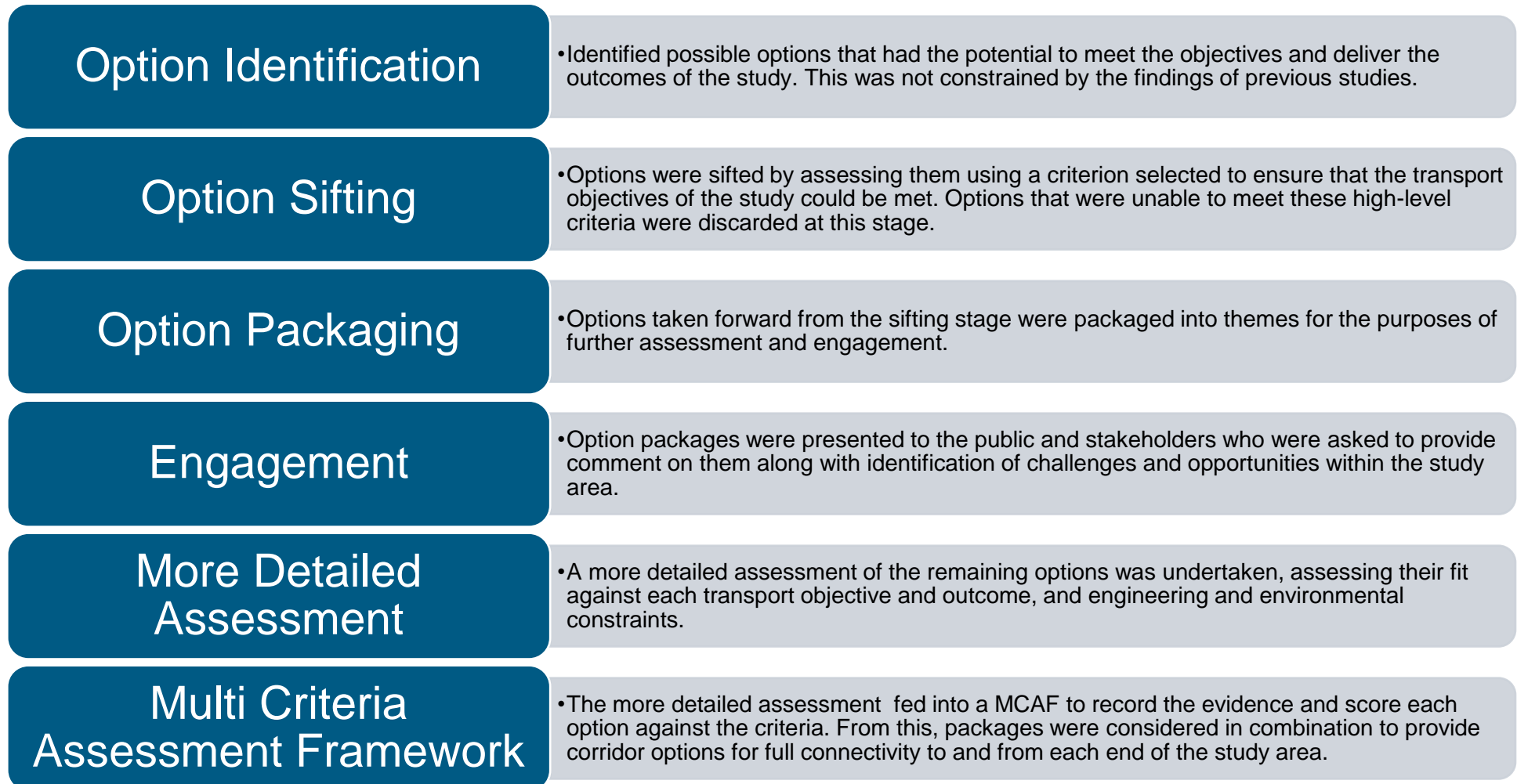
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<sup>45</sup> Atkins (2021) *Options Appraisal Report*

**Table 2-4 - Summary of range of options identified**

Options Identified	Huntingdon	St Ives
Bypass Options	Bypass between Spittals Interchange and the A141. Various options for connections to the existing highway network along the route.	Bypass between the A141 and A1123/A1096. Various options for connections to the existing highway network along the route.
Junction improvement options	Connecting and reconfiguring junctions within the existing highway network. Junction signal improvements along the A1123. Access restrictions. Junction priority changes to favour public transport.	Signal improvements. Restricted movements. Junction reconfigurations.
Public transport options	Implementation of new public transport only routes. The possibility of turning the existing A141 into a public transport route in one direction. Park and Ride for access into town. Reducing pinch points for public transport.	Extensions to the current Cambridgeshire Guided Busway services. Junction priority changes to reduce delays for buses making bus journeys more reliable to encourage modal shift.
Active travel options	Improve connections to active travel routes and additional active travel routes to be provided. Additional active travel crossing point over the East Coast Mainline (ECML) and A141.	Improvements to existing active travel routes. Additional active travel routes. Connecting existing active travel routes.
Demand management options	Reductions in availability of private parking and public parking. Restrictions on vehicle access to create clean air zones.	Reductions in availability of private parking and public parking. Restrictions on vehicle access to create clean air zones.

**Figure 2-6 - Option Development Process**



## 2.10.2. Option Sifting

An option sifting process reviewed the identified options that had been generated in the previous stage. Each option was assessed against three overarching criteria of Effectiveness, Feasibility and Acceptability. Table 2-5 outlines the sifting assessment criteria and the key issues considered under each criterion that reflect the transport objectives and outcomes.

**Table 2-5 - Sifting Assessment Criteria**

Sifting Criteria	Elements Considered Within Each Criterion
Effectiveness	Address current congestion
	Increase transport capacity
	Improve connectivity and quality for walking and cycling
Feasibility	Engineering constraints
	Environmental constraints
	Planning requirements
Acceptability	Stakeholder views
	Alignment with local and regional policies

A number of options were rejected as a result of the option sifting as summarised in Table 2-6 below. All remaining options were taken forward to option packaging and public engagement.

**Table 2-6 - Summary of Rejected Options**

Huntingdon		St Ives	
Option Description	Reason for Rejection	Option Description	Reason for Rejection
Turning the existing A141 into a public transport only road with active travel lane.	Unlikely to leave enough capacity for local movements (sifted out based on effectiveness criteria).	Widening/dualling the A1123.	Constraints regarding width and need to retain 'local road' with housing frontages.
Turning the existing A141 into a one-way road with public transport lane.	Unlikely to leave enough capacity for local movements (sifted out based on effectiveness criteria).	Bypass from the A1123 to the east of the B1090 junction to connect with Marley Road or the B1040.	Hill Rise not suitable as strategic route and unlikely to remove significant vehicles from the A1123 due to journey time impact.
Widening of the existing A141.	Rejected by previous work as unlikely to be able to provide capacity for high growth aspirations (sifted out based on effectiveness criteria).	Third River Crossing.	Discounted by Skanska at Stage 1 – not part of this study.
Upgrades to existing A141 junctions.		Demand responsive public transport from rural villages.	Out of project scope – CPCA/DRT trial ongoing in West Huntingdon.
Dedicated and segregated public transport corridor adjacent to the East Coast Main Line.	Rejected as pinch points alongside the railway are likely to be too narrow to provide a dedicated corridor without demolition (sifted out based on feasibility and acceptability criteria).	Workplace parking levy.	A141 engagement has shown that these are not publicly/politically acceptable.
		Wider policy considerations.	Being picked up by CPCA as part of LTP refresh – also needs a region wide approach.

Huntingdon		St Ives	
Option Description	Reason for Rejection	Option Description	Reason for Rejection
		Bypass from the B1090 north towards Marley Way.	Unlikely to remove significant vehicles from A1123 due to journey time impact. Technically challenging to upgrade and increase capacity of the B1090 due to frontages and accesses.

### 2.10.3. Option Packaging

An option packaging process grouped the option long-list into themes for further engagement and assessment. Packaging was necessary at this stage as it was considered unlikely that any of the individual options identified would be implemented in isolation and therefore grouping the options into indicative packages would allow for stakeholders and the public to visualise the options as part of a holistic solution. Furthermore, it would allow further assessment to be undertaken to determine highest performing options based on whole solutions rather than individual elements. Six packages were identified for each of the Huntingdon and St Ives areas. These are shown in section 5.4 and section 6.4 of the OAR and summarised in Table 2-7.

**Table 2-7 - Option Packages**

Huntingdon	St Ives
Option H1: Full offline bypass between Spittals Interchange and A141 / B1040 roundabout with no connections to existing roads or the proposed developments, directly from the bypass.	Option SI1: offline bypass from the A141 around the north of St Ives, to the A1123 to the east of St Ives. A new connection would be made between the A1123 and the A1096. The A1096 would be upgraded with its junction to Low Road.
Option H2: Full offline bypass with connections to the existing road network at Ermine Street, Abbotts Ripton Road and Kings Ripton Road.	Option SI2: offline bypass from the A141, around the north of St Ives, which connects with an upgraded Marley Road. Online upgrades in the form of junction and capacity improvements would be made to the B1040, A1123, and A1096 including the Low Road junction.
Option H3: Online/Offline Bypass. A bypass between Spittals Interchange and a point near the Tesco roundabout, and widening of the existing A141 from the Tesco roundabout to the Hartford Roundabout (A141 / A1123).	Option SI3: offline bypass from the A141, around the north of St Ives, which connects with an upgraded Marley Road. From the B1040, an offline link would be provided to connect the B1040 with the A1123. A new connection would be made between the A1123 and the A1096 upgraded including the Low Road junction.
Option H4: Rural Travel Hubs to the north, east and west of Huntingdon.	Option SI4: Package of local junction improvements.
Option H5: Public Transport and Active Travel measures including connections from new developments into Huntingdon, improved active travel routes and an additional connection over the East Coast Mainline.	Option SI5: A package of sustainable travel measures including new and improved public transport infrastructure.



Huntingdon	St Ives
Option H6: Transport Network Management measures including a Clean Air Zone, Workplace Parking Levy, reduced parking availability and increased parking charges.	Option SI6: Improvements to infrastructure provision, safety, and route choice for pedestrians, cyclists, and equestrians.

## 2.10.4. Engagement

In order to develop and assess the 12 packages further a public and stakeholder engagement exercise was undertaken to obtain feedback. Details on the engagement process and results can be found in the Engagement Reports for Huntingdon<sup>46</sup> and St Ives<sup>47</sup>.

Should approval to proceed to OBC be granted, a further programme of engagement will be developed for the next stage of the scheme development.

### Stakeholders

Table 2-8 summarises the key stakeholders as identified by the CPCA at this stage and any areas where they have a particular role within the study.

**Table 2-8 - Summary of Key Stakeholders**

Stakeholder	Role within study
Bus Operators	Existing and potential providers of services within study area. Agreement to be sought regarding operations of potential scheme
Business Organisations	Stakeholders
CCC (Local Highway Authority)	Statutory consultee with any proposed planning permission within the study area
Groups which represent people with limited mobility or a sensory impairment and wheelchair users	Stakeholders
Commuters	
Councillors (Local)	Councillors to provide approval for scheme.
Councillors (Wider)	Statutory consultee with any proposed planning permission within the study area
Cambridgeshire and Peterborough Combined Authority (Local Transport Authority)	Scheme will aim to satisfy key stakeholder policies Consultee with any proposed planning permission within the study area
Emergency Services	Statutory consultee with any proposed planning permission within the study area
Environmental Groups	Stakeholder
East Cambs and Villages HCV Group	Stakeholder
National Highways	Statutory consultee with any proposed planning permission within the study area which will impact on the Strategic Road Network (SRN).
Huntingdonshire District Council (HDC)	Local Planning Authority
Huntingdon Town Council	Stakeholder
Huntingdonshire Walking and Cycling Group	Stakeholder

<sup>46</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Transport Study Pre-Consultation Engagement Analysis Report*

<sup>47</sup> Atkins (2021) *St Ives Transport Study Pre-Consultation Engagement Analysis Report*



Stakeholder	Role within study
Landowners	Stakeholder Negotiations may be required for potential land take (subject to proposed routes)
Local Businesses	Stakeholders
Local Campaign Groups	
Local Developers	
Local Residents	
Media	
Members of Parliament	
Ministry of Defence	Stakeholder and Landowner
Network Rail	Statutory consultee with any proposed planning permission within the study area which will impact on the rail network. Potential interaction if any schemes involve or are close to the railway
Local Parish Councils	Statutory consultee with any proposed planning permission within the study area
Residents' Associations	Stakeholders
Schools	
Smart Cambridge	
St Ives Road Safety Group	
St Ives Town Council	
Technical Consultants	
Transport User Groups	
Utilities Companies	
Youth Groups	

## Engagement outcomes

Table 2-9 provides a brief overview of the public and stakeholder engagement undertaken on the 12 packaged options. A more comprehensive review of the findings can be sourced from the Huntingdon<sup>48</sup> and St Ives<sup>49</sup> Engagement Reports.

**Table 2-9 - Methodology and results of the Huntingdon and St Ives Public and Stakeholder Engagement**

	Huntingdon	St Ives
Method		
Public Engagement	The public engagement exercise was conducted between the 22 <sup>nd</sup> February to 15 <sup>th</sup> March 2021.	The public engagement exercise was conducted between the 14 <sup>th</sup> June to 5 <sup>th</sup> July 2021.
	This engagement focused on the problems, issues and challenges for the area and the early emerging option concepts. The engagement was undertaken virtually due to the COVID-19 pandemic and utilised a website guiding the public through the engagement material, with a questionnaire and map where the public could drop pins with specific comments on the option concepts or problems and challenges in the area.	
Stakeholder Engagement	Atkins and CPCA held two online stakeholder meetings during the engagement period, one with Members, and one with landowners and their representatives. The meetings included an overview of the scheme aims and objectives and set out the initial concepts for consideration. Stakeholders were then welcomed to comment on the options presented and were encouraged to respond to the online engagement survey and/or submit responses to the team.	
Results		
Public Engagement	<p>In total 466 responses were received, and respondents were most concerned by:</p> <ul style="list-style-type: none"><li>• HGVs;</li><li>• Congestion;</li><li>• Safety;</li><li>• Improving air quality;</li><li>• Improving journey times;</li><li>• Rat-running;</li><li>• Access to public transport; and</li><li>• Improving active travel options.</li></ul>	<p>In total 469 responses were received, and respondents were most concerned by:</p> <ul style="list-style-type: none"><li>• Congestion;</li><li>• Road safety;</li><li>• Reducing journey times;</li><li>• Rat-running;</li><li>• Increased travel options; and</li><li>• Connecting area to growth opportunities.</li></ul>
Stakeholder Engagement	<p>Generally, responses were consistent in favouring a bypass option (H1, H2 or H3) in conjunction with sustainable transport measures (H4, H5 and H6), particularly from new developments. Option H2 was the most favoured bypass option with one response favouring option H3. One of the responses favoured widening the existing A141 rather than a bypass. Reasons for support of option H2 included better integration with the road network, with planned and existing developments and reducing the barrier effect of the A141. Concerns with the full bypass options (H1 and H2) related to construction costs, land and environment impacts, and the encouragement of</p>	<p>In general, responses were consistent in that they did not think a bypass on its own would solve the problem at all or entirely. It should be noted that most comments stated that constructing a bypass (option SI1, SI2 or SI3) would only have a positive impact on the transport network if considered in conjunction with the other options (SI4, SI5 or SI6). Most responses favoured bypass option SI1 in conjunction with sustainable transport measures SI5 and SI6. However, it should be noted that some responses were sceptical as to whether a bypass, be that option SI1, SI2, or SI3, would improve current transport issues or increase them. Instead, respondents suggested there should be greater emphasis on</p>

<sup>48</sup> Atkins (2021) – *A141 Huntingdon Northern Bypass Transport Study*

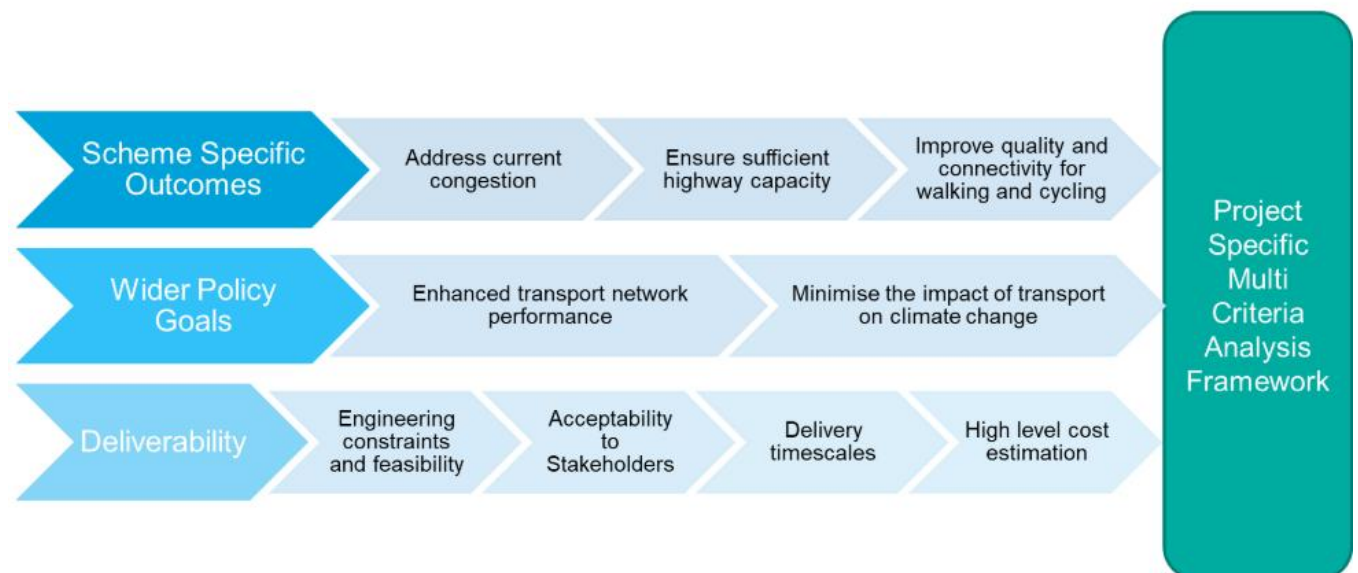
<sup>49</sup> Atkins (2021) – *St Ives Transport Study*

Huntingdon	St Ives
infill development (the process of developing vacant or under-used parcels within existing urban areas that are already largely developed).	assisting active transport mode users to encourage more people to use non-motorised modes of transport, thus reducing the need for a new bypass due to a reduction in motorised traffic on the roads.

### 2.10.5. More Detailed Assessment

Following the option identification, sifting, packaging and initial engagement on all of the Huntingdon and St Ives packages, all 12 were taken forward for more detailed assessment in the form of a Multi-criteria Analysis Framework (MCAF). A summary of the assessment criteria is provided in Figure 2-7; more detailed information around the MCAF assessment can be found in the OAR<sup>50</sup>.

**Figure 2-7 - MCAF Criteria**

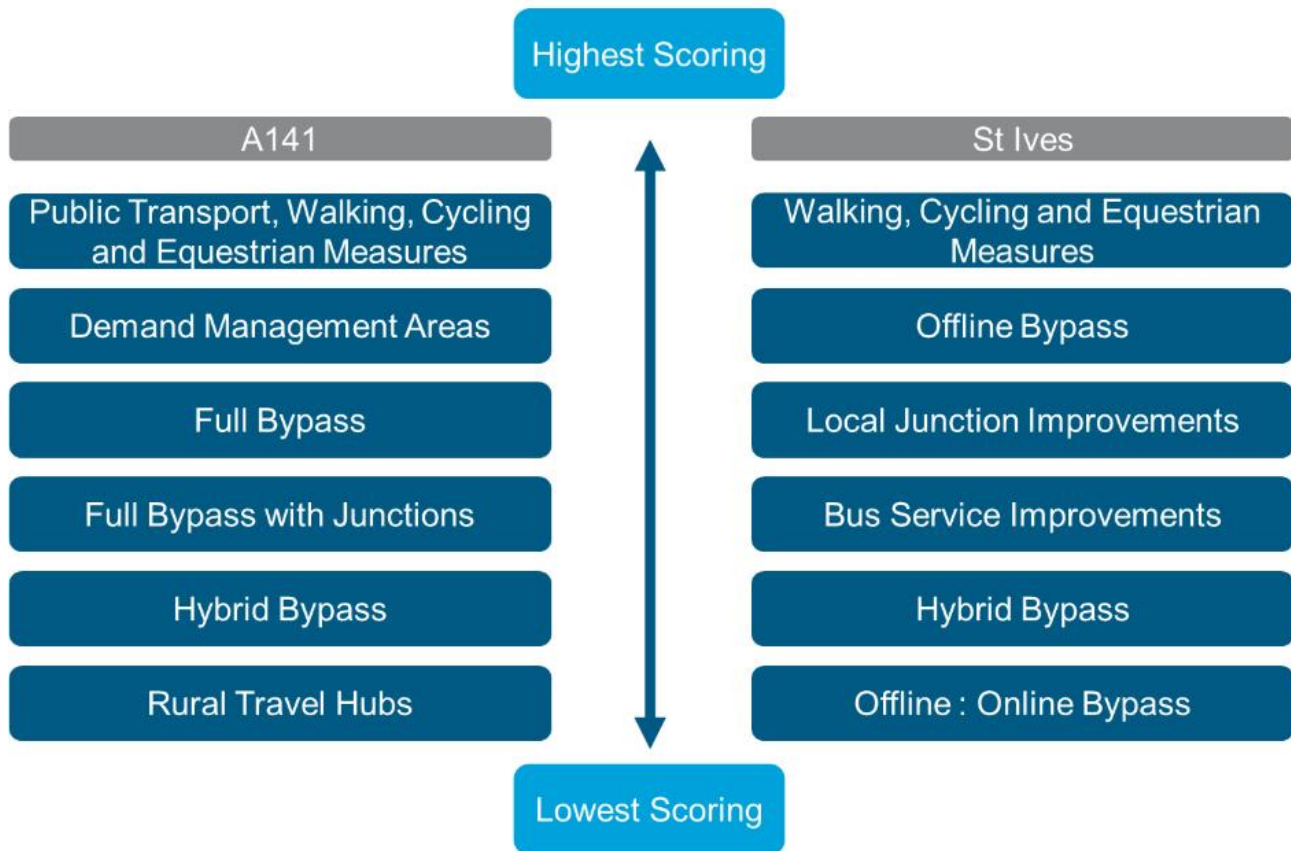


Options were assessed using the criteria outlined in through desktop studies. As a summary of the assessments and to allow intuitive comparison of relative performance, each option was scored against the 9 criteria outlined in Figure 2-7 using a six-point scale from 0 to 5, where 5 was the best performing.

**It is noteworthy that the scores themselves are not representative of a “numbered score” against the criteria. The scores serve the purpose of ranking each option against one another on a per criteria basis.** A summary of the results is shown in Figure 2-8.

<sup>50</sup> Atkins (2021) *Huntingdon and St Ives Transport Study Options Appraisal Report*

**Figure 2-8 - MCAF Results**



### MCAF results for Huntingdon

For the MCAF results for Huntingdon, option H5 (public transport, walking cycling and equestrian measures), scored the highest whilst option H4 (rural travel hubs) scored the lowest. Options H1 and H2 (full bypasses) scored greater due to their impact in addressing current congestion and ensuring sufficient highway capacity. Option H6 scored second highest as a result of its likely impact on minimising the impact of climate change. However, this option scored very low in terms of stakeholder acceptability and following the public and stakeholder engagement was deemed to be undeliverable, therefore option H6 has not been taken forward from this stage.

Options H1-H3 (bypass options) all scored zero on minimising the impact of transport on climate change. Options scoring zero under any criteria were not discounted at this stage as they may have benefits across other criteria. However, these options would need to be delivered as part of a wider package that provides overall benefit across the criteria assessed, including elements that minimise the impact of transport on climate change.

Option H5 (public transport, walking cycling and equestrian measures) scored highest overall due to its impact on improving quality and connectivity in walking and cycling as well as minimising the impact of transport on climate change.

However, as option H4 (rural travel hubs) scored the lowest, this demonstrated that not all sustainable options were high performing. For option H4, this may have been in part due to its poor performance on meeting the scheme specific objectives.

### MCAF Results for St Ives

For the MCAF results of the St Ives Transport Study, option SI6 (walking, cycling and equestrian measures) scored the highest whilst option SI2 (offline : online bypass) was the lowest scoring.

Options SI1-SI3 (bypass options) consistently scored low on their overall deliverability whilst also scoring zero on minimising the impact of transport on climate change. However, options SI1-SI3 scored higher than options SI4-SI6 (junction improvements and sustainable travel improvements) in addressing current congestion and ensuring highway capacity. Overall, options S1-S3 performed better in scoring more favourably in addressing road-related objectives as these options are based on expanding road infrastructure. However, in doing so, they do not address the objective of improving the quality and connectivity of active travel modes and do not serve well in improving sustainable mode share to reduce the impact of transport on climate change. Therefore, it appears more sustainable options that promoted active travel performed better within the MCAF.

From the MCAF results, it can be seen that a package of options needs to be developed that can meet not only the criteria of sustainability but also the scheme specific objectives, whilst also being deliverable.

The MCAF results do not represent the final answer but rather what must be considered when collating options together that will work effectively as a package.

## 2.11. Options to be Appraised

Based on the robust identification, sifting, engagement and assessment process, the better-performing options were recommended to be progressed within this SOC stage are outlined in Figure 2-9.

**Figure 2-9 - Summary of Options Taken Forward for Further Consideration**

Option Name	Description
Package A	Package A comprises of an offline bypass with no junctions other than the existing A141. In addition, there are active travel connections as well as public transport connections.
Package B	Package B contains an offline bypass with connecting junctions to the existing road network along with active travel connections and public transport connections.
Package C	Package C of a hybrid bypass of Huntingdon with junction upgrades in St Ives. In addition, active travel connections are present as well as public transport connections.

Packages are illustrated in Figure 2-10, Figure 2-11 and Figure 2-12 below. It should be noted that the active travel improvements remain the same regardless of option package.



Figure 2-10 - Package A

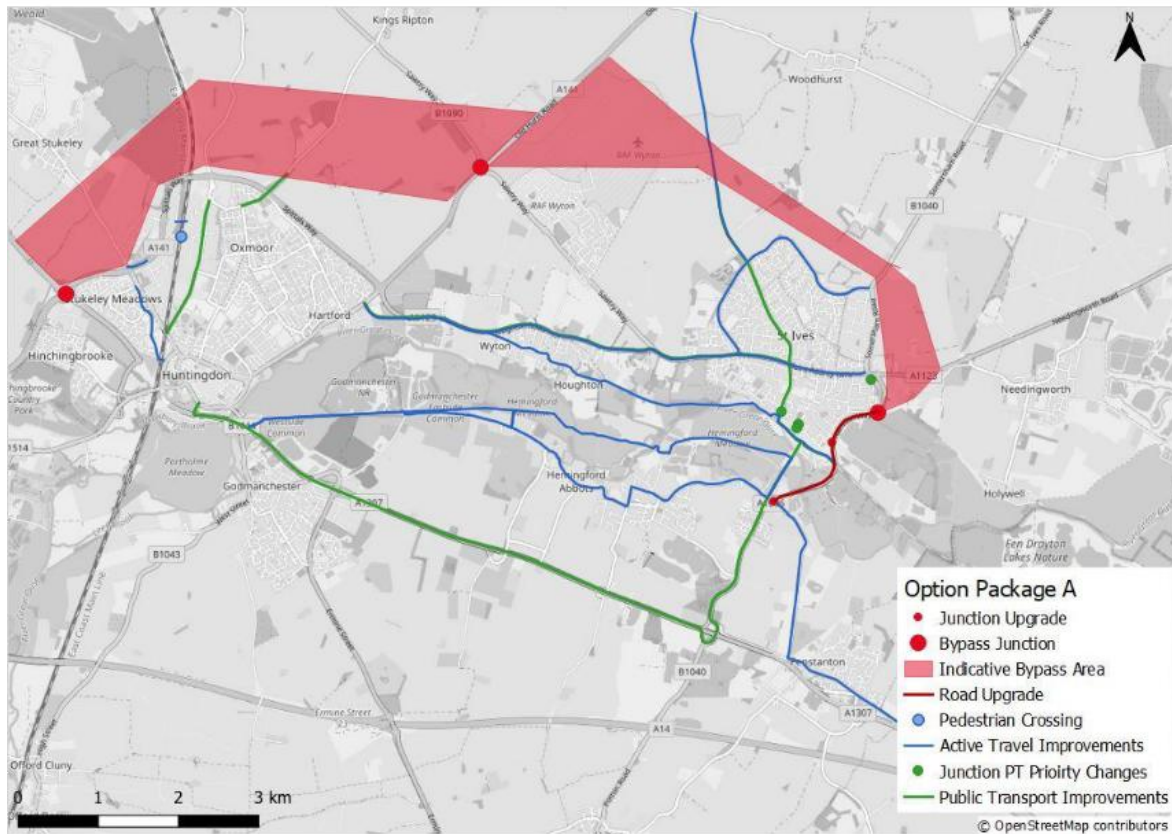


Figure 2-11 - Package B

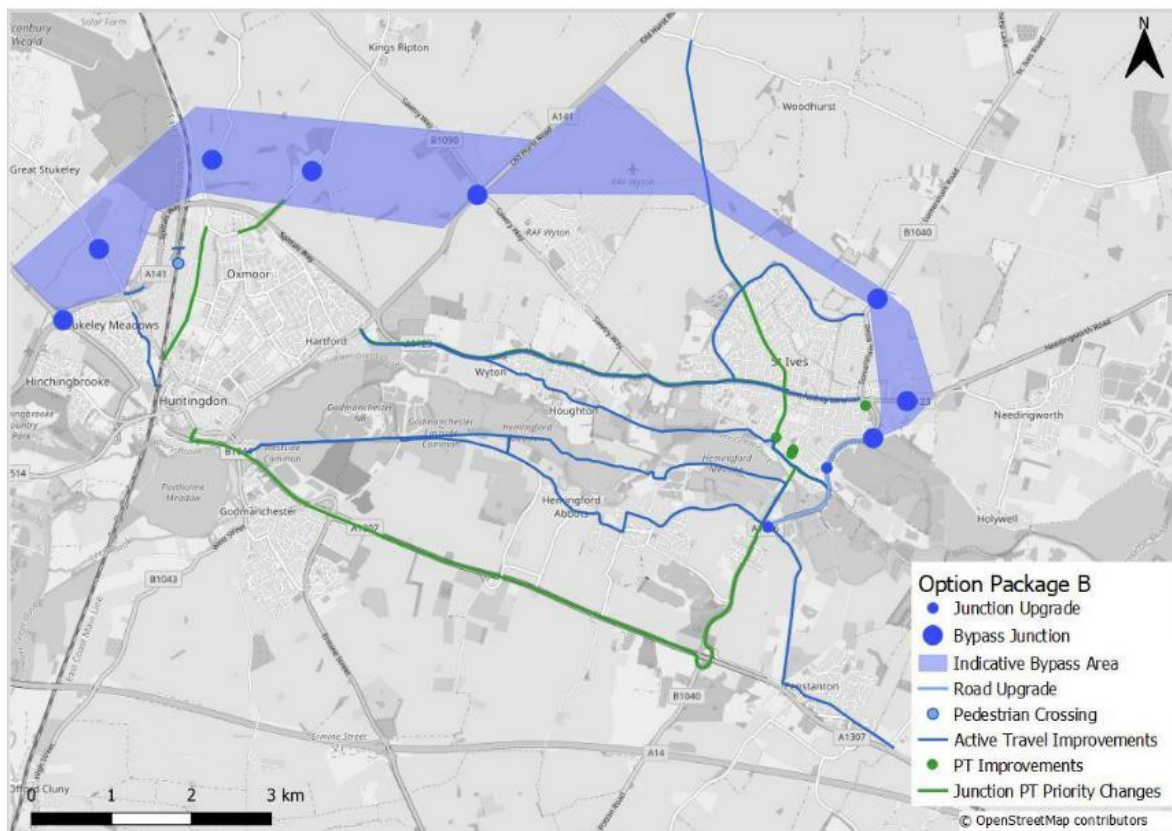
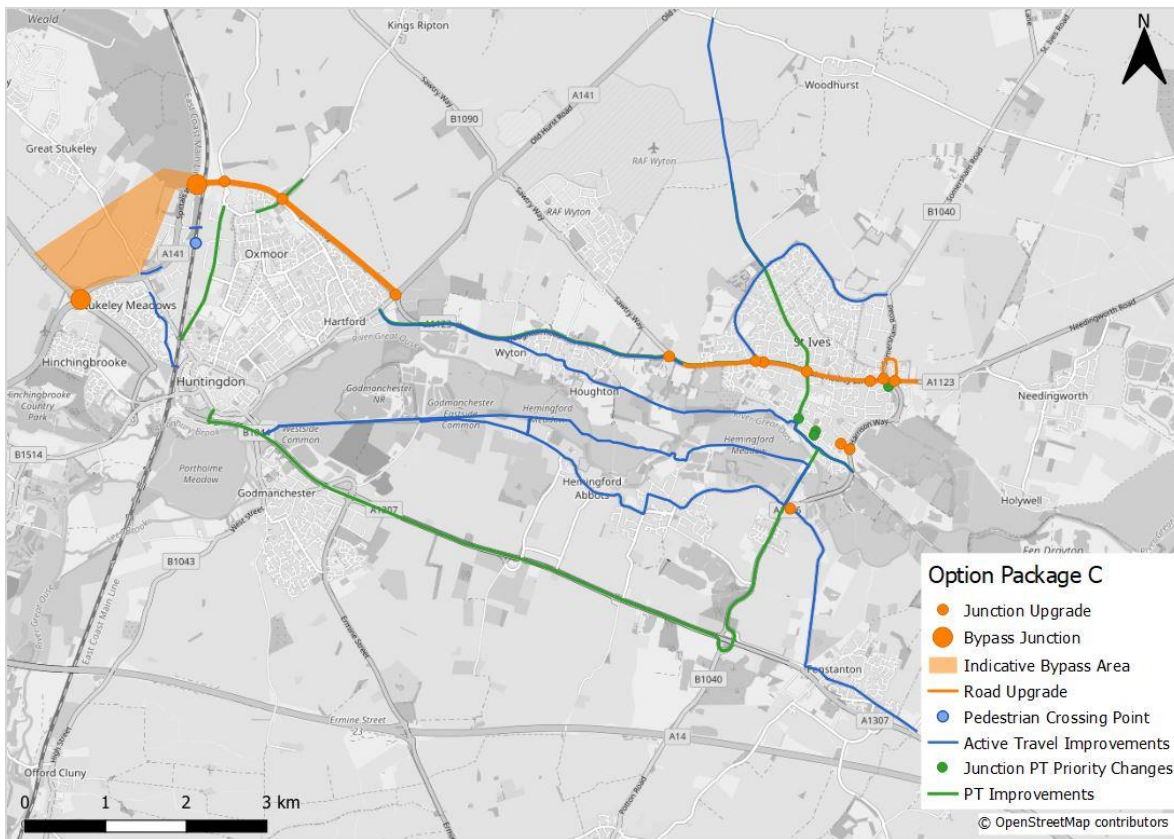


Figure 2-12 - Package C



## 2.12. Strategic Dimension Summary

The proposed upgrade to the Huntingdon and St Ives transport network aims to mitigate existing and future **problems identified** within the study area, namely:

- Highway network delays and congestion which cause rat-running through villages and town centres;
- Lack of sustainable travel alternatives in the form of bus connections and active travel infrastructure; and
- Growth and development plans and aspirations within the study area.

**Without intervention** existing problems are predicted to continue and be exacerbated by planned and aspirational growth in the area. For example, planned Local Plan growth is predicted to increase journey times between Spittals Interchange and the B1090 Sawtry Way roundabout by up to 45% in both directions in the AM and PM peak hours by 2036. Similar patterns are also predicted along other routes within St Ives including the A1123 and B1096. Increased congestion and delay on the highway network would increase carbon emissions and therefore worsen air quality. Increasingly inaccessible due to congestion and delays, the region could experience a reluctance by companies to invest in the region and therefore growth could be stifled.

Therefore, there is a **need to invest** in a holistic solution, targeting all modes, to overcome the existing problems and allow for sustainable growth without compromising the environment or the attractiveness of the region to investment.

The **objectives** for the scheme reflect the problems and the need for intervention as follows:

1. Address current congestion and delay in the study area, thus reducing journey times and improving reliability, and relieving local routes affected by traffic re-routing from the A141 and A1096/A1123;
2. Ensure sufficient transport capacity to accommodate transport demand in the study area from new growth sites in the region;
3. Contribute to improving connectivity and quality for walking and cycling along and across the study area, by incorporating appropriate provision within the scheme and/or enabling the existing A141 and St Ives transport network to better support these modes;
4. Contribute to improving bus service routing, access, and reliability across the corridor and through St Ives Town Centre; and
5. Ensure any future route of strategic public transport infrastructure is taken into consideration.

It is considered that the proposed scheme should improve the quality and connectivity of current walking and cycling networks situated in the study area. This is in line with the scheme objectives. However, active mode trips are reduced in Packages A and B due to the removal of traffic from Huntingdon and St Ives town centres, which makes short distance car journeys more appealing. This will be considered further as the business case develops to the Outline Business Case (OBC) stage, and where necessary objectives will be refined to align with wider policy objectives.

The modelling of the schemes undertaken for the SOC forecasts a decrease in the number of public transport trips as a result of the increased congestion around the St Ives Park and Ride site. At the OBC stage, further consideration will be given to the design of this part of the network in order to mitigate these forecasted impacts and reduce the disbenefit to public transport.

The **option identification, sifting and assessment** process undertaken as part of this Strategic Dimension has identified three potential scheme packages to be progressed. The following three scheme packages have been taken forward for further assessment as part of this SOC:

- **Package A** comprises of an offline bypass with no junctions other than the existing A141. In addition, there are active travel connections as well as public transport connections;
- **Package B** contains an offline bypass with connecting junctions to the existing road network along with active travel connections and public transport connections; and
- **Package C** consists of a hybrid bypass of Huntingdon with junction upgrades in St Ives. In addition, active travel connections are present as well as public transport connections.



## 3. Economic Dimension

### 3.1. Introduction

#### 3.1.1. Background

The Economic Dimension sets out the extent to which each package provides good Value for Money (VfM) and the assessments underlying this. A proportionate approach has been used to conduct an economic assessment, based on the current stage of scheme development (SOC). This has provided analysis and evidence which has continued to be developed as information has become available (Table 3-1).

**Table 3-1 - Economic Dimension Content**

Economic Dimension Content	Adherence to DfT Strategic Outline Case Guidance	Status at SOC stage
Options Appraised	<b>Longlist Appraisal</b> – assessment of the longlist of packages to a shortlist to identify the preferred package.	Outlined
Economic Narrative, and Analytical Tools and Key Assumptions	<b>Methodologies, Assumptions and Data</b> - details the methodologies, assumptions and data underpinning the transport modelling and appraisal.	Outlined
Transport Impacts of the Proposed Packages	<b>Place Based Analysis</b> – conducts a place-based analysis where the proposal has geographically focused objectives.	Outlined
Economic Impacts	<b>Wider Analysis</b> - provides useful analysis to inform the decision-making process. This could include SMART objectives.	Outlined
Value for Money	<b>Value for Money</b> - provides a robust evidence base demonstrating VfM.	Outlined
	<b>Uncertainty Analysis</b> - to understand how changes in varying factors can affect the Value for Money of the investment.	To be completed at OBC
Social Value	<b>Social Cost-Benefit Analysis of Short-List</b> - presents economic impacts associated with the intervention.	Outlined

#### 3.1.2. Huntingdon and St Ives overview

Huntingdon and St Ives are two neighbouring towns located in northwest Cambridgeshire. Both are riverside market towns to the River Great Ouse. Huntingdon has a population of 24,000 residents whereas St Ives has a smaller population of 16,000. Huntingdon railway station provides residents with a connection to London, with the most direct trains taking 45 minutes. This connection is on the East Coast Mainline (ECML) running between Edinburgh and London. Cambridgeshire's Guided Busway connects St Ives to Cambridge, where onward travel is possible from Cambridge North Station and Cambridge Station. Further details around the existing transport conditions can be found in the respective Existing Conditions Reports (ECR) for Huntingdon<sup>51</sup> and St Ives<sup>52</sup>.

Despite the public transport services in the area, the road network is subject to congestion and delay, with the A141 and St Ives town centre highlighted as experiencing significant issues, as outlined in section 2.2.

The scheme packages appraised aim to mitigate these issues and achieve the key economic goals set out by the CPCA in section 2.1.1.

<sup>51</sup> Atkins (2021) *A141 Huntingdon Northern Bypass Existing Conditions Report*

<sup>52</sup> Atkins (2021) *St Ives Transport Study Existing Conditions Report*

### 3.1.3. Structure of this case

The remainder of the Economic Dimension is set out as follows:

- Section 3.2 outlines the analytical tools and appraisal assumptions;
- Section 3.3 details the forecast transport impacts from the packages on different modes and user groups;
- Section 3.4 presents the economic impacts of the packages;
- Section 3.5 provides emerging findings from a desktop assessment of the social and environmental impacts;
- Section 3.6 provides a statement of the likely value for money for each package; and
- Section 3.7 details the next appropriate steps and further investigation into the package options as required at the OBC stage.

### 3.1.4. Assumptions

#### TAG and Green Book principles

The appraisal follows the principles detailed in the Department for Transport (DfT) guidance recently updated in August 2021, utilising the July 20201 TAG Databook, version 1.15, which itself is based on principles set out in the HM Treasury Green Book.

All monetised costs and benefits are expressed as present values (PV) in 2010 prices, discounted to 2010. This is in line with DfT and Treasury guidance.

#### Overview of economic appraisal approach

##### Costs

The costs of each package are based on the investment (capital costs), as estimated by the design teams for each element. Any relevant grants, subsidies, developer contributions or equivalent, and revenues that accrue to the public sector will be considered, if relevant, during the next stage of business case development. It is not yet certain as to who will bear all or part of the costs, so it has been assumed that all costs are attributed to Central Government at this stage of the scheme development.

These costs are outlined in section 3.2.

##### Benefits

The benefits are estimated from several sources including:

- User benefits and revenue impacts on private sector providers, assessed using Transport User Benefit Analysis (TUBA);
- Impacts from changes to the number of accidents using COBA-LT;
- Greenhouse gas impacts assessed using TUBA;
- Local air quality and noise impacts;
- Physical activity impacts using the Active Mode Appraisal Toolkit (AMATs);
- Journey quality impacts using AMATs;
- Journey time reliability;
- Wider economic impacts;
- Environmental impacts; and
- Social impacts.

##### Results

The results from different elements of the appraisal are set out in four summary tables for each scenario:

- The Transport Economic Efficiency (TEE) Table (Appendix A);
- The Public Accounts (PA) Table (Appendix B);
- The Analysis of Monetised Costs and Benefits (AMCB) Table (Appendix C); and
- The Appraisal Summary Table (AST) (Appendix D).

For each option, a benefit-cost ratio (BCR) has been calculated.

### 3.1.5. Scheme objectives

The existing problems on the transport network and the need for intervention presented in the Strategic Dimension helped define the objectives for the scheme. These objectives were developed by CPCA at the start of the study, following a review of early study work to identify the problems and challenges within the study area.

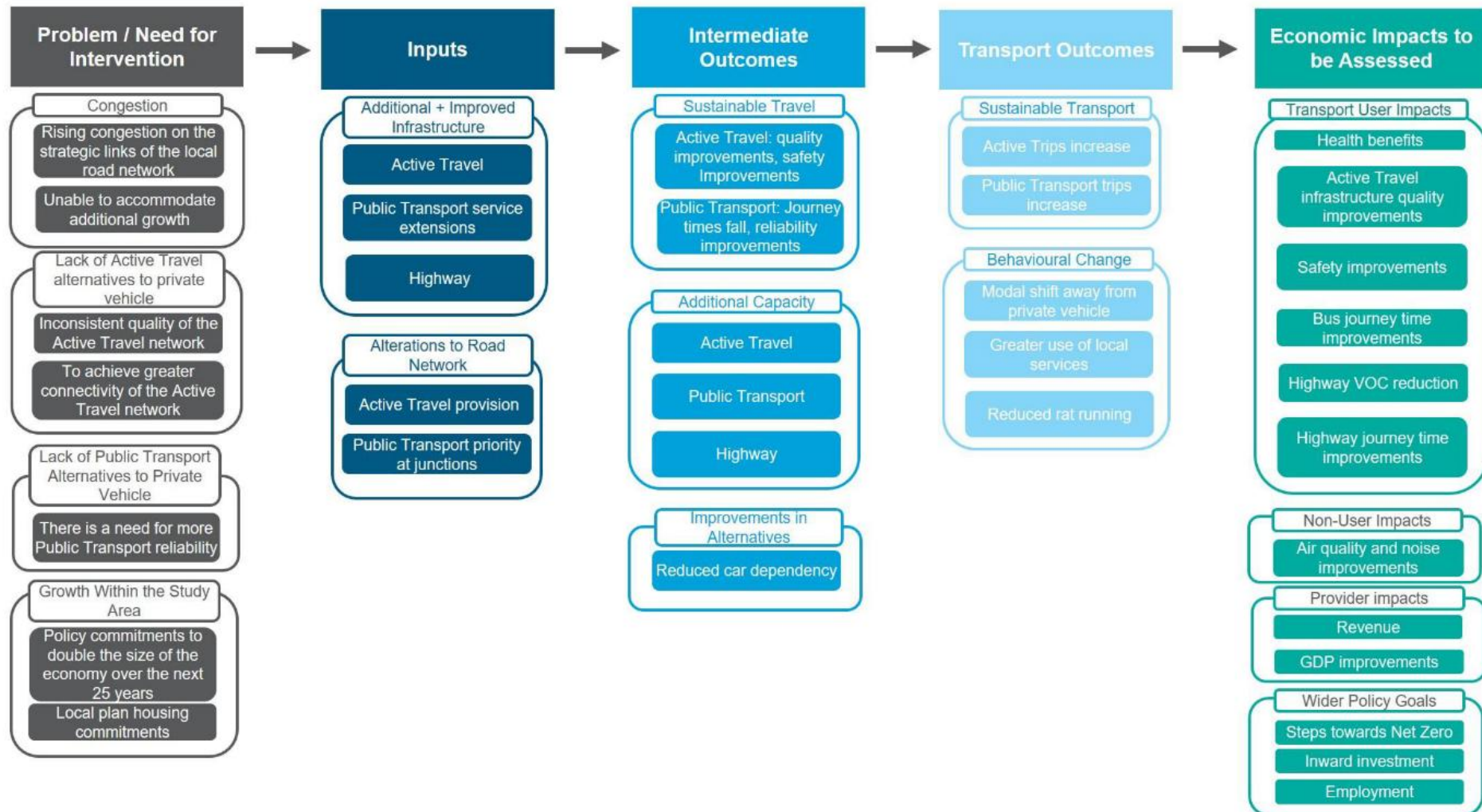
The scheme specific objectives set by CPCA are as follows:

1. Address current congestion and delay in the study area, thus reducing journey times and improving reliability, and relieving local routes affected by traffic re-routing from the A141 and A1096/A1123;
2. Ensure sufficient transport capacity to accommodate transport demand in the study area from new growth sites in the region;
3. Contribute to improving connectivity and quality for walking and cycling along and across the study area, by incorporating appropriate provision within the scheme and/or enabling the existing A141 and St Ives
4. transport network to better support these modes;
5. Contribute to improving bus service routing, access, and reliability across the corridor and through St Ives Town Centre; and
6. Ensure any future route of strategic public transport infrastructure is taken into consideration.

### 3.1.6. Logic mapping

The logic map shown in Figure 3-1 presents the initial need for intervention, proposed intervention (inputs), various outputs and the outcomes for users. From this understanding, economic impacts can be quantified or qualified in the subsequent stages of the appraisal.

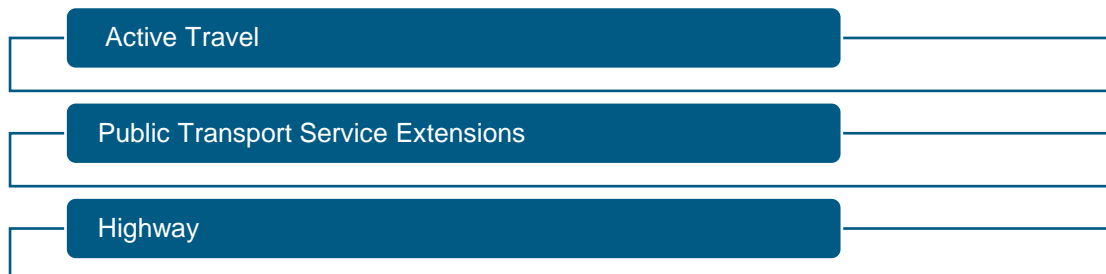
Figure 3-1 - Logic map



### 3.1.7. Transport inputs

The proposed interventions for each package are presented in section 2.11 . The following sections are in line with the Logic Map presented in Figure 3-1 and Section 3.1.6 above.

#### Additional and improved infrastructure



To accommodate planned growth in the area, investment in transport infrastructure is required to increase capacity for all users. Providing a step change in the availability and quality of active travel infrastructure in the study area will increase the viability of active travel as an alternative to private car use for short distance journeys, having benefits for local air quality and health. This will encourage more overall trips by walking and cycling and also increase the number of people using active modes to access public transport hubs.

Extending the geographical coverage of bus services will improve accessibility for users, thus increasing the number of people using public transport, supplemented by the improvements to the active travel network which facilitate greater accessibility to the public transport network.

It is considered that improvements to highway infrastructure will reduce congestion on the existing A141, making local journeys on the current network quicker and more reliable, whilst offering a higher quality, faster and reliable connection for more strategic journeys. This will reduce rat running through the town centres of Huntingdon and St Ives and local villages, which is anticipated to make these areas safer for pedestrians and cyclists.

#### Reallocation of road space



Optimising junction signal timings on the highway network will improve journey times and reliability for both public transport and private car. Targetting improvements to enable public transport priority at key junctions will help to make public transport options more attractive for potential users. It is essential for public transport to remain attractive in comparison to use of private cars to ensure the sustainability of future growth.

### 3.1.8. Options appraised

The option shortlisting process outlined in section 2.10 resulted in the identification of three packages for assessment in the SOC. The contents of each package are outlined in Table 3-2.

**Table 3-2 - Options appraised in the SOC**

Package Name	Description
Package A	Offline bypass with no junctions other than the existing A141. In addition, there are active travel connections as well as public transport connections.
Package B	Offline bypass with connecting junctions to the existing road network along with active travel connections and public transport connections.
Package C	Hybrid bypass of Huntingdon with junction upgrades in St Ives. In addition, active travel connections are present as well as public transport connections.

## 3.2. Analytical tools and key assumptions

### 3.2.1. Key principles

The appraisal follows the principles set out in the Department for Transport (DfT) guidance TAG as updated in August 2021, which itself is based on principles set out by the Treasury in its Green Book.

All monetised costs and benefits are expressed as present values (PV) in 2010 prices, discounted to 2010. This is in line with DfT and Treasury guidance.

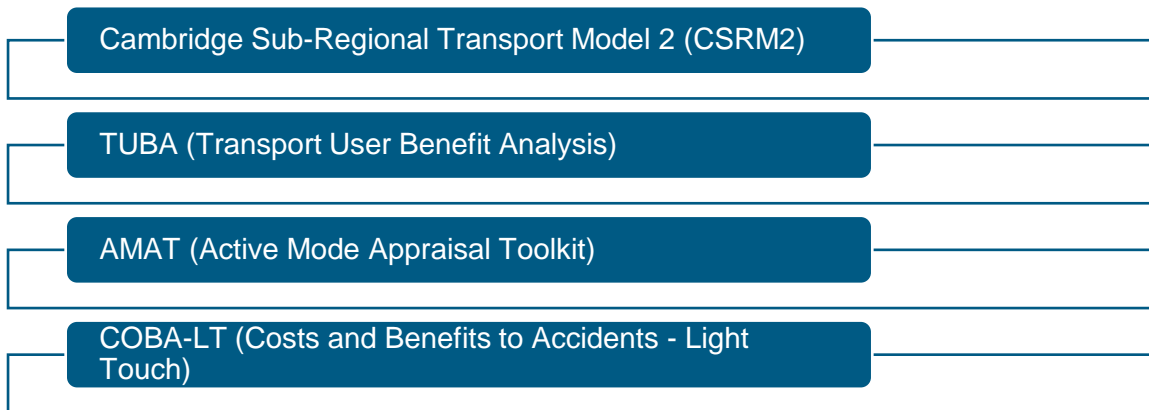
This section categorises the economic impacts and sets out the transport modelling and economic appraisal tools used to quantify impacts from the proposed package options. The overall methodology is based on the following key considerations and principles:

- **Outcome-led scoping:** Scope of the economic impacts and selection of techniques are based on the transport outcomes outlined in the economic narrative. This forms the basis for assessment of Level 1, Level 2, and Level 3 impacts;
- **Selection of appropriate transport and economic modelling tools.** The existing Cambridge Sub Regional Transport Model 2 (CSRM2) was selected for the following reasons:
  - It has the ability to model changes to trip making decisions across relevant modes;
  - The model extent covers the full geographic area of interest; and
  - The model was developed in accordance with TAG guidance and has been successfully applied to develop transport evidence and support business cases unlocking schemes in the region.
- **Derivation of scheme costs:** Scheme costs were estimated with a systematic assessment of programme risks and project-level optimism bias, in accordance with TAG;
- **Value for money assessment following the latest DfT guidelines<sup>53</sup>:** A progressive approach was followed, taking on board quantified impacts with varying analytical certainty as well as qualified impacts;
- **Collation of the Appraisal Summary Table (AST), Transport Economic Efficiency (TEE) Table, and tables:** for supporting analysis; and
- **Sensitivity analysis:** to complete the overall VfM assessment.

<sup>53</sup> <sup>53</sup> DfT Value for money Framework, July 2017. <https://www.gov.uk/government/publications/dft-value-for-money-framework>



Based on these principles, the modelling and analytical tools used in this Economic Dimension comprise:



### 3.2.2. TAG categorisation of economic impacts

VfM has been assessed in line with TAG. Table 3-3 sets out a comprehensive range of economic impacts, from transport infrastructure investment in line with TAG guidance and the latest DfT VfM framework. The economic appraisal scope for this business case is therefore founded on this basis, but refined as shown in Table 3-3 to focus on the most relevant benefit streams reflecting the scheme objectives, outcomes sought and key economic impacts highlighted in the logic map in Figure 3-1.

**Table 3-3 - Potential economic impacts**

Potential Economic Impacts		Assessment Methodology
User and private sector providers impacts	Highway Journey Time and Vehicle Operating Costs (VOC) Savings	Monetised
	Public Transport User Benefits – Time Savings	Monetised
	Active Mode Users – Time Savings	Monetised
	Active Mode users – Journey Quality	Monetised
	Impacts on private sector providers (essentially public transport operators)	Monetised
	Physical Activity Impacts i.e., absenteeism & avoidance of premature deaths	Monetised
	Disruption impacts during construction and maintenance	Qualitatively
Non-user impacts	Local air quality and noise impacts	Qualitatively
	Greenhouse Gas Impacts	Monetised
	Accident Cost Savings	Monetised
Journey reliability / resilience		Qualitatively
Wider economic impacts		Qualitatively
Induced housing or commercial supply - dependent development		Qualitatively
Costs		Monetised

### 3.2.3. Transport modelling

The existing CSRM2 is an appropriate model, being a strategic multi-modal model that encompasses all modes that are likely to be influenced by the proposed interventions. The CSRM2 is an evidence-based multi-modal transport model. Further information is provided in the Highway Model Validation Report<sup>54</sup>, the Model Development and Validation Report<sup>55</sup> and the Forecasting Report<sup>56</sup>.

The CSRM2 is a proven tool, having been successfully applied to other similar proposals such as the Waterbeach to Cambridge Public Transport Study and was readily available to support the SOC. It is suitable to capture changes in trip making across different modes as a result of the proposed schemes. It has a wide geographical extent that covers the Cambridgeshire region and areas further afield to assess end to end impacts.

The CSRM2 F-Series growth uses a forecast Baseline scenario, with a set of land use assumptions that were developed by CCC in 2021, aligning with the latest Preferred Option for the future Greater Cambridge Shared Planning Local Plan (for Cambridge City and South Cambridgeshire), and with the existing committed Local Plans for Huntingdonshire and East Cambridgeshire. Workers and population forecasts follow the distribution of employment and dwellings expected from these Local Plans.

The CSRM2 has been used for the SOC to model and appraise the package options of interventions at a programme level. As the individual schemes progress towards delivery, it is expected that more detailed assessment and appraisal will be required and, if appropriate, localised junction modelling will be utilised.

Figure 3-2 shows the sectoring system employed. Areas not covered by the sectors were modelled in progressively lesser levels of detail further away from the ADM.

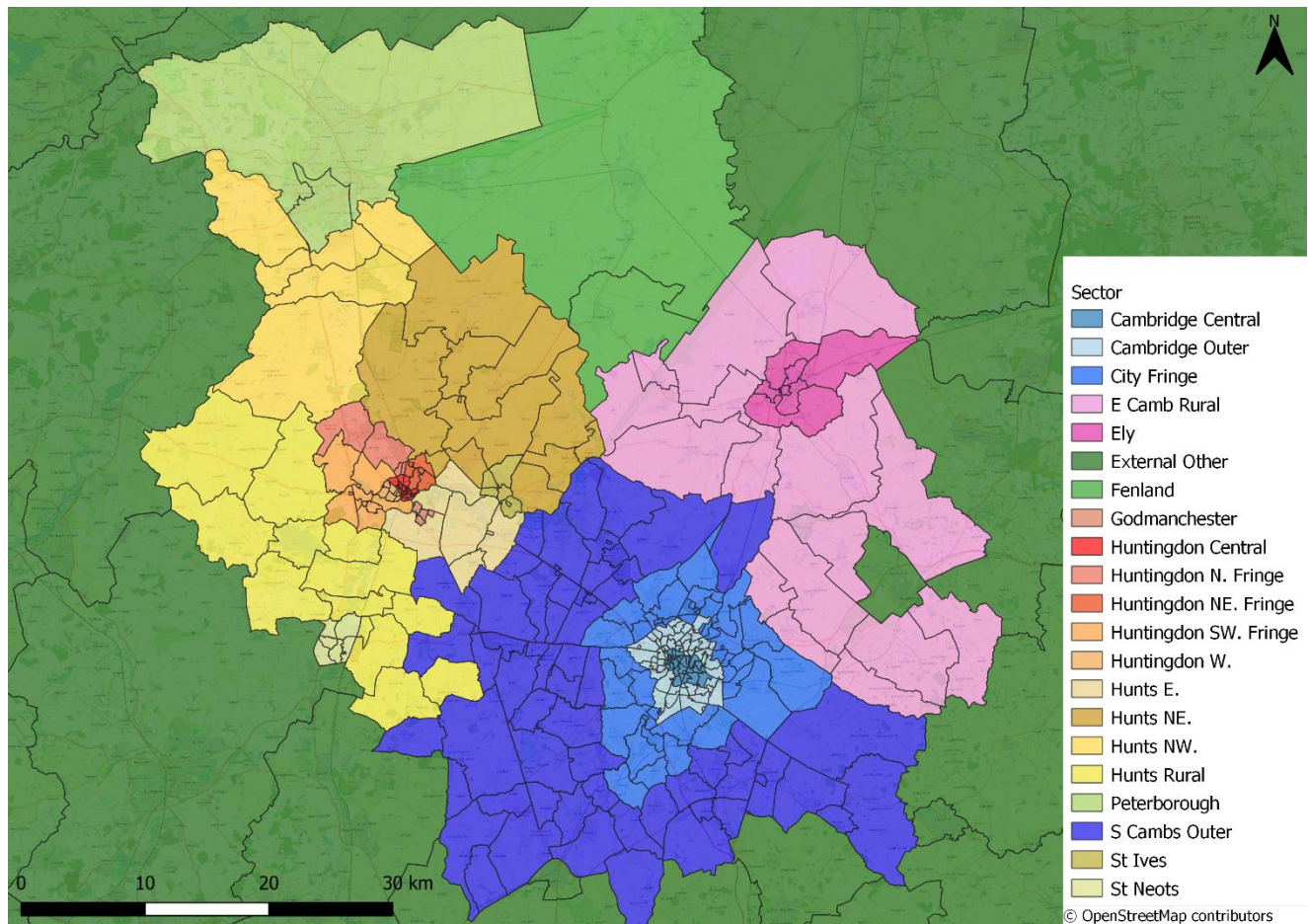
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<sup>54</sup> Atkins (2021) *F-Series Highway Local Model Validation Report*.

<sup>55</sup> Atkins (2021) *CSRM2 F-Series Transport Demand and Public Transport Model Development and Validation Report*.

<sup>56</sup> Atkins (2021) *CSRM2 F-Series Model Forecasting Report*.

Figure 3-2 - Sector system used for scheme modelling



#### Modelled time periods and conversion factors

Highway assignment average peak hours as follows:

- AM peak average hour (07:00-10:00);
- Inter peak average hour (10:00-16:00); and
- PM peak average hour (16:00-19:00).

The CSRM2 demand model outputs (used for all modes except highway) represent three-hour morning and evening peak periods and a six-hour inter-peak period. The SATURN highway assignment model reports single hours. Conversion factors to covert to modelled periods are included within the model and these factors have been adopted in the TUBA assessment to scale the single hour highway assignment model outputs to peak periods. These factors are shown in Table 3-4.

Table 3-4 - CSRM2 Hour to time period conversion factors

Time period	Factor
Morning peak period	2.50000
Inter-peak period	5.98802
Evening peak period	2.70270

#### Forecast years and Annualisation

The model forecast years used for the scheme modelling and appraisal from the CSRM2 F-Series Baseline were 2026 and 2041. Annual impacts were calculated for each modelled year, using an annualisation factor of 253 to convert the average weekday modelled values to a representation of the number of average weekdays

within a calendar year. Benefits for non-modelled years were calculated by linear interpolation between the modelled years of 2026 and 2041, and flat-line extrapolation beyond the final modelled year. However, the impact of the discounting on estimated benefits means that the benefit 'curve' declines towards the end of the appraisal period. The 'rule of a half' was applied as appropriate.

### 3.2.4. Economic appraisal approach

The economic appraisal was undertaken following the DfT's TAG guidance. Its scope covers scheme costs, monetised and non-monetised (dis)benefits of individual options, in comparison to a reference scenario without interventions. The logic map in Figure 3-1 sets out the range of economic impacts to be assessed.

The remainder of this subsection covers four key aspects in relation to the methodology for undertaking the economic appraisal:

- Appraisal period for different types of intervention;
- Cost estimation and derivation of the Present Value of Costs (PVC);
- Modelling strategy and alignment with the impacts to capture; and
- Monetising the impact of the changes.

#### Appraisal period

Transport impacts from the packages were monetised across either a 20 or 60-year appraisal period in line with TAG Unit A1.1 – Cost Benefit Analysis. Active travel journey quality and physical activity impacts were all appraised over a 20-year period in-line with the expected lifespan of these infrastructure elements. All other impacts were appraised over a 60-year period. A sensitivity test has been undertaken to present the benefits that would accrue should a 60-year appraisal period be used for all elements of the scheme, assuming that no increased renewal costs were required. The assumed scheme opening year was 2026 for all packages.

#### Cost estimation – PVC

Derivation of the Present Value of Costs (PVC) follows the guidance in TAG Unit A1.2 – Scheme Costs. All costs in this case have been treated as per TAG guidance. Specifically, these include:

- Conversion of monetary figures to 2010 prices and values;
- Rate of Inflation (Assumed to be 2.2%);
- A risk allowance of 10%;
- Optimism Bias (OB) adjustment:
  - Highway and active travel work 46%;
  - Bridges 56%; and
- Market price adjustment.

It is worth noting that ongoing maintenance and renewal costs have been excluded from the cost estimation thus far. This will be assessed as the business case develops.

This section outlines how the PVC has been derived. Further details of costing assumptions, funding and derivation of outturn costs are provided in section 4.2. The estimation of costs for the proposed interventions comprises investment / capital costs (both from public sector and transport operators). Grants, subsidies, developer contributions and revenue to the public sector will be considered at the next stage of business case development.

#### Investment costs

For physical interventions, capital cost estimates were prepared using bottom-up estimates on a Bill of Materials, based on the concept scheme designs.

Construction costs were estimated for individual schemes in present day prices (2021 Q3). An allowance for design and project management was included as a percentage of this cost. The Financial Dimension provides further detail of how the cost estimates were derived (section 4.2).

A risk allowance of 10% of the infrastructure costs was included in the cost estimation. For Optimism Bias, a 46% uplift was applied to the highway and active travel works in accordance with the guidance for a Stage 1 project. For the bridges and underpasses associated with the project, an uplift of 56% was applied. Due to the early stage of scheme development, a quantitative risk assessment (QRA) has not been undertaken. However,

it is acknowledged that there is likely to be a risk around the level of infrastructure cost. Whilst this could not be considered at SOC stage, an allowance of 10% has been included to ensure robustness of the cost estimation process, based upon professional judgement and prior experience of schemes at a similar level of development. A more detailed quantification of the risks will be conducted at OBC stage.

### **Operating and Maintenance costs**

Operating and maintenance costs have been excluded from cost estimates due to the early stage of scheme development. The inclusion of these may reduce the scheme VfM, however it is possible that the operating costs can be offset by private operator revenues once the issues identified at St Ives Park and Ride at this stage of scheme development have been addressed. At OBC, work will be undertaken to calculate operating and maintenance costs for the scheme.

### **Modelling strategy**

Table 3-5 summarises the modelling strategies adopted, with limitations and scope for further improvement. To model and appraise the significant number of interventions at a programme level, a standard modelling strategy has been adopted for each of the types of the physical changes / inputs shown in the second column of the Logic Map in Figure 3-1. This ensures consistency for similar interventions across different corridors and provides a reasonable simplification in the time window available



**Table 3-5 - Modelling strategy and limitations for different intervention types**

Intervention Type		Modelling Strategy	Limitations
Additional and Improve Infrastructure	Active Travel	A number of additional active travel links have been added in accordance with the active travel improvements proposed as part of all three packages.  Signal timings at the busway/Harrison Way junction have been changed to reduce delay to Harrison Way traffic, representing a pedestrian bridge at the junction and fewer calls of road crossing signals.	The land use scenario of the model does not include all planned developments in the study area, and therefore some active travel routes provided by the packages could not be represented in the model as they would provide no benefit – thus not fully capturing the benefits of the active travel infrastructure in the packages.  Therefore, these limitations may underestimate the benefits delivered due to limited representation of active travel improvements within the model.
	Public Transport Service Extensions	In all three packages the guided busway services have been extended so that some run along the A1307 into Huntingdon.	There are some limitations with representing bus services in the model e.g. stop locations are not accurately represented in rural areas where detail is sparse. However, these limitations apply in both the Do Minimum and the Do Something, and stops are ensured to be sensibly accessible from the zone they serve.  This is likely to have a limited impact on the economic benefits.
	Highway	A bypass is added to the network in all three packages. In each package the bypass is modelled as a dual carriageway in order to capture the maximum benefit provided by the alternative route, however the length and number of junctions varies. Package A has a full-length (Huntingdon and St Ives bypass) with connections to strategic roads, Package B has a full-length bypass with connections to strategic and local roads and finally, Package C has a shorter, Huntingdon only bypass, and includes signal optimisation and upgrades at several junctions in St Ives.	Detailed junction designs have not been tested through local junction modelling, and instead layouts have been proposed through professional judgement to ensure no unreasonable delays are caused by the junction.  The model is unable to represent variable signal timings, hence the modelling of signal improvements may not accurately represent the scheme itself.  The benefits delivered from highway interventions within the packages could vary as a result of



Intervention Type		Modelling Strategy	Limitations
			representation within the model and professional judgement.
Alterations to the Road Network	Active Travel Provision	Improvements to the classifications of active travel provision e.g. on-road cycle lanes and segregated cycle lanes. This is following the propensity to cycle modelling techniques.	<p>Cycle speed in CSRM2 is fixed at 12kph so as the infrastructure has not changed length, benefits from active travel provision are only captured through mode shift to cycle, not journey time or quality improvement.</p> <p>There will be no journey benefit captured for users of existing infrastructure which has been upgraded due to the fixed speed. However, new infrastructure could still produce journey time benefit should this open up a new shorter link than the current network.</p>
	Reducing Rat Running	<p>Access from Meadow Lane onto Harrison Way has been made bus-only in the AM and PM peak periods.</p> <p>In Package C the right-turn from the A1123 into Needingworth Road has been banned.</p>	Model detail in St Ives town centre is sparse, and so the full impact of rat-running and congestion in the area is not accurately represented. Hence, the benefit delivered by reducing rat running may not be fully demonstrated within the model. Consequently, these limitations will result in under estimation of benefits delivered by reducing rat running.

## Active mode appraisal

The DfT's Active Mode Appraisal Toolkit (AMAT) has been used to estimate the key economic impacts of cycling and walking interventions proposed in each scheme package. The appraisal was conducted on a measure-by-measure basis, and it should be noted that each measure was split into multiple sections and assessed rather than as one complete route, as the levels of infrastructure provision varied between measures. The AMAT has been applied to capture the impacts additional to those identified in TUBA.

To calculate demand, the Propensity to Cycle Toolkit (PCT) was used to provide link-by-link travel cycle flows. From this, average flows were calculated, to avoid double counting, to represent cycle flows on the selected links. As the PCT only accounts for work related trips, the flows were scaled up in order to represent all trip purposes, based on the proportion of work-related cycle trips made according to the 2018 National Travel Surveys.

To estimate pedestrian flows, table 0409 from the 2018 National Travel Survey<sup>57</sup> was used. The total cycle flows (once all-purpose trips are accounted for) were scaled as it was found that on average, across all journey purposes, 6% of all active mode trips were cycle trips and 94% were walking trips<sup>58</sup>. As such, the pedestrian flows were scaled from the PCT cycle flow estimation accordingly and then sense checked against professional judgement to ensure flow levels were reasonable. Where some doubt was expressed about the scale of the walking flows, the scaling was removed and a conservative estimate adopted, whereby the walking flows were maintained at an equal level to the cycling flows.

The with scheme cycling flows were calculated using the Logit model and coefficients presented in TAG unit A5.1 – Active Mode Appraisal<sup>59</sup>, supplemented by National Travel Survey and Census Data for the Local Authority area within which the schemes are situated.

The average proportion of a trip which will use the scheme infrastructure was calculated as the scheme length divided by the average length of the cycle or walking journey according to the National Travel Survey. These averages were 4.4km and 1.08km for cycling and walking trips in the East of England.

However, the AMATs have not been used to reflect growth conservative assessment as modelled links have been used to analyse the impact of development growth within the study area.

The results of the AMATs are presented in subsequent sections, refer to section 3.4.2.

## Monetising impacts – overall approach

To monetise the (dis)benefits from the proposed interventions, a range of tools have been used including CSRM2, TUBA and COBA-LT (Table 3-6). A qualitative review, akin to a scoping stage was undertaken to explore potential impacts on non-TEE benefits, such as air quality and journey reliability and identify areas for further assessment at the OBC stage. At this stage of scheme development, Level 2 benefits have not been incorporated into the appraisal.

More information on quantifying individual economic impacts is outlined in subsequent sections.

**Table 3-6 - Tools used to calculate benefits**

Potential Economic Impacts	Appraisal Tool
User and private sector providers impacts	Highway Journey Time and VOC Savings
	Public Transport User Benefits – Time Savings
	Active Mode Users – Time Savings
	Active Mode users – Journey Quality
	Impacts on private sector providers (essentially public transport operators)
	TUBA

<sup>57</sup> Average number of trips (trip rates) by purpose and main mode

<sup>58</sup> Atkins (2020) *Active Modes Appraisal Technical Note*, page 3.

<sup>59</sup> DfT (2021) [TAG Unit A4.1 – Active Mode Appraisal](#)

Potential Economic Impacts	Appraisal Tool
Physical Activity Impacts i.e. absenteeism & Avoidance of Premature Deaths	AMAT
Disruption impacts during construction and maintenance	Qualitative
Revenue to private providers	TUBA
Greenhouse gas impacts	TUBA
Reductions in accidents	COBA-LT
Journey reliability / resilience	Qualitative
Wider Economic Impacts	Qualitative
Costs	Bespoke cost model based on CPCA assumptions and cost estimates

### 3.3. Impacts of the proposed packages

This Chapter presents the identified overall impacts of the packages in accordance with the objectives detailed in section 2.5 and in section 3.1.5.

#### 3.3.1. Address current congestion

This section details how the scheme packages address current congestion concerns within the study area to reduce journey times and improve reliability, and relieve local routes affected by traffic re-routing from the A141 and A1096/A1123.

##### Traffic patterns

The changes in traffic patterns across all packages in both the AM and PM are aligned to the expected and planned outcomes from the proposed interventions. There is a small variance between the peak hours due to the tidal nature of commuting trips. Overall, the packages reduce journey times, improve reliability and reduce rat running due to re-routing from and reduction in traffic volumes on the A141 and A1096/A1123. It should be noted that there is no increase in traffic flow on the A1123 to the east of St Ives in any package suggesting no additional traffic is routing through the corridor. However, this varies depending on the package option as detailed below.

##### Package A – Bypass

The bypass option in Package A presents redistribution of traffic from the old A141 and A1096/A1123 onto the proposed new bypass. However, drivers are sometimes required to travel further to access the bypass in Package A due to the limited number of junctions and therefore overall VOC is not reduced.

##### Package B - Bypass

The bypass option in Package B presents the most significant redistribution of traffic from the old A141 and A1096/A1123 onto the proposed new bypass. The variation in traffic pattern is a result of a greater number of junctions onto the proposed bypass included in Package B, which enables more connectivity to the bypass from the local area. Package B is the only bypass option that reduces VOCs and subsequent vehicle mileage. This is as a result of drivers being required to travel further to access the bypass in Package A and the minimal intervention included within Package C.

##### Package C - Bypass

The bypass option in Package C removes some traffic from the western section of the A141, however increases flow levels on the A1123 through St Ives. As Package C presents the smallest bypass intervention, this package does not provide any benefit to VOC.

## All Packages – Active Travel and Public Transport

As outlined in the sections below, the active travel and public transport interventions are consistent across all three packages, increasing the viability of alternatives to private car use, hence driving a reduction in car dependency within the study area. One of several key areas where car dependency is expected to fall is when accessing the town centre areas. Car dependency is likely to decrease between St Ives and Huntingdon due to the improvement in quality and connectivity of the active travel network, as well as the Cambridgeshire Guided Busway service extension, both creating an improved environment for non-car travel.

### Summary

Overall, the bypass option in Package B presents the most significant redistribution of traffic from the old A141 and A1096/A1123 onto the proposed new bypass. Although the bypass route is the same in both Package A and B, the variation in traffic patterns is a result of a greater number of junctions included in Package B, which enables more connectivity to the local area.

As a result of the attractiveness of the new bypass and decongestion of the existing A141 and A1123 routes, all three packages reduce the volume of traffic routing through Huntingdon and St Ives town centres, with the most significant reduction occurring in Package B. This presents an opportunity to reallocate road space to sustainable travel in these areas and will be explored further at the OBC stage. This will seek to maximise the use of sustainable travel in the study area and to discourage additional trips by vehicle as a result of the increased capacity network.

## Delay and journey time (2041) changes

### Packages A and B

The greatest reduction in delay and improvement to overall journey time occurs in both Packages A and B approaching the A1514/A141/A1123 junction and on the A141 to the north of Huntingdon. There are also delay reductions present along the A1123. However, both packages see increases in delay where the proposed bypass connects to the A1096. The area of this connection has been identified for further refinement at OBC stage to reduce these impacts.

Both packages A and B show a reduction in delays on the A1096 around the Meadow Lane junction and Guided Busway crossing. The general decongestion of the town centre areas also leads to a reduction in delay for these locations. Package B performs most strongly in this regard, given the improved connectivity of the bypass enabling more users to access the new link and move away from the existing road network.

Congestion still occurs in all three packages, but to a much lower extent in Packages A and B. The addition of extra junctions with the bypass in Package B does not cause increased congestion on the network, as the volume of traffic using the junctions remains low enough as to not overload the existing network. In contrast, a reduction in delay, compared to Package A, is observed at the A141/B1090 at Wyton, as the traffic is less constrained to using that single junction to access the bypass.

### Package C

Package C presents the highest-level of congestion compared to Packages A and B. Package C also presents an increase in delay on the A1123 and A141 to the north, but reductions do occur around the Lancaster Way area of the A141. Package C also continues to present a reduction in delays on the A1096 around the Meadow Lane junction and Guided Busway crossing.

### Summary

There is a limited overall increase in total traffic volume as a result of the packages and therefore journey time impacts of any increased traffic are minimal. The general transfer of traffic from the existing network to the new bypass in Packages A and B will also serve to improve journey times on current routes, even where no physical interventions are proposed. As a result, it is expected that overall journey times will improve as a result of Packages A and B, with less of a positive impact being offered by Package C. Figure 3-3 presents the journey time routes considered through Huntingdon and St Ives and Figure 3-4 and Figure 3-5 show the results of the analysis.

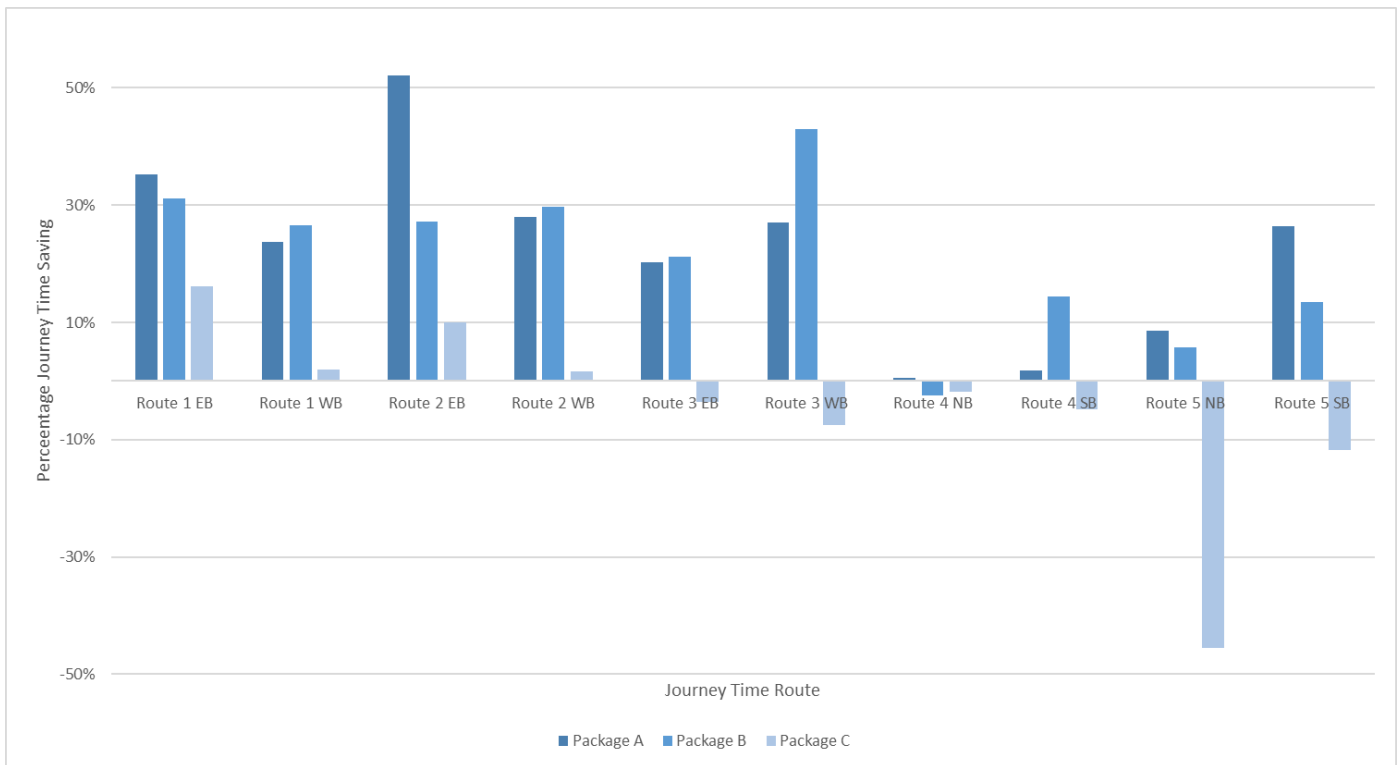
It should be noted that journey times associated with the new developments within the study area are not modelled as of yet, therefore identification of benefits is restricted. To assess the impact, sample routes have been chosen to give a representation of 'typical' trips made within the area.

**Journey Time Routes**

- 1: Spittals-Old Hurst
- 2: Spittals-Needlingworth
- 3: Huntingdon Tesco-Ramsey Rd
- 4: St Ives-Pidley Sheep Ln
- 5: RAF Wyton-A1307



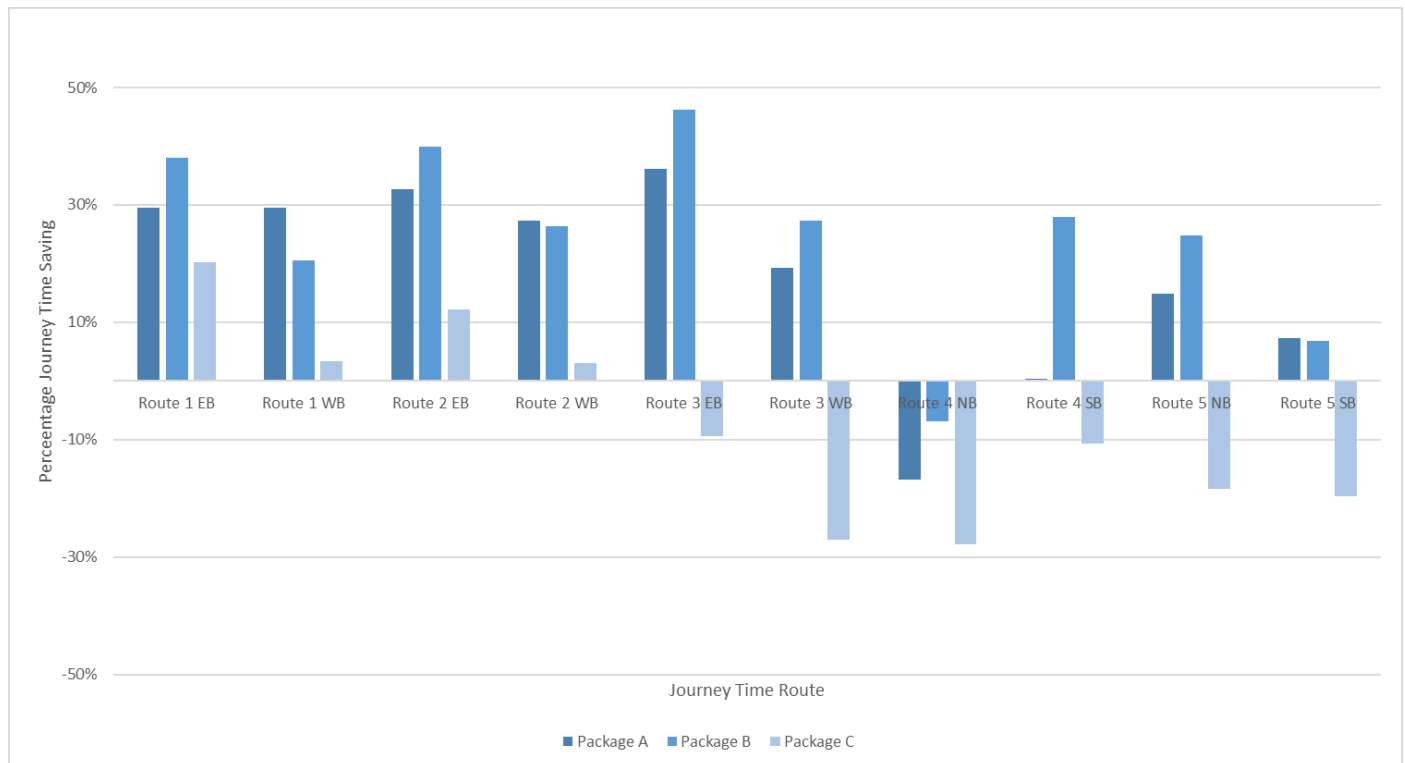
**Figure 3-4 - AM peak journey time improvements (2041)**



The greatest journey time improvements in the AM peak hour occurs in Package A followed by Package B and Package C. The greatest improvement occurs on the Route 2 eastbound in Package A, with improvements exceeding 50% (Figure 3-3 and Figure 3-4). The greatest negative journey time improvement occurs in Package C on Route 5 northbound (Figure 3-3 and Figure 3-4). The general trend is that Package B offers the same or greater journey time improvements as a result of its additional connectivity when compared to Package A and both of these packages significantly outperform Package C (Figure 3-4).



**Figure 3-5 - PM peak journey time improvements (2041)**



In the PM peak hour, the greatest journey time improvement remains in Package B of over 40% for Route 3 eastbound, again followed by Package A and Package C (Figure 3-3 and Figure 3-5). The greatest disbenefits occur in Package C on both Route 3 westbound and Route 4 northbound. Package C presents the greatest disbenefit in both the AM and PM peak across all packages (Figure 3-3 and Figure 3-5).

Overall, journey times are expected to improve as a result of the bypass implemented across all three packages, both as a result of the new infrastructure itself providing a faster link, but also through the subsequent impacts of traffic re-routing from the existing road network, reducing delay and offering improved journey times to those travelling along current routes (Figure 3-5).

### Modal shift

#### Packages A and B

Packages A and B experience little to no modal shift away from private vehicles. The marginal benefits in terms of highway capacity from the larger bypass options exceed the marginal benefits in sustainable travel connectivity, which limits the modal shift. However, there is an observed increase in the use of rail. This is due to the new bus service proposed, utilising the A1096 and A1307, providing a faster and more direct route to connect St Ives with Huntingdon Rail Station, in turn improving access by public transport. In addition, the decongestion of the Huntingdon town centre area enables easier access to the rail station by car and active travel.

#### Package C

A modal shift from private car use is identified in Package C, as private vehicle use decreases by 300 trips per day across the network. This is due, in part, to the marginal benefits in sustainable travel connectivity being greater than the benefits to highway capacity offered from the smaller bypass option within Huntingdon, but also the way in which Package C provides an improvement around Huntingdon which pushes more traffic towards the less significant improvements in St Ives. This in turn causes increased congestion and delay within St Ives, disincentivising car travel.

## Summary

Modal shift across all packages is minimal and thus the points above reiterate the need for the next stage of the scheme development to look at the potential to further reallocate road space towards sustainable travel.

### Rat running

There are two areas used as examples of perceived rat runs within the study area. These are between Sawtry and St Ives, to represent a route that could rat-run through Kings Ripton and Abbots Ripton, and between Wyton and Fenstanton, to represent a route that could rat-run through St Ives town centre.

### Packages A and B

Packages A and B are forecast to significantly reduce rat running for journeys between Sawtry and St Ives. Without the scheme, vehicles would leave the A1 at Sawtry and then travel through Kings Ripton and Abbots Ripton to reach St Ives. However, Packages A and B forecast up to 100% of users switching routes and instead remaining on the A1 and then using the new bypass.

### Package C

Package C is forecast to reduce rat running on the same route, but to a lesser extent than Package A and B, with only 25% of journeys from Sawtry to St Ives forecast to re-route to the new bypass.

## Summary

Overall, there is a reduction in rat running within the study area and re-routing of traffic from town centres out to the various bypass options. There is no evidence of wider traffic re-routing from outside the study area to within it.

Without the scheme, vehicles with trips originating in Wyton & Houghton and terminating in Fenstanton travel via St Ives, often using the town centre network rather than remaining on the A1123 and A1096. However, due to the junction improvements in Packages A and B, although less so in Package C, rat running is reduced through St Ives town centre in the AM and PM peak. Instead, users are forecast to either remain on the A1123 and A1096 or indeed switch routes to travel to Fenstanton via Huntingdon and the A1307 (as a result of the scheme, congestion in Huntingdon is expected to decrease) avoiding the St Ives network altogether. Shorter distance trips originating in St Ives and heading to the A1307 would remain on the A1123 and A1096.

It is important to note that there is no increase in the volume of traffic along the A1123 to the east of the study area, which suggests that no additional traffic is being drawn to the corridor.

This analysis shows that the three scheme packages offer a significant reduction in rat running through Huntingdon and St Ives Town Centres. Noting that Packages A and B offer better benefits than Package C. Package C's rat running benefit is reduced due to the nature of the bypass, where this does assist in routing around Huntingdon, but in turn funnels greater traffic through St Ives.

## Summary

Overall, Packages A and B both perform strongly against the objective of addressing the current congestion on the network, with reduced level of delay, improved journey times and reductions in rat running. Package C does offer some improvements in this area, but to a much lesser extent.

The additional connectivity offered in Package B enables this package to perform the strongest in this area, by enabling greater use of the bypass, providing greater second-order benefits of decongestion in other areas for those users remaining on the existing network.

### 3.3.2. Capacity

This section details how the option packages aim to ensure sufficient transport capacity is provided to accommodate transport demand within the study area from new growth sites in the region.

### Active travel

Several measures have been introduced to increase the active travel capacity on the network, which span evenly across the study area (Figure 3 -6). Active travel connections have been enhanced within the built-up areas of Huntingdon and St Ives. Connectivity to new developments, to the north of the study area will be provided once the new developments are built out. Measures will encourage active travel trips by providing easier and more access into Huntingdon town centre for leisure and employment and more direct connections between the northern residential areas of Huntingdon and the employment areas adjacent to the existing A141.

These improvements are further supported by active travel improvements linking Huntingdon and St Ives. Two routes are included to the north of the River Great Ouse, along the A1123 and The Thicket, connecting St Ives and Hartford. There are two routes south of the river which run through Hemingford Grey, Hemingford Abbots, Godmanchester and then into Huntingdon.

Further active travel improvements are also proposed in St Ives. These upgrade Old Ramsey Road, providing a connection to Old Hurst, as well as a circular route via Hill Rise and along Marley Road to the Somersham Road roundabout. The final improvement to active travel connectivity is extending the new cycle path running alongside the A1307 through Fenstanton, along Low Road and into St Ives to connect to the Cambridgeshire Guided Busway. With these proposed measures in place, it is expected that there will be a large benefit in amount of active travel provision provided in the area, further encouraging the use of journey making by active modes.

### Public transport

New services and/or rerouting options are proposed to gain additional public transport provision within the study area (Figure 3-7). Three extensions or amendments of current guided busway services are proposed. One heading to Huntingdon via the A1307, a second heading to Huntingdon via the A1123 and a third route heading up Ramsey Road, Old Ramsey Road and through to Old Hurst. There are also public transport improvements suggested on St Peters Road on top of opening the old Sapley Road / A141 connection for public transport use only. This would provide a more direct route into Huntingdon town centre. The connection via old Sapley Road and to Old Hurst are only considered if development to the north of Huntingdon and St Ives commences. These options have not been tested in the appraisal at this stage.

These measures, alongside several junction changes, should give public transport priority and produce moderate benefits in terms of additional public transport provision and subsequent reallocation of road space away from private vehicles to public transport services.

**Figure 3 -6 - Proposed active travel improvements**





Figure 3-7 - Proposed public transport interventions



### Highway journeys

All three packages offer additional highway capacity for private and goods vehicles through the proposed bypass intervention, albeit to a varying extent. The true extent of the additional capacity will not be realised until it is finalised as to whether the bypass will be a single or dualled carriageway, however this will not be determined until the business case is developed further.

It is worth noting that a reduction of private vehicles within the two centres of Huntingdon and St Ives is forecast as a result of implementing the bypass. This is caused by the bypass taking trips away from the existing transport network, enabling trips currently travelling through the town centres, but not accessing these areas, to use more strategic links outside the town centre network (see section 3.3.1). This presents the opportunity for further reallocation of the road space in favour of active travel and public transport services, which will be explored further during the next stages of business case development.

### Bypass use

A dual carriageway was modelled in order to not artificially constrain the demand to a single lane capacity and enable an assessment of the overall desire of traffic wishing to use the infrastructure. As seen in Figure 3-8 and Figure 3-9, traffic flow (PCU) exceeds single lane capacity on the Huntingdon section westbound in Package B during the AM peak hour (2041). The single lane capacity is also exceeded on the Huntingdon eastbound as well as the westbound section in Package B during the PM peak hour (2041). Package A is at approximately 85% or above single carriageway capacity by 2041.

These results indicate that a dual carriageway seems to be required to ensure that the capacity limit is not reached under the current forecasts, but also to provide enough additional capacity should greater growth come forward earlier and in advance of any significant changes to travel behaviour. However, this is an area which should be explored further during the OBC stage of development, to consider if additional sustainable travel measures could reduce the bypass use and therefore enable a single carriageway to be delivered. It is acknowledged that greater allocation of road space in town centre areas would further promote active travel alternatives and discourage shorter distance car trips and therefore should be considered further.

**Figure 3-8 - Bypass use in the AM peak hour (2041)**

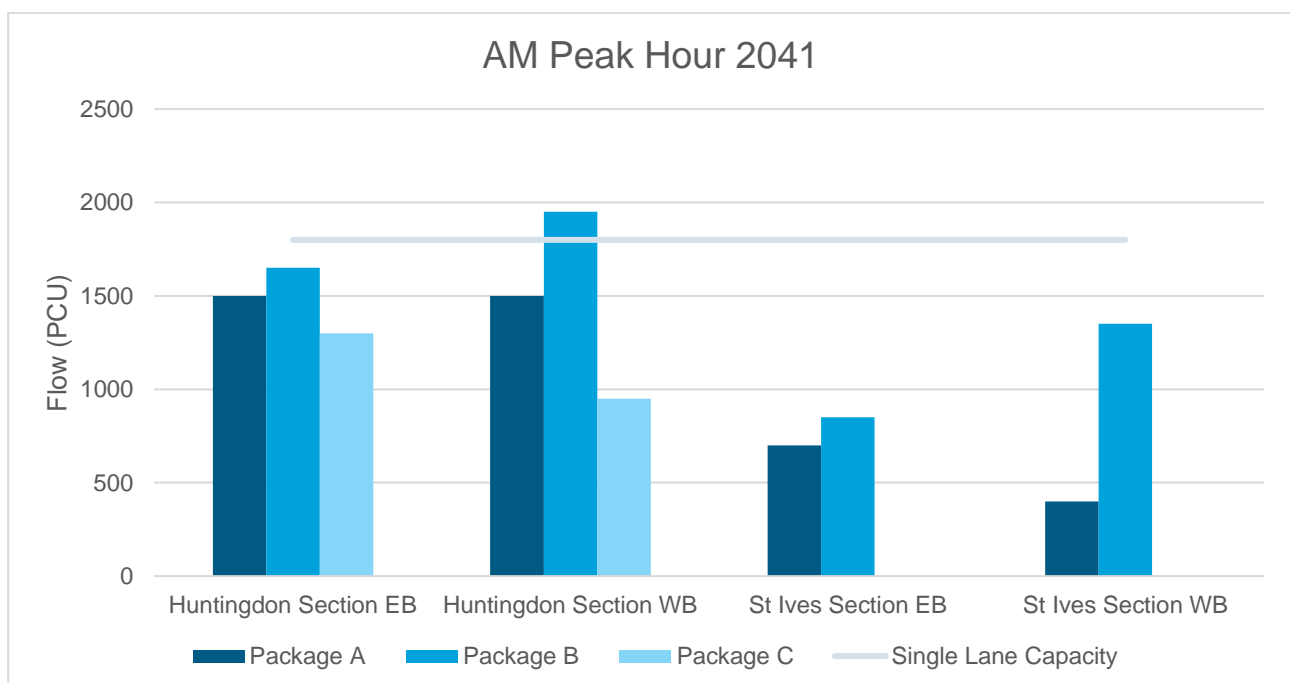
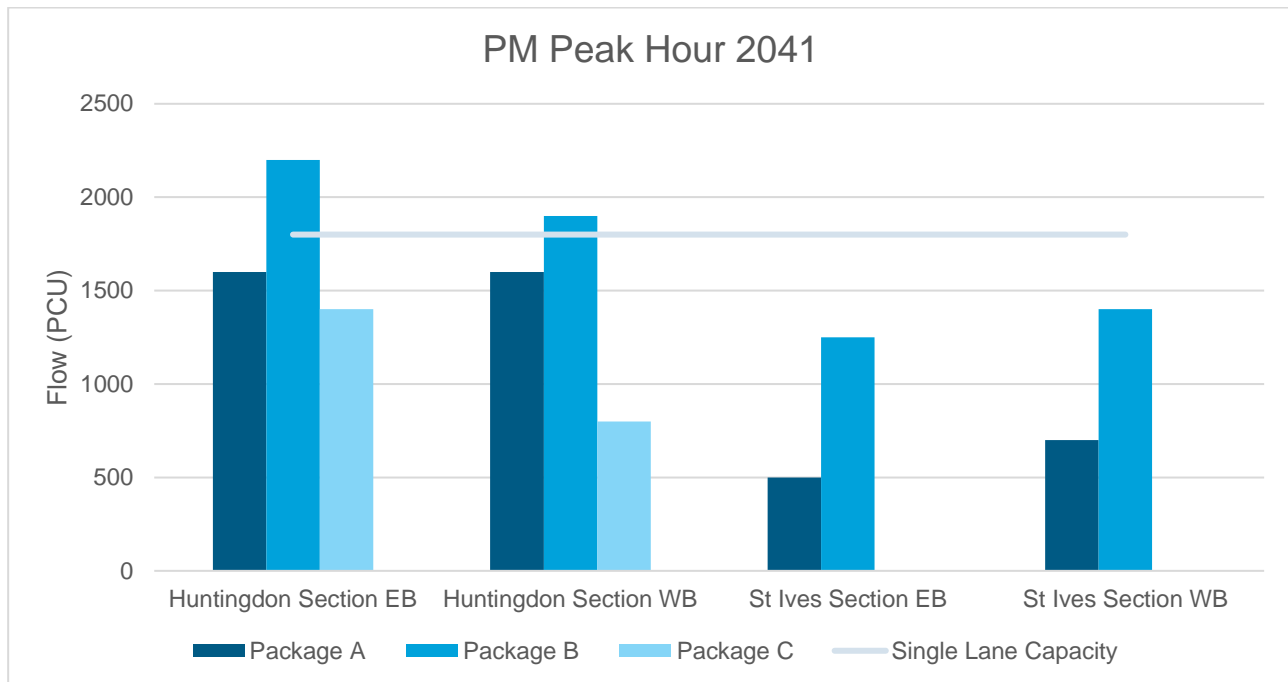




Figure 3-9 - Bypass use in the PM peak hour (2041)



### 3.3.3. Improving connectivity and quality for active travel

This section outlines how the packages contribute to improving connectivity and quality for walking and cycling across the study area, by incorporating appropriate provision within the scheme and/or enabling the existing A141 and St Ives transport network to better support these modes.

Table 3-7 shows the effects of each scheme package on the total number of trips for active travel (broken down into walking and cycling) across the model area.

Table 3-7 - Effect of the scheme on active travel trips

Additional Daily Trips (2026)		Package A	Package B	Package C
Walking	2026	-600	-1,100	+550
Cycling		+350	+300	+100
Walking	2041	-1,100	-1,750	+150
Cycling		+200	+100	0

Currently, the best performing package in terms of active travel trips is Package C. However, given that the infrastructure proposed is common across each package, this is due to some adverse impacts of the highway intervention, causing additional congestion in some areas of the network that therefore acts as demand management to encourage modal shift to walking.

In contrast, each package does exhibit increased cycling use, with Packages A and B having greater increases as a result of the longer bypass providing greater new cycling links in addition to the other interventions proposed. Allied to this, the greater decongestion in the town centres and other cyclable links further encourages cycling compared to the greater congestion exhibited in Package C. This improvement to cycling is expected, since the majority of measures are targeted at movements with trip lengths more akin to cycling than walking.

Packages A and B show fewer short-distance walking trips in north-east Huntingdonshire, as the highway improvements encourage more car trips to Huntingdon and further afield. This decrease in local walking trips outweighs increased walking along the improved A141 corridor.

A further noticeable point is the reduction in walking trips for Packages A and B. The fall results from the improvement of the highway network for shorter distance trips through the decongestion of the town centre

highway networks, meaning users opt to drive for short distance trips. This indicates that there is once again an opportunity to further reallocate road space within the town centres to active travel and manage user demand, to shift the balance back away from encouraging short distance car use. This should be considered further as the business case for the scheme develops.

### 3.3.4. Improving public transport

This section presents how the packages seek to contribute to improving bus service routing, access, and reliability across the corridor and through St Ives Town Centre.

Table 3-8 shows the effects of each scheme package on the total number of trips by public transport across the model area. Public transport includes trips for bus, guided-bus, park and ride, rail and park and active travel. The new route produces journey time savings compared to the existing network. Small journey time benefit is produced within the town centres where the decongestion of the existing network enables faster journey times through reduced levels of highway delay in areas where there is no public transport priority.

**Table 3-8 - Effect of the scheme on public transport trips**

Additional Daily Trips (2026)		Package A	Package B	Package C
Public Transport	2026	-550	-550	-450
	2041	-550	-550	-600

All packages see a reduction in overall public transport trips. This reduction is driven solely by a fall in the use of St Ives Park and Ride, as a result of the junction reconfiguration proposal at Meadow Lane on the A1096. The revised signal timings have increased the delay leaving the park and ride site by up to two minutes, which has resulted in a significant drop in utilisation. This is reflected by an increase in use of the neighbouring Longstanton Park and Ride, which has comparatively greater accessibility in these packages. This has been noted as a clear area for further development in the next stage of business case development, where further modelling could help to optimise signal timings, or improve layouts to include measures such as filter lanes making accessibility for St Ives Park and Ride site easier.

More detailed analysis of the individual modes that combine to make up the public transport numbers do indicate that the new public transport and active mode connections to Huntingdon Rail Station have in fact increased rail usage by approximately 300 trips per day (150 outbound and 150 inbound) in each scenario. This demonstrates strong alignment to the socio-economic outcome of increasing accessibility to the strategic rail network.




The journey time benefits have been estimated using TUBA, with the results presented in section 3.4.2. To achieve public transport journey time savings, several interventions have been proposed. These include junction alterations, bus gates, signal improvements and service rerouting.

To improve public transport reliability, all three packages aim to reduce rat running in Huntingdon and St Ives with the implementation of a bypass, refer to section 3.3.1, which will in turn reduce congestion and delays around both town centres that are used frequently by public transport services. This intervention, alongside the public transport-specific measures, is expected to exhibit improvements in reliability of public transport services.

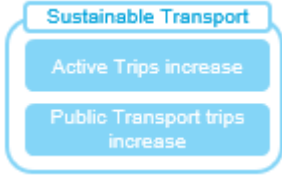
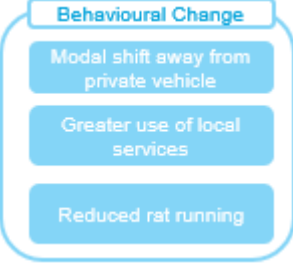
### 3.3.5. Assessing the forecast impacts against logic map

Based on the analysis presented, the packages were assessed against the objectives presented in the logic map. This assessment is summarised in Table 3-9 and Table 3-10, and presents the intermediate and transport outcomes as a result of the packages.

**Table 3-9 - Impact of the packages against the Intermediate Outcomes**

Intermediate Outcomes	Package A	Package B	Package C
	<p>New active travel infrastructure improves the quality and safety of journeys made by active modes.</p> <p>Journeys by public transport are expected to become quicker and more reliable due to movement of trips on to the new bypass.</p>	<p>Similarly to Package A, new active travel infrastructure improves the quality and safety of journeys made by active modes.</p> <p>Journeys by public transport are expected to become quicker and more reliable due to displacement of trips to the new bypass.</p>	<p>New active travel infrastructure improves the quality and safety of journeys made by active modes.</p> <p>Journey times and reliability by public transport will be improved in Huntingdon, however increased congestion around St Ives decreases the number of people using this service.</p>
	<p>Improving and widening the active travel network will increase its' capacity.</p> <p>The addition of the bypass will increase capacity for private vehicles, as well as freeing up capacity for public transport movements within Huntingdon and St Ives.</p>	<p>Improving and widening the active travel network will increase its' capacity.</p> <p>The addition of the bypass will increase capacity for private vehicles, as well as freeing up capacity for public transport movements within Huntingdon and St Ives. Additional junctions enable greater access to this additional capacity, providing increased benefit.</p>	<p>Improving and widening the active travel network will increase its' capacity.</p> <p>The addition of the bypass will increase capacity for private vehicles, as well as freeing up capacity for public transport movements within Huntingdon but does not offer significant improvements to the St Ives network.</p>
	<p>Car use increases, due to improved active travel network alternatives and enhancements and additions to the public transport network. There is therefore a reduced dependency on car travel for key movements within the study area to access town centre services.</p>	<p>Car usage increases due to the bypass making short distance car trips more attractive.</p>	<p>Car usage falls by 300 person trips per day due to improvements to the active travel network.</p>

**Table 3-10 - Impact of the packages against the Transport Outcomes**

Transport Outcomes	Package A	Package B	Package C
	<p>The scheme will deliver an increase of 350 cycling trips per day. However, trips by walking and public transport will decrease by 600 and 550, respectively. The reduction in public transport use is driven by a specific accessibility issue with the St Ives Park and Ride site to be addressed at the next stage of scheme development and masks an increase in utilisation of rail. Reduced walking is a result of successful decongestion on the town centre networks, making short distance car journeys more attractive. This affords an opportunity for road space reallocation in the next phase of development.</p>	<p>The scheme will deliver an increase of 300 cycling trips per day. However, trips by walking and public transport will decrease by 1100 and 550, respectively. The reduction in public transport use is driven by a specific accessibility issue with the St Ives Park and Ride site to be addressed at the next stage of scheme development and masks an increase in utilisation of rail. Reduced walking is a result of successful decongestion on the town centre networks, making short distance car journeys more attractive. This affords an opportunity for road space reallocation in the next phase of scheme development.</p>	<p>The scheme will increase cycling by 100 trips per day and walking by 550 trips per day.</p> <p>Trips by public transport will decrease by 450 trips per day due to a specific accessibility issue with St Ives Park and Ride site to be addressed at the next stage of scheme development and masks an increase in utilisation of rail.</p>
	<p>There will not be a modal shift away from private vehicle due to increased highway network performance.</p> <p>Rat running through Abbots Ripton, Kings Ripton and St Ives will be greatly reduced due to the bypass avoiding these areas.</p>	<p>There will not be a modal shift away from private vehicle due to increased highway network performance</p> <p>Rat running through Abbots Ripton, Kings Ripton and St Ives will be greatly reduced due to the bypass avoiding these areas.</p>	<p>Package C reduces rat running through Abbots Ripton and Kings Ripton by approximately 25% but does not address rat running through St Ives Town Centre.</p>

### 3.3.6. Summary of scheme outcomes as set out in Strategic Dimension

This section outlines a summary of the scheme outcomes, both transport and environmental, in line with those stated within section 2.6.

#### Transport outcomes

The package options proposed **contribute to a coordinated package of investment in the area to increase capacity, reliability and speed for public transport, pedestrians, cyclists and equestrians**. The Packages offer improvements in capacity and speed, therefore increasing reliability and reducing delays and journey times for sustainable travel users. It should be noted that further development within in the area, not modelled for within this study, should produce even greater sustainable travel use once committed and combined with sustainable connections to these development locations.

The **package options detract traffic from key areas prone to rat running** as the new bypass directs traffic away from key rat running routes through Huntingdon and St Ives Town Centres including Abbots Ripton and King Ripton. This outcome is greatest in Package A and B as the bypass is larger and routes around both Huntingdon and St Ives, whereas the bypass in Package C is a smaller bypass routing around Huntingdon but not St Ives. Therefore, traffic is still likely to utilise the A1123 to route through St Ives Town Centre.

The bypass scheme has been flagged as a concern in regard to **maintaining traffic levels at or below 2018 levels**, as constructing a new highway may make private vehicle use more attractive than active travel and public transport. This should be looked at further as the scheme is developed further to ensure that journeys that could be made by sustainable modes are not encouraged back to vehicle as a result of the attractiveness of the highway network.

The packages seek to **minimise vehicle mileage whilst also providing for increased travel demand**. The reductions in VOC for Package B suggests that vehicle mileage is being reduced however this is not apparent in other packages. This is a result of people travelling further to access the bypass in Package A and the smaller bypass option included in Package C.

The current scheme packages do not **intercept or substitute car trips with alternative transport modes** however, they do decongest the current network and create an opportunity to achieve modal shift through the reallocation of road space and demand management through the planned additional developments. This should be represented in high growth tests at the OBC stage.

#### Environmental outcome

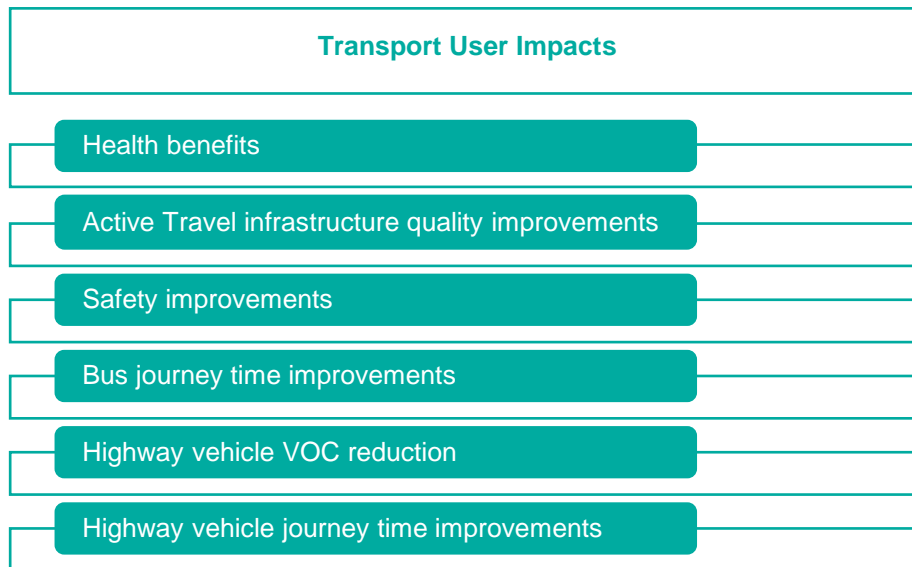
The packages seek to **contribute to the reduction of emissions to 'net-zero' by 2050, to minimise the impact of transport and travel on climate change**. It is a concern that constructing a new bypass would lead to a reduction in active travel and public transport if reallocation of sustainable alternatives is insufficient, however the details above indicate that traffic is being moved away from populated town centre areas and rural villages on to more strategic transport network infrastructure, which could lead to improved impacts on certain emission receptors. The additional connectivity in Package B also offers the best option to reduce vehicle mileage while still using the bypass. This needs to be considered further as the business case is developed, with more detailed environmental assessments undertaken. It should also be noted that the environmental impact during construction has not been considered at this stage however, given the nature of the infrastructure proposed, the environmental impact of the construction phase also needs to be considered further at the OBC stage. It is anticipated that package C would have lower impact than Package A and B due to the lower level of construction required.

## 3.4. Economic impacts

### 3.4.1. Overview

This chapter presents the economic impacts of the three proposed packages. Firstly, this chapter sets out the headline benefits, before covering each benefit stream individually along with the present value of costs (PVC) for each package. Standard appraisal tables (TEE, PA and AMCB) can be found in Appendix A - Appendix C.

### 3.4.2. Transport user impacts



#### Health benefits

Table 3-11 presents the health benefits from the bypass and active travel interventions proposed in all scheme packages. They have been calculated by combining the AMAT results from the active travel and bypass options proposed in each package. These benefits are due to increased quality for active travel trips which, consequently, increases the volume of active travel users. This yields health benefits to users and therefore reduces the risk of premature death and absenteeism. Package C provides the greatest health benefit (£8.8m) followed by Package B (£6.3m) and Package A (£6.2m). The proposed active travel provisions remain consistent across all three packages with the exception of the provision along the different bypass layouts. Therefore, the disparity in the benefit is a result of the variation in the bypass route in each scheme and the impact that the bypass options have on the level of congestion on the existing road network influencing mode choice. Package C presents the greatest benefit as a result of the bypass being situated in a more urban setting and in closer proximity to the active travel desire lines, attracting greater use of the bypass by active modes. Despite the similarities in the bypass options in Packages A and B, there remains an incremental difference in health benefit due to the variation in the number of junctions and junction priority in Package B. This results in a slight increase in the health benefits in Package B.

**Table 3-11 - Health benefits**

£m's in 2010 prices and values	Package A	Package B	Package C
Reduced risk of premature death	£5.3	£5.4	£7.5
Absenteeism	£0.9	£1.0	£2.1
Health Total	£6.2	£6.3	£8.8

#### Active travel infrastructure quality improvements

Table 3-12 presents journey quality improvements resulting from the interventions proposed in all scheme packages. This benefit is a result of improvements to the quality of active travel provisions. Improving the quality will consequently increase the attractiveness of active travel options as an alternative to private car use. For more detail on the specific active travel interventions see section 3.3.3.

**Table 3-12 - Active travel journey quality improvements**

£m's in 2010 prices and values	Package A	Package B	Package C
Journey Quality	£3.0	£3.0	£3.2



## Safety improvements

The results presented in Table 3-13 show the expected changes to safety for active travel and highway measures as a result of the scheme. They are derived from active travel and highway collision data and are a result of rerouting trips and additional infrastructure. The collision cost savings for active travel remains consistent across all packages due to reasoning stated previously.

### Package A

Package A has a marginal disbenefit to collision cost. The decongestion of the existing network offers reductions to slight and serious collisions across a large area of the network. However, this is offset by an increased collision rate on the new, higher-speed bypass. Analysis of the collision data conducted in the ECR identified key hotspots within the study area<sup>60</sup>. Collision savings are forecast to occur along the existing A141 network and at the A141/B1090 along the existing network. As well as along the section of the A1123 situated to the east of St Ives, along the A1307 and at the A1307/A1096 roundabout. It should be noted that this package offers reductions in collision occurrence along Ramsey Road.

### Package B

In contrast, Package B delivers a benefit in overall highway collisions at £4.24m. This is due to its' additional junctions providing greater access to the new, safer bypass, which in turn leads to further decongestion of the existing network. This greater decongestion offers greater reductions to slight and serious collisions on the existing road networks, particularly along the existing A141, at the A141/B1090 roundabout, along the A1123, A1307, A1096/A1307 roundabout and Ramsey Road to Hill Rise. This helps to reduce collisions at some of the accident hotspot locations identified in the ECR<sup>61</sup>.

### Package C

Package C provides the largest benefit to collision saving out of all the packages, at £10.33m. This is partly because it attracts fewer new trips to the network than Packages A and B. Furthermore, as the bypass option in Package C is shorter and includes less high-speed sections of road, the fatality rate is lower than the full bypass packages and the general distance travelled is reduced. However, there are less collision reductions on the existing network, including along the A1096/A1123, B1040 and Huntingdon Road.

**Table 3-13 - Accident cost**

£m's in 2010 prices and values	Package A	Package B	Package C
Active travel Accidents	£0.03	£0.03	£0.04
Highway Accidents	-£0.48	£4.24	£10.33

It should be noted that the values in Table 3-13 are to two decimal places to present the active travel accidents cost, even though minimal.

## Public transport journey time improvements

Packages A and B offer positive bus journey time savings as a result of decongestion in town centres positively impacting bus routes and minimising journey delays. While the improvements to the bus network and implementation of priority junctions which favour public transport are common across all packages, Packages A and B also provide more significant decongestion of the town centre networks which enables bus services to run more quickly. In contrast, Package C suffers a disbenefit due to the bypass at Huntingdon drawing more traffic in to other already congested areas, such as the A141/A1123/B1514 junction, hindering the movement of existing public transport services.

Park and Ride services however are all subject to a disbenefit as a result of the packages implemented. This is due to the additional congestion experienced on the car leg of the Park and Ride trip at the exit of the St Ives a Park and Ride Site. This has been identified as a weakness that arises from the signalisation of the Meadow Lane junction, and this will be explored and refined further during the next stages of the study, whereby it is anticipated that these delays can be mitigated and positive benefits attributed to Park and Ride services.

Users accessing the rail network (and therefore classed as rail trips in the model hierarchy) also experience significant benefits, primarily as a result of the new PT service linking St Ives to Huntingdon Rail station via the

<sup>60</sup> Atkins (2021) *St Ives Transport Study Existing Conditions Report*, Page 36

<sup>61</sup> Atkins (2021) *Huntingdon Northern Bypass Existing Conditions Report*, Page 33

A1307. This improved and faster connection reduced journey times and makes connections via the rail network more attractive.

**Table 3-14 - Public transport journey time benefits**

£m's in 2010 prices and values	Package A	Package B	Package C
Bus	£0.5	£0.3	-£0.3
Park and Ride	-£5.8	-£4.9	-£17.1
Rail	£8.6	£9.0	£7.3

#### Highway VOC reduction

Package B is the only package to offer positive benefits for highway VOC (Table 3-15). This benefit is largely driven by the savings made to HGVs VOC. The proposed bypass within Package B means that HGVs can reduce the number of kilometres they travel when compared to Packages A and C, due to the increased number of junctions. The greater accessibility for HGVs to the bypass from key industrial areas within the study area drives this reduction compared to Packages A and C, emphasising the importance of the scheme in facilitating connection for the efficient movement of goods in the area. A further contributing factor, albeit to a lesser extent, is that adding more junctions on the bypass (than in Package A) spreads the pressure of joining the bypass across more junctions, which in turn reduces delays and queues generating vehicle operating cost savings. These factors in turn also impact the accident rates anticipated along the proposed bypass, refer to Safety improvements.

**Table 3-15 - Highway VOC**

£m's in 2010 prices and values	Package A	Package B	Package C
Vehicle Operating Cost	-£11.9	£8.3	-£14.3

#### Highway journey time improvements

Packages A and B offer significant highway journey time savings (Table 3-16). This is due to removing traffic away from the town centres and residential roads which then get rerouted onto the bypass. Package B offers the highest journey time savings, as by providing junctions to residential and industrial areas, vehicles do not have to drive as far to access the bypass, or indeed have the option to use the bypass due to the greater accessibility to the infrastructure. Users can therefore complete their journeys on roads with higher speed limits and reduced traffic congestion and delays. Package C offers the lowest amount of benefit due to only providing a bypass for Huntingdon. This adds additional pressure onto the road network in St Ives resulting in congestion and queueing, particularly along the A1123 and A1096.

**Table 3-16 - Highway journey time savings**

£m's in 2010 prices and values	Package A	Package B	Package C
Highway Journey Time	£335.0	£463.0	£41.2

#### Reliability impact on commuting and other users

The impact of the scheme on journey reliability has been assessed qualitatively. It is expected that there will be increased journey reliability for commuters and other users in Packages A and B due to the increased capacity of the new bypass and a reduction of vehicles in Huntingdon and St Ives town centres. This is because the capacity of the new road will be greater than the forecast demand, resulting in less unexpected journey time variability. In Package C, there will be an increase journey reliability for trips using the bypass north of Huntingdon. However, the scheme is forecast to increase traffic on the A1123 as a result of traffic from the bypass being funnelled onto the existing A1123 where minimal improvements are proposed. Therefore, journey reliability on this route may be affected.

#### Spatial distribution of user benefits

To understand the spatial distribution of the benefits, sector analysis was undertaken. Figure 3-10 and Figure 3-11 show the benefits generated by movements to and from key sectors for the forecast year 2041. The sector map is presented in Figure 3-2. The pattern of benefits generated by each sector was very similar for forecast

year 2026, further demonstrating that the issues facing the road network in this area are a current problem, not something that will arise in the future.

For Package A, the greatest benefits are generated on journeys to and from St Ives. This is due to the high congestion on the A1123, which will be alleviated by the bypass. The Hunts NE sector, which covers settlements such as Ramsey, Warboys and Kings Ripton also generates significant benefits for trips to the sector. This is due to the bypass reducing congestion on the existing network, allowing faster journey times for vehicles travelling on the A141 northeast of Huntingdon. The benefits generated by journeys to and from the Fenland and Peterborough sector, which contains settlements such as Wisbech, March and Chatteris, demonstrate the importance of the A141 as a key strategic route in the area, as many people from these settlements use this route to access employment and the wider strategic road network. Significant benefits are also generated for trips to and from Huntingdon Centre. This is because the bypass will route traffic away from this sector, alleviating congestion and improving journey times.

Package B provides a similar trend in results, with St Ives, Huntingdon Central, Hunts NE and Fenland and Peterborough all performing strongly. However, the benefits generated for trips to these sectors, with the exception of Huntingdon Central, are all considerably higher in Package B than in Package A. This because the additional junctions provided on the bypass allow greater access to the new and improved road network, leading to faster journey times for more vehicles.

Package C is forecast to deliver moderate benefits for trips from the Huntingdon West and Huntingdon Central sectors. This is a result of the hybrid bypass routing traffic away from the existing network around Huntingdon. In contrast to the other packages, Package C is forecast to generate a disbenefit for journeys from St Ives. This is because the hybrid bypass will attract more trips to the new network but will not provide a new route away from St Ives. As a result, congestion and journey times on the A1123 will increase, driving the disbenefit.

**Figure 3-10 - Benefits generated by movements from key sectors**

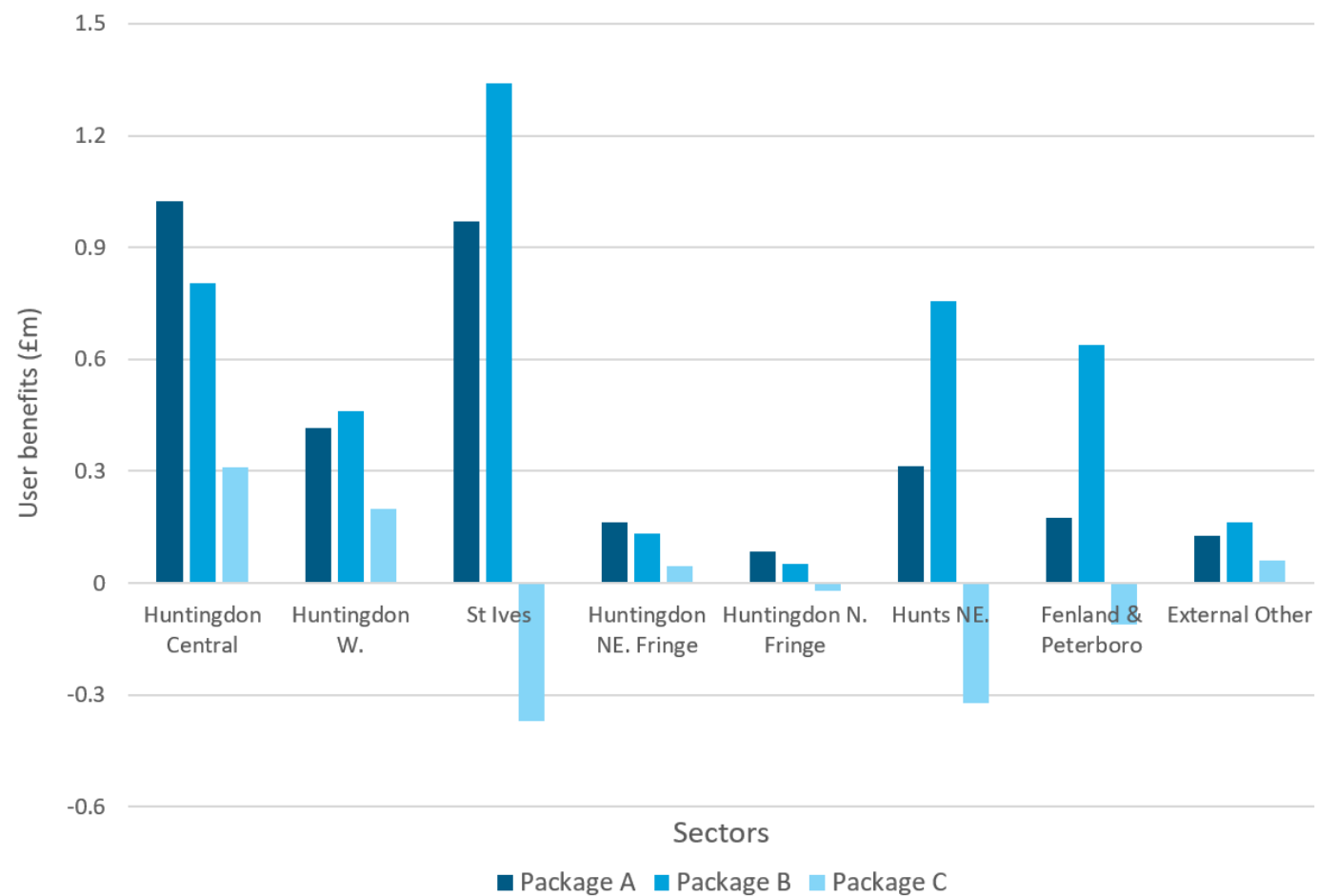
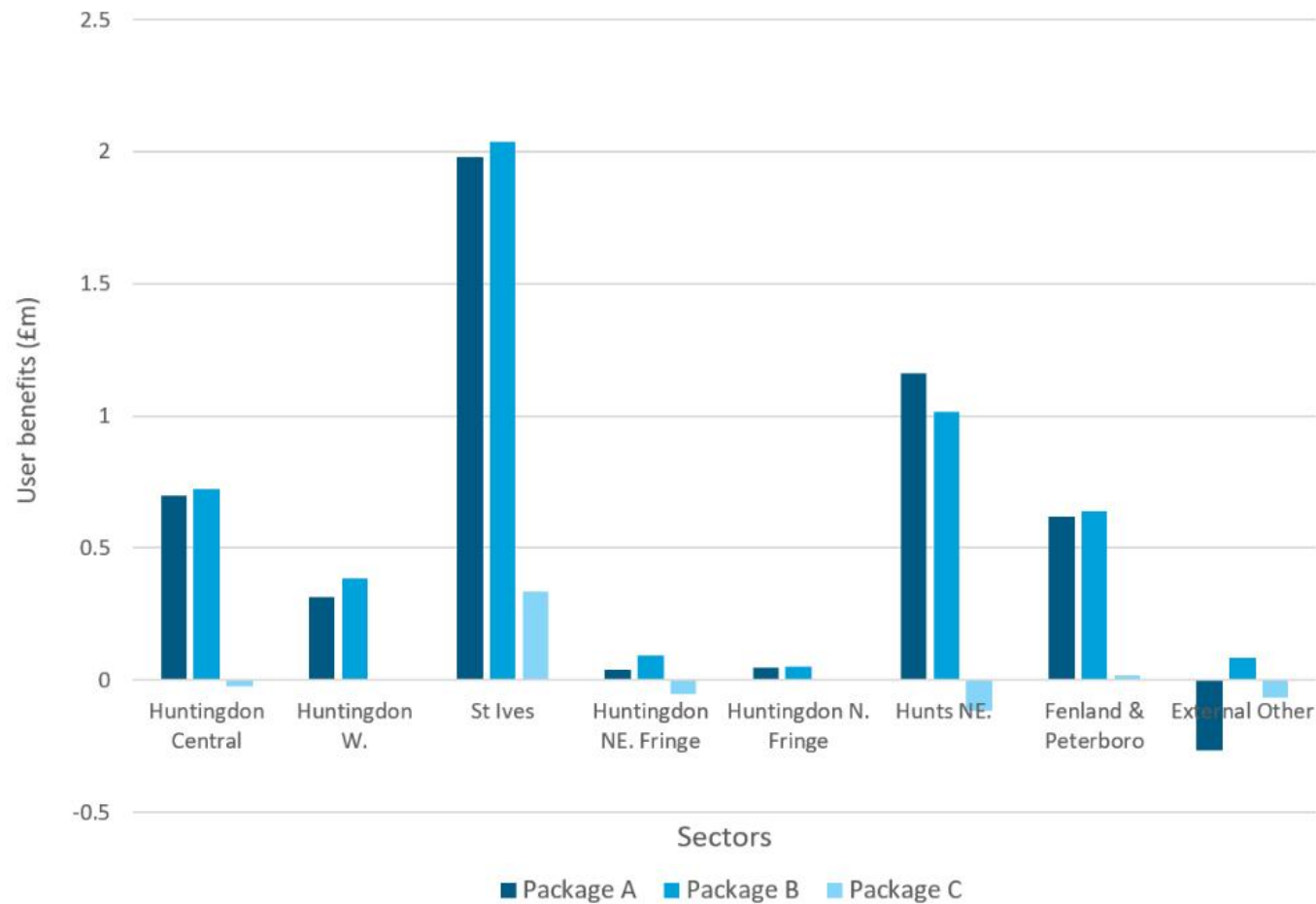


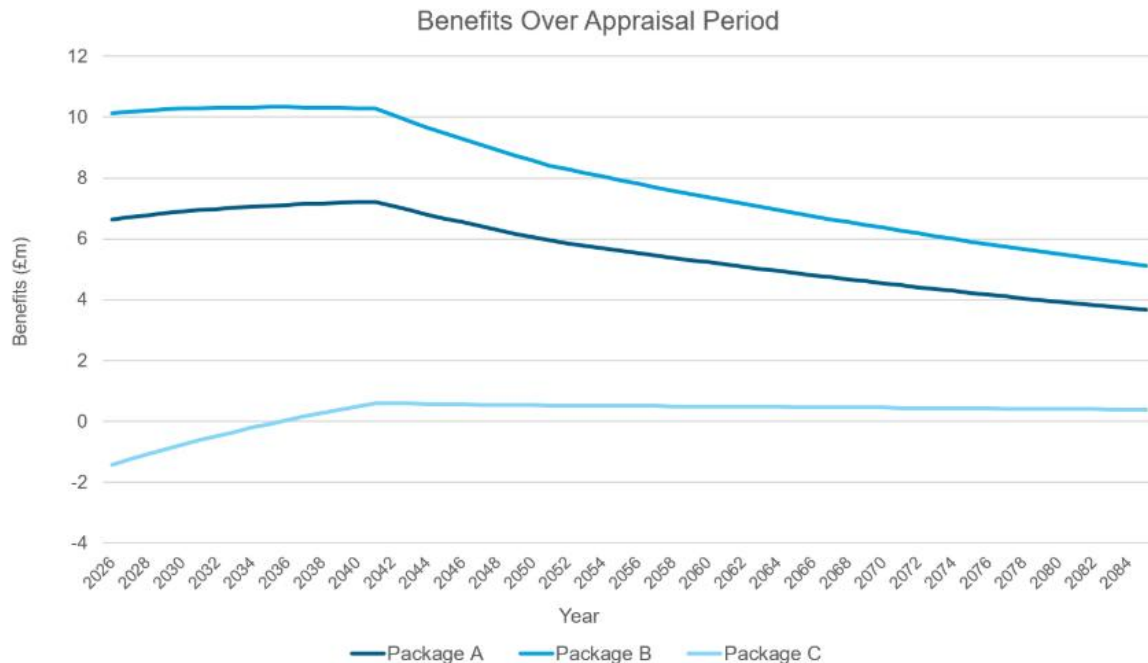
Figure 3-11 - Benefits generated by movements to key sectors



### User benefits over 60-year appraisal period

Figure 3-12 shows the forecast profile of the user benefits over the 60-year appraisal period for each package.

**Figure 3-12 - Profile of user benefits over appraisal period**

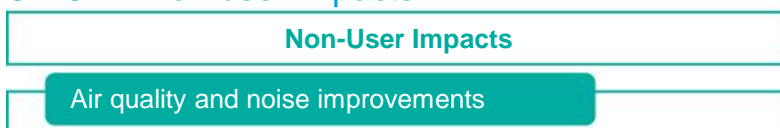


User benefits from Package A and B remain relatively constant between 2026 and 2041, driven by steady growth across the study area, offsetting the effects of the discounting applied in the appraisal.

Package C shows a larger increase in user benefits between the two forecast years in line with the modelled growth for the north of Huntingdon. A key driver of these benefits is the growth of Alconbury Weald between 2026 and 2041, which helps to offset the disbenefits generated by movements to St Ives. Section 3.4.2 contains further details on the St Ives disbenefit in Package C.

All packages demonstrate a decline in benefits from 2041 onwards, where benefits are held constant in real terms, but decline in-line with discounting through the remainder of the appraisal period.

### 3.4.3. Non-user impacts



#### Air quality and noise improvements

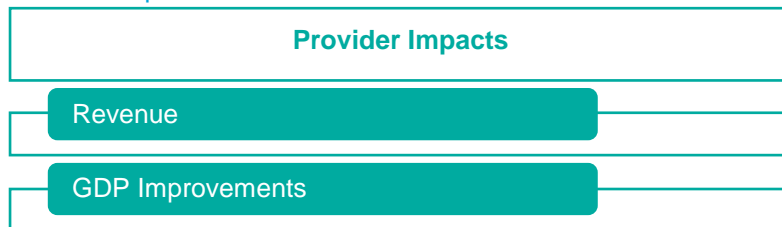
It is expected that local air quality will improve as the bypass routes significant traffic further away from the key receptors of Huntingdon and St Ives town centres. The southern part of Huntingdon Town Centre is covered by an Air Quality Management Area (AQMA). There are also AQMAs at select properties along the A1307 and in Fenstanton. As the scheme is expected to reduce traffic flows on these routes, benefits to air quality are expected.

As a result of the re-routing, a reduction in noise pollution for local residents is also forecast. There are 22 Noise Important Areas (NIAs) within 1000m of the proposed scheme. These are all located on the existing A141, the A1307 or the A1123 with the exception of one, which is located on the ECML as it crosses Ermine Street. There is potential for noise reduction along the existing road network as traffic becomes displaced to the new bypass.



It is expected that the improvements in local air quality and reductions in noise pollution will be largest for Package B, given this is the most accessible bypass and offers greatest decongestion of the local areas. Package A is forecast to perform almost as well, however only a slight benefit for Package C is expected. This is because Package C does less to remove traffic from Huntingdon and St Ives Town Centres, as well as increasing flow on the A1123 and the A1096.

#### Provider impacts

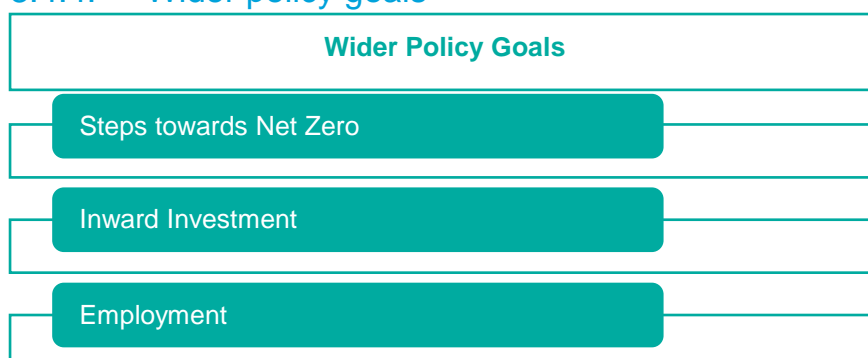


The Net Business Impacts are a combination of the business user impacts, private sector provider impacts and developer contributions. Table 3-17 shows that Package B provides the largest benefit which is driven by significantly higher travel time savings and VOC savings when compared to Packages A and C. Package C has significantly less Net Business Impacts, because the package does little to address highway capacity other than offering a mode switch to active travel and public transport alternatives. It is worth noting that currently no developer contributions have been accounted for. This will be investigated as the scheme progresses through to the full business case.

**Table 3-17 - Net business impacts**

£m's in 2010 prices and values	Package A	Package B	Package C
Business User Impacts	£145.8	£209.9	£16.5
Private Sector Provider Impacts	£-4.9	£-4.8	£-4.9
Net Business Impacts	£140.8	£205.1	£11.6

#### 3.4.4. Wider policy goals



#### Steps towards Net Zero

The results from the TUBA greenhouse gas assessment are presented in Table 3-18. It shows that Package A and C offer a relatively small (dis)benefit whereas Package B offers a slight benefit. This is largely due to the HGV VOC savings mentioned in section 3.4.2, which is generated by greater access to industrial areas within the study area as a result of the bypass in Package B having additional local junction connections. Due to the increased number of junctions, it reduces the number of miles travelled by HGVs which in turn generates a positive greenhouse gas saving and hence a move towards Net Zero. This level of accessibility is not provided by the bypass options in Package A or C hence the small disbenefits that these options produce. Package C offers a slightly better result than Package A, this is due to the mode shift from highway to active travel measures as shown in section 3.3.3, which sees an increase in the number of walking and cycling trips.

**Table 3-18 - Greenhouse gas assessment**

£m's in 2010 prices and values	Package A	Package B	Package C
Greenhouse Gases	-£3.1	£1.4	-£2.3

#### Inward investment & employment

It is expected that due to a number of quantified factors that have already been discussed, such as journey time savings and vehicle operating costs section 3.4.2) along with qualitative statements regarding the increases in active travel, public transport and highway capacity (section 3.3.2), that inward investment and employment within the local area will increase. This is a result of the reduction in the cost of travel, which is a derived demand from accessing employment, along with greater alternatives arising following improvements in active travel and public transport quality and connectivity that will encourage individuals to seek employment / better quality employment. This will mean GDP per capital will rise, which will in turn increase revenue within the study area as it is generally accepted that the marginal propensity to spend is greater on additional income, rather than of the marginal propensity to save on additional income meaning more money will be spent in the local economy.

### 3.4.5. Package costs – PVC

#### Scheme costs

Costs for each of the three packages are presented in Table 3-19. Costings include the active travel, public transport and the bypass elements proposed within each package. Scheme costs were costed in accordance with section 3.2.4.

**Table 3-19 - Present value scheme costs**

£m's in 2010 prices and values	Package A	Package B	Package C
Total (including risk + OB)	£243.6	£284.2	£137.0

A spend profile has not been provided due to the uncertainty over the variance of the schemes. This is considered acceptable at this early stage of scheme development. A spend profile will be developed at OBC, when early contractor involvement (ECI) will take place to assist with planning the phasing of delivery of the scheme and the scheme will be developed in greater detail.

### 3.4.6. Calculation of initial BCR

A summary of the quantified economic benefits for each of the packages is presented in Table 3-20 for Level 1 impacts assessed under this SOC. Appendix A, Appendix B and Appendix C present the Transport Economic Efficiency (TEE), Public Accounts (PA), and Analysis of Monetised Costs and Benefits (AMCB), respectively. The Appraisal Summary Table (AST) is provided as Appendix D.

**Table 3-20 - Calculation of initial BCR (Level 1 only)**

£m's in 2010 prices and values	Package A	Package B	Package C
Greenhouse Gases	-£3.0	£1.4	-£2.3
Journey Quality	£3.0	£3.0	£3.2
Physical Activity	£6.2	£6.3	£8.8
Accidents	-£0.4	£4.3	£1.1
Economic Efficiency: Consumer Users (Commuting)	£100.6	£143.9	£3.8
Economic Efficiency: Consumer Users (Other)	£88.1	£131.3	£-£2.8
Economic Efficiency: Business Users and Providers	£140.8	£205.1	£11.6
Wider Public Finances (Indirect Taxation Revenues)	£7.4	£0.4	£5.3

£m's in 2010 prices and values	Package A	Package B	Package C
Present Value of Benefits (PVB)	£327.7	£494.8	£18.0
Broad Transport Budget	£244.4	£284.9	£138.8
Present Value of Costs (PVC)	£244.4	£284.9	£138.8
Net Present Value (NPV)	£83.3	£209.9	-£120.1
Benefit Cost Ratio (BCR)	1.34	1.74	0.13
Initial Value for Money Category	Low	Medium	Poor

The best performing of the packages is Package B, which yields a BCR of 1.74. As this value is between 1.5 and 2, it has a 'Medium' Value for Money (VfM) category. It generates most of its benefits through economic efficiency benefits, but also has a positive effect on accidents and greenhouse gases.

Package A yields a BCR of 1.34, which falls into the 'Low' VfM category as the BCR is between 1 and 1.5. It generates most of its benefits through economic efficiency, but has a negative effect on accidents and greenhouse gases.

Package C is the worst performing of the packages, yielding a BCR of 0.13. this is classified as 'Poor' VfM as its' BCR is less than 1.

### 3.4.7. Sensitivity tests

A number of sensitivity tests of the appraisal have been made, the results of which are described in the following sections.

#### 60-year appraisal period for AMAT

When considering the 60-year appraisal period, benefits remain consistent across all packages between the 20- and 60-year appraisal period. Health, a combination of absenteeism and premature death, sees the greatest benefit followed by journey quality and accidents. It would therefore be expected that this would have a positive effect on the BCRs for all packages.

**Table 3-21 - 60-year appraisal period sensitivity test for monetised active travel benefits**

£m's in 2010 prices and values	Package A	Package B	Package C
20 Year Appraisal Period			
Health	£6.2	£6.3	£8.8
Accidents	£0.03	£0.03	£0.04
Journey Quality	£3.0	£3.0	£3.2
Total	£9.2	£9.3	£12.1
60 Year Appraisal Period – Sensitivity Test			
Health	£15.8	£16.0	£22.5
Accidents	£0.07	£0.07	£0.07
Journey Quality	£7.3	£7.4	£8.0
Total	£23.2	£23.5	£30.5

With the application of a 60-year appraisal period, the total benefits in Packages A and B increase by at least £14m. The increase in benefit for Package C is approximately £18m. This means that, over the additional 40-year period, up to £14m or £18m can be spent on maintenance of the respective packages without reducing the Net Present Value (NPV) of the infrastructure below its NPV over a standard 20-year appraisal period.

### Highway traffic volume sensitivity

A sensitivity test has been conducted to assess the impacts that an additional 20% increase on traffic levels for trips starting or ending within the study area. This is to act as a pseudo representation of a scenario in which additional growth comes forwards in the area and gives rise to an increase in baseline traffic volumes. This test assesses the impact that this level of increased traffic would have, assuming that the 2026 remains as per the main appraisal and this growth occurs in the 2046 modelled year. This test only utilised a reassignment of the highway model and was not a full demand model run. Therefore, the impacts captured here are only as a result of the change in highway volume and do not include any additional modal shift of changes in benefits for other modes that would occur. This sensitivity test was conducted on Package B only, due to its strongest highway performance. Key metrics for the high growth sensitivity are presented in Table 3-22.

**Table 3-22 - Highway traffic volume sensitivity**

£m's in 2010 prices and values	Package B	Package B Sensitivity
PVB	£494.8	£853.5
PVC	£284.9	£284.9
NPV	£209.9	£568.6
BCR	1.74	3.00
Value for Money Category	Medium	High

Increased traffic within the study area increases the benefits yielded by Package B by over £350m. This is because the 'Do Minimum' scenario performs very poorly in a scenario with greater traffic volumes, whereas Package B is able to accommodate those additional trips more readily with less impact on the highway network. In turn, this enables the intervention to deliver higher benefits.

### Estimated highway only BCR

A sensitivity test has been conducted to calculate the BCR of a highway-only scheme. As a significant amount of the benefits for all packages are derived from highway-related benefits, it is expected that this would have a positive effect on the BCRs for all packages. Key metrics for the highway-only packages, including the BCR, are presented in Table 3-23.

**Table 3-23 - Highway only BCR sensitivity test**

£m's in 2010 prices and values	Package A	Package B	Package C
Highway PVB	£313.1	£477.4	£30.7
Highway PVC	£184.7	£225.3	£79.1
Highway NPV	£128.4	£252.2	-£46.6
Highway BCR	1.70	2.12	0.39
Value for Money Category	Medium	High	Poor

For all Packages, the highway element of the scheme delivers a slight improvement in BCR. This means that this element of the scheme is not dependent on other interventions, such as the active travel infrastructure. Therefore, should the scheme be delivered in a phased approach, implementing highway interventions first will still deliver significant benefits.

### Cost increase sensitivity

A further sensitivity test assessed the affect that a 25% rise in costs would have on the initial BCR. This includes the active travel infrastructure as well as the remaining highway and PT interventions. The Optimism Bias (OB) and risk factors have been applied to produce the PVC. The affect that an increased PVC (following a 25% increase in capital costs) has had on the BCR can be seen below in Table 3-24.

**Table 3-24 - Increased cost BCR**

£m's in 2010 prices and values	Package A	Package B	Package C
Initial PVC	£244.4	£284.9	£138.8
Initial BCR	1.34	1.72	0.10
Initial Value for Money Category	Low	Medium	Poor
Sensitivity PVC	£305.0	£355.8	£172.9
25% Cost Increased BCR	1.07	1.38	0.08
Sensitivity Value for Money Category	Low	Low	Poor

Increasing PVC by 25% has an (expected) negative impact on the BCRs for all packages. For Package B, the VfM category is reduced to 'Low' as the BCR falls below 1.5, whilst Packages A and C remain as 'Low' and 'Poor' respectively. It is considered that this is an unlikely scenario, due to the application of OB and risk in the original PVC. Section 4.2 provides further details around cost assurance.

#### OBC levels of optimism bias sensitivity

A further sensitivity test assessed the impact that producing the initial BCR using Outline Business Case (OBC) levels of OB when calculating the PVC had on the BCR. It followed the TAG Unit A1.1 Cost-Benefit Analysis guidance for suggested OB percentages of a project within stage 2 (OBC stage). This meant the OB percentage of road infrastructure was reduced from 46% to 23% and the OB percentage of structures infrastructure was reduced from 56% to 23%. The affects that this had on the BCR can be seen in Table 3-25.

**Table 3-25 - Outline business case - optimism bias BCR**

£m's in 2010 prices and values	Package A	Package B	Package C
Initial PVC	£244.4	£284.9	£138.8
Initial BCR	1.34	1.74	0.13
Initial Value for Money Category	Low	Medium	Poor
OBC Optimism Bias PVC	£206.2	£240.3	£117.3
OBC Optimism Bias BCR	1.59	2.06	0.15
OBC Optimism Bias Value for Money category	Medium	High	Poor

The application of OBC levels of OB had an expected positive impact on the BCRs for all packages. Package A and Package B increased Value for Money category to 'Medium' and 'High', respectively. This suggests that there is opportunity for the scheme performance to improve as it develops further, with potential for 'High' Value for Money categories to be obtained.

#### Tipping point analysis

A tipping point analysis has been undertaken to show the marginal change required to increase or decrease the VfM category of each option. Two variations of tipping point analysis have been carried out. These are as follows:

- The additional benefits required to increase the VfM category while holding costs constant; and,
- The level of cost increase that would result in a fall in the VfM category while holding benefits constant.

As shown in section 0 the initial BCRs put Packages A, B and C in the Low, Medium and Poor VfM categories respectively as defined in the DfTs VfM Framework. Therefore, an increase in PVB while holding PVC constant looks to move Packages A, B and C to Medium, High and Low VfM categories respectively, while the increase

in PVC while holding PVB constant looks to move the packages to Poor, Low and Very Poor. Table 3-26 shows the Current PVB, Required PVB for a VfM category improvement, the absolute and percentage change between the current and required figures. Table 3-27 shows the Current PVC, the PVC figure that would result in a VfM category reduction and the absolute and percentage change between the current and required figures.

**Table 3-26 - Increase in PVB required for a VfM category improvement**

£m's in 2010 prices and values	Package A	Package B	Package C
Initial PVB	£327.7	£494.8	£18.0
Required PVB for VfM Category Improvements	£366.6	£569.9	£138.8
Absolute Change in PVB	£38.9	£75.1	£120.8
Percentage Change in PVB	12%	15%	671%

**Table 3-27 - Increase in PVC that would result in a VfM category reduction**

£m's in 2010 prices and values	Package A	Package B	Package C
Initial PVC	£244.4	£284.9	£138.8
An increase in PVC resulting in a VfM Category Reduction	£327.7	£329.9	£1,800.6
Absolute Change in PVC	£83.3	£44.9	£1,661.8
Percentage Change in PVC	34%	16%	1,197%

The tipping point analysis shows that, in both absolute and relative terms, Package A is the closest to a VfM category improvement. It requires an additional £38.9m benefit to become 'Medium' VfM. In relative terms, Package B is similar; needing only 3% more of its current PVB than Package A in order to improve its' VfM category. However, as Package B generates significantly more benefits than Package A, the PVB increase required in monetary terms is much larger.

Package B is the most susceptible to a VfM category reduction. A decrease in benefits of £44.9m would lower it to 'Low' Value for Money. Package C would require a very significant shift to improve the VfM categorisation.

## 3.5. Social and environmental impacts

### 3.5.1. Overview

This chapter outlines the scoping exercise undertaken to identify the areas of potential social and environmental impacts which could arise from the scheme. These have been considered in line with TAG units A4.1 – Social Impact Appraisal<sup>62</sup> and A3 – Environmental Impact Appraisal<sup>63</sup>, respectively. The following statements are high level, reflecting the early stage of scheme development. An assessment of the expected impacts has not yet been made; however, this will be undertaken at OBC stage when the scheme is at a more developed stage.

### 3.5.2. Social impacts

#### Physical activity

The impact of the scheme packages on physical activity have been monetised in the AMAT assessment and can be found in section 3.4.2.

<sup>62</sup> DfT (2021). [TAG Unit A4.1 – Social Impact Appraisal](#).

<sup>63</sup> DfT (2021). [TAG Unit A3 – Environmental Impact Appraisal](#)



## **Journey quality**

The impact of the scheme on journey quality for active travel users has been monetised and is also presented in section 3.4.2.

For other users, the predicted impacts on journey quality have been assessed qualitatively.

Traveller care, which covers aspects such as cleanliness and general transport facilities, is not expected to be impacted by the scheme in any of the packages. There may be some impact on traveller views due to the presence of artificial and natural barriers along the bypass.

Packages A and B are expected to have a positive effect on traveller stress due to the following:

- Reduced congestion and delay, reducing driver frustration;
- Segregated routes for active travel users along the bypass and through other measures included within the packages therefore reducing interaction between highway users and active travel users; and
- Widening of active travel paths, provision of adequate road markings and wayfinding, reducing frustration of users and the fear of potential accidents.

Furthermore, it is expected that, by directing strategic traffic around Huntingdon and St Ives, route uncertainty for strategic vehicles will be greatly reduced.

As with the other packages, Package C will reduce fear of potential accidents for road users, however it is expected that the impact on congestion within the study area will not be as pronounced as for the other packages, therefore frustration is not expected to be reduced.

## **Accidents**

The accident cost savings for each of the packages have been monetised and are presented in section 3.4.2.

## **Security**

The impact of the scheme on security is expected to be negligible. Increased security for road users is expected through decreased congestion and stationary vehicles. These benefits will be higher in Packages A and B than for Package C. It is considered that the scheme will not impact the security of public transport users.

## **Access to services**

Changes to bus routes is expected to increase accessibility to public transport in all packages. Bus rerouting will provide access to residents of London Road to the south of St Ives to access Huntingdon and St Ives town centres as well as Huntingdon Rail Station directly. Reduced congestion in St Ives and Huntingdon town centres is likely to make accessing services within these areas easier and therefore encourage more use.

## **Affordability**

It is considered that the scheme will be beneficial to personal affordability due to reduced travel times and the improved active travel network. In Packages A and B, there will be a net benefit to VOC, further improving affordability. The most deprived LSOAs in the study area are located in Huntingdon town centre, which is forecast to benefit in terms of reduced congestion and improved journey times from the scheme across all packages. As the perceived cost of travel is based on an assigned value of time, improving journey times thus makes travel more affordable.

## **Severance**

An overarching element of the proposed Packages is the provision and upgrading of active travel links in Huntingdon and St Ives. The additional crossings of the ECML is expected to greatly reduce severance issues for active travel users in Huntingdon, particularly those who live in the residential areas to the east of the ECML and work in the business parks to the west.

## **3.5.3. Environmental impacts**

The following section presents an assessment of the Environmental Impacts of the scheme. Noise and Air Quality impacts have already been qualitatively assessed in section 3.4.3, with Greenhouse Gas savings presented in section 3.4.4.

## **Landscape**

The majority of the bypass element of the scheme is in a rural area characterised by arable farmland, which means that there is potential for negative effects on the landscape. active travel infrastructure and public transport improvements are largely within the built-up areas of Huntingdon and St Ives and therefore are not

expected to impact upon landscape. There are no landscape designations or registered parks within 1000m of any of the scheme elements.

It is expected that landscaping will be undertaken as a mitigation measure against any negative effects that arise from the scheme. The need and extent of these measures will be determined in future phases as the project progresses.

### **Townscape**

The highway element of the scheme is predominantly in a rural setting and is not expected to have a significant impact on the built environment. However, traffic flows, as a result of the scheme, are predicted to lead to a reduction in traffic flow and congestion in Huntingdon and St Ives town centres, which would lead to an improved townscape for local communities and users of services in these areas.

The active travel elements of the scheme in built-up areas are expected to complement and enhance existing infrastructure.

During the construction phase, it is possible that the active travel elements of the scheme within Huntingdon and St Ives may have a temporary adverse effect on the townscape. The impacts of the construction phase would be mitigated where possible. The need and extent of these measures will be determined in future phases as the project progresses.

### **Historic environment**

There is a small amount of potential for the scheme to have a negative impact on the historic environment.

For Packages A and B, there are Seven Scheduled Monuments within 1000m of the scheme. 'The Moat' castle is located on the edge of the proposed bypass corridor.

Two Scheduled Monument sites, which are both Roman barrows in Great Stukeley, are within 1000m of the proposed bypass corridor for all packages. The impacts of the scheme on these features are expected to be small due to their location in a built-up area away from the proposed corridor.

It is considered that the routing of the bypass will take the historic environment into account and mitigations will be developed to ensure they retain their characteristics. The need and extent of these measures will be determined in future phases as the project progresses.

### **Biodiversity**

There is potential to be a large negative impact upon the rare plants along the Great Stukeley Railway Cutting during the construction of the bypass over the ECML.

To mitigate this, further assessment of these impacts will be carried out and the need and extent of these measures will be determined in future phases as the project progresses.

### **Water environment**

The proposed bypass corridor largely lies outside of the main flood risk zone, however the implications of increased runoff are yet to be assessed in detail.

It is expected that full consultation with the appropriate authorities will be undertaken to mitigate any impacts on the water environment should the scheme progress further.

## **3.6. Value for Money**

This section presents the VfM statement in line with the DfT's VfM Framework (2021). It follows the HM Treasury Green Book method of cost-benefit analysis, by weighing the benefits against the costs to indicate whether the scheme offers 'Value for Money'. Qualitative, quantitative and monetised information are used in preparing the statement. This VfM Statement in this section should be read in conjunction with the Transport Economic Efficiency table, Public Accounts table and Analysis of Monetised Costs and Benefits tables in Appendix A -Appendix C. The additional qualitative assessment is contained in the Appraisal Summary Table in Appendix D.

The aim of the VfM assessment is to help decision makers judge whether the expected cost of the transport intervention is justified by monetising the expected benefits to the public and society. The VfM categories as defined by the DfT are presented in Table 3-28.

**Table 3-28 - Value for Money categories**

Value for Money category	Implies
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 1.5
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

As a qualitative assessment of the social and environmental impacts has not been undertaken as part of the appraisal, there is insufficient information surrounding these impacts to incorporate them into the VfM statement. Considering that none of the scheme BCRs are particularly close to a VfM category threshold and given the information available at present, it is not anticipated that the VfM category would be influenced. Further qualitative and quantitative analysis will be undertaken at OBC stage which may identify impacts that could influence the VfM categorisation.

With Table 3-28 in mind, the VfM categories of each package are as follows:

- Package A – with a BCR of **1.34**, the VfM category for Package A is classed as **Low**;
- Package B – with a BCR of **1.74**, the VfM category for Package B is classed as **Medium**; and
- Package C – with a BCR of **0.13**, the VfM category for Package C is classed as **Poor**.

Level 2 impacts have not been considered at this stage, therefore this is an Initial BCR which may change at the next stage of business case development when an adjusted BCR is calculated.

Other key findings from the assessment comprise:

- PVCs for the three packages range from £284.9m for Package B to £138.8m for Package C;
- PVBs for the three packages range from £494.8 for Package B to £18.0m for Package C;
- The scheme's main benefits for all Packages are derived from highway users, with Active Modes delivering relatively large benefits in Package C when compared to the other benefit streams of this package. This is due to the effect of improving the active travel network without making significant improvements to the highway network;
- In Packages A and B, the trips generating the most benefits are journeys to or from Huntingdon and St Ives. Trips using the A141 to travel to or from areas external to the study area also generate significant benefits.
- In Packages A and B, the trips generating the most benefits are journeys to or from Huntingdon and St Ives. Trips using the A141 to travel to or from places external to the study area also generate significant benefits. This reflects the role of the A141 as both an important local and strategic highway route;
- In Package C, the scheme benefits Huntingdon, but brings a disbenefit to St Ives. This is because the bypass upgrade encourages more trips by car, leading to increased flow on the A1123;
- Qualitative environmental and social assessments have been completed for all packages. The impacts on these are largely considered to be slight or neutral. There is potential for a larger disbenefit to Biodiversity due to the location of the Great Stukeley Railway Cutting SSSI, which will be assessed further at OBC; and

Overall, the strongest package is Package B, which provides Medium VfM. Hence this package should be assessed further as the business case develops. The next steps are detailed in the subsequent section (Section 3.7).

## 3.7. Next steps

The appraisal of the three packages shows that there is a clear economic case for a full bypass of Huntingdon and St Ives with integrated active and public travel provisions. Therefore, the best performing package, Package B, should be investigated further at OBC stage, as set out in the following section.

### 3.7.1. Dual vs single dual carriageway

Further investigation will be undertaken at OBC stage to determine whether the proposed bypass should be single or dual laned. Figure 3-8 and Figure 3-9 shows the forecast flow on sections of the proposed bypass in relation to the estimated single lane capacity. It is considered that a dual carriageway is likely to be the most suitable highway intervention, in order to accommodate forecasted growth at Huntingdon and prevent stifling of growth around St Ives.

### 3.7.2. Package B – junction layouts

As the scheme develops further, a more detailed assessment of the scheme's forecasted performance can be undertaken. As Package B is the best performing of the options, it is expected that variations of this will be tested at OBC. This includes testing the bypass without some of the junctions or revising the layout of some junctions. This presents an opportunity for Value Engineering, which is where an objective is met but at minimal cost.

### 3.7.3. More detailed layout of A1123/A1096/B1040 junction

This junction is located at the eastern end of St Ives and is a key pinch point of major roads in the area. The modelling results have identified that this junction is critical to the performance of the scheme in all packages. At OBC stage, further options testing will be undertaken to determine how to maximise the performance of this junction through effective design.

### 3.7.4. Review of access to St Ives Park and Ride

The model forecasts for the packages show that the scheme will increase traffic on key access roads to the St Ives Park and Ride site, such as Harrison Way. Due to this, travel by this mode becomes less attractive, pushing people to use other modes of transport. This results in a disbenefit to trips using the guided busway. At the next stage of scheme development, the access to the Park and Ride will be reviewed in order to mitigate potential impacts from the scheme.

### 3.7.5. More detailed growth scenario

To reflect the high growth that is outlined in section 2.1, a more spatially detailed high growth scenario will be developed at OBC. This will enable the benefits of the scheme on future scenarios to be forecast more accurately.

## 4. Financial Dimension

### 4.1. Introduction

This chapter sets out the Financial Dimension for the Huntingdon and St Ives Transport Study Scheme. The objective of the Financial Dimension is to provide evidence as to the affordability of the proposed scheme including funding arrangements and technical accounting issues. At SOC stage, the DfT document '*The Transport Business Cases*'<sup>64</sup> requires that the Financial Dimension contains the following:

- An introduction outlining the approach taken to assess affordability (Outline), section 4.2 ; and
- Analysis of budgets / funding cover for the project (Outline), section 4.4.

The following aspects of the Financial Dimension are not required at SOC stage and will therefore be considered at Outline Business Case (OBC) and beyond:

- Costs (not required at SOC, but high-level capital cost estimates are nevertheless included in this Chapter); and
- Accounting implications.

### 4.2. Capital cost

At this stage, high-level initial capital cost estimates have been made based on the Huntingdon and St Ives network structure presented in the section 2.11. Estimates of cost are based on current cost rates, based on unit prices for infrastructure and the associated works. Table 4-1 presents the initial capital cost per option; these capital costs include both the highway, public transport and active travel elements of the options.

The costs produced are based on the following assumptions:

- The prices are as at Q3 2021 and exclusive of VAT;
- Inflation at a rate of 2.2%;
- Ground conditions are generally good with no soft spots;
- "Shallow foundations" for the entire length of the roadway i.e. no piling;
- Stabilisation of soils not required over and above risk allowance;
- Services are generally not diverted but protected;
- No major ecological impacts i.e. badgers, owls, newts, etc. over and above risk allowance; and
- An allowance for 20% preliminaries, 25% traffic management and 30% contingency.

There are also a number of exclusions for the costs as follows:

- Works arising from asbestos surveys or analyses;
- Works arising from the identification of hazardous materials;
- Treatment of contaminated ground over and above allowance;
- Abnormal ground conditions over and above risk allowance;
- Client direct order works;
- Requirements imposed by Planning Authority or Fire Officer;
- Agency costs, legal fees and finance charges;
- Development taxes, levies or other "planning gain" items;
- Section 106 costs/278 agreements;
- VAT;
- Statutory fees;

<sup>64</sup> The Transport Business Cases, Department for Transport, Table 5.1 – Contents of the Commercial Case.  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/85930/dft-transport-business-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf)



- Land acquisitions and associated costs (CPO);
- Piled foundations; and
- Professional fees and surveys.

**Table 4-1 - Capital costs (£m) (2021 price base)**

	Package option A	Package option B	Package option C
Expected capital cost	£312	£364	£175

More detailed cost estimates will be provided as the scheme develops to the OBC stage.

### 4.3. Operating and maintenance costs

Operating and maintenance costs have been excluded from cost estimates due to the early stage of scheme development. At OBC, work will be undertaken to calculate operating and maintenance costs for the scheme.

### 4.4. Funding

At this stage of the SOC it is assumed that the funding for the Huntingdon and St Ives Transport Study Scheme is to be received from the Department for Transport (DfT). This is to be confirmed as part of the next stage of the project at the OBC/FBC stage. It is possible that some elements of the scheme, such as active travel improvements, could be funded through local contributions. These opportunities will be explored further at a later stage of project development.

## 5. Commercial Dimension

### 5.1. Introduction

This chapter sets out the Commercial Dimension for the Huntingdon and St Ives Transport study scheme. The objective of the Commercial Dimension is to provide evidence as to the commercial viability of the proposed scheme and outline how the scheme can be procured, delivered and operated as required.

At the SOC stage, the DfT document *'The Transport Business Cases'*<sup>65</sup> requires that the Commercial Dimension contains:

- An introduction outlining the approach taken to assess commercial viability (Complete, Section 2.2);
- An output-based specification which summarises the requirement in terms of outcomes and outputs, supplemented by a full specification as annex (in outline, Section 2.3); and
- A procurement strategy detailing procurement / purchasing options including how they will secure the economic, social and environmental factors outlined in the Economic Case (in outline, Sections 2.4 and 2.5).

The following aspects of the Commercial Case are not required at SOC stage and will therefore be considered further at OBC and beyond:

- Sourcing options;
- Payment mechanisms;
- Pricing framework and charging mechanisms;
- Risk allocation and transfer;
- Contract length;
- Human resource issues; and
- Contract management.

### 5.2. Outline approach to assessing commercial viability

The Commercial Dimension sets out options for the potential procurement strategies available to engage the market, setting out the financial implications of each strategy and the commercial strategy that drives best value for money.

At this stage of the SOC development, the Commercial Dimension has been prepared at a high level, to provide a strategic outline or overview. The Commercial Dimension would be developed in future stages following the steps outlined below:

- Set the procurement objectives, define desired outcomes, and identify potential constraints;
- Identify potential procurement / purchasing options;
- Assess the procurement options in terms of pros and cons, to develop a rationale for selecting the preferred sourcing option;
- Confirm the preferred payment mechanism and pricing framework; and
- Assess how different types of risk might be apportioned / shared, with risks allocated to the party best placed to manage them.

CPCA should work to secure the infrastructure associated with the scheme. In terms of infrastructure the scheme itself is considered major, however it would be a relatively conventional highway-type construction. In terms of operations, despite there being little change to public transport services, the Commercial Dimension must reflect the legal context for local transport services. At this early stage, the Commercial Dimension sets out a range of potential procurement routes for the infrastructure. These routes will require further consideration as the business case is developed.

<sup>65</sup> The Transport Business Cases, Department for Transport, Table 5.1 – Contents of the Commercial Case.  
[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/85930/dft-transport-business-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf)

### 5.2.1. Summary of options

Three corridor option packages for the Huntingdon and St Ives Transport study scheme (as described in the Strategic Dimension) have been considered within this Commercial Dimension. To identify an appropriate procurement strategy for the infrastructure (capital) outputs for these options, it is important to understand both the engineering and logistical complexity of each option. In terms of infrastructure, the key characteristics of the three options are as follows:

- Construction of a bypass;
- Improvements to active travel connections; and
- Improvements to public transport connections.

Different elements of the packages are likely to be implemented using different routes depending on the nature of the infrastructure delivered.

### 5.3. Output based specification

Sections 2.5 and 2.6 set out the strategic objectives and intended outcomes of the scheme. The scheme objectives as defined by the CPCA are as follows:

1. Address current congestion and delay in the study area, thus reducing journey times and improving reliability, and relieving local routes affected by traffic re-routing from the A141 and A1096/A1123;
2. Ensure sufficient transport capacity to accommodate transport demand in the study area from new growth sites in the region;
3. Contribute to improving connectivity and quality for walking and cycling along and across the study area, by incorporating appropriate provision within the scheme and/or enabling the existing A141 and St Ives transport network to better support these modes;
4. Contribute to improving bus service routing, access, and reliability across the corridor and through St Ives Town Centre; and
5. Ensure any future route of strategic public transport infrastructure is taken into consideration<sup>66</sup>.

The objectives have been developed into a set of outcomes and outputs as follows:

1. Socio-economic outcomes:
  - a. Provide conditions that encourage inward investment in higher-value employment sectors;
  - b. Improve access around Huntingdon, to/from the strategic road and rail networks, and to/from London; and
  - c. Reduce spatial inequalities across Cambridgeshire, by sharing and expanding the benefits of Greater Cambridge's success.
2. Transport outcomes:
  - a. Contribute to a coordinated package of investment in the area to increase capacity, reliability and speed for public transport, pedestrians, cyclists and equestrians;
  - b. Minimise the amount of rat-running;
  - c. Maintain traffic levels at or below 2018 levels;
  - d. Minimise vehicle mileage whilst providing for increased travel demand; and
  - e. Intercept or substitute car trips with alternative transport modes.
3. Environmental outcomes:
  - a. Contribute to the reduction of emissions to 'net-zero' by 2050, to minimise the impact of transport and travel on climate change.

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<sup>66</sup> Cambridgeshire & Peterborough Combined Authority (2020) – *Local Transport Plan*

Any chosen procurement option must be able to ensure delivery of the on-street infrastructure which delivers the intended scheme outcomes and meets the identified objectives.

Initial concept designs of the Huntingdon and St Ives Transport study scheme have been completed by Atkins during option development and assessment to establish the feasibility of initial scheme design. Preliminary design of the proposed scheme is yet to be undertaken and will be completed during the later stages of business case development.

In line with the identified scheme packages detailed in section 2.11 and the associated initial concept designs, the chosen procurement option must ensure successful development of the proposed options shown in Figure 5-1.

**Figure 5-1 - Summary of proposed scheme options**

Package A	Package B	Package C
Full Bypass between Spittal's Interchange and the A1096	Full Bypass between Spittal's Interchange and the A1096	Hybrid Bypass of Huntingdon
No junctions along the route with the exception of the existing A141 near the B1090	Junctions along the route where it crosses the existing highway	St Ives Junction Improvements
Huntingdon and St Ives Pedestrian, Cycle and Equestrian Measures	Huntingdon and St Ives Pedestrian, Cycle and Equestrian Measures	Huntingdon and St Ives Pedestrian, Cycle and Equestrian Measures
Huntingdon and St Ives Public Transport Measures	Huntingdon and St Ives Public Transport Measures	Huntingdon and St Ives Public Transport Measures

It is expected that the preferred option will meet as many of the agreed objectives, as outlined in the Strategic Dimension, as possible whilst returning greatest Value for Money.

The full details of how the schemes will be measured against these objectives will be provided in the Benefits Realisation Plan and Monitoring and Evaluation Plan developed during later stages of the business case development process. Further details are provided in section 6.1.

For the purposes of highlighting the ability of different procurement methodologies to deliver these outputs, it is helpful to simplify the list into key concepts for contracts: Cost, Quality and Time. In this case Quality is understood more widely as not only the standard of infrastructure, but also the ease and speed of undertaking a journey when utilising the improved connectivity. Time is important in the delivery of both Quality and Cost; delivering a transport network quickly increases utility of the new transport scheme due to earlier use. Time and Cost are key differentiating factors between possible procurement methodologies.

Developing a set of requirements for the outputs will be key to a successful procurement process whether that process is Traditional, Design and Build (D&B) or Develop and Construct (D&C). As the Commercial Dimension develops, a specification will be developed to achieve the outcomes set out above.

## 5.4. Tendering procedure

The Public Contracts Directive 2014 issued by the European Union was implemented in the UK through the Public Contracts Regulations 2015. CPCA as the public authority responsible for procuring the Huntingdon and St Ives Transport Scheme, are required to comply with these regulations. The regulations describe several

options for procurement processes for contracts and the criteria that determine which of these options can be applied. The options given are outlined in the following sections.

#### 5.4.1. Open procedure

Bids for the contract are received from any applicant who fulfils certain minimum criteria. This procedure requires a fully developed scheme design and proposal and may result in the receipt of numerous bids. This procedure allows an unlimited number of interested parties to tender against defined parameters.

There are no restrictions (e.g. pre-qualification) on the parties who are permitted to tender, meaning that some parties may not be suitable to carry out the work. This procedure is straightforward and transparent but can attract numerous potential bidders (which will require a greater degree of assessment and resource requirements).

It also takes considerable time and resource, as well as limiting time for Early Contractor Involvement (ECI), and buildability input from the contractor.

#### 5.4.2. Restricted procedure

Applicants are required to submit a pre-qualification application from which a short list of the most suitable applicants is drawn up. Bids are invited only from those applicants on the short list. This is a two-stage procedure.

The first stage allows the contracting authority to set the minimum criteria relating to technical, economic and financial capabilities that the potential bidders must satisfy, and suppliers are alerted to express an interest to a contract opportunity by obtaining and submitting a selection questionnaire which is used to establish such aspects as their capability, experience and suitability.

The second stage involves shortlisted suppliers which meet the selection criteria being invited to tender. All tenders are evaluated in line with the methodology and award criteria set out in the tender documentation.

#### 5.4.3. Competitive dialogue procedure

Competitive dialogue procedure may be used where the needs of the contract cannot be met with readily available solutions, and the Open or Restricted procedures are not considered suitable. In this case applicants are shortlisted but the solution for the scheme is developed with the applicants, at which point a reduced number of applicants are asked to submit a final tender.

This procedure is appropriate for complex contracts where contracting authorities are not objectively able to define the technical means capable of satisfying their needs or objectives; and / or are not objectively able to specify the legal and / or financial make-up of a project.

This is a multi-stage procedure. The first stage is a pre-qualification to select the potential bidders to participate in the dialogue. In the second stage the contracting authority enters a dialogue with the potential bidders to identify and define the means best suited to satisfying their needs.

Any aspect of the contract may be discussed, including technical requirements for the works to be delivered and the commercial / contractual arrangements to be used. The dialogue may be conducted in successive phases with the remaining bidders being invited to tender.

By the end of the dialogue phase the contracting authority's requirements will have been determined such that the scheme can be tendered. In the final stage, the remaining bidders from the dialogue phase are invited to tender for the scheme.

#### 5.4.4. Competitive procedure with negotiation

Competitive procedure with negotiation is a relatively new procedure intended to be used where minimum requirements can be specified but negotiations with bidders may be needed to improve the initial tenders. The grounds for using this procedure are as follows:

- Where needs cannot be met without adaptation of readily available solutions;
- Where the contract includes design or innovative solutions;
- Where the requirement is complex in nature, in its legal and financial makeup or because of its risks;
- Where the technical specifications cannot be established with sufficient precision; and

- In the case of unacceptable/irregular tenders.

Within this procedure, bidders initially submit tenders based on the information issued by the contracting authority. The contracting authority is then able to review the tenders it has received and negotiate with the bidders, following which the tenders will be resubmitted. This procedure may therefore be useful where the requirements are well developed initially and full tender documents can be produced, but it is felt that there may be advantage in retaining the ability to negotiate if there are certain aspects which bidders raise.

#### 5.4.5. Tendering summary

It is likely that this scheme will be procured using the Restricted Procedure. However, further options for tendering will be considered at the OBC / FBC stage.

### 5.5. Procurement strategy

A procurement strategy has been prepared to address the output risks for the infrastructure options identified within the Strategic Dimension. As the scheme is at an early stage, routes to procurement are still open. The CPCA is expected to procure many of its professional services through frameworks with suppliers that have been pre-selected by virtue of their capabilities, experience, capacity and behaviours.

Risks to operational performance should sit with the scheme promoter and the outline designer, whereas risk to time and costs, especially during implementation, would sit with the contractor.

The CPCA are able to access any procurement route for the work. The most common / local streams include:

- Framework: CCC is part of the Eastern Highways Alliance Framework 3. The contractors on this framework are Carillion Construction Services; Eurovia Infrastructure; Interserve Construction; Jackson Civil Engineering Group; Kier Infrastructure and Overseas Morgan Sindall;
- Standalone – ‘Find a Tender’ service. This is the new UK e-notification service, introduced on 1st January 2021. Notices for new procurements from public sector organisations are required to be published in place of the Official Journal of the European Union’s Tenders Electronic Daily (OJEU / TED), following the end of the Brexit Transition Period;
- Existing Cambridgeshire Highways Services Contract: Cambridgeshire Highway Services Contract with Milestone Infrastructure; and
- Joint Professional Framework: A new joint framework between CCC and Peterborough City Council for the procurement of professional services was awarded to Atkins and WSP in April 2021.

#### 5.5.1. Procurement options

The relative advantages and disadvantages of the established procurement routes are summarised in Table 5-1.

**Table 5-1 - Procurement Routes Comparison**

Procurement Route	Advantages	Disadvantages
Eastern Highways Alliance Framework 2	<ul style="list-style-type: none"> <li>- Reduces procurement time and cost</li> <li>- Quality checks have already been carried out through a framework tender process</li> <li>- Further benefits from historical programme of work through efficiency savings and lessons learnt</li> </ul>	<ul style="list-style-type: none"> <li>- May exclude contractors that could potentially offer benefits not offered by framework contractors</li> <li>- Framework contractors may not bid as competitively as those in a standalone contract</li> </ul>
Standalone Procurement Process	<ul style="list-style-type: none"> <li>- Competitive tender process provides reassurance that a competitive price has been achieved and the most suitable contractor is selected</li> <li>- Opportunity for a wide range of contractors to be invited to tender</li> </ul>	<ul style="list-style-type: none"> <li>- Tender process can be lengthy and costly</li> <li>- Risk that an unfamiliar contractor winning the tender based on price but does not deliver to required performance criteria</li> </ul>



Procurement Route	Advantages	Disadvantages
Cambridgeshire Highways Services Contract	<ul style="list-style-type: none"> <li>- Reduces procurement process and timescale</li> <li>- Quality checks already carried out</li> </ul>	<ul style="list-style-type: none"> <li>- Price comparisons cannot be made</li> <li>- Different approaches to delivery and risk not available</li> </ul>
Joint Professional Services Framework	<ul style="list-style-type: none"> <li>- Reduces procurement process and timescale</li> <li>- Quality checks already carried out</li> <li>- Familiarity/understanding of project</li> </ul>	<ul style="list-style-type: none"> <li>- Price comparisons only possible between two providers on framework</li> <li>- Different approaches to delivery and risk not available</li> </ul>

There may also be other procurement and delivery routes which the CPCA will explore as they seek to expedite and accelerate the delivery of transport measures.

### 5.5.2. Capital works procurement strategy

The Capital Works Procurement Strategy must acknowledge appropriate risk allocation, work with the design strategy, and set the appropriate engagement of consultants and contractors for the detailed design and implementation. The capital works strategy is realised through the resulting project organisation, project management, contracting strategy and the consistency and coordination of the contract terms between the client and external organisations.

There are several different options available for the scheme promoter to procure the best suite contractor to deliver the preferred package of works including:

- Traditional arrangement – Scheme promoter appoints a consultant to design the project and prepare tender documents and then contractors are invited to submit tenders;
- Single stage design and build – design and construction of the scheme is tendered as one package;
- Two stage design and build – the same as the single stage design and build but there is potential to review contractors' performance and cost and stop the process at the end of design phase if needed;
- Early Contractor Involvement – like traditional arrangement but contractor is appointed during preliminary design stage under consultancy agreement to provide advice on construction; and
- Private Finance Initiative – scheme promoter buys the scheme from the private sector on long-term basis (typically 25 years).

### 5.5.3. Procurement summary

In accordance with the DfT's The Transport Business Cases, the sourcing option for construction will be assessed in further detail and agreed at the FBC stage.

## 5.6. Procurement to date

Procurement to date has solely been the commission of consultants Atkins to identify and prepare the preliminary scheme and SOC. No contractors have yet been commissioned for delivery of the physical infrastructure or services.

## 5.7. Procurement timescales

Timescales for the procurement process will be developed within the OBC. This will set out projected timescales for the procurement of infrastructure and services.

## 5.8. Procurement frameworks

This section sets out the in-principle strategy for procurement of consultant and contractor services to deliver the Huntingdon and St Ives Transport Scheme. Consultant services extend to design and advisory services to the CPCA, and contractor services include construction of the scheme.

The highways industry uses several recognised procurement methods for delivering civil engineering and highway schemes. Each procurement method can be used for selecting a Service Provider. Several procurement methods, in this instance Frameworks, will be further considered at the OBC and FBC stages.

## 5.9. Preferred procurement approach

This will be determined at a later stage.

## 5.10. Procurement route

This will be determined at a later stage.

## 5.11. Payment mechanism

Payment timing will be utilised to maximise the value from the contract through minimising financing and construction costs. Prompt and fair payment mechanisms will be applied throughout the supply chain, in accordance with the contract tender documents issued as part of the procurement process. The contract will be written to ensure that:

- The project objectives are achieved;
- Risks are mitigated before and during construction; and,
- Best value is achieved in terms of overall delivery.

Guidance from the Local Government Task Force states that “where practicable, payment mechanisms should be chosen to reflect opportunities offered by integrated team working. Wherever possible steps should be taken to discourage the potential abuse of retentions within the supply chain.

In accordance with the DfT’s The Transport Business Cases, the payment mechanisms will be agreed at the FBC stage.

## 5.12. Pricing framework and charging mechanism

It is anticipated that appropriate performance targets, including incentives or deductions, will be built into the proposed contracts for scheme delivery. The precise mechanisms will be decided at FBC stage.

## 5.13. Risk allocation and transfer

The allocation of risk is a pre-requisite to considering the optimum procurement approach and contracting model. For example, “price certainty” is bought by paying the contractor to accept the risk of fixing a price in a commercial, changing market.

The usual approach to risk transfer is that the management of a particular risk will rest with the party best placed to manage that risk.

Although many of the design risks can only be resolved through rigorous design and review processes, once the design options are clear and the scope of land acquisition, planning requirements, and environmental requirements are fully identified, the primary risks will be related to construction. There is potential for transferring these risks through the construction procurement process. This will be explored fully, and a risk transfer matrix will be developed as the design and procurement processes progress at FBC Stage.

In accordance with the DfT’s The Transport Business Cases information relating to risk allocation and transfer will be completed at the FBC stage.

## 5.14. Contract management

The design works and the associated professional services will be managed by the project sponsor. This will include the monitoring of project fees and the effective management of change. Monthly progress meetings are to be held, with standing items on the agenda such as programme, risks and financial review.

The procured contractor on site will be responsible for Project Management and Supervision. As part of this role, the procured contractor will audit costs to ensure that they are within scheme budgets, monitor the programme, monitor the monthly payment applications, assess compensation events (with client approval), resolve disputes, and supervise the works on site.

Further details will be decided at the FBC stage depending on the procurement route.

### 5.15. Procurement summary

This Commercial Dimension has set out the procurement options and objectives in line with the desired outcomes from the scheme. The procurement strategy is being developed with the outcomes and outputs at the forefront to ensure that the preferred route is the most suitable to achieve the desired end result. The Capital Works Procurement Strategy is based on a number of contract options, likely to be managed through an NEC4 contract, which have been assessed in terms of pros and cons to develop a rationale for selecting the preferred sourcing option.

Following this SOC, the Commercial Dimension for the Scheme will be further considered as part of the OBC. This will develop the strategies identified in this SOC and consider the following / provide more details on the following criteria:

- Sourcing options;
- Payment mechanisms
- Pricing framework and charging mechanisms
- Risk allocation and transfer
- Contract length
- Human resource issues; and
- Contract management.

## 6. Management Dimension

### 6.1. Introduction

This Chapter sets out the Management Dimension for the Huntingdon and St Ives Transport Study Scheme. The purpose of the Management Dimension is to assess if the proposal is deliverable. At the SOC stage, the DfT document '*The Transport Business Cases*'<sup>67</sup> states that the Management Dimension should contain:

- An introduction outlining the approach taken to assess if the proposal is deliverable (Complete);
- Evidence of similar projects to support the recommended project approach (Complete), Section 6.2;
- A summary of programme / project dependencies including deliverables and decisions that are provided or received from other projects (Outline), Section 6.3;
- A description of the governance, organisational structure and roles (Complete), Section 6.5;
- A programme and project plan (Outline), Section 6.6;
- An assurance and approvals plan (Complete), Section 6.7;
- A communication and stakeholder management strategy (Outline), Section 6.8;
- A description of programme and project reporting (Outline), Section 6.9;
- A risk management strategy (Outline), Section 6.10; and
- A summary of the overall approach for project management at this stage of the project (Outline).

The following aspects of the Management Dimension are not required at SOC stage and will therefore be considered at OBC and beyond:

- Implementation of workstreams;
- Key issues for implementation;
- Contract management;
- A benefits realisation plan;
- Monitoring and evaluation; and
- A contingency plan.

### 6.2. Evidence of similar projects

#### Ely Southern Bypass

The Ely Southern Bypass forms a new road between the A142 at Angel Drove to Stuntney Causeway with the aim to ease congestion in and around Ely. The construction of Ely Southern Bypass also facilitates active travel mode improvements. The Ely Southern Bypass was forecast to reduce journey times on the routes by up to 56%. It was also forecast to reduce delays for motorists leaving the station by 50% at peak times and the addition of a new walkway will bring new opportunities for pedestrians.

A contract for the detailed design, technical approval and construction of the bypass was tendered in line with procurement regulations and the contractor VolkerFitzpatrick was appointed in summer 2016. Ely Southern Bypass opened to traffic on Wednesday 31<sup>st</sup> October 2018. The bridge walkway opened 23<sup>rd</sup> January 2019 and the Ely underpass opened 28<sup>th</sup> February 2019. The project was funded by the CPCA, CCC, East Cambridgeshire District Council, (£22 million Growth Deal which includes £16 million from Department for Transport) and Network Rail. An extra £13 million was allocated to cover cost increases due to the issues related to building on a floodplain and near a national heritage site.

The Ely Southern Bypass has many similarities with the Huntingdon and St Ives Transport scheme, in that they both provide an additional corridor to ease congestion within the area and provide better connectivity for public

<sup>67</sup> The Transport Business Cases, Department for Transport, Table 5.1 – Contents of the Commercial Case. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/85930/dft-transport-business-case.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf)

transport and active travel. This provides confidence that the scheme proposed within this SOC is deliverable and will be able to address the objectives defined by CPCA.

### 6.3. Programme and project dependencies

The scheme programme will need to consider the following key dependencies / constraints, as summarised below in Table 6-1.

**Table 6-1 - Key dependencies and constraints**

Project	Dependency	Risk for Huntingdon and St Ives Transport Scheme
Local Plan Growth	Huntingdonshire Local Plan identifies the need for an additional 20,100 new houses to meet population forecasts between 2011 and 2036, coupled with 14,400 additional jobs. There are several allocations in Huntingdon around the A141, St Ives and the surrounding area.	Increased congestion.
Land Availability and Access	The acquisition of land is likely to be required for the schemes.	Gaining access to the land in order to construct these options.
Waterways	The Huntingdonshire Local Plan has identified flooding as a key challenge for the local area going forward. It is recognised that Huntingdon is situated between low lying fenland and the River Great Ouse which is susceptible to flooding.	Risk of flooding when infrastructure on the flood plain is being built. Unable to use infrastructure at certain times of the year due to flooding.
Cambridge County Council	St Ives package of schemes – including a package of smaller schemes to improve St Ives.	Conflicts of programmes.
Cambridge and Peterborough Combined Authority Independent Commission on Climate	The Independent Commission on Climate produced the Initial Recommendations report in March 2021. This report, one of two due to be published from the Independent Commission this year, puts a spotlight on the first four key areas of transport, buildings, energy and peat. From the report a number of recommendations are made for transport including 1) Complete phase-out of the use of cars running on fossil fuels by 2050 within the CPCA area, 2) All buses and taxis operated within the CPCA area, and Council owned and contracted vehicles, should be zero emissions by 2030, 3) Reduction in car miles driven by 15% to 2030 relative to baseline, 4) Diesel vans and trucks to be excluded from urban centres by 2030 and local zero emission options pursued.	Improper scheme definition leads to increased vehicle mileage.
Funding	At present funding is in place for the current stage of the Huntingdon and St Ives Transport Study Scheme including the development of the SOC.	N/A

Whilst there is a risk of a conflict of programmes between elements of the scheme and CCC projects, the scheme programmes will also be reviewed for alignment with other commensurate transport projects to deliver efficiencies in infrastructure delivery.

The dependencies above will also form part of the scheme risk register to be developed during the OBC phase. In addition, other potential influences on the project, such as changes to political governance, changes to transport policy and the relationship with local developers and stakeholders will also be included. It is

anticipated that the scheme risk register will be developed jointly between the scheme consultant and the client at the inception of the OBC phase and continually updated throughout the remainder of the scheme's development.

## 6.4. Powers and consents

Given that the preferred option has not been decided at this stage of scheme development, the most appropriate delivery path has not been determined and therefore the exact planning approvals and consents required cannot be determined. Subject to approval to proceed, the authority taking the scheme through the next stage of scheme development will review the requirements as part of the next stage of scheme development and ensure that time and budget will be allocated to enact these powers.

## 6.5. Governance, organisational structure and roles

This section describes the key roles and lines of accountability and how they will be resourced. The project processes and resources are set out in a separate Project Management Plan (PMP) and Project Initiation Document (PID) agreed by the Project Board. The project process is based on the DfT major scheme development methodology, which includes the following key aspects.

### 6.5.1. Executive Board

The CPCA is responsible for the development and the delivery of the Huntingdon and St Ives Transport Study Scheme. To progress the project onto the next stage collaboration with CCC is necessary.

Given the current stage of the project, a finalised project governance and organisational structure for managing the delivery of the Huntingdon and St Ives Transport Study Scheme is yet to be determined. The structure and roles defined below represent a likely governance structure going forward and may be amended as the project develops.

A key role of the Executive Board is to agree and oversee the delivery of a programme of major schemes that will help achieve the CPCA aims and support the sustainable growth and continued prosperity of the Greater Cambridge region, in line with national and local policy objectives and the Local Enterprise Partnership's (LEP) overarching economic strategy for the area. In particular, the Executive Board:

- Takes responsibility for ensuring value for money is achieved;
- Identifies prioritised list of investments within the available budget;
- Makes decisions on individual scheme approval, investment in decision making and release of funding, including scrutiny of individual scheme Business Cases;
- Monitors the progress of Scheme delivery and spend; and
- Actively manages the budget and programme to respond to changed circumstances (delay to programme, scheme alteration, cost increases etc).

### 6.5.2. Project Board and Project Team

The Project Team will consist of all the key project delivery partners/ stakeholders. The Project Team will be responsible for the daily running of the project, coordinating with all key stakeholders, and managing the delivery programme. The Project Team will be responsible for scheme delivery, and the day-to-day management of all partners. The Project Team will co-ordinate inputs from technical advisors responsible for the delivery of key work streams within an agreed programme, including:

- Stakeholder Engagement;
- Design Development;
- Transport Modelling;
- Environmental Assessment; and
- Business Case Development.

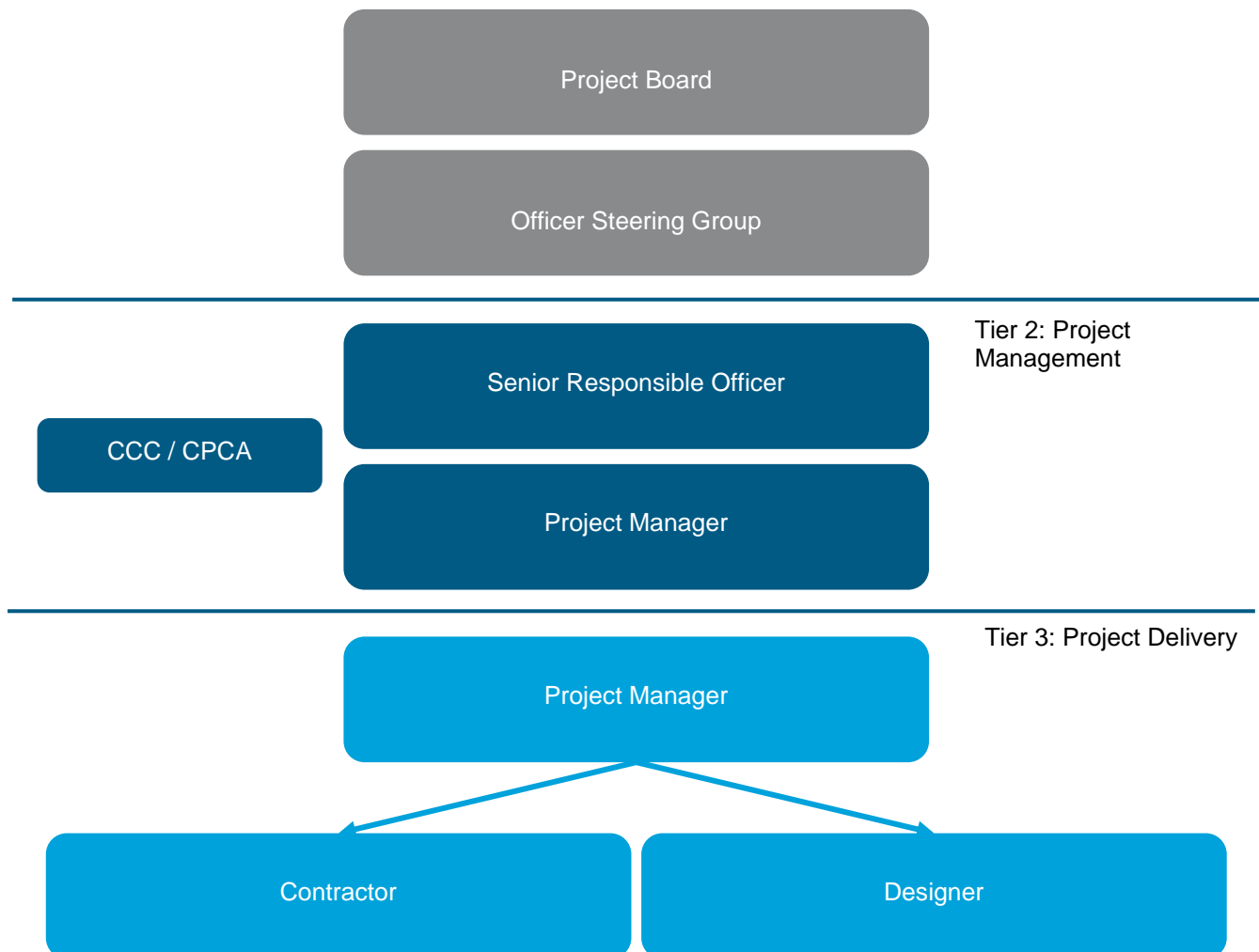
A CCC Project Board will be used to oversee the continued development and delivery of the schemes by the Project Team, and to make key decisions relating to the delivery of the project. The Project Board will be supported by technical specialists. Key stakeholders will be invited to attend as necessary.



The Project Management Team will report to the CCC Project Board, and ultimately to the CPCA Project Board.

The organisational structure for the scheme is illustrated in Figure 6-1 below. As the business case process progresses through stages the organisation structure will become more detailed. A RACI (Responsible, accountable, consulted and informed) model will be utilised to clearly lay out roles and responsibilities for any activity / role.

**Figure 6-1 - Organisational structure for scheme**



### 6.5.3. Decision making and change control

The CPCA's Assurance Framework sets out the decision-making process for investments in Cambridgeshire and Peterborough, to ensure accountability and transparent decision making.

Investment decisions using public funds will be made with reference to statutory requirements, conditions of the funding, local transport objectives and through formal LEP involvement. The monitoring and S73 officers review all proposed funding decisions and their comments are included in all public or delegated power reports.

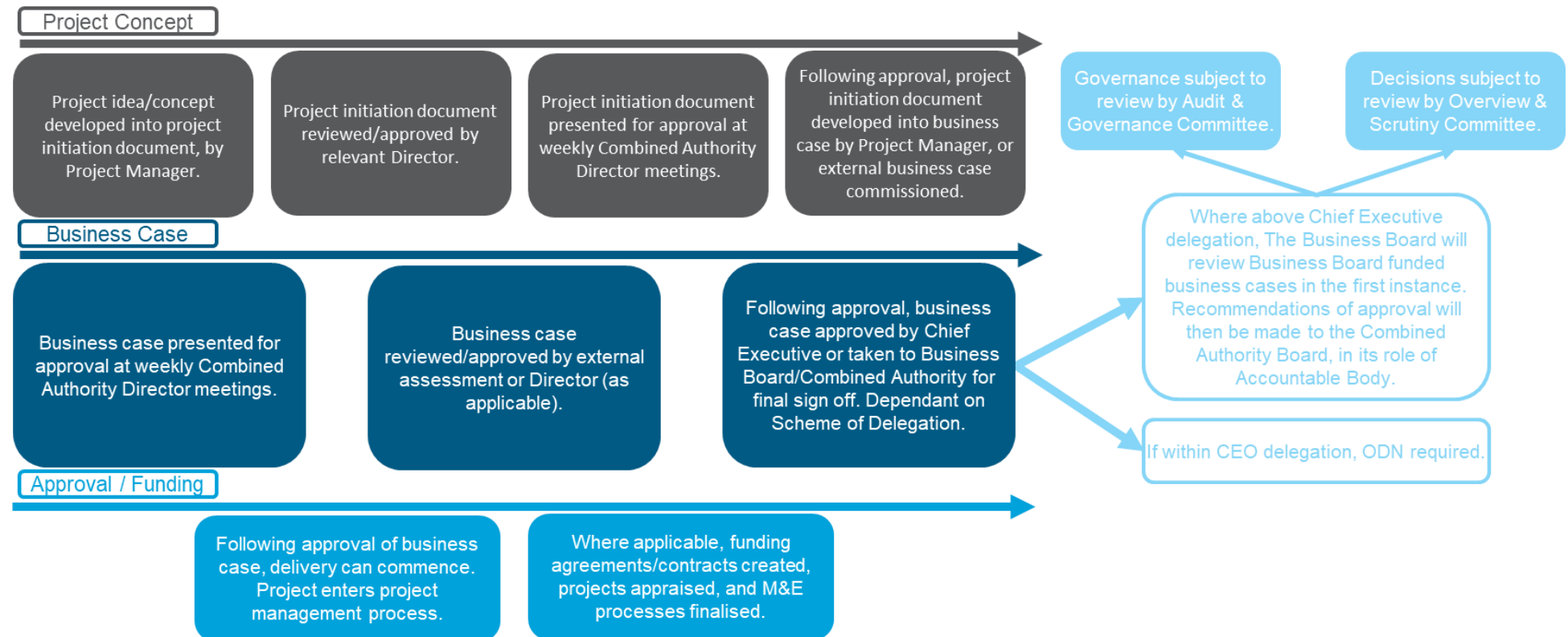
At the start of each stage, the CPCA Project Manager will produce a Project Initiation Document (PID), to identify the expected expenditure, timescales for delivery and proposed outcomes of the project. PIDs are approached and approved during the CPCA weekly director meetings. Following approval the Project Manager can then arrange for the Outline Business Case to be developed, following TAG.

The Business Case will be initial appraised and approved at the weekly CPCA Director meetings. The Business Case will then require final approval to commence to project delivery. This may be via the monthly CPCA Board cycle or by CPCA Officers. Projects with additional political sensitivities or a variation to an original board

approval are required to go to CPCA Board for approval, even when the Chief Executive has delegated authority to sign off.

The decision-making process is summarised in Figure 6-2.

Figure 6-2 - Decision making process



## 6.6. Programme and project plan

A definitive timeline for key project milestones is yet to be determined. In terms of moving the project forward the Huntingdon project should be progressed initially followed by the St Ives aspects.

## 6.7. Assurance and approvals plan

The project will be managed in line with and existing assurances and approval processes. The Project Manager will be responsible for the daily running of the project, and any approval required will be provided by CCC Project Board and CPCA.

Technical Assurance will be provided by the CPCA's Technical Assurance Framework, and each stage of the project will be reviewed by the CPCA's independent technical reviewer. Once the independent technical reviewer is satisfied, a recommendation is made to the CPCA Board to approve funding for further stages of the project, including construction.

## 6.8. Communication and stakeholder management

This section sets out the strategy for communications and stakeholder management on the project. All communication will be signed off by the Project Manager. The strategy ensures that all internal and external stakeholders are informed of relevant project information and that timely and accurate messages about the project are disseminated to a range of identified stakeholder groups. The relevant stakeholders are outlined in 2.10.4.

Key stakeholders will be identified and involved in the delivery of the study in a number of ways. Public and stakeholder engagement is an important means of solving problems and making decisions that directly impact upon those living, working, using services and doing business in the local area. Such engagement may include informing, consulting with, involving, collaborating with and empowering stakeholders to understand the issues to enable them to make informed choices. Communication and Stakeholder engagement will continue as the project progresses, including:

- Regular updates on delivery progress and key activities to the local community, businesses and key stakeholders;
- Engaging with the local community, businesses and key stakeholders about delivery to ensure local needs are taken into account throughout the duration of the project; and
- Ensuring information is shared using appropriate methods of communication to all sectors of the community, businesses and key stakeholders.

## 6.9. Programme and project reporting

The Project Manager will report how the project is performing against the project objectives / key milestones and this will be reported on a regular basis to the Project Board.

The CPCA is the organisation ultimately responsible for the delivery of Huntingdon and St Ives Transport Study Scheme. The project team will report back to the CPCA.

Every month the Project Manager will also submit a highlight report to the CPCA recording what progress has been made and whether there are any new risks that could impact the scheme. Financial progress will also be reported.

Regular Project Progress Meetings will be held throughout the duration of the scheme to allow key staff to discuss important issues that could affect the delivery of the scheme.

## 6.10. Risk management strategy

The CPCA have a well-established, proactive process to manage risk, therefore risk management plans should be implemented in accordance with those principles and with best practice.

A Project Risk Register has been developed by CPCA. This identifies potential risks, considers the impact they may have, the likelihood of them occurring, and the measures that will be taken to mitigate these.

The Risk Register completed by Atkins will identify the risks delivering the scheme.

Both Risk Registers form live documents and will be reviewed regularly at progress meetings. Updates are reported to the Project Team and Board through the monthly highlight reports

All risk registers should be reviewed regularly throughout all stage of the business case as well as through construction and post-construction phase.

# Appendices





# Appendix A. Transport Economic Efficiency Tables

### Package A: Economic Efficiency of the Transport System (TEE)

Non-business: Commuting		ALL MODES	ROAD	BUS and COACH		RAIL		OTHER
<u>User benefits</u>	TOTAL		Private Cars and LGVs	Passengers	Passengers			
Travel time	110400		108359	-1942	658			3325
Vehicle operating costs	-9302		-9302					0
User charges	-545		33	340	-918			0
During Construction & Maintenance	0		0	0	0			0
<b>COMMUTING</b>	100553	(1a)	99090	-1602	-260			3325
Non-business: Other		ALL MODES	ROAD	BUS and COACH		RAIL		OTHER
<u>User benefits</u>	TOTAL		Private Cars and LGVs	Passengers	Passengers			
Travel time	100658		96464	-2813	2405			4602
Vehicle operating costs	-12911		-12911					0
User charges	324		112	651	-439			0
During Construction & Maintenance	0		0	0	0			0
<b>NET NON-BUSINESS BENEFITS: OTHER</b>	88071	(1b)	83665	-2162	1966	0		4602
Business								
<u>User benefits</u>			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
Travel time	135330		109618	20534	-559	0	5554	183
Vehicle operating costs	10331		9612	719				
User charges	110		0	11	47		52	0
During Construction & Maintenance	0		0	0	0	0	0	0
<b>Subtotal</b>	145771	(2)	119230	21264	-512	0	5606	183
Private sector provider impacts								
Revenue	-4929					Freight	Passengers	
Operating costs	0					0	0	0
Investment costs	0					0	0	0
Grant/subsidy	0					0	0	0
<b>Subtotal</b>	-4929	(3)				-9155	0	4226
Other business impacts								
Developer contributions	0	(4)						
<b>NET BUSINESS IMPACT</b>	140842	(5) = (2) + (3) + (4)						
<b>TOTAL</b>								
Present Value of Transport Economic Efficiency Benefits (TEE)	329466	(6) = (1a) + (1b) + (5)						

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.  
All entries are discounted present values, in 2010 prices and values

<b>Non-business: Commuting</b>		<b>ALL MODES</b>	<b>ROAD</b>	<b>BUS and COACH</b>	<b>RAIL</b>	<b>OTHER</b>	
<u><b>User benefits</b></u>	<b>TOTAL</b>		<b>Private Cars and LGVs</b>	<b>Passengers</b>	<b>Passengers</b>		
Travel time	156373		153117	-1596	842	4010	
Vehicle operating costs	-11871		-11871			0	
User charges	-602		37	249	-888	0	
During Construction & Maintenance	0		0	0	0	0	
<b>COMMUTING</b>	143900	(1a)	141283	-1347	-46	4010	
<b>Non-business: Other</b>		<b>ALL MODES</b>	<b>ROAD</b>	<b>BUS and COACH</b>	<b>RAIL</b>	<b>OTHER</b>	
<u><b>User benefits</b></u>	<b>TOTAL</b>		<b>Private Cars and LGVs</b>	<b>Passengers</b>	<b>Passengers</b>		
Travel time	146599		141416	-2682	2616	5249	
Vehicle operating costs	-15650		-15650			0	
User charges	342		116	670	-444	0	
During Construction & Maintenance	0		0	0	0	0	
<b>NET NON-BUSINESS BENEFITS: OTHER</b>	131291	(1b)	125882	-2012	2172	0	
<b>Business</b>							
<u><b>User benefits</b></u>			<b>Goods Vehicles</b>	<b>Business Cars &amp; LGVs</b>	<b>Passengers</b>	<b>Freight</b>	<b>Passengers</b>
Travel time	173930		139549	28884	-366		5576
Vehicle operating costs	35825		34294	1531			
User charges	103		0	8	42	0	53
During Construction & Maintenance	0		0	0	0	0	0
<b>Subtotal</b>	209858	(2)	173843	30423	-324	0	5629
<b>Private sector provider impacts</b>							
Revenue	-4801						
Operating costs	0						
Investment costs	0						
Grant/subsidy	0						
<b>Subtotal</b>	-4801	(3)					
<b>Other business impacts</b>							
Developer contributions	0	(4)					
<b>NET BUSINESS IMPACT</b>	205057	(5) = (2) + (3) + (4)					
<b>TOTAL</b>							
Present Value of Transport Economic Efficiency Benefits (TEE)	480248	(6) = (1a) + (1b) + (5)					

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.  
All entries are discounted present values, in 2010 prices and values

Non-business: Commuting		ALL MODES	ROAD	BUS and COACH		RAIL		OTHER
<u>User benefits</u>		TOTAL	Private Cars and LGVs	Passengers	Passengers	Passengers		
Travel time	8110		13793	-5199	-118			-366
Vehicle operating costs	-4090		-4090					0
User charges	-257		-165	826	-918			0
During Construction & Maintenance	0		0	0	0			0
<b>COMMUTING</b>	3763	(1a)	9538	-4373	-1036			-366
Non-business: Other		ALL MODES	ROAD	BUS and COACH		RAIL		OTHER
<u>User benefits</u>		TOTAL	Private Cars and LGVs	Passengers	Passengers	Passengers		
Travel time	3003		9267	-10204	2134			1806
Vehicle operating costs	-5247		-5247					0
User charges	-604		265	-456	-413			0
During Construction & Maintenance	0		0	0	0			0
<b>NET NON-BUSINESS BENEFITS: OTHER</b>	-2848	(1b)	4285	-10660	1721	0		1806
Business								
<u>User benefits</u>			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
Travel time	21398		15854	2299	-1937	0	5298	-116
Vehicle operating costs	-4985		-4615	-370				0
User charges	82		0	33	48	0	1	0
During Construction & Maintenance	0		0	0	0	0	0	0
<b>Subtotal</b>	16495	(2)	11239	1962	-1889	0	5299	-116
<b>Private sector provider impacts</b>								
Revenue	-4938					Freight	Passengers	
Operating costs	0					0	5363	0
Investment costs	0							
Grant/subsidy	0							
<b>Subtotal</b>	-4938	(3)				-10301	0	5363
<b>Other business impacts</b>								
Developer contributions	0	(4)						
<b>NET BUSINESS IMPACT</b>	11557	(5) = (2) + (3) + (4)						
<b>TOTAL</b>								
Present Value of Transport Economic Efficiency Benefits (TEE)	12472	(6) = (1a) + (1b) + (5)						

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.  
All entries are discounted present values, in 2010 prices and values

## Appendix B. Public Accounts Tables

Package A: Public Accounts (PA) Table

	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Local Government Funding	TOTAL	INFRASTRUCTURE			
Revenue	770	0			770
Operating Costs	0				
Investment Costs	0				
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	770 (7)	0	0	0	770
Central Government Funding: Transport					
Revenue	0				
Operating costs	0				
Investment Costs	243606	243606			
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	243606 (8)	243606	0	0	0
Central Government Funding: Non-Transport					
Indirect Tax Revenues	-7382 (9)	-6592	-1369	579	0
TOTALS					
Broad Transport Budget	244376 (10) = (7) + (8)				
Wider Public Finances	-7382 (11) = (9)				
Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.					



Package B: Public Accounts (PA) Table

	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Local Government Funding	TOTAL	INFRASTRUCTURE			
Revenue	732	0			732
Operating Costs	0				
Investment Costs	0				
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	732 (7)	0	0	0	732
Central Government Funding: Transport					
Revenue	0	0			
Operating costs	0				
Investment Costs	284201	284201			
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	284201 (8)	284201	0	0	0
Central Government Funding: Non-Transport					
Indirect Tax Revenues	-411 (9)	338	-1300	551	0
TOTALS					
Broad Transport Budget	284933 (10) = (7) + (8)				
Wider Public Finances	-411 (11) = (9)				
Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.					

Package C: Public Accounts (PA) Table

	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Local Government Funding	TOTAL	INFRASTRUCTURE			
Revenue	1807	0			1807
Operating Costs	0				
Investment Costs	0				
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	1807 (7)			0	1807
Central Government Funding: Transport					
Revenue	0				
Operating costs	0				
Investment Costs	137018	137018			
Developer and Other Contributions	0				
Grant/Subsidy Payments	0				
NET IMPACT	137018 (8)			0	0
Central Government Funding: Non-Transport					
Indirect Tax Revenues	-5271 (9)	-4470	-1558	757	0
TOTALS					
Broad Transport Budget	138825 (10) = (7) + (8)				
Wider Public Finances	-5271 (11) = (9)				
Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers. All entries are discounted present values in 2010 prices and values.					

## Appendix C. Analysis of Monetised Costs and Benefits Tables

## Package A: Analysis of Monetised Costs and Benefits

Noise		(12)
Local Air Quality		(13)
Greenhouse Gases	-3080	(14)
Journey Quality	2965	(15)
Physical Activity	6184	(16)
Accidents	-447	(17)
Economic Efficiency: Consumer Users (Commuting)	100553	(1a)
Economic Efficiency: Consumer Users (Other)	88071	(1b)
Economic Efficiency: Business Users and Providers	140842	(5)
Wider Public Finances (Indirect Taxation Revenues)	7382	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	327706	$(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)$
Broad Transport Budget	244376	(10)
Present Value of Costs (see notes) (PVC)	244376	$(PVC) = (10)$
OVERALL IMPACTS		
<b>Net Present Value (NPV)</b>	83330	$NPV = PVB - PVC$
<b>Benefit to Cost Ratio (BCR)</b>	1.341	$BCR = PVB / PVC$

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

## Package B: Analysis of Monetised Costs and Benefits

Noise		(12)
Local Air Quality		(13)
Greenhouse Gases	1427	(14)
Journey Quality	2997	(15)
Physical Activity	6264	(16)
Accidents	4273	(17)
Economic Efficiency: Consumer Users (Commuting)	143900	(1a)
Economic Efficiency: Consumer Users (Other)	131291	(1b)
Economic Efficiency: Business Users and Providers	205057	(5)
Wider Public Finances (Indirect Taxation Revenues)	411	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	494798	$(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)$
Broad Transport Budget	284933	(10)
Present Value of Costs (see notes) (PVC)	284933	$(PVC) = (10)$
OVERALL IMPACTS		
<b>Net Present Value (NPV)</b>	209865	$NPV = PVB - PVC$
<b>Benefit to Cost Ratio (BCR)</b>	1.737	$BCR = PVB / PVC$

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

## Package C: Analysis of Monetised Costs and Benefits

Noise		(12)
Local Air Quality		(13)
Greenhouse Gases	-2294	(14)
Journey Quality	3234	(15)
Physical Activity	8797	(16)
Accidents	1068	(17)
Economic Efficiency: Consumer Users (Commuting)	3763	(1a)
Economic Efficiency: Consumer Users (Other)	-2848	(1b)
Economic Efficiency: Business Users and Providers	11557	(5)
Wider Public Finances (Indirect Taxation Revenues)	5271	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	18006	$(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)$
Broad Transport Budget	138825	(10)
Present Value of Costs (see notes) (PVC)	138825	$(PVC) = (10)$
OVERALL IMPACTS		
<b>Net Present Value (NPV)</b>	-120819	$NPV = PVB - PVC$
<b>Benefit to Cost Ratio (BCR)</b>	0.130	$BCR = PVB / PVC$

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.



## Appendix D. Appraisal Summary Tables

Appraisal Summary Table				Date produced:		09/12/2021		Contact:		
Name of scheme:		Huntingdon and St Ives Transport Study - Package A						Name	Matthew Croot	
Description of scheme:		Offline bypass with no junctions other than the existing A141. In addition, there are active travel connections as well as public transport connections.						Organisation	Atkins	
								Role	Project Manager	
Impacts		Summary of key impacts		Quantitative		Qualitative		Monetary £000 (NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	Business users and transport providers are predicted to experience benefits of £140.8 million. This is the result of a reduction in congestion between business areas which will in turn improve journey times. As a result transportation times of goods will improve, making businesses more efficient.		Value of journey time changes(£)		£135.3m		Improved efficiency through improved transport links.	£140,842	
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
					£14.9m	£21.9m	£98.5m			
	Reliability impact on Business users	The impact of reliability on business users is expected to be positive, with decreased congestion around Huntingdon and St Ives contributing to increased journey time reliability.				Reduced congestion leading to reduction in delays.				
	Regeneration	Not assessed - not anticipated to be significant.				Not assessed - not anticipated to be significant.				
	Wider Impacts	The main benefits for the WEI are likely to arise from improvements in the freer movement in labour and increased static clustering. This is because the scheme is expected to improve access to Huntingdon Railway Station.				Improvements in the movement of labour and static clustering.				
Environmental	Noise	There are 22 Noise Important Areas (NIAs) within 1000m of the proposed scheme. These are all located on the A141, the A1307 or the A1123 with the exception of one, which is located on the East Coast Mainline as it crosses Ermine Street.  There is potential for a benefit to noise along the existing road network as traffic is displaced to the new bypass.  It is expected that the bypass will have some negative noise impacts on local residents, both during construction and operation. These impacts will be assessed in more detail at later stages of development and mitigation will be developed.				A reduction in vehicles in noise sensitive areas leads to noise impact benefits.				
	Air Quality	The southern part of Huntingdon Town Centre is covered by an Air Quality Management Area (AQMA). There are also AQMAs at select properties along the A1307 and in Fenstanton. The scheme is expected to reduce traffic flows on these routes, therefore bringing benefits to the air quality.				A reduction in vehicles in air quality management areas, as well as reduced congestion, leads to air quality impacts.				
	Greenhouse gases	Greenhouse gas impacts are predicted to experience disbenefits of £3.1 million.		Change in non-traded carbon over 60y (CO2e)		72404		Increased total vehicle miles caused by increased capacity with new bypass.	-£3,080	
				Change in traded carbon over 60y (CO2e)		5354				
	Landscape	The majority of the bypass element of the scheme is in a rural area, which means that there is potential for negative effects on the landscape. Active Travel infrastructure and PT improvements are largely within the built-up areas of Huntingdon and St Ives and therefore are not expected to affect landscape.  The landscape surrounding Huntingdon and St Ives is largely characterised by arable farmland. There are no landscape designations or registered parks within 1000m of any of the scheme elements.  It is expected that landscaping will be undertaken as a mitigation measure against any negative effects that arise from the scheme.				Not currently assessed.				
	Townscape	The highway element of the scheme is predominantly in a rural setting and is not expected to have a significant impact on the built environment.  The Active Travel elements of the scheme in built-up areas are expected to complement existing infrastructure.  During the construction phase, it is possible that the Active Travel elements of the scheme within Huntingdon and St Ives may have an adverse effect on townscape.				Not currently assessed.				
	Historic Environment	There is potential for the scheme to have a negative impact on the historic environment; there are Seven Scheduled Monuments within 1000m of the scheme. 'The Moat' castle is located on the edge of the proposed bypass corridor.				Not currently assessed.				
	Biodiversity	There is potential to be a large negative impact upon the rare plants along the Great Stukeley Railway Cutting during the construction of the bypass over the ECML.  To mitigate this, further assessment of these impacts will be carried out.  Portholme Meadow Special Area of Conservation is located within 100m of one of the proposed active travel upgrades associated with the scheme, though it is not expected to be impacted.				Not currently assessed.				
	Water Environment	A significant proportion of the study area is categorised as Flood Risk Zone 3.  The main water courses in the study area are Alconbury Brook and the River Great Ouse.  The proposed bypass corridor largely lies outside of the main flood risk zone, however the implications of any increased runoff are yet to be assessed in detail.  It is expected that full consultation with the appropriate authorities is undertaken to mitigate any impacts on the water environment should the scheme progress further.				Not currently assessed.				
	Social	Commuting and Other users	Commuting and other users are predicted to experience benefits of £188.6 million. This is the result of the journey times savings for commuting and other users following implementation of the scheme.		Value of journey time changes(£)		£211.1m		Journey time savings offered by the scheme.	£188,624
		Net journey time changes (£)								
		0 to 2min	2 to 5min	> 5min						
				£21.0m	£55.3m	£134.8m				
Reliability impact on Commuting and Other users		The impact on reliability for commuting and other users is expected to be positive due to increased capacity on the new bypass and a reduction of traffic in Huntingdon and St Ives town centres. This is because the capacity of the new road will be greater than forecast demand, resulting in less journey time variability.				Increased reliability offered by the scheme.				
Physical activity		The expected physical activity benefits of the scheme are £6.2 million. This is a result of the additional Active Travel infrastructure provision increasing the number of trips made by active modes.				This physical activity benefit is due to the additional Active Travel facilities implemented by the scheme.		£6,184		
Journey quality		The impact of journey quality for Active Travel users has been monetised and is £3.0 million. For motorised users, the scheme is not expected to impact upon traveller care. There may be a small negative impact on traveller views due to the presence barriers along the bypass. The scheme is expected to have a positive effect on traveller stress due to less congestion therefore reducing frustration, no pedestrians on the offline bypass, widening of Active Travel paths and adequate road markings reducing the fear of potential accidents.  The provision of route signs is expected to reduce route uncertainty. It is expected that, by directing strategic traffic around Huntingdon and St Ives, route uncertainty will be greatly reduced.				The journey quality benefit for Active Travel users is due to increased infrastructure. The journey quality benefit for motorised users is due to less traveller stress and perceived fear of accidents.		£2,965		
Accidents		The accident cost savings are predicted to be £-0.4 million, calculated using COBA-LT and AMAT. Where?				Accident cost disbenefit due to increased vehicle mileage caused by larger capacity on new bypass.		-£447		
Security		The impact of the scheme on security is expected to be negligible. Increased security for road users is expected through decreased congestion and less stopping in vehicles. It is considered that the scheme will not impact the security of public transport users.				Not currently assessed.				
Access to services		Changes to bus routes is expected to increase accessibility to public transport. Bus rerouting will provide access to residents of London Road.				Not currently assessed.				
Affordability	It is considered that the scheme will be beneficial to personal affordability due to reduced travel times, vehicle operating costs and the improved Active Travel network. LSOAs in the study area scoring highly on the Index for Multiple Deprivation are located in Huntingdon town centre, which is where the scheme is expected to have a large impact.				Not currently assessed.					
Severance	An overarching element of the proposed packages is the provision and upgrading of Active Travel links in Huntingdon and St Ives. The provision of more footbridges over the ECML is expected to greatly reduce severance issues for Active Travel users.				Not currently assessed.					
Option and non-use values	Not assessed as the scheme is not expected to substantially change the availability of transport service in the area.									
Public Account	Cost to Broad Transport Budget	Present Value Cost (PVC) of £244.4 million in 2010 prices and values.						£244,376		
	Indirect Tax Revenues	The indirect tax revenue is expected to be £7.4 million.						£7,382		

Appraisal Summary Table				Date produced:		09/12/2021		Contact:		
Name of scheme:		Huntingdon and St Ives Transport Study - Package B							Name	Matthew Croot
Description of scheme:		Offline bypass with connecting junctions to the existing road network along with active travel connections and public transport connections.							Organisation	Atkins
									Role	Project Manager
Impacts		Summary of key impacts		Quantitative		Qualitative		Monetary £000 (NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	Business users and transport providers are predicted to experience benefits of £205.1 million. This is the result of a reduction in congestion between business areas which will in turn improve journey times. As a result transportation times of goods will improve, making businesses more efficient.		Value of journey time changes(£)		£173.9m		Improved efficiency through improved transport links.	£205,057	
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
			£23.6m	£23.0m	£127.3m					
	Reliability impact on Business users	The impact of reliability on business users is expected to be positive, with decreased congestion around Huntingdon and St Ives contributing to increased journey time reliability.				Reduced congestion leading to reduction in delays.				
	Regeneration	Not assessed - not anticipated to be significant.				Not assessed - not anticipated to be significant.				
	Wider Impacts	The main benefits for the WEI are likely to arise from improvements in the freer movement in labour and increased static clustering. This is because the scheme is expected to improve access to Huntingdon Railway Station.				Improvements in the movement of labour and static clustering.				
Environmental	Noise	There are 22 Noise Important Areas (NIAs) within 1000m of the proposed scheme. These are all located on the A141, the A1307 or the A1123 with the exception of one, which is located on the East Coast Mainline as it crosses Ermine Street.  There is potential for a benefit to noise along the existing road network as traffic is displaced to the new bypass.  It is expected that the bypass will have some negative noise impacts on local residents, both during construction and operation. These impacts will be assessed in more detail at later stages of development and mitigation will be developed.				A reduction in vehicles in noise sensitive areas leads to noise impact benefits.				
	Air Quality	The southern part of Huntingdon Town Centre is covered by an Air Quality Management Area (AQMA). There are also AQMAs at select properties along the A1307 and in Fenstanton. The scheme is expected to reduce traffic flows on these routes, therefore bringing benefits to the air quality.				A reduction in vehicles in air quality management areas, as well as reduced congestion, leads to air quality impacts.				
	Greenhouse gases	Greenhouse gas impacts are predicted to experience benefits of £1.4 million.		Change in non-traded carbon over 60y (CO2e)		-30947		Increased time benefits; more junctions to allow vehicles access to new bypass therefore reducing vehicle mileage compared to Package A.	£1,427	
			Change in traded carbon over 60y (CO2e)		7197					
	Landscape	The majority of the bypass element of the scheme is in a rural area, which means that there is potential for negative effects on the landscape. Active Travel infrastructure and PT improvements are largely within the built-up areas of Huntingdon and St Ives and therefore are not expected to affect landscape.  The landscape surrounding Huntingdon and St Ives is largely characterised by arable farmland. There are no landscape designations or registered parks within 1000m of any of the scheme elements.  It is expected that landscaping will be undertaken as a mitigation measure against any negative effects that arise from the scheme.				Not currently assessed.				
	Townscape	The highway element of the scheme is predominantly in a rural setting and is not expected to have a significant impact on the built environment.  The Active Travel elements of the scheme in built-up areas are expected to complement existing infrastructure.  During the construction phase, it is possible that the Active Travel elements of the scheme within Huntingdon and St Ives may have an adverse effect on townscape.				Not currently assessed.				
	Historic Environment	There is potential for the scheme to have a negative impact on the historic environment; there are Seven Scheduled Monuments within 1000m of the scheme. "The Moat" castle is located on the edge of the proposed bypass corridor.				Not currently assessed.				
	Biodiversity	There is potential to be a large negative impact upon the rare plants along the Great Stukeley Railway Cutting during the construction of the bypass over the ECML.  To mitigate this, further assessment of these impacts will be carried out.  Portholme Meadow Special Area of Conservation is located within 100m of one of the proposed active travel upgrades associated with the scheme, though it is not expected to be impacted.				Not currently assessed.				
	Water Environment	A significant proportion of the study area is categorised as Flood Risk Zone 3.  The main water courses in the study area are Alconbury Brook and the River Great Ouse.  The proposed bypass corridor largely lies outside of the main flood risk zone, however the implications of increased runoff are yet to be assessed in detail.  It is expected that full consultation with the appropriate authorities is undertaken to mitigate any impacts on the water environment should the scheme progress further.				Not currently assessed.				
Social	Commuting and Other users	Commuting and other users are predicted to experience benefits of £275.2 million .This is the result of the journey times savings for commuting and other users following implementation of the scheme.		Value of journey time changes(£)		£303m		Journey time savings offered by the scheme.	£275,191	
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
			£30.7m	£56.5m	£215.8m					
	Reliability impact on Commuting and Other users	The impact on reliability for commuting and other users is expected to be positive due to increased capacity on the new bypass and a reduction of traffic in Huntingdon and St Ives town centres. This is because the capacity of the new road will be greater than forecast demand, resulting in less journey time variability.				Increased reliability offered by the scheme.				
	Physical activity	The expected physical activity benefits of the scheme are £6.3 million. This is a result of the additional Active Travel infrastructure provision increasing the number of trips made by active modes.				This physical activity benefit is due to the additional Active Travel facilities implemented by the scheme.		£6,264		
	Journey quality	The impact of journey quality for Active Travel users has been monetised and is £3.0 million. For motorised users, the scheme is not expected to impact upon traveller care. There may be a small negative impact on traveller views due to the presence barriers along the bypass.  The scheme is expected to have a positive effect on traveller stress due to less congestion therefore reducing frustration, no pedestrians on the offline bypass, widening of Active Travel paths and adequate road markings reducing the fear of potential accidents.  •The provision of route signs is expected to reduce route uncertainty. It is expected that, by directing strategic traffic around Huntingdon and St Ives, route uncertainty will be greatly				The journey quality benefit for Active Travel users is due to increased infrastructure  The journey quality benefit for motorised users is due to less traveller stress and perceived fear of accidents.		£2,997		
	Accidents	The accident cost savings are predicted to be £4.3 million, calculated using COBA-LT and AMAT.				Accident cost savings due to network improvements and reduced congestion. Additional junctions on route reduce travel distance to access the improved network.		£4,273		
	Security	The impact of the scheme on security is expected to be negligible. Increased security for road users is expected through decreased congestion and less stopping in vehicles. It is considered that the scheme will not impact the security of public transport users.				Not currently assessed.				
	Access to services	Changes to bus routes is expected to increase accessibility to public transport. Bus rerouting will provide access to residents of London Road.				Not currently assessed.				
Affordability	It is considered that the scheme will be beneficial to personal affordability due to reduced travel times, vehicle operating costs and the improved Active Travel network. LSOAs in the study area scoring highly on the Index for Multiple Deprivation are located in Huntingdon town centre, which is where the scheme is expected to have a large impact.				Not currently assessed.					
Severance	An overarching element of the proposed packages is the provision and upgrading of Active Travel links in Huntingdon and St Ives. The provision of more footbridges over the ECML is expected to greatly reduce severance issues for Active Travel users.				Not currently assessed.					
Option and non-use values	Not assessed as the scheme is not expected to substantially change the availability of transport service in the area.									
Public Account	Cost to Broad Transport Budget	Present Value Cost (PVC) of £284.9 million in 2010 prices and values.						£284,933		
	Indirect Tax Revenues	The indirect tax revenue is expected to be £0.4 million.						£411		



Appraisal Summary Table				Date produced:		09/12/2021		Contact:	
Name of scheme:		Huntingdon and St Ives Transport Study - Package C						Name	Matthew Croot
Description of scheme:		Hybrid bypass of Huntingdon with junction upgrades in St Ives. In addition, active travel connections are present as well as public transport connections.						Organisation	Atkins
								Role	Project Manager
Impacts		Summary of key impacts		Quantitative		Qualitative		Monetary £000 (NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Business users and transport providers are predicted to experience benefits of £11.6 million. This is the result of a small reduction in congestion between business areas which will in turn improve journey times. As a result transportation times of goods will improve, making businesses more efficient.		Value of journey time changes(£) £21.4m		Improved efficiency through improved transport links.		£11,557	
				Net journey time changes (£)					
				0 to 2min 2 to 5min > 5min					
				£-1.6m £12.2m £10.8m					
	Reliability impact on Business users	The impact of reliability on business users is expected to be positive overall, with decreased congestion around Huntingdon contributing to increased journey time reliability. The level of reliability is much lower than in the other packages, due to the bypass loading increased trips onto the A1123 in St Ives, increasing congestion.				Reduced congestion leading to reduction in delays.			
	Regeneration	Not assessed - not anticipated to be significant.				Not assessed - not anticipated to be significant.			
	Wider Impacts	The main benefits for the WEI are likely to arise from improvements in the movement in labour and increased static clustering. This is because the scheme is expected to improve access to Huntingdon Railway Station.				Some improvements in the movement of labour and static clustering.			
Environmental	Noise	There are 22 Noise Important Areas (NIAs) within 1000m of the proposed scheme. These are all located on the A141, the A1307 or the A1123 with the exception of one, which is located on the East Coast Mainline as it crosses Ermine Street. There is potential for a benefit to noise along the existing road network as traffic is displaced to the new bypass. It is expected that the bypass will have some negative noise impacts on local residents, both during construction and operation. These impacts will be assessed in more detail at later stages of development and mitigation will be developed.				A reduction in vehicles in noise sensitive areas leads to noise impact benefits.			
	Air Quality	The southern part of Huntingdon Town Centre is covered by an Air Quality Management Area (AQMA). There are also AQMAs at select properties along the A1307 and in Fenstanton. The scheme is expected to reduce traffic flows on these routes, therefore bringing benefits to the air quality.				A reduction in vehicles in air quality management areas, as well as reduced congestion, leads to air quality impacts.			
	Greenhouse gases	Greenhouse gas impacts are predicted to experience disbenefits of £2.3 million.		Change in non-traded carbon over 60y (CO2e) 53578		Congestion and increased vehicles on the network.		£-2,294	
				Change in traded carbon over 60y (CO2e) 1489					
	Landscape	As with packages A and B, the bypass element of the scheme is largely over rural, arable farmland to the north of Ermine Business Park. However, the bypass for this option is much smaller and will therefore have considerably less impact on landscape than the full offline options. Active Travel infrastructure and PT improvements are largely within the built-up areas of Huntingdon and St Ives and therefore are not expected to affect landscape. The landscape surrounding Huntingdon and St Ives is largely characterised by arable farmland. There are no landscape designations or registered parks within 1000m of any of the scheme elements. It is expected that landscaping will be undertaken as a mitigation measure against any negative effects that arise from the scheme.				Not currently assessed.			
	Townscape	The highway element of the scheme is predominantly in a rural setting and is not expected to have a significant impact on the built environment. The Active Travel elements of the scheme in built-up areas are expected to complement existing infrastructure. During the construction phase, it is possible that the Active Travel elements of the scheme within Huntingdon and St Ives may have an adverse effect on townscape				Not currently assessed.			
	Historic Environment	Two sites, which are both Roman barrows in Great Stukeley, are within 1000m of the proposed hybrid bypass corridor. The impacts of the scheme on these is expected to be small due to their location in a built up area away from the proposed corridor.				Not currently assessed.			
	Biodiversity	There is potential to be a large negative impact upon the rare plants along the Great Stukeley Railway Cutting during the construction of the bypass over the ECML. To mitigate this, further assessment of these impacts will be carried out. Portholme Meadow Special Area of Conservation is located within 100m of one of the proposed active travel upgrades associated with the scheme, though it is not expected to be impacted.				Not currently assessed.			
	Water Environment	A significant proportion of the study area is categorised as Flood Risk Zone 3. The main water courses in the study area are Alconbury Brook and the River Great Ouse. The proposed bypass corridor largely lies outside of the main flood risk zone, however the implications of increased runoff are yet to be assessed in detail. It is expected that full consultation with the appropriate authorities is undertaken to mitigate any impacts on the water environment should the scheme progress further.				Not currently assessed.			
Social	Commuting and Other users	Commuting and other users are predicted to experience benefits of £0.9 million. This is the result of the journey times savings for commuting and other users following implementation of the scheme.		Value of journey time changes(£) £11.1m		Journey time savings offered by the scheme.		£915	
				Net journey time changes (£)					
				0 to 2min 2 to 5min > 5min					
				£2.7m £10.1m £-1.6m					
	Reliability impact on Commuting and Other users	There will be an increase journey reliability for trips using the bypass north of Huntingdon. However, the scheme is forecast to increase traffic on the A1123 as a result of traffic from the bypass being funnelled onto the existing A1123 where minimal improvements are proposed. Therefore, journey reliability on this route may be affected.				Increased reliability offered for some journeys by the scheme.			
	Physical activity	The expected physical activity benefits of the scheme are £8.8 million. This is a result of the additional Active Travel infrastructure provision increasing the number of trips made by active modes.				This physical activity benefit is due to the additional Active Travel facilities implemented by the scheme.		£8,797	
	Journey quality	The impact of journey quality for Active Travel users has been monetised and is £3.2 million. For motorised users, the scheme is not expected to impact upon traveller care. There may be a small negative impact on traveller views due to the presence barriers along the bypass. The scheme is expected to have a positive effect on traveller stress due to less congestion therefore reducing frustration, no pedestrians on the offline bypass, widening of Active Travel paths and adequate road markings reducing the fear of potential accidents. *The provision of route signs is expected to reduce route uncertainty. It is expected that, by directing strategic traffic around Huntingdon and St Ives, route uncertainty will be greatly reduced.				The journey quality benefit for Active Travel users is due to increased infrastructure The journey quality benefit for motorised users is due to less traveller stress and perceived fear of accidents.		£3,234	
	Accidents	The accident cost savings are predicted to be £1.1 million, calculated using COBA-LT and AMAT.				Accident cost savings due to network improvements and reduced congestion.		£1,068	
	Security	The impact of the scheme on security is expected to be negligible. Increased security for road users is expected through decreased congestion and less stopping in vehicles. It is considered that the scheme will not impact the security of public transport users.				Not currently assessed.			
	Access to services	Changes to bus routes is expected to increase accessibility to public transport. Bus rerouting will provide access to residents of London Road.				Not currently assessed.			
	Affordability	It is considered that the scheme will be beneficial to personal affordability due to reduced travel times, vehicle operating costs and the improved Active Travel network. LSOAs in the study area scoring highly on the Index for Multiple Deprivation are located in Huntingdon town centre, which is where the scheme is expected to have a large beneficial impact.				Not currently assessed.			
	Severance	An overarching element of the proposed packages is the provision and upgrading of Active Travel links in Huntingdon and St Ives. The provision of more footbridges over the ECML is expected to greatly reduce severance issues for Active Travel users.				Not currently assessed.			
	Option and non-use values	Not assessed as the scheme is not expected to substantially change the availability of transport service in the area.							
Public Account	Cost to Broad Transport Budget	Present Value Cost (PVC) of £138.8 million in 2010 prices and values.						£138,825	
	Indirect Tax Revenues	The indirect tax revenue is expected to be £5.3 million.						£5,271	

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