Transport Business Case Report

Kent Strategic Congestion Management Programme

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1 Introduction

1.1 Overview

1.1.1 Amey have been commissioned by Kent County Council (KCC) to develop proportionate business cases for various South East Local Enterprise Partnership (SELEP) schemes being promoted by Kent to be funded by the South East Growth deal as part of the Government's Local Growth Fund (LGF).

1.2 Kent Strategic Congestion Management Programme (KSCMP)

1.2.1 The KSCMP is a continuation of improvements being made by KCC to maximise the efficiency of the local highway network as traffic levels increase in line with development. The Programme is to be delivered between the financial years 2015/16 and 2020/21 and the total Programme value is £4.8million. KCC is entering the fourth year of its KSCMP, with this business case applying for £0.95 million for financial year 2018/19.

1.2.2 The KSCMP strategy incorporates a methodology of assessing areas or road links that suffer from congestion and unreliability. The strategy uses a number of criteria to score road links that are then assessed in more detail to establish the worst performing links. The new Local Transport Plan adopts this approach to tackle unreliable sections of the road network as a way of supporting economic growth.

1.2.3 For the 2018/19 KSCMP funding allocation four schemes have been developed to tackle hotspots that have been identified. These schemes are:

- Wateringbury Crossroads improvement;
- Tunbridge Wells ITS Improvements;
- Elwick Road / A2042 junction, Ashford; and
- MOVA Implementation Programme.

1.2.4 In addition to the three above hotspot schemes, funding from SELEP will be used to provide an extension to a pan-European project to introduce a Connected Intelligent Transport System (C-ITS) corridor from Blackfriars in London to the Port of Dover in Kent via the M2 and A2. It is KCC's aim to integrate the project seamlessly into the Kent road network by extending the project onto the A229 which connects the M20 and M2 motorways and forms a key corridor in the event of a major disruption on the strategic road network. Increasing automation will increase efficiency, reduce crashes

and reduce congestion.

1.2.5 Figure 1-1 shows the 2018/19 scheme locations.

Figure 1-1 Scheme Locations

1.2.6 The implementation of the KSCMP will enable the creation of an estimated 2,000 jobs and 2,300 additional homes for the SELEP region within the six-year course of the programme, which is consistent with the length of the SELEP Strategic Economic Plan. It will help to provide a transport environment which makes it easier for businesses and employees to travel to, and for work. Around 10% of the planned housing across the SELEP region relies on the KSCMP, which if delivered could provide significant increases in Gross Value Added (GVA) for the region.

1.2.7 Without the investment required to both improve sustainable transport and to mitigate the existing and forecast levels of congestion in Kent, there is concern that the viability of the ambitious employment and residential development, required to fulfil the strategic economic growth objectives of the SELEP sub-region, will be hampered.

1.3 Area Description

1.3.1 KCC and its 12 district councils administer most of the traditional county of Kent, a total of 3,352 km2. The Medway Towns Council (MTC) is a unitary authority which administers the remainder (192 km2) consisting of the urban agglomeration of Gillingham, Chatham, Rochester and Strood amongst others. Together, KCC and MTC have around 300 town and parish councils.

1.3.2 With regards to transport, Kent is well connected as High Speed 1 operates through the county offering frequent services from Ebbsfleet and Ashford International stations to a range of northern European destinations via the Channel Tunnel. It is home to the country's busiest and most successful ferry port at Dover, which is undergoing a £130 million expansion in 2016/17 to meet growing demand for cross-Channel freight. Kent is a major employment centre with over 56,000 businesses providing around 575,000 jobs.

1.3.3 The two major road corridors in Kent are the M2/A2 route from Dartford to Dover via the Medway Towns and Canterbury, and the M20 from south-east London to Folkestone via Maidstone and Ashford. Other trunk routes in the county include the A249 Sittingbourne to Sheerness, the A2070/A259 route from Ashford towards Hastings in East Sussex, and the A21 from Sevenoaks also towards Hastings.

1.3.4 Kent also has more motorways by distance than any other county in the UK, totalling 173km. In addition to the M2 and M20 discussed above, part of the M25 runs through Kent, between Westerham and Dartford. The M26 motorway provides a short link between the M25 at Sevenoaks and the M20 near Wrotham.

1.4 Socio-Economic Characteristics of Study Area

1.4.1 The 2011 census indicates that the area administered by KCC has a population of around 1.51 million. The socio-economic characteristics of Kent include the following:

1.4.2 Of residents aged 16 to 74, 78.6% (almost 720,000 people) are economically active; whilst 5.0% of the workforce is unemployed (compared to 6.0% across England);

1.4.3 Kent's average household size is 2.34 people per household which compares to 2.4 in England;

1.4.4 6.6% of Kent residents aged 16 and over hold no qualifications, below the national average. An above average percentage (13.8%) hold Level 1 qualifications, with higher than average possession of higher levels;

1.4.5 20% of households do not own a car. Of those that do, single car ownership is slightly more common in Kent (43%) than across the rest of the nation (42%).

1.5 Background to the KSCMP Business Case

1.5.1 The UK Government's Local Growth White Paper, published in October 2010, set out the roles that local enterprise partnerships (LEPs) can play depending on their local priorities. The Chancellor of the Exchequer announced the first 11 zones in the 2011 Budget. The government has now created 39 LEPs.

1.5.2 Following a report by Lord Heseltine entitled "No Stone Unturned"; a new approach to funding local major transport schemes that are to be constructed in England (outside London) during the 2015-2021 period was established. At its heart is a powerful case for decentralising economic powers from central government to local areas and leaders, as those best placed to understand and to address the opportunities and obstacles to growth in their own communities.

1.5.3 On 18 March 2013 the government published its response to the Heseltine review, accepting in full or in part 81 of Lord Heseltine's 89 recommendations. Each of the LEPs was invited to submit a Strategic Economic Plan (SEP) by 31 March 2014, outlining their local priorities to maximise growth.

1.5.4 In July 2014, the government negotiated a Growth Deal with all 39 LEPs, which awarded them a significant proportion of the £12 billion LGF.

1.5.5 The SELEP brings together key leaders from business, local government, further and higher education with the goal of creating the most enterprising economy in England through exploring opportunities for enterprise while addressing barriers to growth. The SELEP area covers greater Essex, Kent and East Sussex; it is the largest strategic enterprise partnership outside of London.

1.5.6 SELEP has secured £442.2 million in funding from the Government to boost economic growth from 2015/16 to 2020/21, with a particular focus on transport schemes that will bring new jobs and homes. This includes £358.2 million for new growth schemes on top of £74 million already committed for large transport projects, of which the Kent and Medway Economic Partnership, the local arm of SELEP, will receive an allocation of £104 million.

1.5.7 The Growth Deal resulted in £84.1 million invested in the SELEP area in the financial year 2015/16, and over the length of the funding deal 35,000 jobs, 18,000 new homes and over £100 million in private investment are expected to be delivered.

1.6 Purpose of this Document

1.6.1 The purpose of this document is to provide an evidence-based Business Case to secure £4.8m from SELEP's LGF allocation to progress the KSCMP.

1.6.2 Guidance for the preparation of Business Cases for Transport Schemes has been published by the Department for Transport (DfT), based on HM Treasury's advice on evidence-based decision making as set out in the "Green Book: Appraisal and Evaluation in Central Government".

1.6.3 This document is a Transport Business Case and as such uses the best practice "five case" model approach. This approach assesses whether schemes:

- Are supported by a robust case for change that fits with wider public policy objectives – the 'strategic case';
- Demonstrate value for money – the 'economic case';
- Are commercially viable – the 'commercial case';
- Are financially affordable – the 'financial case'; and
- Are achievable – the 'management case'.

1.6.4 The evidence gathered as part of the business case preparation process has been prepared using the tools and guidance provided by the DfT, most notably the transport appraisal guidance published in WebTAG. This approach ensures that the evidence produced is robust and consistent.

1.6.5 For the KSCMP it is proposed that a business case is submitted annually detailing only those elements of the scheme due to go forward in the following year. Therefore, a separate business case was published for the 2015/16, 2016/17 and 2017/18 spending rounds and this business case will deal only with those elements of the scheme to be implemented in 2018/19. This is because there are no definitive plans for which measures will be implemented and in which locations beyond 2018/19; these will only become apparent as schemes are identified and mitigation, feasibility work and prioritisation are undertaken.

1.7 Structure of the Document

1.7.1 This report is structured in accordance with "The Transport Business Cases", the DfT guidance on transport scheme appraisal, as updated in January 2013. Following this introduction, the remainder of the document is structured as following:

- Chapter 2 provides a description on the scheme design;

- Chapter 3 states the Strategic Case:
- Chapter 4 presents the Economic Case including the Value for Money Statement;
- Chapter 5 outlines the Financial Case;
- Chapter 6 details the Commercial Case; and
- Chapter 7 provides the Management Case.

2 KSCMP Detailed Scheme Description

2.1 Background

2.1.1 The Kent Strategic Congestion Management Programme (KSCMP) is a series of projects or interventions to improve the efficiency of the road network. Hotspot schemes are identified using a methodology derived from data obtained about the road network from a range of sources including journey time reliability, crash record, flow and bus reliability.

2.1.2 The first year of the programme (2015/16) identified two hotspot junction improvements and an enhancement to the Highways Management Centre. The second year of the programme (2016/17) identified three hotspot junction improvements and support for the extension of a Connected Intelligent Transport System (C-ITS) pilot study in Kent along the A229 corridor. The third year of the programme (2017/18) identified two hotspot junction improvements and continued support for the extension of a Connected Intelligent Transport System study along the A229 corridor.

2.1.3 The intention was to develop and deliver schemes at these locations that can bring about improvements to journey reliability and support unlocking growth. The following sections provide a summary of the component schemes within the KSCMP.

2.2 2015/2016 Scheme Update

2.2.1 The following provides a summary of the component schemes delivered during 2015/16 and Table 2-1 below contains a summary of requested funds against actual spend.

1. **HMC Technology Refresh** – A full in-depth assessment of the operation of the HMC identified a range of improvements including database management, CCTV and network coverage of Variable Message Signs (VMS) and as a result all have been upgraded.

2. **A229 Bluebell Hill, Medway Approach and northbound off slip** – KCC engaged with Highways England (HE) and sought to develop a suitable scheme that improved the crash record, meeting the needs of the HE and the objectives of the KCSMP. As the scheme was developed it was evident that while this initial scheme had merit, supported by the initial modelling work with HE, it was clear that a bigger scheme could unlock greater growth potential. It is now intended to complete this expanded investigation and submit a separate business case for an improvement scheme to be funded within later years of the KSCMP.
3. **A229/A274 Wheatsheaf Junction, Maidstone** - This corridor was identified using the KSCMP methodology and is a priority intervention area. The scheme was taken through consultation and was not supported by County and District members. As a priority corridor for growth a scheme to investigate the whole corridor was taken forward and this junction has been included into the Maidstone Integrated Transport Package LGF scheme.

Cost Category	Requested	Actual Spend	Comments
HMC Technology Refresh			
Database development	£106,000	£95,000	
CCTV	£132,000	£267,000	CCTV refresh increased in cost following procurement exercise. Increased cost incurred for the decommissioning of the existing system and unforeseen need to implement on site equipment at camera locations.
Variable message signs	£265,000	£391,000	Increased number of VMS installed due to increased scope to tackle the implication of Operation Stack. Changes in location due to site surveys resulted in the need for protection and installation of barriers.
Total	**£503,000**	**£753,000**	**-**
A229 Bluebell Hill			
Design	£22,000	£43,000	Scheme design identified a larger scheme and will be taken forward as a separate business case.
Civils and signing	£60,000	-	
Signals	£20,000	-	
Total	**£102,000**	**£43,000**	-
A229/A274 Wheatsheaf Junction			
Design	£10,000	-	The scheme has been added to the wider Maidstone Integrated Package.
Civils and signing	£30,000	-	
Forward scheme identification and design for 2016/17	£88,000	£67,000	-
Total	**£220,000**	**£67,000**	-

Cost Category	Requested	Actual Spend	Comments
Total Base Cost 2014 prices	**£733,000**	**-**	-
Inflation **Risk Allowance** **Total Scheme Costs**	**£22,499** **£75,549** **£831,048**	 **£863,000**	-

Table 2-1: 2015/16 Scheme Spend Update

2.3 2016/2017 Scheme Update

2.3.1 The following provides a summary of the component schemes delivered during 2016/17 and Table 2-2 contains a summary of requested funds against actual spend.

1. **A229 Extension to C-ITS Corridor** – The A229 C-ITS scheme has not started due to delays in the wider project in Europe. This means the 2016/17 funding on the project will now move into this 2017/18 business case with a new spend profile. This project is a national pilot being led by the Department for Transport with Highways England and Transport for London.
2. **A292 Ashford Junctions** – Both junctions have been designed and implemented in the first 2 quarters of the year following the detailed design carried out in 2015/16. The A292 is the main corridor for accessing Ashford, linking growth sites between the north and south of Ashford. The costs for the scheme have increased due to the cost of moving utility plant. A significant fibre optic cable had to be moved to facilitate the improvements.
3. **A229 Loose Road, Maidstone** – This intervention has been included in the wider programme of measures taking place in Maidstone (Maidstone Integrated Transport Package LGF scheme) as it links directly with the wider study into unlocking growth to the south of Maidstone.

Cost Category	Requested	Actual Spend	Comments
A229 Extension to CITS Scheme	£300,000	-	This project has been delayed following the delay in submitting the bid to Europe. It was successful and it is intended to roll it into the next year's programme of works.
A292 Mace Lane/ Wellesley Road, and Somerset Road/ Canterbury Road junctions	£300,000	£510,000	Increased construction cost due to utility diversion and the use of a pilot temporary Traffic Management System.
A229 Loose Road, Maidstone: Armstrong Road and Sheal's Crescent junctions	£100,000	-	The scheme has been added to the Maidstone Integrated Transport Package LGF Scheme.
Forward Design		£110,000	

Cost Category	Requested	Actual Spend	Comments
Total Base Cost 2015 prices	**£700,000**		
Inflation **Risk Allowance** **Final Scheme Costs**	**£17,860** **£71,787** **£789,657**	**Estimated at £620,000**	The £300,000 underspend due to the delay of the C-ITS scheme will be carried over into financial year 2017/18.

Table 2-2: 2016/17 Scheme Spend Update

2.4 2017/2018 Scheme Update

2.4.1 The following provides a summary of the component schemes delivered during 2017/18 and Table 2-3 contains a summary of requested funds against actual spend.

1. **A229 C-ITS Scheme -** This project is a national pilot being led by the Department for Transport with Highways England and Transport for London. The project has been subject to further delays due to resource constraints within Highways England and some delays on the delivery of standards from the INTERCOR European Union partners. There will be some work identifying the system interfaces and infrastructure requirements for the corridor before the year end. It is intended to roll over the remaining funding for completion in 2018/19. The INTERCOR agreement completes in 2019 so the scheme will be finished by the end of September 2019.
2. **A225 Princes Road/Darenth Road Hotspot** - The Dartford Improvement scheme is complete. The road network is now measuring journey times approaching the area. The development of the Network Management strategies will be complete by the end of March. The UTMC systems are now connected and sharing information.
3. **A2500 Lower Road/Barton Hill Drive junction, Sheppey** – The Installation of the scheme will be completed by the end of December. The works are programmed in the full works package. The works will ensure that vehicles cannot turn right out of Barton Hill Drive and improve the alignment for vehicles travelling east. This will reduce the crash potential significantly and improve capacity until the full scheme is delivered in late 2019.

Cost Category	Requested	Actual Spend	Comments
M2 C-ITS Scheme	300,000	115,000	Highways England delayed the scheme due to resourcing issues within their organisation. The first contract has been let and there will be some spend to the end of the 2017/18 financial year.
A225 Princes Rd / Darenth Rd	270,000	200,000	Scheme will be completed by the year end.
A2500 Lower Rd / Barton Hill Rd	50,000	25,000	Works complete by the end of December 2017.
Forward Design	90,000	50,000	
Total Base Cost 2016 prices	**£710,000**		
Inflation **Risk Allowance** **Final Scheme Costs**	**£11,094** **£83,203** **£804,297**	**Estimated at £390,000**	

Table 2-3: 2017/18 Scheme Spend Update

2.5 2018/2019 Proposed Schemes

2.5.1 The following section outlines the component schemes being put forward for funding in this Business Case for 2018/2019. The KSCMP for 2018/2019 includes the delayed C-ITS scheme, for which funding is carried forward from the previous year, and five schemes designed to alleviate hotspots identified on the network for which funding is sought. The schemes put forward for funding for 2018/2019 area as follows:

- C-ITS Scheme
- Wateringbury Crossroads
- Tunbridge Wells ITS Implementation
- Elwick Road / A2042
- MOVA Implementation
- Dover TAP / ITS Assessment

C-ITS Scheme

2.5.2 The delayed C-ITS scheme will be carried forward into the 2018/19 financial year as part of this business case and be included in this year's spend along with the additional funding required to complete the scheme. The total contribution for the project will be £600,000, comprising of £300,000 carried over from the 2016/17 financial year and £300,000 in 2017/18. The project will complete in 2018/19 as the European Union project has to complete by the end of 2019.

2.5.3 The C-ITS scheme is an innovative pilot project which, if successful, will be rolled out nationally on the country's roads. One of the project's aims is to provide a blueprint for future roll-out and disseminate the findings of this real world trial across member states, enabling EU members to build on the learning of this trial thereby fast tracking the development of C-ITS across Europe.

2.5.4 KCC have identified a number of new ITS initiatives that link with the corridor proposal and with the HMC technology refresh (realised as part of this KCSMP scheme in financial year 2015/16) it provides an opportunity to align the initiative to bring benefits to the residents of Kent.

2.5.5 The C-ITS scheme will improve the Kent Thameside and Maidstone corridors. The scheme will provide better information straight into vehicles of issues on the road network improving journey time reliability and reducing the risk of crashes. Both corridors have extensive growth areas and form a link to the heavily congested Dartford area. Bluewater is a major generator of traffic on the corridor and the C-ITS scheme will enable direct dissemination of information enabling better management of the road network. Kent benefits directly due to the many links between the growth areas and the strategic road network.

2.5.6 The project will finish in 2018/19.

Wateringbury Crossroads Improvement

2.5.7 The A26 is a strategic route linking Maidstone, Tonbridge and Tunbridge Wells. The Wateringbury Crossroads at the junction of the A26 with the B2015 Bow Road is a recognised bottleneck identified as a junction that causes delays and journey time reliability issues (Figure 2-1). The junction which is controlled by a set of traffic signals, suffers from peak hour delays due to the site constraints and increasing demand. The junction is a four arm traffic signal controlled junction in a village location with narrow footways. An assessment of the junction was carried out and alternative options considered.

Figure 2-1 Wateringbury Crossroads

2.5.8 The preferred option (Option 2.1) to be taken forward involves a revision of the lane markings on the A26 with the addition of a dedicated right turn lane which will stop right turning traffic impeding the predominant straight ahead and left turning movements. The additional of a left turn lane on the south arm improves capacity and junction thorough movements. This design caters for the east and west movements that are impeded by the right turning traffic heading north in to Red Hill.

2.5.9 The junction assessment, summarised in Table 2-4, indicates that the proposed scheme would result in an increase in overall capacity of 57% in the AM peak and 53% in the PM peak in 2020.

	Existing				Proposed			
	2020		2030		2020		2030	
	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak	AM Peak	PM Peak
PRC Over All Lanes (%)	-80.6	-67.7	-113.8	-86.5	-23.8	-15.1	-37.8	-28.6
Total Delay Over All Lanes (pcuHr)	409.4	404.5	514.9	556.2	129.3	73.9	237.4	194.8

Table 2-4 Wateringbury Crossroads – Linsig Summary

Tunbridge Wells ITS Implementation

2.5.10 Tunbridge Wells is a large town in the west of Kent with a Borough population of 115,049. It suffers from peak hour delays due to the demand to access the town and the need to access the strategic A21 that allows access onto the M25.

2.5.11 The road network leading to the town is made of two bisecting A roads. The A26 north to south and the A264 north east to west, with the A21 in close proximity taking the majority of London and coast bound traffic. There are few options available to improve capacity and this scheme is intended to deliver improvements in traveller awareness and enable strategic decisions to be taken to manage traffic more effectively.

2.5.12 Existing studies have been undertaken that demonstrate capacity issues on the surrounding arterial routes entering the town in the am and exiting in the pm. With limited traffic signal infrastructure to influence driver interaction and little highway land available to make any significant alterations, there appear to be limited opportunities to reduce congestion. Previous studies have shown that percentage wise there is little through traffic of the town.

2.5.13 The objective of this project is to deliver ways of improving journey time reliability and ways to increase capacity on the existing infrastructure. This commission is to assess the key arterial routes into the centre of Tunbridge Wells to determine if there are congestion improvement measures that sit outside of the existing recommendations. Namely the implementation of new technologies and the development of sustainable travel measures. The outcome of this commission may lead to a separate detailed design commission within the same budget.

Elwick Road / A2042, Ashford

2.5.14 The A2042 junction with Elwick Road and Victoria Road is a large double junction controlled by traffic signals in the centre of Ashford (Figure 2-2). The junction complex is congested and has been highlighted as a site suffering from a poor crash record. In the morning and evening peaks there are significant delays from all directions and travellers through the junctions suffer from unreliable journey times. Pedestrians cross the junction to access the international station using crossing that have long crossing times.

Figure 2-2 Elwick Road / A2042 Improvement

2.5.15 The junction with Elwick Road and Station Road is an urban route in the centre of Ashford and is a strategic connection, serving the station, town centre and college. There are many developments being delivered in Ashford Town Centre including the cinema, hotels, apartments, college and commercial quarter and this congestion improvement scheme unlocks development and upgrades local infrastructure. As part of a Section 106 agreement, the scheme has been designed and developed to upgrade the existing pedestrian crossings with the addition of crossing facilities on the central reservations and by staggering the crossing points to improve efficiency. The scheme includes a dedicated left turning lane and will improve junction operation.

2.5.16 Assessment of the proposed scheme (Table 2-5) concluded that the scheme will improve the capacity at both junctions. The junctions will be controlled dynamically using SCOOT within the county council Urban Traffic Control System.

	Base Flows			2020 Core Flows			Base Flows			2020 Core Flows		
	Existing network						ALL Proposed Changes					
	AM Peak	PM Peak	Week end	AM Peak	PM Peak	Week end	AM Peak	PM Peak	Week end	AM Peak	PM Peak	Week end
Elwick Rd junction PRC Over All Lanes (%)	-40.7	-123.1	-162.0	-22.8	-44.0	-23.1	23.3	20.0	24.1	-2.7	-1.1	10.8
Victoria Rd junction PRC Over All Lanes (%)	-28.1	-31.6	-22.8	-23.6	-9.2	-4.5	24.4	29.3	32.0	-0.1	3.5	11.3
Elwick Rd junction Total Delay Over All Lanes (pcu/Hr)	89.8	239.7	239.5	141.6	453.1	203.7	26.1	37.5	34.3	40.2	58.3	45.1
Victoria Rd junction Total Delay Over All Lanes (pcu/Hr)	113.9	66.3	95.5	144.5	67.3	56.9	31.7	30.7	30.1	46.7	50.3	41.0

Table 2-5 A2042 / Elwick Road / Victoria Road Junction Assessment

2.5.17 The scheme will improve access for buses to the International Station and unlock the growth in the area around the station for development. An improved and safer junction will allow access to the transport interchange at the station enabling access to employees and residents to the town centre.

MOVA Implementation

2.5.18 The Congestion Strategy has assessed a number of strategic links into urban centres across Kent. The strategy has identified those links that suffer from the variable journey times making accessing employment difficult to predict and discourages access to some employment areas.

2.5.19 The assessment identified Thanet and Tunbridge Wells as two areas that particularly suffer from these issues. Thanet in particularly is an area of growth with significant housing areas identified and being encouraged for development. There are a number of signal junctions on the strategic corridors in both urban areas. These junctions currently operate Vehicle actuated (VA) without any consideration of changing flows. The implementation of MOVA will bring about significant improvements. MOVA will dynamically optimise the traffic links at junctions and implement changing control

strategies to minimise delays and reduce the impact of unequal flows that result in poor junction capacity on VA junctions.

2.5.20 MOVA responds dynamically to live traffic flow arrival data and there is no analytical technique to accurately predict in advance of improvements. This is documented in a technical paper released by JCT Consultancy, developers of the traffic signal modelling software Linsig. Modelling the junction for the benefits of MOVA would therefore prove fruitless. The JCT Consultancy technical paper estimates that MOVA alone decreases the mean peak period delay by up to 9.5%.

2.5.21 While the specific benefits of the proposed improvements at these sites cannot be accurately estimated, experience of implementing MOVA at other sites in the County allow the benchmarking of likely levels of benefits it could bring. Such an example is that of the A229 Linton Road / B2163 Heath Road, Maidstone.

Dover TAP / ITS Assessment

2.5.22 On a typical day the Port of Dover handles over 8,000 lorries. Dover TAP (Traffic Assessment Project) is designed to keep Dover clear during peak ferry times. HE have commissioned a review of the strategic road network in and around Dover, primarily looking at the A20 route, to establish the effects that Operation TAP has on the Strategic network. KCC are looking to undertake a parallel scheme that considers the local network, this will allow the two projects to be linked.

2.5.23 Dover town centre is being redeveloped and linking these projects will unlock the economic growth that the town needs for regeneration. The Dover Western Dock expansion will increase demand to and from the town centre, accessing the new developments.

2.5.24 The Dover TAP / ITS Assessment project will look at all of the on street technology to enable better coordination between HE and KCC in the event of the implementation of Operation TAP.

3 Strategic Case

3.1 Introduction

3.1.1 This section sets out the 'case for change', by explaining the rationale for making investment and presenting evidence on the strategic policy fit of the proposed scheme. This section also sets out the scheme options under consideration.

3.1.2 The Strategic Case establishes the:

- Context for the business case, outlining the strategic aims and responsibilities of KCC;
- Transport-related problems have been identified, using evidence to justify intervention and examining the impact of not making the investment;
- Specific, Measurable, Achievable, Realistic and Time-bound (SMART) objectives that solve the problem, identified through alignment with KCC's strategic aims and responsibilities;
- Measures for determining successful delivery of the objectives;
- Scheme scope, determining what the project will and will not deliver;
- Analysis of constraints and opportunities for investment on the KSCMP;
- Breakdown of interdependencies on which the successful delivery of the scheme depends;
- Details of main stakeholder(s); and
- Evaluation of the options considered.

3.2 Strategic Context

National Transport Priorities

3.2.2 The Government has long-term objectives aimed at improving the economy, environment and society. These are the three tenets against which major transport infrastructure projects are assessed, and will continue to be assessed in future.

3.2.3 In its National Infrastructure Plan 2014, the Government presented its vision for the UK transport system:

- Transport infrastructure can play a vital role in driving economic growth by improving the links that help to move goods and people around and by supporting the balanced, dynamic and low-carbon economy that is essential for

future prosperity;

- Local transport systems must enable suburban areas to grow. The transport network must support good value and rapid movement of goods around the country. The transport system must be efficient but also resilient and responsive to infrequent and unexpected pressures; and
- Airports and ports are the gateways to international trade and the Government will work to improve the road and rail connectivity to major ports and airports.

3.2.4 These elements of the vision can be seen as being of direct relevance to the KSCMP scheme, which aims to improve journey time reliability, air quality, safety, bus punctuality and enable growth in Kent.

Regional Transport Priorities

South East LEP: Growth Deal and Strategic Economic Plan 2014

3.2.5 In March 2014, SELEP submitted their Strategic Economic Plan (SEP). Within the six year period covered by the SEP (2015/16 to 2020/21) several considerable developments are planned within Kent, including:

- Ebbsfleet Garden City (10,000 homes and 20,000 jobs);
- Paramount Park, Swanscombe Peninsula (27,000 jobs);
- Lodge Hill (5,000 homes and 5,000 jobs);
- Kent Science Park (3,000 jobs);
- Discovery Park Enterprise Zone (1,300 jobs);
- London Gateway container port (12,000 direct and 20,000 indirect jobs).

3.2.6 The SEP document outlines the case for investment into infrastructure, enterprise and employment that is required for the South East region's economy to continue its successful upward trajectory.

3.2.7 The Kent and Medway Growth Deal forms part of the SEP and indicates the intention to invest over £80 million each year over the six-year SEP plan, in order to:

- Substantially increase the delivery of housing and commercial developments;
- Deliver transport and broadband infrastructure to unlock growth;
- Back business expansion through better access to finance and support; and
- Deliver the skills that the local economy needs.

3.2.8 Strategic congestion management in the form of the KSCMP is established as a country-wide priority in the SEP. Traffic congestion is highlighted as a significant

constraint to growth in the Canterbury district and in the town centres of Maidstone, Tonbridge, Tunbridge Wells and Sevenoaks. Therefore, Kent stands to benefit from the fulfilment of the criteria of the Kent and Medway Growth Deal.

Local Transport Priorities

3.2.9 Kent is South East England's fastest recovering economy and has great potential for successful economic growth. In the last 20 years, Kent has seen 100,000 more people living in the county, housing stock increase by over 60,000 homes and 130,000 more cars on the road. This pace of change is set to accelerate further over the next 20 years with a projected 8 per cent population increase, accompanied by the presence of two of the UK's four Growth Areas in Thames Gateway and Ashford.

3.2.10 Local growth is predicted to result in 250,000 extra journeys on Kent's roads by 2026. Coupled with a forecast increase in international traffic this leads to tackling congestion being regarded as one of the main priorities for Kent.

3.2.11 KCC's framework for regeneration "Unlocking Kent's Potential" defines what Kent should look like in 20 years' time and includes 1 of its 5 priorities "delivering growth without transport gridlock" – by designing communities that will encourage walking, cycling and healthy leisure activities. Based on this "Growth without Gridlock: A transport delivery plan for Kent" establishes transport priorities for the next 20 to 30 years to support Kent's Environment Strategy target of reducing greenhouse gas emissions by 20% by 2020 and 80% by 2050.

<u>Growth without Gridlock</u>

3.2.12 "Growth without Gridlock" recognises that road transport is responsible for around 30% of Kent's greenhouse gas emissions and that the way forward is to provide low carbon transport options allied with better planning to reduce the need to travel, which in turn will support economic growth, housing growth and tackle climate change.

3.2.13 The Plan outlines the growth expected within the Thames Gateway area of Kent. The Thames Gateway area covers the majority of the districts of Dartford, Gravesham and Swale including the main urban areas of Dartford, Gravesend, Northfleet, Sittingbourne and Sheerness. It joins up with Medway, South Essex and parts of East London to form the Thames Gateway Growth Area. There is a target to develop 52,340 new homes and 58,000 jobs over the period 2006-2026.

3.2.14 The Plan recognises the Thames Gateway area has good road links, being located on the M2/A2 corridor, although major congestion at the Dartford Crossing is limiting growth across the whole area. North south links are also highlighted as poor, which results in congestion on the main inter-urban routes to Maidstone and Tonbridge/ Tunbridge Wells. The report concludes that this new growth will put pressure on local roads and therefore sustained investment in new infrastructure is necessary.

3.2.15 "Growth without Gridlock" recognises that sustainable economic growth and regeneration is reliant on comprehensive and resilient transport networks. The efficiency of the network affects travel time and reliability for business, freight and logistic operations as well as local residents. Working to this end the C-ITS Scheme, as part of the KSCMP, will bring together ITS initiatives to transport corridors in Thameside and Maidstone to improve journey reliability and accommodate forecast increase in travel demand.

3.2.16 The C-ITS Scheme is accompanied by a number of projects designed to relieve local hotspots of congestion on key routes. The Wateringbury Crossroads Improvement, proposed as part of this business case, is designed to relieve a bottleneck identified on the A26 corridor which causes significant congestion between Maidstone and Tonbridge / Tunbridge Wells. Maidstone is expected to accommodate significant growth across the district which will generate increased demand on the main inter urban routes. The improvements proposed are designed to increase capacity at the junction, reducing delays and improving journey time reliability.

3.2.17 The Plan flagged poor transport connectivity in West Kent, particularly at peak time on inter-urban routes, as contributing to lower levels of economic growth. The key transport challenges identified for Tunbridge Wells in "Growth without Gridlock" are to address congestion hotspots on major routes. The Tunbridge Wells ITS proposal included in this business case is designed to investigate ways of improving journey time reliability and capacity on the existing infrastructure. This approach will focus on the implementation of new technologies and the development of sustainable travel measures.

3.2.18 Some of the key transport challenges identified in the Plan are:

- Transferring existing and new car trips onto public transport, walking and cycling, especially for short journeys;
- Tackling congestion hotspots;

- Integrating rail services and improving connectivity between stations; and
- Providing sufficient transport infrastructure to mitigate the impact of the planned development including walking and cycling.

3.2.19 The schemes detailed in this business case, as part of the 2018/19 KSCMP, align with the policies in 'Growth without Gridlock' as they are located in or between areas undergoing growth and will contribute to creating a more efficient transport network within Kent.

Local Transport Plan 4: Delivering Growth without Gridlock 2016-2031

3.2.20 Kent's fourth "Local Transport Plan (LTP4), 2016-31" sets out KCC's Strategy and Implementation Plans for local transport investment to 2031. It sets out policies to deliver strategic outcomes for transport and is accompanied by implementation plans and a methodology for prioritising investment in transport infrastructure.

3.2.21 The LTP4 aims to "deliver safe and effective transport, ensuring that all Kent's communities and businesses benefit, the environment is enhanced and economic growth is supported". The five overarching policies targeted at achieving these aims are;

- Economic growth and minimised congestion;
- Affordable and accessible door-to-door journeys;
- Safer travel;
- Enhanced environment; and
- Better health and wellbeing.

3.2.22 The transport priorities are described in the LTP4 as being strategic, countywide or local. LTP4 refers specifically to the KSCMP, for which this business case is prepared, as an integral part of the countywide plan which seeks to improve journey time reliability and in doing so support development and economic growth.

3.2.23 The LTP4 highlights severe congestion problems on the major roads converging on Royal Tunbridge Wells. The Tunbridge Wells ITS scheme and MOVA Implementation Programme included in this business case are designed to take different but complementary approaches to tackle this issue.

3.2.24 The Ashford town centre project, identified in the LTP4, includes junction improvements at the junction of Elwick Road to relieve congestion, improve accessibility to the town and station and to improve safety. These are issues are

addressed by the A2042 / Elwick Road scheme which is included in this business case.

3.3 Problem Identified

3.3.1 This section of the report will outline the existing problems encountered across Kent and provide evidence as to why the scheme is required in order to support future development within the county.

Existing Situation

3.3.2 There are a number of challenges facing Kent and the main areas of concern are as follows:

- In a DfT study, 23% of adults said congestion was a problem most or all of the time on their general road journeys;
- In the South East people travel further on average than any other region, at over 8,300 miles per person per year;
- The region has a larger proportion of the UK's road traffic than any other, at 16%.
- Kent's dispersed settlement pattern makes the car the most suitable mode of transport;
- Kent's international traffic has an impact; and
- The housing growth planned for Kent could result in an extra 250,000 car journeys on the County's roads every day.

3.3.3 LTP4 recognises that "Funding for local transport schemes is essential to facilitate housing growth" and "Efficient transport that reliably connects places is vital for economic Growth without Gridlock". Regeneration in East Kent is particularly dependant on improving accessibility. The Kent network suffers from unsustainable levels of congestion and has a lack of resilience.

3.3.4 The 'key outcomes' sought for Kent, as identified by KCC's LTP4, are:

- Economic growth and minimised congestion;
- Affordable and accessible door-to-door journeys;
- Safer travel;
- Enhanced environment; and
- Better health and wellbeing.

Traffic Congestion

3.3.5 LTP4 notes the opportunities for growth for Kent arising from the proximity to London, access to nationally important ports and major road and rail links to UK and Europe. The potential for growth could be inhibited by ever increasing congestion on major local and strategic routes across Kent. Growth across the county will be constrained unless this can be addressed by investing in increasing capacity or reducing demand on the network.

Wateringbury Crossroads Improvement

3.3.6 The Wateringbury Crossroads is located in Tonbridge and Malling Borough Council but is in close proximity to the adjacent Maidstone Borough Council district. The junction is identified in the LTP4 as presenting capacity issues with significant congestion on the A26 corridor which links Maidstone and Tonbridge and Tunbridge Wells. The "hotspot" scheme to improve the operation of the junction included in this business case has the potential to relieve some of the pressure on this junction.

Elwick Road / A2042 Improvement

3.3.7 The junction of Elwick Road with Station Road is on an urban route in the centre of Ashford which has strategic function, serving the station and the town centre and routes to the south of the town. The junction currently suffers from significant delays on all arms which contribute to unreliable journey times. The scheme is intended to improve the junction operation and relieve congestion.

Dover TAP / ITS Assessment

3.3.8 The Port of Dover handles over 8,000 freight vehicles on a typical day and this has a significant impact on the town centre, especially when services are disrupted. Dover TAP (Traffic Assessment Project) was introduced to hold port bound lorries outside the town on the A20 during busy periods to prevent lorries queueing in central Dover causing serious congestion.

3.3.9 The Dover TAP has proved a valuable tool in freight management and the DOVER TAP / ITS Implementation scheme is intended to maximise the potential benefits that can achieved to relieve congestion.

Supporting Economic Growth

3.3.10 Sustainable economic growth and regeneration is reliant on comprehensive and

resilient transport networks. These networks are essential to increasing business efficiency by generating time savings and improved reliability for business travellers, freight and logistics operations. They support clusters of economic activity, expand labour market catchments, and facilitate business-to-business interactions.

3.3.11 Kent's economy is not as prosperous as other parts of the South East, with a Gross Value Added (GVA) per head of population (£18,994) well below the regional average (£25,843), and relatively high unemployment rates in some areas. These problems are particularly acute in areas of East Kent and around the coastal fringe, which until recently have suffered from relatively poor road and rail links.

3.3.12 In order to achieve the scale of economic growth necessary to support sustainable development in the County's Growth Areas and the regeneration of its coastal towns, it is vital that business and retail sites are well connected to reliable and integrated multi-modal transport networks.

Elwick Road / A2042 Improvement

3.3.13 The poor operational efficiency of the Elwick Road / A2042 junction is a constraint to planned development within Ashford town centre. The improvement scheme will unlock the potential development and improve access to the transport interchange at the station.

MOVA Implementation Programme

3.3.14 The Congestion Strategy identified links in Thanet and Tunbridge Wells that suffer from congestion and unreliable journey times, inhibiting access to some employment areas. Thanet is an area of growth with significant development potential which could be impeded by poor network efficiency. The implementation of MOVA is planned to optimise the operation of signalised junctions to minimise delay, increase capacity and improve journey time reliability.

Dover TAP / ITS Assessment

3.3.15 The redevelopment of the town of Dover and of Dover Western Dock expansion will benefit from the implementation of the Dover TAP / ITS Assessment Scheme.

Improving Access to Jobs and Services

3.3.16 Relative disadvantage is the capacity to participate in or have access to the forms of employment, occupation, education, recreation, family and social activities which are

enjoyed by the majority of the population. Poverty exists all over Kent and is not confined to specific areas. Nevertheless, it is most strongly associated with the County's coastal areas. There are significant pockets of disadvantage in the Kent Thameside boroughs of Dartford and Gravesham, as well as the East Kent coastal towns, interspersed with some localised areas of high affluence.

MOVA Implementation Programme

3.3.17 The Congestion Strategy identified links in Thanet and Tunbridge Wells that suffer from variable journey times, making access to employment difficult and inhibiting access to some employment areas.

3.3.18 Thanet is an area that has been suffered from higher levels of poverty and disadvantage but now has potential for growth which could be impeded by poor access on a congested network. Royal Tunbridge Wells, which is a key economic and service centre for West Kent, is constrained by the congestion and poor journey time reliability. This impedes access to employment and services.

3.3.19 The implementation of MOVA in these areas is planned to optimise the operation of signalised junctions to minimise delay and increase capacity. This will improve journey time reliability and improve access to jobs and services.

Elwick Road / A2042 Improvement

3.3.20 The junction of Elwick Road with Station Road is on an urban route in the centre of Ashford which has strategic function, serving the station and the town centre and routes to the south of the town. The poor operational efficiency of the Elwick Road / A2042 junction is a constraint to planned development within Ashford town centre. The improvement scheme will unlock the potential development and improve access to the transport interchange at the station for employees and residents.

Tunbridge Wells ITS Implementation

3.3.21 Tunbridge Wells is an important employment and service centre in West Kent, but suffers from delays and congestion on the key routes that converge on the town. The Tunbridge Wells ITS Implementation aims to improve access to jobs and services in the town by improvement of traveller awareness.

Dover TAP / ITS Assessment

3.3.22 The Port of Dover handles 13 million passengers, 2.5 million freight vehicles and

supports 22,000 jobs, many of which are in the local community. The Dover TAP / ITS Assessment will maximise the benefits of the Dover TAP which improves access to the jobs and services in the town during busy times.

A Safer Healthier County

3.3.23 Key areas of concern are as follows:

- Some 23.4% of Kent's residents are obese, which is higher than the national average, and 31% of the County's children are overweight;
- The South East mean temperature rose by between 1.4 and 1.8°C in the period 1961 to 2006;
- Kent has the largest total carbon emissions of any County, with 11,879 kilotonnes of CO_2;
- Many of Kent's roadside air quality sites failed to meet the annual mean NO_2 objective; and
- There are significant health inequalities within Kent.

Elwick Road / A2042 Improvement

3.3.24 The improvement scheme will support sustainable travel measures by improving access to the transport interchange at the station.

Tunbridge Wells ITS Implementation

3.3.25 The Tunbridge Wells ITS Implementation aims to improve access to jobs and services in the town by improvement of traveller awareness, development of new technologies and sustainable travel measures.

3.4 Impact of Not Changing

3.4.1 Growing the local and regional economy through the creation of employment opportunities and providing new housing are key drivers identified by the Government, the SELEP and KCC.

3.4.2 Substantial housing and employment growth is planned for Kent and the South East. The County contains two of the country's four Growth Areas at Thames Gateway Kent and Ashford and two Growth Points at Dover and Maidstone. The South East Plan included a target to provide over 128,000 new homes and over 165,000 jobs in Kent by 2026 and KCC estimates that, if delivered, this growth could result in an extra 250,000 car journeys on Kent's roads every day. The KSCMP is therefore essential to

support these new jobs and houses without causing the transport network to grind to a halt. Specific do nothing outcomes will include:

- The constraints of the existing transport conditions will act as an inhibitor to growth with private sector investment attracted to other areas with better accessibility;
- The network will not be resilient enough to respond to disruption and resilience to incidents will continue to weaken without the scheme;
- The significant pockets of disadvantage in Kent will worsen;
- Kent's reputation as the UK's front door may be damaged without effective highway management; and
- The ongoing Air Quality issues will be exacerbated without the mitigation afforded by the scheme.

Elwick Road / A2042 Improvement

3.4.3 Figure 3-1 displays the scheme location in relation to the growth that is occurring in and around Ashford town centre. The significant development planned for this area of Kent will put significant pressure on existing infrastructure. The scheme has been identified as currently experiencing problems in peak periods and so needs to be addressed in order to be able to accommodate future traffic growth this area.

3.4.4 Ashford has been identified one of the key Growth Points of the county. There are a number of major developments focussed on the centre of Ashford which may be inhibited by the problems of congestion which already exists. The Elwick Road / A2042 junction is at a key location on the southern approach to the town centre (**Error! Reference source not found.**. The junction is under pressure and suffers from significant delays and the proposed improvement will unlock the growth in the town centre and also in the wider area.

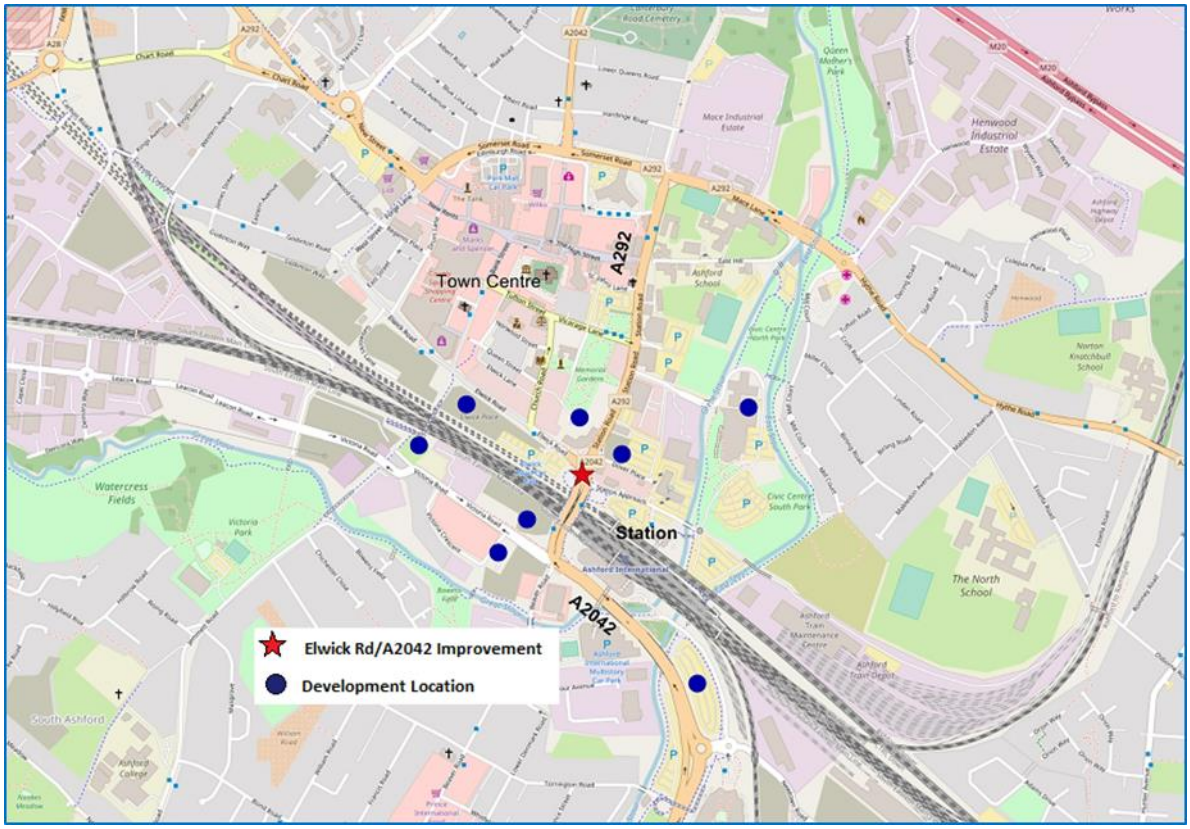

Figure 3-1 Elwick Road/A2042 Scheme and Development Location

MOVA Implementation

3.4.5 Thanet is on the eastern periphery of Kent and poor access has contributed high levels of unemployment and social disadvantage in the area. Strategic routes across Thanet suffer from unreliable journey times and a disproportionate level of congestion. Economic regeneration is underway and key development sites have been identified across Thanet. Figure 3-2 shows key development sites and the location of traffic signal junctions across Thanet. The proposed MOVA Improvements for selected signalised junctions on key strategic routes are aimed at reducing the level of delay and improving journey time reliability. This will improve accessibility and help unlock potential development.

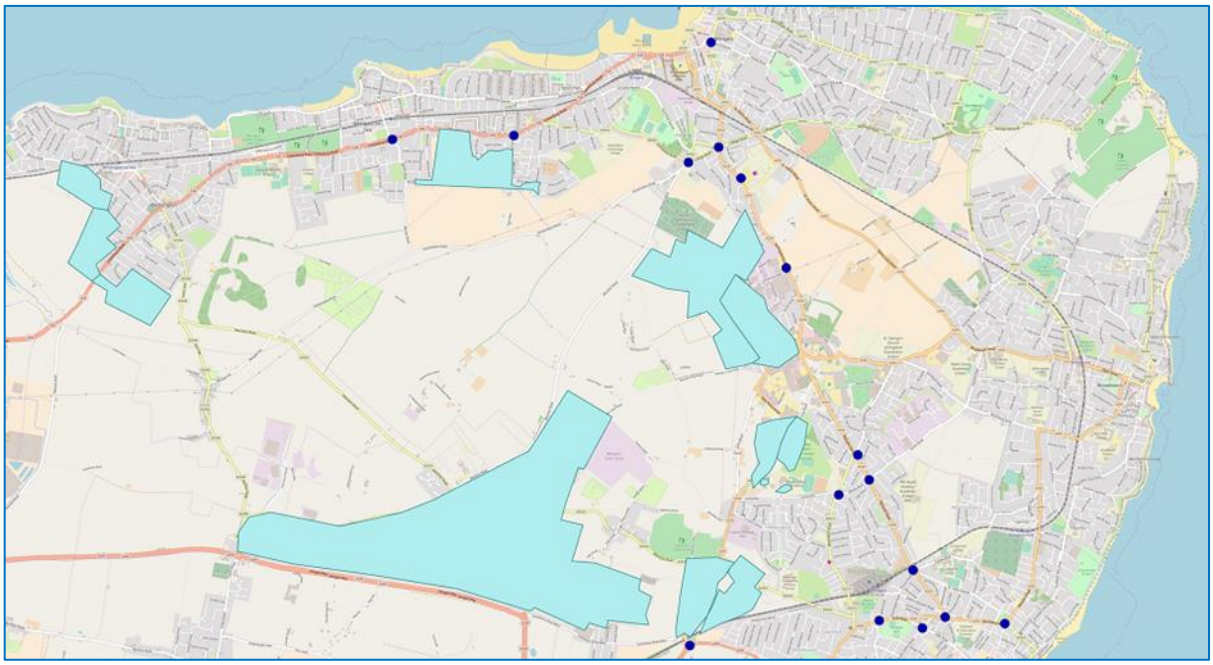

Figure 3-2 Thanet Development Locations

Dover TAP / ITS Assessment

3.4.1 The Port of Dover handles 13 million passengers, 2.5 million freight vehicles and supports 22,000 jobs, many of which are in the local community. The Dover TAP / ITS Assessment will maximise the benefits of the Dover TAP which improves access to the jobs and services in the town during busy times.

3.4.2 On a typical day the Port of Dover handles over 8,000 lorries and this has a significant impact on the town centre, especially when services are disrupted. Dover TAP (Traffic Assessment Project) was introduced to hold port bound lorries outside the town on the A20 during busy periods to prevent lorries queueing in central Dover causing serious congestion. HE have commissioned a review of the strategic road network in and around Dover, primarily looking at the A20 route, to establish the effects that Operation TAP has on the Strategic network. KCC are looking to undertake a parallel scheme that considers the local network, this will allow the two projects to be linked.

3.4.3 Dover town centre is being redeveloped and linking these projects will unlock the economic growth that the town needs for regeneration. The Dover Western Dock expansion will increase demand to and from the town centre, accessing the new developments.

3.4.4 The Dover TAP / ITS Assessment project will look at all of the on street technology to enable better coordination between HE and KCC in the event of the implementation of Operation TAP.

3.4.5 The redevelopment of the town of Dover and of Dover Western Dock expansion will be constrained by congestion without maximising the benefits of Dover TAP.

3.5 Internal Drivers for Change

3.5.1 A key delivery strand of "Growth without Gridlock" outlines how economic growth and regeneration can be delivered in a sustainable way and what infrastructure is needed to deliver an integrated transport network which is fit for purpose in the 21st Century. If Kent is to accommodate this growth, its transport network must be well managed and have sufficient capacity and resilience to provide for efficient and reliable journeys.

3.6 External Drivers for Change

3.6.1 Journey reliability is fundamentally the primary driver and the planned growth of housing and jobs across the South East supports the assertion that the existing problems are likely to worsen in the future.

3.7 Objectives

3.7.1 The scheme objectives have been defined to address directly the problems discussed earlier in this chapter. They align closely with the business strategies for the scheme promoters, SELEP and for Central Government – most obviously in terms of the Government's broad goals for transport.

3.7.2 The desired outcomes from each objective have been considered and are shown in Table 3-1.

Objective	**Desired Outcome**
Alleviate congestion by allowing better flow of traffic	Improve car journey times
Supporting economic development in Kent	Improve journey time reliability
To promote accessibility to jobs and services for all	Increase public transport modal split and reduce public transport journey times
Provide a resilient network that is able to respond to disruption and incidents	Improvement of the ability of the transport system to function during adverse conditions and quickly recover to acceptable levels of service after an event
Improve air quality	Reduce carbon dioxide and other greenhouse gas emissions

Table 3-1: Objectives and Desired Outcomes

3.8 Measures of Success

3.8.1 Successful delivery against the scheme objectives will be monitored as part of the post construction monitoring and evaluation, details of which are discussed in Chapter 7 (the Management Case) of this report.

3.8.2 A programme of monitoring will be put in place prior to construction, then again at one-year and five-year post construction. It is envisaged that monitoring will include before and after conditions in relation to:

- Average daily traffic by peak/ non-peak periods;
- Average AM and PM journey times on key routes; and
- Day to Day travel time variability.

3.9 Constraints

3.9.1 The key constraint likely to affect delivery of the KSCMP is the LGF funding allocation to be granted by SELEP.

3.10 Inter-dependencies

3.10.1 There are internal and external factors upon which the successful delivery of the KSCMP is dependent. The proposed schemes conform to priorities set by the national, regional and local policy environments. Successful delivery will require continued alignment with policy priorities and subsequent political support.

3.10.2 A list of risks has been prepared as part of The Management Case (Chapter 7). The delivery of the KSCMP is dependent on these risks either not arising or being sufficiently mitigated so that scheme delivery remains unaffected.

3.10.3 For the purposes of this section of the business case, therefore, it is sufficient to summarise the key areas of risk/dependency.

3.10.4 The key inter-dependencies can be summarised under the headings of project delivery and project funding, namely:

<u>Project Delivery</u>

- Concurrency with multiple suppliers;
- Teething problems with operations;
- Competent staff;
- Any land acquisition/ CPO procedures taking longer than allowed for;

- Unforeseen Statutory Services;
- Unexpected difficulties during construction; and
- Increased environmental requirements.

Project Funding

- Changes/uncertainty over funding streams;
- Project overspend; and
- Political changes of direction.

3.11 Stakeholders

3.11.1 Consultation with the community, members, and local representatives is a vital part of a scheme's development. If undertaken successfully and inclusively, consultation can ensure the success of a project and enables great certainty of delivery to both time and budget.

3.11.2 The communications and stakeholder management strategy for the project is outlined in The Management Case (Section 7).

3.11.3 As each of the individual hotspot schemes progresses, and a work plan for delivery of each is developed, stakeholders such a local bus operators and nearby businesses and residences will be consulted as to the nature of the works and any diversions or disruptions expected.

3.12 Options

3.12.1 Three funding options have been identified, namely:

- Do nothing – Without investment the journey times that occur will continue. Buses will suffer from delays and varying journeys and congestion will only increase;
- Reduced investment – Provide a small amount of funding to tackle priority areas; and
- Maximum investment – Provide funding to bring about all of the described improvements.

3.12.2 The 'Maximum Investment" option involves delivering the component schemes in the manner described in Section 2.5 of this report. It is designed to target the investment where it can generate the most benefit from the available capital funding package. Additionally, as the investment targets growth areas in the county and SELEP region

the delivery of the full committed investment will be crucial in delivering the growth targeted in these areas and mitigating the transport effects of the additional trip generation that growth will bring.

3.12.3 In the event of the "reduced investment" option being selected, this utility would be reduced by curtailing the multi-criteria analysis, postponing or shelving one or more "hotspot" schemes, or targeting the available investment on a more limited area. This runs the risk of failing to alleviate one or more of the issues described in Section 3.4 "Impact of Not Changing".

3.12.4 This level of assessment of options is considered proportionate with the amount of funding being requested and in line with the detail of this Business Case. If no funding is received, it is unlikely that the schemes will go ahead.

3.12.5 The preferred option identified by KCC is the Maximum Investment option which will facilitate growth across the county and not just in limited areas. Investment will improve efficiency and reliability of journeys and influence modal choice, providing better alignment with the strategies and priorities at the national, regional and local level.

4 Economic Case

4.1 General KCC Approach to Scheme Economic Case

Overview

4.1.2 The economic case is one of five strands of evidence required to support the scheme transport business case. KCC's general approach to the economic case has been determined by the need for it to be proportionate to the scale, scope and cost of the proposed scheme and the preparation time available. This approach is fully consistent with Department for Transport advice to scheme promoters (KCC) and adjudicators (SELEP). This advice recurs in the following DfT guidelines:

- Transport Analysis Guidance (WebTAG) (The Proportionate Update Process January 2014);
- Value for Money advice note, December 2013 (Sections 1.4, 1.17, 5.3);
- The Transport Business Cases, January 2013 (Sections 1.4, 2.7, 6.2);
- LEP Assurance Framework, December 2014 (Sections 5.6, 5.7, Annex A); and
- HM Treasury The Green Book, July 2011 (Appraisal and Evaluation in Central Government).

4.1.3 However, none of the above guidance specifies the parameters of what constitutes a proportionate approach to appraisal. Therefore, KCC has applied best judgement to decide how much rigour there should be in the scheme economic case.

Qualitative Economic Appraisal

4.1.4 In line with the proportionate approach, KCC has prepared qualitative evidence to support the scheme economic case. Generally, for a scheme with relatively large cost (>£5m), the economic appraisal would be substantiated with quantified outcomes. Conversely for schemes with relatively small cost (<£5m), as is the case for the 2018/2019 submission, mainly qualitative evidence has been assembled.

4.1.5 It has also not been appropriate to calculate monetised economic impacts for certain KCC schemes for which the LGF bid is not primarily aimed at achieving transport user benefits. Here, the main scheme objective has been, for example, to enable a more prosperous economy and community by improving public realm, or to save unnecessary future expense by maintaining existing transport assets more effectively.

4.1.6 In addition, the difficulties in assessing the MOVA signal control means no quantified

assessment has been undertaken for the Thanet and Tunbridge Wells.

Components of Economic Case

4.1.7 The economic case has initially considered all aspects of scheme performance and likely impacts, in line with the TAG criteria outlined in the Appraisal Summary Table (AST), broadly:

- Economic prosperity and efficiency –
  - User travel costs, congestion, reliability, regeneration and wider economy;
- Environment –
  - Noise, air quality, greenhouse gases, landscape, townscape, heritage, biodiversity and water;
- Social well-being –
  - Accidents, physical activity, journey quality, value for non-users, affordable travel, security, access to opportunities/door-to-door options and severance;
- Public accounts –
  - Cost to transport budget, indirect tax receipts and value for money (VfM).

4.1.8 However, many of these aspects are insignificant, or not easily assessed, in the context of the KCC scheme in question. Therefore, the economic case has focussed on economic efficiency for transport users, decongestion, reliability, greenhouse gases (carbon), safety, capital cost and VfM as the core aspects for appraisal.

Qualitative Evidence for Economic Case

4.1.9 The economic outcomes from the scheme have been assessed by aligning with a qualitative scale. This appraisal method for the economic case has largely followed the steps outlined in the DfT 'Value for Money' approach. The qualitative method is considered to be appropriate for schemes of modest cost and scope, which do not merit an elaborate, quantified economic case.

4.1.10 Qualitative evidence used to support the economic case is based around applying an order of magnitude to a likely scheme outcome, rather than by calculating a precise, quantified, impact value.

4.2 Proportionality Assessment

4.2.1 HM Treasury's Green Book states that all new proposals should be subject to

comprehensive but proportionate assessment, wherever it is practicable, so as best to promote public interest.

4.2.2 Table 4-1 discusses TAG Appraisal Summary Table (AST) impacts and outlines the key proportionality assumptions made through the development of the KSCMP package of measures and the appraisal process. The assumption table provides supplementary and supporting information to the proportionality assessment.

Impact	Assumptions
Economy: Business users and transport providers	Due to the difficulties of determining the impact of proposed schemes and their relatively low cost, the journey time benefits have been assumed. A qualitative score has been applied using professional judgement.
Economy: Reliability impact on business users	Due to the difficulties of determining the impact of proposed schemes and their relatively low cost, the journey time benefits have been assumed. A qualitative score has been applied using professional judgement.
Economy: Regeneration	Positive regeneration impacts are anticipated across Kent; however, it is not judged appropriate to complete the assessment (TAG Unit A2.2 January 2014) for such a low cost schemes. A qualitative score has been applied using professional judgement.
Economy: Wider impacts	Positive wider impacts would be expected to accrue across Kent, but the impacts are expected to be dispersed rather than in measurable concentrations in a few locations. A qualitative score has been applied using professional judgement.
Environmental: Noise	The proposed schemes are expected to result in limited impact in terms of noise and vibration, therefore a quantitative assessment has not been carried out (TAG Unit A3 November 2014). A qualitative score has been applied using professional judgement.
Environmental: Air quality and Greenhouse gases	The proposed schemes would be expected to reduce congestion in urban areas resulting in fewer vehicles idling at congestion and pollution 'hotspots'. However given the scope of the schemes it is inappropriate to perform detailed air quality testing (TAG Unit A3 November 2014). A qualitative score has been applied using professional judgement.
Environmental: Landscape	Any change to landscape value is expected to be small and limited to the corridors and junctions covered in the scheme. A qualitative score has been applied using professional judgement.
Environmental: Townscape	Although the urban hotspot schemes are expected to result in townscape changes, these are offset against the reduction of congestion in their immediate vicinities. A qualitative score has been applied using professional judgement.
Environmental: Historic environment	Although the urban hotspot schemes are expected to result in environmental changes, these are offset against the reduction of congestion in their immediate vicinities. A qualitative score has been applied using professional judgement.
Environmental: Biodiversity	Ecological impacts are unlikely with the introduction of any of the component parts of the programme. Works could potentially impact on protected species and habitats where vegetation clearance is required or where works are within or close to a sensitive site. A qualitative score has been applied using professional judgement.

Impact	Assumptions
Environmental: Water environment	The hotspot mitigation schemes are unlikely to significantly affect the water environment. A qualitative score has been applied using professional judgement.
Social: Commuting and other users	Due to the difficulties of determining the impact of proposed schemes and their relatively low cost, the impact on commuting and other users have been assumed. A qualitative score has been applied using professional judgement.
Social: Reliability impact on Commuting and Other users	Due to the difficulties of determining the impact of proposed schemes and their relatively low cost, the journey time benefits have been assumed. A qualitative score has been applied using professional judgement.
Social: Physical activity	The proposed scheme is expected to result in minimal impact in terms of physical activity therefore a quantitative assessment (TAG Unit A4.1 November 2014) has not been carried out, particularly given the low cost of the scheme. A qualitative score has been applied using professional judgement.
Social: Journey quality	Due to the low cost of the schemes and the dispersed locations of the improvements, it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative score has been applied using professional judgement.
Social: Accidents	The existing junction of Elwick Road and the A2042 has a poor crash record and the proposed scheme will provide a safer arrangement. However insufficient data is available to determine a quantitative assessment and a qualitative score has been applied using professional judgement.
Social: Security	Due to the low cost of the scheme and the sparing distribution of impacts, it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative score has been applied using professional judgement.
Social: Access to services	Improvements in access to a number of services are expected. The hotspot schemes will deliver more accessibility to retail, education and leisure. A qualitative score has been applied using professional judgement.
Social: Affordability	There is not expected to be any impact on personal affordability with the scheme. Due to the low cost and small impact of the scheme it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). Instead, a qualitative score has been applied using professional judgement.
Social: Severance	There is not expected to be any change in severance resulting from the scheme. Pedestrian crossings and signal phases will remain in situ at all hotspot sites and will be enhanced at Elwick Road. Due to the low cost and small impact of the scheme it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative score has been applied using professional judgement.
Social: Option and non-use values	The scheme being appraised does not include any measures that will substantially change the availability of transport services within the study area. A qualitative score has been applied in line with TAG Unit A4.1 (November 2014).

Table 4-1: Proportionality Assumptions

4.3 User Benefits

4.3.1 It is likely that the anticipated benefits from the schemes in this business case will be to commuters and those travelling in the peak periods of the day. As a result of the schemes, the greatest journey time saving is likely to be realised during the peak periods. Journey time savings are still likely outside of the peak periods, and will encompass more user groups, but to a lesser extent.

4.4 BCR

4.4.1 Due to the identified difficulties in undertaking a quantified appraisal of the component schemes, no BCR has been calculated for the KSCMP scheme for this financial year.

4.5 Qualitative Assessment

4.5.1 The assessments of impacts made above have been input into the Appraisal Summary Table (AST) shown as Table 4-2 provided overleaf.

4.5.2 The qualitative assessment indicates that the proposed schemes making up the KSCMP programme for 2018/19 would have an overall beneficial impact. In particular the economic and social impacts of the scheme are where most benefits are considered to be gained by the proposed schemes.

4.6 Optimism Bias

4.6.1 Optimism bias adjustments are designed to deal with the 'systematic tendency of project appraisers to be overly optimistic' with regard to a project's 'costs, benefits and duration'. In a typical appraisal, an Optimism Bias uplift of 10% would be applied to the scheme costs as part of the Economic Case to ensure that the economic appraisal is robust. The selection of the 10% figure is based upon guidance in the Green Book Supplementary Advice.

4.6.2 As a quantified appraisal of the component schemes is not practical, the Economic Case for this scheme has been supported by qualitative evidence in line with a proportionate approach. Optimism Bias has therefore not been applied

4.6.3 Optimism Bias adjustments are not intended for use in estimating actual scheme outturn costs for funding requests and are therefore not included in the costs.

Impacts		Summary of key impacts	Qualitative Assessment
Economy	Business users & transport providers	Journey time benefits are estimated to improve as a result of the schemes, however given the difficulty in being able to quantify the schemes and for such low cost schemes, the assessment (TAG Unit A1.3) has not been completed. A qualitative score has been applied using professional judgement.	Beneficial
	Reliability impact on Business users	Journey reliability is expected to increase as a result of the schemes, however given the difficulty in being able to quantify the schemes and for such low cost schemes, the assessment (TAG Unit A1.3) has not been completed. A qualitative score has been applied using professional judgement.	Beneficial
	Regeneration	Positive regeneration impacts are anticipated across Kent; however, it is not judged appropriate to complete the assessment (TAG Unit A2.2 January 2014) for such low cost schemes which is likely to have very diffused regeneration benefits. A qualitative score has been applied using professional judgement.	Neutral
Environmental	Noise	The proposed schemes are expected to result in minimal impact in terms of noise and vibration, therefore a quantitative assessment has not been carried out (TAG Unit A3 November 2014). A qualitative score has been applied using professional judgement.	Neutral
	Air Quality	The proposed hotspot schemes would be expected to reduce congestion in urban areas resulting in fewer vehicles idling at congestion and pollution hotspots. However given the scope of the scheme it is inappropriate to perform detailed air quality testing (TAG Unit A3 November 2014). A qualitative score has been applied using professional judgement.	Slightly beneficial
	Greenhouse gases	Levels of reduction of hydrocarbon, carbon monoxide and nitrous oxides of 3.5% to 5% at peak periods repeatedly arise as a by-product of integrated ITS. A qualitative score has been applied using professional judgement.	Slightly beneficial
	Landscape	Any change to landscape value is expected to be small and limited to the corridors and junctions covered in the scheme. Such impacts are not, therefore, assessed in detail. A qualitative score has been applied using professional judgement.	Neutral
	Townscape	Although the urban hotspot schemes are expected to result in townscape changes, these are offset against the reduction of congestion in their immediate vicinities. A qualitative score has been applied using professional judgement.	Neutral
	Historic Environment	Although the urban hotspot schemes are expected to result in environmental changes, these are offset against the reduction of congestion in their immediate vicinities. A qualitative score has been applied using professional judgement.	Neutral
	Biodiversity	Ecological impacts are unlikely with the introduction of any of the component parts of the programme. Works could potentially impact on protected species and habitats where vegetation clearance is required or where works are within or close to a sensitive site. A qualitative score has been applied using professional judgement.	Neutral
	Water Environment	Proposed hotspot mitigation schemes are unlikely to significantly affect the water environment. A qualitative score has been applied using professional judgement.	Neutral
Social	Commuting and Other users	Journey time benefits are estimated to improve as a result of the schemes, however given the difficulty in being able to quantify the schemes and for such low cost schemes, the assessment (TAG Unit A1.3) has not been completed. A qualitative score has been applied using professional judgement.	Beneficial
	Reliability impact on Commuting and Other users	Journey reliability is expected to increase as a result of the schemes, however given the difficulty in being able to quantify the schemes and for such low cost schemes, the assessment (TAG Unit A1.3) has not been completed. A qualitative score has been applied using professional judgement.	Beneficial
	Physical activity	The proposed schemes are expected to result in minimal impact in terms of physical activity therefore a quantitative assessment (TAG Unit A4.1 November 2014) has not been carried out, particularly given the low cost of the scheme. A qualitative score has been applied using professional judgement.	Neutral
	Journey quality	Due to the low cost of the scheme and the diffused locations of the improvements, it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative score has been applied using professional judgement.	Slightly beneficial
	Accidents	Improvements to pedestrian crossing facilities at Elwick Road will improve safety but it is not anticipated that the hotspot schemes will have a discernible effect on accident rates. A qualitative impact score has been applied using professional judgement.	Largely beneficial
	Security	Due to the low cost of the hotspot schemes and the sparing distribution of impacts, it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets).	Slightly beneficial

Impacts		Summary of key impacts	Qualitative Assessment
	Access to services	Minor improvements in access to a number of services are expected; the hotspot schemes will deliver more accessibility to retail, education and leisure, Due to the low cost of the scheme and its dispersed impacts, it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative impact score has been applied using professional judgement.	Slightly beneficial
	Affordability	There is not expected to be any impact on personal affordability with the scheme. Due to the low cost and small impact of the scheme it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). A qualitative score has been applied using professional judgement.	Neutral
	Severance	Improvements to pedestrian crossing facilities at Elwick Road will reduce severance but it is not anticipated that the hotspot schemes will have a discernible effect overall. Due to the low cost and small impact of the scheme it is not deemed appropriate to undertake a full assessment (i.e. completing TAG worksheets). Instead, a qualitative score has been applied using professional judgement.	Neutral
	Option and non-use values	The scheme being appraised does not include any measures that will substantially change the availability of transport services within the study area. A qualitative score has been applied in line with TAG Unit A4.1 (November 2014).	Neutral
Public Accounts	Cost to Broad Transport Budget	Capital costs have been assigned to each scheme within the project, and then adjusted for inflation and for risk.	Neutral
	Indirect Tax Revenues	No indirect tax revenues are anticipated from this scheme.	N/A

Table 4-2: Appraisal Summary Table

4.7 Benchmarking

4.7.1 In order to provide an indication of the value for money of at least part of the KSCMP for 2018/19 it has been considered appropriate to benchmark the proposed MOVA improvements for Thanet and Tunbridge Wells against a similar LGF scheme in Kent. The installation of MOVA signal control and puffin crossing facilities is similar to the scheme already delivered at the A26/Yew Tree Road/Speldhurst Road junction in Tunbridge Wells.

4.7.2 Although the A26/Yew Tree Rd scheme also included the implementation of staggered pedestrian crossings to improve the efficiency of the traffic signals, the estimated scheme cost was considerably higher than that estimated for both Thanet and Tunbridge Wells. The A26/Yew Tree Road scheme had an estimated cost of £1.0m compared with an estimate cost of £0.22m (including 10% optimism bias uplift) for MOVA for Thanet and Tunbridge Wells.

4.7.3 The approved business case for the A26/Yew Tree Rd scheme calculated a BCR of 7.3 representing high value for money (VfM). Although the proposed schemes are not anticipated to derive the same level of benefit as the A26/Yew Tree Rd scheme, the significantly smaller cost indicates that the proposals for this component of the KSCMP would also represent high value for money.

4.8 Value for Money Statement

4.8.1 Due to the difficulties identified in undertaking a quantified appraisal of the proposed component schemes in the 2018/19 KSCMP, no BCR has been calculated.

4.8.2 A qualitative assessment of the schemes indicates that the proposals would have a beneficial impact, particularly in terms of economic and social impacts. In addition a benchmarking exercise of the proposed improvements for Thanet and Tunbridge Wells indicates that this component would represent high value for money.

4.8.3 On the basis of the above and the relatively low cost of the scheme programme for 2018/19 it is considered that the combined proposals are likely to represent medium-high value for money.

5 Financial Case

5.1 Introduction

5.1.1 This chapter presents the Financial Case for the KSCMP scheme. It concentrates on the affordability of the proposal, its funding arrangements and technical accounting issues. The total outturn costs and expenditure profile are presented, along with an assessment of the impact of the proposed deal on the Department's budgets and accounts.

5.1.2 Capital costs have been calculated for the Do-Maximum funding option only, because there are not expected to be any alternative construction costs that would be incurred in the Do-Nothing and the Do-Maximum.

5.1.3 Only the costs which will be incurred subsequent to a successful funding bid have been considered. 'Sunk' costs, which represent expenditure incurred prior to funding approval and which cannot be retrieved, have not been included.

5.2 Capital Cost Components at 2017 Prices

5.2.1 The capital required to fund the Programme is £4.8m for the period 2015 to 2021. With £0.863 spent in 2015/16, £0.610m spent in 2016/17 and an estimated spend of £0.390m in 2017/18, the total spend for the first three financial years is expected to be £1.863m. The anticipated spend for 2018/19 will be £950,000. Table 5-1 shows the scheme capital costs as estimated in 2017 prices.

Cost Category	**£**
Wateringbury Crossroads Improvement	300,000
Tunbridge Wells ITS Implementation	100,000
Elwick Road / A2042	150,000
MOVA Implementation Programme	200,000
Dover TAP / ITS Assessment	100,000

Cost Category		**£**
Forward Design: A2070 Ashford Turbo Roundabout A249 Journey Time Management Bluewater Traffic Management Plan Dover Network Assessment to link with HE Punctuality Improvement Partnership Data Analysis	 25,000 20,000 25,000 20,000 10,000	100,000
Total		950,000

Table 5-1: Components of Investment Cost at 2017 Prices

5.3 Inflation to 2018 Prices

5.3.1 Table 5-2 provides a base cost estimate of the investment which incorporates real cost increases. The average Consumer Price Index forecasts for 2018 is 2.3%[1], while construction costs are forecast to increase by 2.8%[2] in the south east for the same period. Therefore the base investment costs, including real cost increases have been calculated as follows:

$$\text{cost} = \text{£}950{,}000 \times \frac{1.028}{1.023} = \text{£}954{,}643$$

Cost Category	**£**
Wateringbury Cross Roads Improvement	301,446
Tunbridge Wells ITS Implementation	100,489
Elwick Road / A2042	150,733
MOVA Implementation Programme	200,978
Dover TAP / ITS Assessment	100,498
Forward Scheme Identification for 2018/19	100,489
Total	**954,643**

Table 5-2: Base Scheme Costs (2018 prices)

5.4 Quantitative Risk Assessment

5.4.1 A 10% risk contingency has been applied in line with best practice for work of this nature.

[1] Forecasts for the UK economy: a comparison of independent forecasts; No. 336, November 2017.
[2] Currie Brown tender price inflation by region, Q1 2017

5.5 Final Scheme Costs

5.5.1 Table 5-3 below shows the final scheme costs for the 2018/19 funding bid, including risk and inflation, but excluding optimism bias.

Cost Type	Cost (£)
Scheme Cost	950,000
Inflation	4,643
Risk Allowance	95,464
Total	**1,050,108**

Table 5-3: Summary of Final Scheme Costs (2018 prices)

5.6 Spend Profile

5.6.1 An estimated outturn spend profile for the KSCMP is shown in Table 5-4, split by financial year.

Estimated Spend	Total	15/16	16/17	17/18	18/19	19/20	20/21
Total Costs (£m)	4.80	0.86	0.62	0.39	1.05	0.94	0.94

Table 5-4: Outturn Spend Profile

5.7 Whole Life Costs

5.7.1 It is not anticipated that the hotspot schemes will generate any additional whole-life costs, they involve the modification of existing junctions that are presently in the highway maintenance cycle. Therefore, no additional whole-life operating, maintenance or renewal costs should be ascribed.

5.8 Section 151 Officer Sign Off

5.8.1 A signed letter by KCC's Section 151 officer providing appropriate assurances is contained in **Appendix A**.

5.9 Funding Assumptions

5.9.1 The total remaining project cost is estimated at approx. £1.98 million which will be fully LEP funded which will be granted dependent on the business case.

6 Commercial Case

6.1 Introduction

6.1.1 The commercial case provides evidence on the commercial viability of the scheme and the procurement strategy that will be used. It sets out the financial implications of the proposed procurement strategy and presents evidence on risk allocation and transfer, contract timetables and implementation timescale as well as details of the capability and skills of the team delivering the project.

6.1.2 The outcomes which the procurement strategy must deliver are to:

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

6.2 Hotspot Scheme Procurement

6.2.1 KCC have identified two procurement options for the delivery of their LEP funded schemes. The alternative options are:

Full OJEU tender

6.2.2 This option is required for schemes with an estimated value of over £4,322,012.

6.2.3 KCC will then need to opt for an 'open' tender, where anyone may submit a tender, or a 'restricted' tender, where a Pre-Qualification is used to whittle down the open market to a pre-determined number of tenderers. This process takes approximately one month and the first part is a 47 day minimum period for KCC to publish a contract notice on the OJEU website.

6.2.4 The minimum tender period is 6 weeks but could be longer for larger schemes. Once the tenders are received they must be assessed and a preferred supplier identified.

There is a mandatory 10 day 'standstill' period, during which unsuccessful tenderers may challenge the intention to award to the preferred contractor.

Delivery through existing Amey Highways Term Maintenance Contract (HTMC)

6.2.5 This option is strictly not procurement as the HTMC is an existing contract. The HTMC is based on a Schedule of Rates agreed at the inception of the contract. The price for each individual scheme is determined by identifying the quantities of each required item into a Bill of Quantities. Amey may price 'star' items if no rate already exists for the required item.

6.2.6 If the scope of a specific scheme is different from the item coverage within the HTMC contract a new rate can be negotiated. The HTMC contains an upper limit in terms of scheme value which is £100,000; however, this can potentially be increased with agreement from KCC procurement, or the works can be split up into smaller discreet packages with values less than £100,000.

6.3 Procurement Strategy

6.3.1 The preferred procurement route for the KSCMP scheme is through its Amey HTMC.

6.3.2 This option has been selected as the value of the scheme is less than the OJEU scheme value threshold. The Amey HTMC has already delivered the hotspot schemes in the 2015/16 and 2016/17 financial years and provides similar interventions in the form of construction and maintenance on the Kent highways network. The fact that the contracts are already in place and a mature market for project delivery has already been explored/tendered will help to alleviate potential risks and dis-benefits which may otherwise occur from external (OJEU) procurement.

6.3.3 The European CITS scheme is a new and developing project, however, there is experience to be drawn on from France and The Netherlands as some of the system is already in place. KCC is supported by HE and DfT for the A2/M2 connected corridor.

6.4 Potential for Risk Transfer

6.4.1 Engaging early with contractors will assist in identifying potential threats posed to the delivery of the schemes. The schemes deliverables will be risk assessed and the mitigating methods to be apportioned with the client and contractors appropriately. The KCC Contractors are long term partners that have a vested interest in delivering schemes, using close working relationships to avoid unnecessary risks to delivery. Telent Technology and Amey have been utilised in tandem in the past to deliver schemes with a minimal risk. These will be explored further as the schemes progress.

7 Management Case

7.1 Introduction

7.1.1 The management case assesses the deliverability of the project, testing project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.

7.1.2 It sets out a plan to ensure that the benefits set out in the economic case are realised and includes measures to assess and evaluate this.

7.2 Evidence of Similar Projects

7.2.1 KCC has a long history of delivering and making use of Intelligent Transport Systems (ITS) to carry out its transport policy objectives. In particular, there are anticipated synergies between the HMC technology refresh and the C-ITS scheme, with data from each informing the other in turn. As the HMC technology refresh has been delivered, there is significant ITS expertise presently in house at KCC.

7.2.2 Furthermore, ITS has been previously utilised by KCC to realise the goals set in its Local Transport Plans for Kent, examples include:

- Extension of traffic control and monitoring tools (UTC, SCOOT, pedestrian and cycle crossings, variable message signs) to improve safety and reduce congestion in urban areas;
- Countywide rollout of the Kent Bus location and real time information system to improve journey times and reliability and promote the use of public transport;
- Monitoring and modelling the impacts of traffic management on air quality and assisting the DfT TRAMAQ research programme; and
- Managing traffic on the network by using variable message signs to inform drivers of car park space availability and general traffic congestion.

7.3 Project Dependencies

7.3.1 There are no external dependencies associated with the hotspot schemes, with procurement contracts in place as described above in the Commercial Case.

7.4 Governance, Organisation Structure, Roles and Assurance

7.4.1 KCC have set up a clear and robust structure to provide accountability and an

effectual decision making process for the management of the LEP funded schemes. The KSCMP scheme has a designated Project Sponsor (Andrew Westwood) who is an appropriately trained and experienced member of KCC staff.

7.4.2 Figure 7-1 on page 52 provides an outline of the overall governance structure implemented to manage the delivery of each scheme.

7.4.3 A detailed breakdown of the meetings (along with the attendees, scope and output of each) which make up the established governance proves is set out below.

Project Steering Group (PSG) Meetings

7.4.4 PSG meetings are held fortnightly to discuss progress on the scheme and will be chaired by Andrew Westwood. Progress is discussed in technical detail raising any issues or concerns for all to action. A progress report, minutes of meeting and an update on programme dates are provided ahead of the Programme Board (PB) meeting for collation and production of the Highlight Report.

Highlight Report

7.4.5 The Progress Reports sent by Andrew Westwood comprise of the following updates; general progress, project finances, issues, risks and governance meeting dates. The Highlight Report identifies any areas of concern or where decisions are required by the PB meeting or higher to the KCC LEP Programme Manager. An agreed version of the Highlight Report is issued to the PB meeting attendees during the meeting.

Programme Board (PB) Meeting

7.4.6 The PB meeting is held monthly and is chaired by the KCC LEP Programme Manager. Attendees include representatives from all three stages of the schemes (i.e. KCC LEP Management, KCC Sponsors, KCC PMs). This meeting discusses project progress to date, drilling into detail if there is an issue or action (as identified in the PSG meeting), financial progress, next steps and actions. Outputs of this meeting are the Highlight Report and the minutes of the meeting.

Escalation Report

7.4.7 A list of actions and decisions that the PB meeting was unable to resolve is prepared ready for the Sponsoring Group (SG) meeting to discuss and ultimately resolve.

Sponsoring Group (SG) Meeting

7.4.8 The SG meeting is held monthly and chaired by Tim Read (KCC Head of Transportation). Attendees are Barbara Cooper (Corporate Director), Roger Wilkin (Director of Highways, Transportation and Waste) and Mary Gillett (KCC Major Capital Programme Manager). This meeting discusses high-level programme progress to date, financial progress, next steps and closes out any actions from the escalation report. Output is sent to Mary Gillett for distribution. Technical advisors are invited if necessary to expand upon an issue. All actions from the start of this meeting cycle are to be closed out by the SG when they meet (i.e. no actions roll over to subsequent meetings).

Project Roles and Responsibilities

Role	**Name**
KCC Local Growth Fund Programme Manager	Lee Burchill
Project Sponsor	Andy Westwood
KCC Project Manager	Chris Beck

KCC LGF Meeting Governance Diagram

Local Growth Fund	High level Agenda	Frequency	Attendees	Format	Scope	Agenda Items	Key Deliverables/Feedback	Templates
Sponsoring Group	Planning Design Construction Post Scheme Monitoring	Every two months - Can be called in emergency if required	**Chair: TR** MB/BC/RW/KS/CH/MG Supported by PB attendees as required	Face to face meeting	To discuss programme (i.e. high level progress/preview next steps and discuss and resolve issues.	LEP programme (high level) progress to date Programme Financial reporting Communicatio/Stakeholder Engagement Issues/Risk/Change Decisions	Minutes of Meeting Action List/Decision Log Output distributed to all attendees + Programme Board Attendees where appropriate	**Agenda** **Minutes** **Decision list**
Sponsoring Group Progress Report	Decisions Needed	Every two months	LB	Report	To record progress/outstanding actions/issues that require a decision made by the board		Action list ready for the Sponsoring Group	**Progress Report**
Programme Board Meeting	Planning Design Construction Post Scheme Monitoring	Bi- Monthly	**Chair: LB** LB/KCC PMs/ External Suppliers	Face to face meeting	To discuss progress/preview next steps and discuss and resolve issues. Escalate issues/decisions required to the Sponsoring Group	LEP programme progress to date Programme financial reporting Communicatio/Stakeholder Engagement Issues/Risk/Change Internal Governance	Minutes of Meeting Action List Output distributed to all attendees + Steering Group attendees where appropriate	**Agenda** **Minutes**
Highlight Report	Identify key points for Programme Board Meeting	Monthly	LB	Report	To collate and streamline all reports highlighting areas of interest for the Programme Board meeting.		Used for Programme Board Meeting. Highlight report shared with PB attendees.	**Highlight Report**
Steering Group Meeting	Progress Update	Monthly/Fortnightly as required	**Chair: KCC PMs** All input staff - Project Team/KCC PMs/External Suppliers	Face to face meeting	Individual meetings per project (including each stage of the LEP process to discuss progress in detail).	LEP project progress to date/MS Programme Project financial reporting Issues/Risk/Change Actions	MS Programme Update Progress update in template for each project e.g Risk Register/ Issues Log	**Agenda** **Minutes** **Progress Report**

List of Initials:

MB	Matthew Balfour	Cabinet Member Planning, Highways, Transport and Waste
BC	Barbara Cooper	Corporate Director Growth, Environment and Transport
RW	Roger Wilkin	Director of Highways, Transport and Waste
KS	Katie Stewart	Director of Environment, Planning and Enforcement,
CH	Cath Head	Head of Financial Management Strategic and Corporate Services.
TR	Tim Read	Head of Transportation for Growth, Environment and Transport
MG	Mary Gillett	Major Capital Programme Manager for Growth, Environment and Transport
LB	Lee Burchill	Local Growth Fund Programme Manager for Growth, Environment and Transport

Figure 7-1: KCC Project Governance Structure

7.5 Project Plan

7.5.1 Key project milestones for 2018/19 from business case to completion are shown below in Figure 7-2.

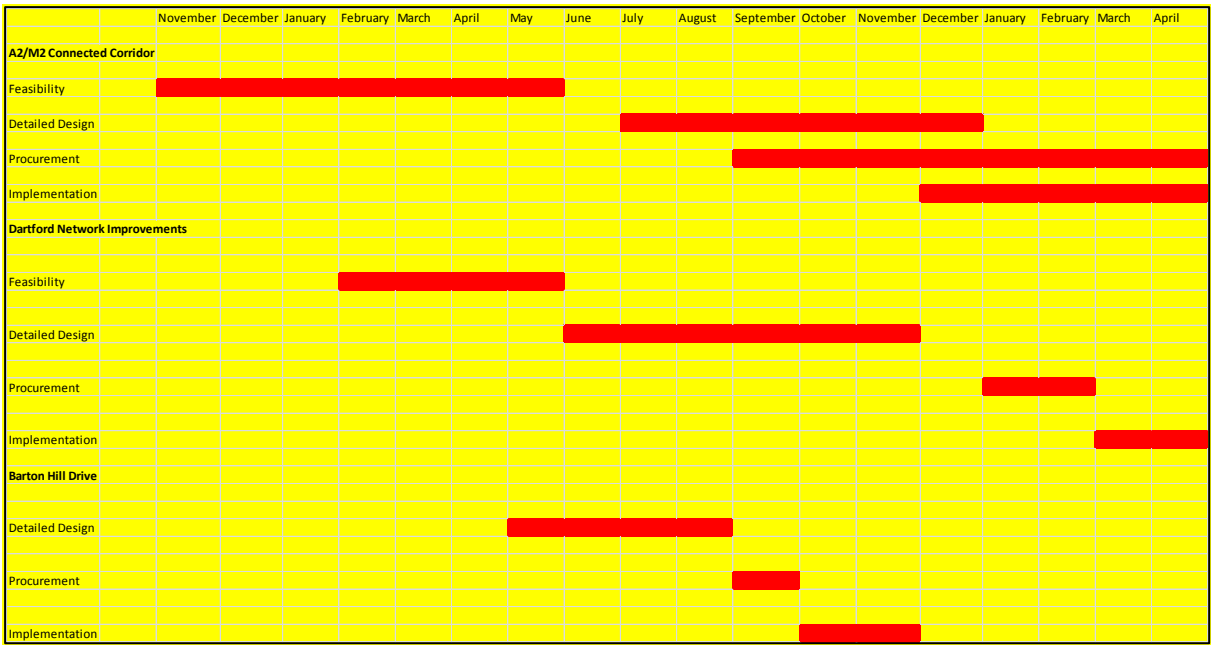

Figure 7-2: Project Plan

NB. A2/M2 corridor implementation will continue into 2018/19.

7.6 Communications and Stakeholder Management

7.6.1 KCC develop a communication plan specifically focussed on the individual components of the programme. The plan is likely to follow existing plans used for other schemes in Kent. Whilst not exhaustive, the following is an indication of what is likely to be included in the plan:

- Indicate suitable period of time for public consultation;
- Keep general public fully informed of progress during construction;
- Ensure that public and stakeholders are made aware as early as possible of any issues associated with scheme (time slips etc.);
- Engage with key stakeholders at regular pre-defined intervals; and
- Make stakeholders aware of benefits of scheme.

7.6.2 The hotspot schemes will mainly impact on the public when construction is involved. There may be an impact on strategic partners when the scheme is close to the strategic network and it is likely that the communications may have to be in

conjunction with Highways England. It is currently expected that the financial year 2018/19 hotspot schemes will only require limited resources from communications related to scheme start dates and awareness of the scheme and no specific consultation or design support.

7.6.3 The communication will be channelled according to the scope of the scheme. This will depend on each individual element and could utilise any of the below mediums.

- Local news media PR;
- National trade PR;
- Social media (e.g. LinkedIn, Twitter, Facebook, Yammer);
- Online presence;
- Presentations at other people's events; and
- Printed materials.

7.6.4 The budget for communicating the hotspot schemes will be allocated according to the scheme being developed depending on its likely impact on the travelling public. This will be decided on a sub project basis and discussed with the communications team at the start of the financial year.

7.7 Contract Management

7.7.1 The project will be managed by KCCs project manager (Andrew Westwood) with officers from their in house design team and contracts team delivering the works streams with support from the partnering Engineering Consultants (Amey) providing additional resources where required and specialist services that cannot be provided in house.

7.7.2 The senior user (Mary Gillett) on the Programme Board will also be a representative from the Council's Major Projects Planning team who are responsible for submitting the business case. This will ensure the project delivers the objectives identified within the original business case.

7.8 Risk Management

7.8.1 Project risk is managed as an on-going process as part of the scheme governance structure, as set out in sections 7.4 and 7.5 of this report.

7.8.2 The KSCMP risk register is maintained and updated at each of the two-weekly Project Steering Group Meetings. Responsibility for the risk register being maintained is held

by the KCC PM and is reported as part of the monthly Progress Reports. An example scheme risk register is shown in Figure 7-3 below.

Figure 7-3: Example Risk Register

7.8.3 Any high residual impact risks are then identified on the highlight report for discussion at the Programme Board (PB) meeting. Required mitigation measures are discussed and agreed at the PB meeting. Required mitigation measures are discussed at the PB meeting and actioned by the KCC PM as appropriate.

7.8.4 Effective Risk Management, ensuring that risk will be an integral part of the organisational processes and part of the decision making process. It will explicitly address uncertainty and assumptions in a systematic and structured way based on the best available information at the time. It will be able to be tailored to suit the situation and need, be transparent, inclusive dynamic, iterative and responsive to change. The risk management strategy will be capable of continual improvement and enhancement, and can be continually or periodically re-assessed.

7.8.5 In line with these principles, initial risks were been identified during the inception and development stages of the programme as listed in Table 14. These risks will be continually reviewed and re-assessed going forward as part of the defined management processes for the programme. New risks will be raised and discussed as they are identified, assessed, tracked and acted upon as agreed by the programme coordinator and Steering Group as appropriate.

7.9 Scheme Risks

7.9.1 As with any transport scheme there are a number of risks and issues that must be managed. Through the management arrangements established to progress the KSCMP scheme, there are risk management arrangements in place. For the purposes of this Business Case, the main risks associated with proposed investment to progress the KSCMP are summarised in Table 7-1.

Risk description	Likelihood	Impact	Likelihood x Impact	Mitigation
Project Delivery				
Concurrency with Multiple Suppliers: dependencies and overlaps occur with the use of multiple suppliers and concurrent contracts.	3	3	9	Allow float in programme, consider coordination with main contractor.
Integration: Integration with existing systems and other new systems present teething problems, or compatibility issues.	1	3	3	Specify compliant systems and accurate specification of the Works Information.
Competent Staff: Shortage of skilled resources to operate / maintain the IT systems.	4	3	12	Allowance for training within the programme. Consider possible secondment of individuals into the HMC.
Equipment Location: Locations for equipment restricted by land ownership issues.	3	1	3	Ascertain land ownership issues at earliest opportunity.
Unforeseen Statutory Services: Availability or time taken to obtain information relating to locations of statutory undertakers apparatus	3	3	9	Early applications with Statutory Undertakers, contingency allocations.
Unexpected Difficulties During Construction: Archaeological finds, contractor performance, missed road bookings, equipment theft etc.	1	1	1	Desktop study. Quality Control process, method statements and site audits and supervision. Obtain internal agreement for flexibility of requirements. Site Management.
Increased Environmental Requirements: Environment Agency expresses concerns about proposals.	2	4	8	Early and ongoing consultation.
Project Funding				
Changes / Uncertainty Over Funding Streams: The funding for the KSCMP is not available.	1	5	5	Development of robust Business Case approved by the SELEP. Regular discussion of LGF with SELEP.
Project Overspend: Failure to deliver the scheme within available funding.	1	5	5	Careful project management.
Political Changes of Direction: Changes to Local Authority/SELEP Strategic Direction	2	5	10	On-going discussions with all organisations involved to ensure compatibility and consistency with Strategic Direction.

Table 7-1: Scheme Risks

Table Key	**Value**	**5**	**4**	**3**	**2**	**1**
	Likelihood	Very High	High	Significant	Low	Almost impossible
	Impact	Catastrophic	Critical	Major	Marginal	Negligible

7.9.2 In considering the need to manage the risks associated with this important scheme, there are considerable and possibly greater risks of not proceeding with the KSCMP. These risks have previously been outlined and are as follows:

- The constraints of the existing transport conditions will act as an inhibitor to growth with private sector investment attracted to other areas with better accessibility;
- The network will not be resilient enough to respond to disruption and resilience to incidents will continue to weaken without the scheme;
- The significant pockets of disadvantage of Kent will worsen;
- Kent's reputation as the UK's front door may be damaged without effective highway management; and
- The ongoing Air Quality issues in Kent will be exacerbated without the mitigation afforded by the scheme.

7.10 Benefits Realisation and Monitoring

7.10.1 Tracking of the scheme benefits will be a key element in understanding the success of a specific intervention. The realisation of benefits is intrinsically linked to the Monitoring and Evaluation plan.

7.10.2 The scheme objectives (as outlined in section 3.7) have been used to develop the desired outputs and outcomes for the scheme. The desired outputs are the actual benefits that are expected to be derived from the scheme and are directly linked to the original set of objectives. The definition of outputs and outcomes are:

- Outputs – tangible effects that are funded and produced directly as a result of the scheme; and
- Outcomes – final impacts brought about by the scheme in the short and medium/long term.

7.10.3 To determine whether the scheme benefits are being realised, the outputs and outcomes have been converted into measurable indicators of scheme benefits; these are set out in Table 7-2.

Objective	Indicator
Alleviate congestion by allowing better flow of traffic	Car journey times
Supporting economic development in Kent	Travel time variability
To promote accessibility to jobs and services for all	Public transport modal split; Public transport passenger boardings; Public transport journey times
Provide a resilient network that is able to respond to disruption and incidents	Flow to capacity variation; vehicle journey time variation

Table 7-2: Scheme Benefit Indicators

7.10.4 Table 7-3 provides a summary of the proposed measurement metrics and thresholds of acceptability that will be used to evaluate the benefits of the scheme.

Monitoring Indicator	Measurement	Acceptable Threshold
Vehicle journey times	Vehicle journey times (AM & PM peak hours)	% reduction from existing
Travel time variability	Mean journey time variation using GIS data (AM & PM peak hour)	Reduction from existing
Flow to capacity variation	Junction ratios of flow to capacity (AM & PM peak hours)	Reduction from existing

Table 7-3: Outcome Measurement and Acceptability Thresholds

7.10.5 KCC will conduct a full evaluation of the impact of the scheme in the period after it is completed. The Council will prepare evaluation reports one year and five years after scheme opening, using the information to be collected as set out above to gauge the impact of the scheme on the traffic network, and assess the success of the scheme in meeting the objectives of the KSCMP. Unexpected effects of the scheme will be reported upon and, where appropriate, remedial measures identified.

Appendix A S151 Officer Letter