



## **Business Case Template**

#### What is the purpose of the Business Case?

The Business Case Template is to be used in providing an Outline of Full Business Case to the West Yorkshire Combined Authority (WYCA) in line with the agreed Assurance Pathway for any given scheme.

The Business Case must be completed by the Scheme Promoter (this is the organisation seeking the funding for a scheme they are delivering), and submitted to the WYCA along with any supporting documentation in order for any scheme to be appraised by WYCA and approved to continue to the next Activity on the Assurance Process.

All Business Cases must be based on the 5 Case Model and follow <u>HM Treasury – The Green Book</u> guidance, and follow guidance as set out in the Leeds City Region Assurance Framework.

All Business Cases should also be proportional to the scale and complexity of a scheme as defined in the Leeds City Region Assurance Framework. For further advice on this, please contact the WYCA PMO and/or the WYCA Case Officer assigned to your scheme.



The Business Case forms a detailed 'five cases' assessment of a scheme, and builds on the evidence presented in the Expression of Interest. Its purpose is to present detailed information about a scheme and evidence that the scheme meets the strategic aims of WYCA, offers value for money a good return on investment, is affordable and deliverable. The Business Case will also form the basis on which any appropriate conditions precedent for a funding agreement can be identified.

Case	Focus	
Strategic Case: To set out the need for the scheme, and to define the outcomes and scope of the scheme. Does the scheme have a strong strategic case?	<ul> <li>Revisit the case for change and update accordingly, summarising any changes</li> <li>Does the case for change still exists?</li> <li>Confirm that the preferred way forward still stands</li> <li>Ensure clear evidence of: <ul> <li>Alignment to SEP Priorities</li> <li>Objectives are SMART</li> <li>Evidence of the need for intervention/market failure</li> <li>Clearly identified barrier/opportunities the scheme will unlock</li> <li>Evidence of stakeholder engagement</li> </ul> </li> </ul>	





Commercial Case: To set out the market demand for the scheme and the procurement strategy. Is there demand for the scheme and is it commercially viable?	<ul> <li>Revisit the Commercial Case and update accordingly, summarising any changes</li> <li>Is there still a market demand for the scheme?</li> <li>To prepare the scheme for procurement with high level summary of procurement option(s)/preferred plan (OBC)</li> <li>Set out detailed procurement plan (FBC)</li> </ul>
Economic Case: To include any options analysis and initial value for money assessment. Does the preferred project option demonstrate value for money and a good return on investment?	<ul> <li>Revisit the Economic Case and update accordingly, summarising any changes</li> <li>Revisit long and short list of options</li> <li>Set out any options analysis and the initial Value for Money assessment of those short listed options</li> <li>To set out the detailed economic appraisal that will be undertaken as part of the FBC (OBC)</li> <li>To undertake initial benefits appraisal (OBC)</li> <li>Select and set out the Preferred Option (OBC)</li> <li>Present an assessment of any of the uncertainties i.e. sensitivity analysis (OBC &amp; FBC)</li> <li>Present final benefits appraisal (FBC)</li> <li>Set out the detailed economic appraisal of the Preferred Option and the Final VfM Statement (FBC)</li> <li>Note for transport schemes this should include an Appraisal Specification Report</li> <li>Note also that the Final VfM Statement should be updated following any procurement exercise</li> </ul>
Financial Case: To set out the scheme costs, including the funding and financial profile. Is the project financially viable, affordable and sustainable?	<ul> <li>Revisit the Financial Case and update accordingly, summarising any changes</li> <li>Update the project costs as detailed in the Initial Cost Plan and the funding profile and provide a Detailed Cost Plan</li> <li>Set out capital and revenue implications for preferred option</li> <li>Set out arrangements for dealing with cost risks and confirm 'match' funding is in place</li> </ul>
Management Case: To set out the governance and project management arrangements for the project, including how the project will be delivered. Is the project deliverable, are the objectives achievable and have all compliance issues been addressed?	<ul> <li>Revisit the Management Case and update accordingly, summarising any changes</li> <li>Set out the necessary management arrangements for the successful delivery of the scheme</li> <li>Set out the project management strategy, change management strategy, benefits realisation strategy, risk management strategy, communications strategy and post project evaluation strategy</li> <li>Produce and update any related registers to the named strategies e.g. Risk Register, Benefits Register</li> </ul>





#### What happens once a Business Case is submitted?

- On receipt of a completed OBC or FBC, the scheme's assigned WYCA Case Officer will check the document to ensure all necessary information has been provided. Including any supporting documentation.
- The WYCA Case Officer will then arrange any necessary appraisal of the Business Case. This may involve internal appraisal by WYCA officers, external appraisal by independent third parties and/or a Peer Review.
- Once the Business Case has been appraised, the WYCA Case Officer will draft a Business Case Appraisal Report, summarising the results of the appraisal.
- This will be presented to the Programme Appraisal Team (PAT) along with the Business Case and or not a scheme will recommend whether should continue to the next activity in the Assurance Process, be rejected, of that further information is required in order for a recommendation to proceed is made.
- Once a scheme has been reviewed by the PAT, the Scheme Promoter and the author of the Business Case will be contacted to confirm the next steps.

#### **Completing the Business Case Template**

- All sections highlighted in yellow to be completed by the Scheme Promoter. "Advice for completion" text within yellow boxes should be overwritten. Please do not write in white boxes.
- PLEASE NOTE If this a Full Business Case, a summary of any key changes and their implications on the business case should be included in each section.
- Once completed, the Business Case should be submitted to WYCA, along with any supporting documentation at <u>pmo@westyorks-ca.gov.uk</u>.
- WYCA will endeavour to respond to applicants within one week to confirm receipt of the Business Case.
- Guidance and examples for completing the form can be found within the template.
- > For further information or help in completing the template, please contact WYCA via:
  - Email: pmo@westyorks-ca.gov.uk
  - Tel: 0113 2517421

PMO Doc Ref: T-003 Doc Version: V0.1





# OUTLINE BUSINESS CASE (with Finalised Costs)

West Yorkshire Integrated UTMC

January 2018





## **Scheme Title**

Name of scheme:	West Yorkshire Integrated Urban Traffic Management Control (UTMC) Project
Scheme PMO Reference Code:	
Business Case Stage:	Outline Business Case
Lead Organisation Name:	Kirklees Council (on behalf of West Yorkshire Combined Authority)
Business Case Owner:	David Caborn
Date:	19 <sup>th</sup> January 2018

### **Document Control**

Version	Date	Author	Checked
V1	19/01/18	David Caborn	Richard Hadfield

## **Document Confidentiality Statement**

Is any information in this form considered exempt from release under		
	No	Х

## **Document Purpose**

This Outline Business Case presents the overall West Yorkshire Integrated UTMC Project including on-street improvements (Element A), a new cloud based combined UTC / UTMC system (Element B) and reorganisation to create a combined West Yorkshire UTMC service at a single location (Element C).

This Business Case seeks support for the overall project and specific approval to commence procurement for Elements A and B. It also seeks support to develop proposals for Element C in more detail. It is proposed that the Full Business Case (FBC) would be split into two, with an initial FBC for Elements A and B in June 2018, followed by further version for Element C in the later part of 2018 (date to be confirmed). This approach will enable Elements A and B to be expedited while further option assessment is undertaken for Element C.





# Certificate of Approvals

To be completed by WYCA staff:

This business case has been appraised in accordance with the Leeds City Region Assurance Framework and approved by the following:

Note – the required approvals will depend on the agreed approval pathway set out and agreed for the scheme during Stage 1: Pipeline Eligibility, if it does not require a certain approval then mark as N/A

	Approved (Y/N, n/a)	Signed	Date
WYCA Case Officer:			
Appraisal Team/Peer Review Team			
Programme Appraisal Team:			
WYCA Managing Director:			
Investment Committee:			
Combined Authority:			
Other (Please State):			





Contents		
	Page No.	
1. Scheme Summary	12	
1.1 Scheme Description	13	
1.2 Scheme Objectives	14	
1.3 Key Activities to be Funded	15	
2. Strategic Case	17	
2.1 The Strategic Context	17	
3. Commercial Case	39	
3.1 The Case for Change	39	
3.2 Procurement Strategy	39	
4. Economic Case	43	
4.1 Long List Options Testing	43	
4.2 Short List Options Testing		
4.3 Preferred Option Testing		
5. Financial Case		
5.1 Capital Costs		
5.2 Funding Profile		
5.3 Revenue Costs		
5.4 Funding Source		
6. Management Case	65	
6.1 Deliverability	65	
6.2 Scheme Programme	67	
6.3 Delivery Constraints & Risk Management	69	
6.4 Communications and Stakeholder Management	71	
6.5 Monitoring and Evaluation	72	
6.6 Change Management	74	





List of Appendices (see separate attachment)		
Appendix	Title	
А	Trafficmaster Plots for Overnight, AM, Inter-peak and PM periods (2016)	
В	Appraisal Specification Report	
С	Appraisal Summary Table	
D	TEE Table	
E	AMCB Table	
F	PA Table	
G	Risk Register	
н	Investment Logic Map	
I	Element A Scope – Map of routes to be upgraded across West Yorkshire and by local authority	
J	Interdependencies	
К	Energy Savings Example	
L	Journey Time Savings	





List of Tables		
Tables	Title	Page No.
1.1	Scheme Objectives	14
1.2	Proposed Improvements, by Local Authority – Element A	16
2.1	Journey Time Delay (Trafficmaster 2016)	21
2.2	Key Stakeholders	38
3.1	Returns Summary – Element B	41
4.1	Long List of Options – Element C	44
4.2	Critical Success Factors – Element C	44
4.3	Short List of Options – Element C	47
4.4	Summary of Contributions to SEP Headline Indicators	48
4.5	Sensitivity Tests	53
4.6	Energy Savings – Element A	54
4.7	Environmental Appraisal Summary – Element A	55
4.8	Social and Distributional Analysis	56
4.9	Value for Money Assessment	58
4.10	Net Additional GVA Assessment	58
5.1	Breakdown of Project Outturn Costs	60
5.2	Cash Flow and Funding Profile	61
5.3	Funding Source	62
6.1	Project Delivery Partners	67
6.2	Scheme Programme	67
6.3	Key Delivery Constraints	69
6.4	Headline Risks	70





List of Figures		
Figure	Title	Page No.
1.1	Proposed Improvements – Element A (on-street improvements to UTC equipment)	15
2.1	West Yorkshire Key Route Network	18
2.2	West Yorkshire Annual Car Traffic, all roads (1993-2015)	19
2.3	West Yorkshire Trafficmaster AM peak – UTMC routes to be upgraded (2016)	20
2.4	PM10 Intensity in West Yorkshire (2005) 2	
2.5	Usual Area of Residence and Work for Travel to Work Movements within West Yorkshire	23
2.6	Travel to Work Flows (2011) – All trips/modes24	
2.7	Casualties on West Yorkshire A Roads (2012-2016) 24	
2.8	Operating Systems Summary	27
2.9	Age of Signals (West Yorkshire KRN)	27
2.10	WY+TF and NPIF Interdependent schemes (see Appendix J for more detail)	29
6.1	Scheme Programme	68
6.2	Investment Logic Map (see Appendix H for more detail)	72





Glossary of Terms		
Acronym	Full Title	
ASR	<b>Appraisal Specification Report</b> . This report outlines the appraisal approach for the project.	
AST	<b>Appraisal Summary Table.</b> The AST is a Transport Analysis Guidance (TAG) worksheet used to present the results of a scheme appraisal as part of a business case. The AST includes the Economic, Social and Environmental appraisal sub-objectives/impacts.	
BCR	<b>Benefit-Cost Ratio</b> . This is the ratio of the benefits of the project, expressed in monetary terms, relative to its costs, also expressed in monetary terms. It indicates how much benefit is obtained for each unit of cost and therefore presents the overall VfM of a project.	
KRN	<b>Key Route Network</b> . A network of West Yorkshire roads deemed strategic which connect major towns and centres of employment, motorways and their diversion routes and any road with greater than 20,000 vehicles per day.	
MOVA	<b>Microprocessor Vehicle Actuation</b> . This is a modern microprocessor technology developed by the Transport Research Laboratory for isolated intersections to optimise signal timings.	
PVB	<b>Present Value Benefits.</b> Term used in cost-benefit analysis and project appraisal that refers to the discounted sum, or present value, of a stream of benefits associated with a project.	
PVC	<b>Present Value Costs.</b> Term used in cost-benefit analysis and project appraisal that refers to the discounted sum, or present value, or a stream of costs associated with a project.	
SCOOT	<b>Split Cycle and Offset Optimisation Technique</b> . This is a traffic control system for controlled road crossings developed by the Transport Research Laboratory.	
UTC	Urban Traffic Control. The control of traffic signals.	
UTMC	<b>Urban Traffic Management Control</b> . The monitoring and control of all other Intelligent Transport Systems (ITS) e.g. VMS, ANPR, Car Parks, Bluetooth, CCTV etc.	
VfM	<b>Value for Money</b> . This assessment is determined using the BCR and DfT guidance on VfM categories.	
VMS	Variable Message Sign.	
WYCA	West Yorkshire Combined Authority.	
WY+TF	West Yorkshire Plus Transport Fund.	

r





# 1. Scheme Summary

Name of scheme:	West Yorkshire Integrated Urban Traffic Management Control (UTMC) Project			
Location of scheme (including postcode):	West Yorkshire Combined Authority (WYCA) wide			
Lead organisation:	Kirklees Council (on behalf of WYCA)			
Type of organisation:	Local Authority			
Scheme Programme:	Scheme Start Date Scheme End Date			
	<ul> <li>Forecast Full Approval Date:</li> <li>FBC for Element A and B: June 2018</li> <li>FBC for Element C: Later part of 2018 (TBC)</li> <li>Forecast Completion Date: April 2021</li> </ul>			
Total Scheme Cost (£m):	£7.49m			
WYCA funding (£m):	£7.49m			
WYCA funds as % of total scheme investment:	100% from West Yorkshire Plus Transport Fund (WY+TF)			
Total other public sector investment (£m)	Not applicable			
Total other private sector investment (£m):	Not applicable			
Applicable Funding Stream:	Growth Deal: WY+TF			
Strategic Economic Plan Priority Area:	<ul> <li>The project will help deliver Priority Area 4 – Infrastructure for Growth of the Leeds City Region Strategic Economic Plan (2016).</li> <li>The proposed scheme would contribute to the following success measures identified for the 'Infrastructure for Growth' priority: <ul> <li>Increases in GVA and job growth;</li> <li>Increases in connectivity bringing people, places and jobs closer together;</li> <li>Reduced delays, congestion and faster journey times across all transport modes and both within and beyond the city region; and</li> <li>Reduced carbon emissions and vehicle air pollution, contributing to improved environmental quality.</li> </ul> </li> </ul>			





#### **1.1 Scheme Description:**

The 2015 WY+TF submission to Government included the West Yorkshire Urban Traffic Management Control (UTMC) project. At present, there are four Urban Traffic Control (UTC) teams which operate in West Yorkshire and they use various systems and technologies. Whilst the teams share resources where possible, the service levels and standards vary across boundaries. Furthermore, the duplication of staff and equipment, which is inevitable under the current structures, is not the most efficient use of resources.

The West Yorkshire UTMC project aims to reduce the effects of congestion and the resulting costs to the local economy. It is comprised of three distinct elements:

- Element A (On-street Improvements to UTC Equipment): Improvements to facilities at key junctions on the West Yorkshire Key Route Network (KRN), including the implementation of Split Cycle and Offset Optimisation Technique (SCOOT) and Microprocessor Vehicle Actuation (MOVA) and upgrading obsolete equipment;
- Element B (Cloud Based Combined UTC/UTMC System): The joining of all of the districts UTC and UTMC systems into one central, comprehensive system located in the "cloud" including a common database; and
- Element C (Combined UTMC Service): Reorganisation of West Yorkshire UTC services (combining existing four UTC teams) to provide improved day-to-day management and coordination across the network through an integrated team at a single location. The centre would also be available for use by partners e.g. bus operators, emergency services and Highways England.

The first two elements provide technical improvements to help each of the West Yorkshire districts undertake UTC processes more efficiently. Element A would carry out the necessary improvements onstreet to equipment and further detail on the location of these improvements is provided in **section 1.3**. Element B would integrate all traffic signals in West Yorkshire within one common computer system and integrate all electronic traffic management systems across West Yorkshire.

The third element could create a single combined UTMC service for West Yorkshire which would be more resilient and efficient than the existing structure. This would enable better management of the network across District boundaries and also enable staff to spend more time on scheme development work for other WT+TF projects. Element C has operational changes for each district and this inevitably creates sensitivities, for example, regarding location, governance and revenue funding. This element is currently being discussed with Leaders/Chief Executives.

Owing to the sensitivities surrounding Element C, a phased approach to delivery is recommended with the technical improvements (Elements A and B) implemented in **Phase 1** and the re-organised operations (Element C) in **Phase 2**. This is anticipated to include two iterations of the Full Business Case (FBC) to enable Elements A and B to be progressed in the shorter term. The phases are able to run concurrently or consecutively dependent on progress and approvals (i.e. in the event that resolution is achieved quickly for Element C, it could be brought forward with Elements A and B).

The new combined UTMC service will enable more efficient and seamless management of the West Yorkshire highway network, which will have a number of benefits for the economy, environment and those living and working in the region:

- Consistent UTMC service across West Yorkshire;
- Better management of congestion to unlock capacity on the highway network;
- Improved journey time reliability for highway travel;





- A more resilient network able to better manage unplanned events;
- Air quality improvements; and
- Increase in employment and the promotion of economic growth by the completion of transport schemes across West Yorkshire regardless of boundaries.

The project is also an enabler to other schemes within the WY+TF, highways efficiency programme, and National Productivity Investment Fund (NPIF) to ensure they fully meet their benefits realisation in unlocking growth.

This Outline Business Case (OBC) has been prepared for the full project with all three elements. It is proposed that a FBC is submitted for Elements A and B in June 2018 following receipt of tender prices. The FBC for Element C is likely to follow later in 2018 given the further work that is required to develop this element of the project (date to be confirmed).

#### **1.2 Scheme Objectives:**

The vision for the West Yorkshire UTMC service is:

Our vision for urban traffic control is to create a properly resourced and integrated service for the key routes in West Yorkshire that provides the effective management of congestion for an efficient and resilient network, with a local focus; to do this we will harness the best practice, new ideas and the latest technologies to develop the sophisticated information and communication systems we need to meet the challenges we face now and in the future.

Following a policy and evidence review to understand existing problems and opportunities (see **section 2.1.1** to **2.1.4**), a series of objectives have been identified for the project (**Table 1.1**).

Table 1	1: Scheme Objectives	
No.	Objective	
1	<ul> <li>To facilitate economic growth and employment</li> <li>To support the local economy with improved journey times and reliability</li> </ul>	
	<ul> <li>To support schemes which create jobs and growth opportunities</li> </ul>	
2	To better manage congestion on the West Yorkshire KRN	
	<ul> <li>To achieve a 12% reduction in junction delays at sites with SCOOT implemented</li> </ul>	
	<ul> <li>To achieve a 5% reduction in bus delays at sites with SCOOT implemented</li> </ul>	
	<ul> <li>To achieve a 13% reduction in junction delays at sites with MOVA implemented</li> </ul>	
3	To implement more effective management of the KRN within West Yorkshire, irrespective of boundaries and agencies	
	<ul> <li>To share data and information between districts and relevant organisations to a greater extent</li> </ul>	
	<ul> <li>To provide more advice, warning and guidance to road users</li> </ul>	
	<ul> <li>To enhance detection of events and incidents on the KRN and boost resilience</li> </ul>	
4	To deliver a more reliable highway network that supports users with information to inform	





	travel choices
	<ul> <li>To reduce journey time variability relative to the average journey time along corridors (see Table 2.1 and Appendix L)</li> </ul>
	<ul> <li>To provide more advice, warning and guidance to road users</li> </ul>
5	To reduce the adverse impacts of transport on local air quality
	<ul> <li>To minimise queue lengths along the selected corridors, reducing emissions from standing traffic</li> </ul>

#### **1.3 Key activities to be funded:**

The project will deliver the following:

**Element A:** This will include small scale on-site improvements at selected junctions to gain maximum benefit from subsequent elements. The proposed improvements to be funded through the project are presented in **Table 1.2** by local authority and mapped in **Figure 1.1**. The complete list of junction names, together with more detailed plans is included in **Appendix I**.

#### Figure 1.1: Proposed Improvements – Element A (On-street improvements to UTC equipment)



In addition to the above junctions, a number of further improvements are also proposed through the WY+TF and NPIF which complement this programme and are dependent on the delivery of Element B. A further map of these schemes is included in **Appendix J** to highlight the extent of on-street improvements proposed across West Yorkshire. Together these schemes offer a comprehensive on-street improvement programme across West Yorkshire, providing the best opportunity to deliver economic growth across the region.





Table 1.2: Proposed Improvements, by Local Authority – Element A								
Local Authority	Routes	Junction to SCOOT	Puffin to SCOOT	MOVA				
Bradford Council	3	13	6	-				
Calderdale Council	1	5	1	-				
Kirklees Council	3	10	3	-				
Leeds City Council	2	16	10	-				
Wakefield Council	5	2	9	2				
Total	14	46	29	2				

Element B: This is comprised of the following:

- Deliver a new UTC system for West Yorkshire (to replace the existing four systems);
- Deliver a new UTMC system for West Yorkshire (to replace the existing three systems);
- Deliver a new Journey Time Monitoring system for West Yorkshire;
- Provision of all the communications systems required to operate the new systems;
- Integration and migration of the existing systems to the new UTC and UTMC systems;
- Integration of the existing UTC CCTV systems across West Yorkshire;
- Integration of the current Variable Message Sign (VMS) network; and
- Enable additional functionality to be incorporated in the future as more sophisticated management systems are developed.

**Element C:** This would create a combined UTMC service, including the creation of a new Control Room at a chosen location for the new service. The project will be fully funded by the funds provided by WYCA and will include programme management and development costs, the purchase of new technical equipment, setting up of the new service and its integration across West Yorkshire. The five West Yorkshire local authorities will be responsible for the ongoing revenue commitments.





## 2. Strategic Case

The purpose of the Strategic Case is to set out the strategic drivers for this investment and the associated strategies, programmes and plans both locally and nationally. This should be based upon a robust evidence base which demonstrates a case for change.

# Note – All sections should be reviewed and updated if this is the Full Business Case. A summary of any key changes and their implications on the business case should be included.

#### 2.1 The Strategic Context

2.1.1 What are the strategic drivers for this investment?

West Yorkshire is home to over 2.2 million people and 15% of the total output of the North. The Leeds City Region SEP outlines the ambition to deliver an extra 36,000 jobs and £3.7 billion of economic output by 2036 to ensure West Yorkshire remains a key driver for the Northern economy into the future.

The West Yorkshire Transport Strategy has a vision to deliver a world-class, modern, integrated transport system which covers the geography of West Yorkshire but recognises the importance of the wider Leeds City Region. The strategy recognises the significant potential but, as with much of the north of England, the productivity gap is increasing, incomes are lower than elsewhere and living standards have stalled. Investment in the transport network can facilitate and support:

- Increases in GVA and job growth;
- Increases in connectivity bringing people, places and jobs closer together;
- Reduced delays, congestion and faster journey times across all transport modes and both within and beyond the city region;
- Reduced carbon emissions and vehicle air pollution, contributing to improved environmental quality; and
- Creation of a strong sense of place.

The highway network is a key component of the West Yorkshire transport network. Car mileage represents approximately 80% of all traffic in the region and car/van is the dominant mode for travel to work (in 2011 this was approximately 70%). Within this context, there are several challenges with regards to the management of the highways network, including limited capacity. This project uses technology to improve the management and efficiency of the West Yorkshire highway network to maximise the capability of the existing infrastructure.

This section presents the strategic drivers for the project in relation to the following:

- A) Transport problems and issues;
- B) Existing socio-economic conditions;
- C) Opportunities identified;
- D) Internal drivers for change; and
- E) External drivers for change.





#### A) <u>Transport Problems and Issues</u>

#### **Traffic Flows**

To understand the existing issues on the West Yorkshire KRN, a review of traffic flows and conditions has been undertaken. **Figure 2.1** presents the KRN and demonstrates the significance of this network in joining the urban centres across the five West Yorkshire local authorities. The West Yorkshire KRN includes approximately 661km of predominately A roads and has been designed to include roads based on the following criteria:

- Where traffic flows exceed 20,000 vehicles per day; <u>and</u>
- Roads that perform strategic functions by:
  - i. Connecting the five West Yorkshire Core Centres and the Key Centres together;
  - ii. Connecting these centres to District Core Centres within other areas of the Leeds City Region and other adjacent City Regions;
- iii. Connecting these centres to Leeds-Bradford International Airport; and/or
- iv. Performing ring road / bypass functions around these centres and other primary urban areas in West Yorkshire.

#### Figure 2.1: West Yorkshire Key Route Network



Source: WYCA.

Trends in annual car traffic on all roads in West Yorkshire since 1993 are shown in **Figure 2.2**. The results show the long-term increase in car travel with a slight dip during the economic recession but in 2015 car traffic had returned to 2007 levels with approximately 7.7 billion vehicle miles.







Department for Transport (DfT) forecasts from the National Trip End Model (NTEM) identify that trip numbers on the highway network in West Yorkshire are expected to grow by 13% in the period 2015-2028. To support increasing demand, there is a need for further investment in the highway network, in conjunction with wider initiatives, to ensure it remains fit for purpose and does not restrict opportunities for growth.

#### **Traffic Speeds**

Analysis of traffic speeds can provide an indication of the congestion on the highway network. DfT produce Congestion Statistics and the national average speed on A roads across England was 25.2mph (*April 2016-March 2017*), whilst West Yorkshire performed worse than this with an average of 22.5mph.

Trafficmaster vehicle speeds have been used as a proxy for network 'stress' (see **Figure 2.3**). Trafficmaster plots using 2016 weekday values have been prepared for the routes to be upgraded to SCOOT and MOVA (Element A) to highlight network stress in these areas and provide further justification for the sites identified. The analysis highlights traffic congestion and its effect on journey reliability is an issue for the proposed routes to be upgraded on the KRN. In each case, there are instances where the average speed observed in 2016 for particular links along the route displays speeds less than 10mph. **Figure 2.3** presents the AM peak (07:00 to 10:00); while the IP (10:00 to 16:00), PM peak (16:00 to 19:00) and overnight periods (19:00 to 07:00) are presented in **Appendix A**. The plots present all links with speed less than 30mph.







Source: Journey time information provided by Mott MacDonald strat-e-gis system from historic vehicle tracker data under licence from Trafficmaster Plc.

#### **Traffic Journey Times**

The West Yorkshire Transport Evidence Base presents the average delay on local A roads in 2014. This highlights the average delay in Bradford, Calderdale and Kirklees is above the national average (estimated at 42.3 seconds per vehicle mile).

Journey times have been collated for the AM, IP and PM peaks and compared to the overnight period for the routes with proposed SCOOT and MOVA junction upgrades through Element A (2016 weekday values). The results are presented in **Table 2.1**. Journey time savings proposed per route as a result of the intervention are separately reported in **Appendix L**.

**Table 2.1** highlights that delay (assessed as difference between peak period and the overnight period) can represent up to 68% of the total journey time on heavily congested routes such as Tong Street in Bradford. Measures such as SCOOT and MOVA can have a material impact on routes with this level of delay.





Local Authority	•	Route Description	c	2016 Journey Delay (Seconds) for Route (Perio versus Overnight) (Actual and percentage of journey time)			
	RouteIC		Directio	AM	IP	PM	
Wakefield	1	A636 Denby Dale	NB	47 (14%)	49 (14%)	66 (18%)	
Wakefield	1	Road	SB	26 (9%)	40 (14%)	197 (44%)	
Wakefield	2	A642 Aberfoed	NB	50 (17%)	42 (14%)	79 (24%)	
Wakefield	2	Road	SB	196 (44%)	63 (20%)	78 (24%)	
Wakefield	3	Whitwood	NE	12 (27%)	7 (18%)	15 (33%)	
Wakefield	3	common lane	SW	9 (15%)	6 (11%)	7 (12%)	
Wakefield	4	A61 Barnsley Road	NB	31 (27%)	21 (20%)	16 (16%)	
Wakefield	4		SB	17 (15%)	19 (17%)	22 (19%)	
Wakefield	5a	Leake Street /	NB	21 (19%)	22 (20%)	41 (32%)	
Wakefield	5a	Churchfield Lane	SB	24 (21%)	15 (15%)	12 (12%)	
Wakefield	5b	Church Street	NB	5 (38%)	5 (36%)	12 (57%)	
Wakefield	5b	Church Street	SB	0 (0%)	0 (0%)	0 (0%)	
Wakefield	5c	Various Puffins - Ings Road	NB	4 (33%)	4 (33%)	6 (43%)	
Calderdale	1	A58 - Kings	WB	61 (24%)	49 (21%)	84 (31%)	
Calderdale	1	Cross	EB	59 (29%)	59 (29%)	48 (25%)	
Kirklees	1	Dews RR	WB	31 (17%)	24 (14%)	40 (21%)	
Kirklees	1	Wakefield Road to Halifax Road	EB	44 (23%)	41 (22%)	56 (28%)	
Kirklees	2	A644 Webster	NB	178 (31%)	140 (26%)	128 (24%)	
Kirklees	2	Hill to North Road Ravensthorpe	SB	123 (25%)	212 (36%)	385 (51%)	
Kirklees	3	A652 Bradford	WB	59 (26%)	79 (32%)	84 (34%)	
Kirklees	3	Road and Batley	EB	47 (17%)	50 (18%)	85 (28%)	
Bradford	1	Tong Street	NB	337 (61%	101 (32%)	179 (45%)	
Bradford	1	Tong Street	SB	138 (46%)	94 (37%)	341 (68%)	
Bradford	2		NB	24 (15%)	52 (27%)	70 (33%)	
Bradford	2		SB	24 (15%)	56 (30%)	117 (47%)	
Bradford	2	A6177 Bradford	NB	73 (35%)	117 (47%)	189 (59%)	
Bradford	2	Ring Road Girlington	SB	85 (40%)	94 (42%)	224 (63%)	
Bradford	2		EB	72 (33%)	82 (35%)	91 (38%)	
Bradford	2		WB	6 (5%)	48 (28%)	171 (58%)	
Bradford	3		EB	32 (32%)	17 (20%)	47 (41%)	
Bradford	3	<b>F O</b>	WB	31 (41%)	9 (17%)	24 (35%)	
Bradford	3	Foxes Corner	NB	10 (18%)	10 (18%)	13 (22%)	
Bradford	3		SB	9 (15%)	26 (34%)	53 (51%)	
Leeds	1	A65- from	NB	265 (26%)	167 (18%)	618 (46%)	
Leeds	1	Tingley to Gildersome	SB	627 (49%)	152 (19%)	467 (42%)	
Leeds	2	M62 Jn28	WB	113 (27%)	60 (16%)	256 (45%)	
Leeds	2	Tingley to A6110 ORR Stanningley	EB	102 (25%)	59 (16%)	125 (29%)	





#### **Resilience of Highway Network**

The West Yorkshire Transport Strategy describes a lack of resilience in the transport network, particularly a lack of options when things go wrong, which can limit growth ambitions. These issues are likely to become exacerbated when there are incidents, events and disruption to the highway network.

#### Air Quality

Local air quality is affected by oxides of nitrogen  $(NO_x)$  and particulate matter  $(PM_n)$ . Most of it as a result of transport. The West Yorkshire Transport Strategy Evidence Base highlighted urban areas of West Yorkshire have been identified as having some of the highest levels of air pollution in the UK with the region having the highest levels outside of London. In particular, air quality is a significant problem in Leeds and Bradford with these authorities located in the top 50 local authorities in the country for poor air quality. The Evidence Base also highlights that 4.9% of premature deaths in West Yorkshire are attributable to exposure to fine particulate matter  $(PM_{2.5})$ , through heart and lung disease and respiratory illnesses.

**Figure 2.4** shows the intensity of  $PM_{10}$  emissions and highlights the most intense levels of  $PM_{10}$  are in the cities of Leeds, Bradford and Huddersfield. Much of the surrounding road network between these cities also falls within areas of high  $PM_{10}$  intensity. The map highlights air quality is an issue in all districts and collective management of the highway network can contribute to an integrated approach to mitigating the impact of transport on air quality.



#### Figure 2.4: PM10 Intensity in West Yorkshire (2005)

Source: West Yorkshire Transport Evidence Base.

With regards to  $NO_x$ , the Transport Strategy Evidence Base also highlights that parts of West Yorkshire continue to exceed the current national air quality objective of  $40\mu gm^{-3}$  with some of these areas considered to be highly unlikely to meet this target until after 2030. With regard to  $NO_2$ , current





projections indicate that in some parts of West Yorkshire, levels are not anticipated to fall within limits until 2025.

Government now, however, expects particular local authorities; including Bradford and Leeds to put in place urgent actions to address pollution levels to ensure levels fall back to legal limits by 2021. As a first step, Leeds launched consultation on reducing air pollution and the introduction of a Clean Air Zone in 2018. The proposed zone covers all roads within the outer ring road with the M1 and M62 as the south-eastern boundary but would not include vehicles that divert around the outer ring road, motorways, or vehicles which cross the city using the M621. Further improvements that contribute toward air quality enhancements will be required to ensure levels fall within legal limits at the earliest opportunity.

#### Travel to Work Characteristics

The West Yorkshire Transport Strategy and accompanying Evidence Base provides a summary of the travel characteristics and highlights the dominance of the car / van with 70% of travel to work trips made by car / van in West Yorkshire (2011). This proportion was notably greater in Wakefield (76%) and Kirklees (75%) compared with Leeds (65%). Bus journeys accounted for a further 11% of travel to work trips. Between 2001 and 2011, the average distance travelled to work increased from 11.3km to 12.9km, representing a 14% increase in distance.

The 2011 Census provides useful data regarding the travel to work movements within West Yorkshire. For all modes of transport to work within West Yorkshire, **Figure 2.5** compares the area of residence and area of work. The results highlight Leeds is the only district which is a net importer of labour whilst Kirklees has the greatest export of labour.



#### Figure 2.5: Usual Area of Residence and Work for Travel to Work Movements within West Yorkshire

Source: Data from West Yorkshire Transport Evidence Base.

**Figure 2.6** presents travel to work flows between the West Yorkshire districts for all movements over 7,000 as well as the internal movements within each district. The results show a considerable number of journeys made between the West Yorkshire districts, particularly between Bradford and Leeds as well as from Wakefield and Kirklees to Leeds.







Source: Data from West Yorkshire Transport Evidence Base. All flows less than 7,000 are excluded.

#### **Road Safety**

**Figure 2.7** presents the casualty statistics for all West Yorkshire A roads between 2012 and 2016. Whilst the results highlight the number of casualties has fallen on A roads over the five year period from a total of 3,388 casualties in 2012 to 2,524 casualties in 2016 (-864), road casualties remains a concern for West Yorkshire and will need ongoing action to further reduce.









#### Summary

The evidence has highlighted congestion is evident on particular sections of the KRN and delays on the highway network can have a considerable impact on productivity and reliability which impacts economic growth. For example, a high level assessment of congestion across West Yorkshire, undertaken by Leeds City Council concluded that the annual cost of congestion was £611m per annum in 2014 (or £1.7m per day). In addition, congestion on the network also has consequences for local air quality and carbon emissions – it also increases driver frustration regarding delays, raising the likelihood of accidents. Finally, the travel to work flows across district boundaries highlights the need for an integrated approach to highway management in order to effectively manage flows for those travelling throughout West Yorkshire.

#### B) <u>Existing Socio-Economic Conditions</u>

According to ONS population estimates, in 2016 the population of West Yorkshire was 2.3m people, which represents 42% of the Yorkshire and Humber population. Just under two-thirds (63%) of the West Yorkshire population are aged 16-64 so are considered to be of working age. According to ONS for the period July 2016 to June 2017, unemployment in West Yorkshire was above the national average (5.0% compared with 4.6%). Investment that contributes to the provision of an efficient and well-connected transport network which improves and provides equitable access to employment opportunities will be required to ensure congestion does not limit growth across West Yorkshire.

#### C) **Opportunities Identified**

This project provides a unique opportunity to create a new combined UTMC service with all the technology and impetus to tackle the problems facing the region from congestion, low growth, and poor air quality. The scheme will contribute to the completion of other developer led, WY+TF and NPIF schemes which will have a positive impact on the problems identified earlier.

All five districts plan to increase housing provision and this will increase demand for travel on the transport network. This is likely to exacerbate the highway conditions presented earlier without an intervention to manage the highway network. Based on the most recent Local Plan / Strategy, the following units are forecast:

- Bradford: 42,100 (2014-2030);
- Calderdale: 16,871 (2017/18-2031/32);
- Kirklees: 31,140 (2013-2031);
- Leeds: 70,000 (2012-2028) and
- Wakefield: 34,650 (1,170 dwellings per annum 2004-2008, 1,600 dwellings per annum 2008-2026).

Once all three elements are complete, the project will provide the opportunity to create a new service that delivers:

- A single Service Level Agreement (SLA) across West Yorkshire, allowing a UTMC service from 06:00 till 19:00 for all local authorities;
- One point of contact for West Yorkshire traffic signal faults, enquiries and complaints;
- Transition from four UTC teams to one which would reduce duplication of staff resources who could be reassigned elsewhere;
- Consistent management of the KRN which will target congestion, setting of signs, planned and





unplanned event management and interaction with the public;

- Enhance relationships with partners (e.g. Highways England, West Yorkshire) and have a stronger combined West Yorkshire focus;
- Bringing together specialist skills which would allow better management of existing workloads, major schemes and events;
- Efficiencies in day-to-day network management duties, providing increased capacity for development and delivery of transport fund projects;
- Potential to establish West Yorkshire UTMC as a school of excellence, with enhanced training and knowledge share opportunities;
- Opportunity to create a structure which addresses the problems of staff recruitment and retention;
- Provide a more robust and better informed platform for embracing and pioneering future technologies; and
- Still provide a local District focus.

#### D) Internal Drivers for Change

#### **Cross-Boundary UTC Provision**

Currently, UTC services are delivered by each of the West Yorkshire authorities with the exception of Calderdale whose operations / design are undertaken by Leeds. The four West Yorkshire UTC teams therefore work in different locations to varying service level agreements, with limited formal cross-boundary operations. The travel to work data highlighted the considerable cross-boundary travel between the West Yorkshire local authorities and the existing UTC services provide limited opportunity to influence road user's behaviour for these journeys. Greater coordination should improve the response to incidents and result in improved resilience of the highway network to planned and unplanned events.

#### Skills & Staffing

Traffic signals design and operation is a bespoke area of engineering and there is a national, regional and local problem with the recruitment and retention of staff with the necessary skills.

As of December 2017, there were 27 staff across the region employed by the four UTC teams and several vacancies. The average age of staff employed is 48 years of age with 19 members of staff (70%) above the age of 45. Consequently, it is likely staff shortages will be exacerbated in the near future as staff retire.

In today's demanding, resource stricken environment, combining local authority staffing resources through delivery of a combined UTMC service offers the opportunity to centralise skills and build in resilience to future operations, noting the potential impact of retirements.





#### Internal Drivers for Change: Multiple Operating Systems

Currently, there are multiple different operating systems across West Yorkshire as summarised in **Figure 2.8**. This duplication of assets is inefficient and presents an opportunity to streamline asset management.





#### Age of Assets

DfT guidance (*Traffic Advisory Leaflet – Code of Practice for Traffic Control and Information Systems*) suggest a life expectancy of 15 years for traffic signal installations, with the integrity of the signals compromised after this point. Furthermore, the failure rate increases and the time taken to repair can also increase. Whilst old signals are mains voltage, modern controllers are Extra Low Voltage (ELV) and have LED lamps which consequently have significant energy savings.

Of the 1,017 signals on the KRN in West Yorkshire, 27% (n=273) are more than 15 years and a further 9% (n=93) are 12-15 years old. There is considerable variability in the age of installations in West Yorkshire districts, as shown in **Figure 2.9**.

Figure 2.9: Age of Signals (West Yorkshire KRN)



PMO Doc Ref: T-003 Doc Version: V0.1





It has been estimated that £20.4m would be needed to ensure that all traffic signals on the West Yorkshire KRN are fit for purpose. This is based on a three year programme of works where all signal infrastructure with greater than 15 year lifespan (i.e. any with greater than 12 years now) would be upgraded. The proposed project would ensure all UTMC equipment upgraded is of a consistently good standard which would reduce the adverse impact of signal failures and enable greater monitoring which would have benefits for road users. It is likely that if the issue of ageing assets is not addressed, the scale of the problem will increase annually and require greater resources and funding to tackle it.

#### Resilience

With the consolidation of existing staff and systems, there would be a higher level of resilience to planned (*e.g. roadworks, concerts, matches*) and unplanned events (*e.g. severe weather, major incidents*) on the highway network. When large events affect more than one local authority area, streamlining the management and communication will result in a more effective response for the travelling public.

WYCA was established in 2014 and this has developed closer working relationships, for example between the local authorities, Highways England and the KRN Board. This integration provides a strategic direction for transport and an opportunity to establish common and consistent protocols across the region. The proposed project seeks to integrate the UTC services to more effectively manage the highway network across West Yorkshire.

#### E) <u>External Drivers for Change</u>

The policy and strategy review (**section 2.1.4**) highlights the promotion of greater coordination in the provision of transport services. For example, the Northern Powerhouse: One Agenda, One Economy, One North document describes the need for better coordination between local and strategic road networks as well as shared traffic information to mitigate congestion. Similarly, DfT highlight the emphasis on the development of shared delivery arrangements to maximise efficiencies through standardisation of contracts and specifications. Therefore, the drive for greater integration and coordination is evident as this can maximise the benefits of existing facilities and provision.

2.1.2 How will the scheme contribute to the achievement of the Leeds City Region's Strategic Economic Plan (2016)? (please refer to the plan here)

The Leeds City Region's SEP has a vision 'to be a globally recognised economy where good growth delivers high levels of prosperity, jobs and quality of life for everyone'. Four strategic priorities are identified to achieve the vision with 'Infrastructure for Growth' one of these and transport infrastructure and services is a key action area within this priority. It is considered that existing transport infrastructure does not go far enough to easily, quickly and affordably connect business, people or communities within the region and beyond with peak hour congestion a particular issue.

The SEP refers to the delivery of 31 strategic projects prioritised within the WY+TF and this includes the use of technology to better manage traffic. The proposed scheme would contribute to the following success measures identified for the 'Infrastructure for Growth' priority:

- Increases in GVA and job growth;
- Increases in connectivity bringing people, places and jobs closer together;
- Reduced delays, congestion and faster journey times across all transport modes and both within and beyond the city region; and
- Reduced carbon emissions and vehicle air pollution, improved environmental quality.





2.1.3 Does the scheme link to other activity being delivered either within the City Region or nationally?

The scheme complements a number of other projects, particularly as the UTC teams work closely with transportation, design, planning and network management colleagues across the region to deliver the efficiencies and growth required in the SEP.

The UTMC programme includes a number of linkages both in the shorter and longer term with WY+TF and NPIF schemes. **Figure 2.10** illustrates the proposed SCOOT and MOVA upgrades within the UTMC programme (blue) against the wider WY+TF schemes (red) and NPIF schemes (Leeds – Gold; Bradford – Purple). It highlights as a package of complementary initiatives, the schemes will deliver a comprehensive improvement to UTMC infrastructure across West Yorkshire.



Figure 2.10: WY+TF and NPIF Interdependent Schemes (see Appendix J for more detail)

Of particular interest in the shorter term are the following schemes:

- A650 Tong Street (Bradford Route 1);
- Castleford Growth Corridor Church Street/Savile Road (Wakefield Route 5);
- A658 Ings Road (Wakefield Route 5); and
- CIP A6117 Thornton Road (Bradford Route 2).

With regard to Tong Street, there are ten junction upgrades to SCOOT proposed as part of Element A which will need to be planned alongside wider highway improvement to reduce congestion, improve journey times and improve bus reliability on the corridor. The WY+TF scheme for Tong Street will also seek to provide improved facilities for pedestrians and cyclists.

In each case, where there are interdependencies with wider WY+TF and/or NPIF schemes, engagement between the UTMC Project Manager and WT+TF / NPIF scheme Project Managers will be undertaken





to align objectives and the proposed works to ensure efficiencies can be achieved for development and delivery where possible.

There are also linkages with longer term schemes/corridors (proposals currently within scoping/optioneering stage). The UTMC project includes junction improvements which will need to be considered as part of future option testing for these longer term studies including:

- A653 Leeds to Dewsbury Corridor (M2D2L); and
- A6110 Outer Ring Road Corridor Improvements (Leeds).

Integrating traffic control management across West Yorkshire also has synergies with other projects being delivered, including:

- The Corridor Action Plan;
- A62 Huddersfield to Cooper Bridge;
- Halifax Huddersfield A629 Corridor;
- Kirkgate Highways Scheme;
- Wakefield Eastern Relief Road;
- Leeds City Centre package; and
- West Yorkshire Key Route Network.

Although a combined UTMC service will not solely deliver these schemes, it will be integral to the future success of the schemes by providing the technical knowhow, the technology and physical infrastructure to ensure each scheme realises its full potential.

The new combined UTMC service will be a major consultee for each authority on planning applications. It will provide a consistent joined up regional approach to future developments across West Yorkshire whilst maintaining local concerns. This will enable planning colleagues to:

- Accelerate delivery of new housing and commercial floor space construction;
- Provide the Highways Infrastructure to deliver growth and developments; and
- Give a uniform regional approach to planning applications across boundaries.

2.1.4 How does the scheme meet other national, sub-regional and local strategies and policies?

In addition to the Leeds City Region SEP, the scheme is well aligned with wider strategy and policy. This section presents the relevance of guiding documents at a national, sub-regional and local level. It highlights the alignment to national and regional aspirations, for example Transport for the North (TfN) ambitions to transform the transport system in the North of England. The policy review also highlights the contribution of enhancing highway provision to address issues for the districts and improving connectivity with neighbouring authorities.

#### National Policy

#### Transport Investment Strategy, DfT (2017)

The strategy places a focus on schemes that tackle clearly-defined problems or unlock particular opportunities. A well-managed and maintained transport network is considered to be a powerful national asset that underpins the economy and daily lives.

Chapter 1 outlines the challenges of the existing network, for example, the confidence of the public





and businesses in knowing how long journeys will take. Chapter 3 introduces the following strategic priorities for transport investment:

- Create a more reliable, less congested and better connected transport network that works for the users who rely on it;
- Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities;
- Enhance our global competitiveness by making Britain a more attractive place to trade and invest; and
- Support the creation of new housing.

The impact of congestion on the road network is discussed with regard to the delays and bottlenecks created on heavily-used routes. Furthermore, the consequences of incidents are exacerbated on a congested network owing to longer recovery times and lower reliability. The strategy notes that upgrades which tackle congestion typically have high returns.

Chapter 4 highlights the importance of investment in the local, regional, national and international transport network as each has a significant role in addressing challenges for the economy. Locally and regionally this includes reducing congestion and delays so that journeys to work and freight movements are quicker and more reliable as well as minimising environmental impacts.

**Relevance:** The strategy specifically notes the benefits of tackling congestion on the highway network and this is one of the primary objectives of the project. The resulting benefits of easing congestion are therefore shared between this strategy and the project. The project, through investment in the KRN transport network, will also be a driver to support the unlocking of development sites for new housing and delivery of places people want to live, aligned to the strategic priority for the creation of new housing.

#### Investing in Britain's Future, HM Treasury and Infrastructure UK (2013)

This document presents the vision for the future of British infrastructure. The importance of transport and communication networks is recognised due to the need to connect people and businesses. Chapter 2 describes the road network and highlights that whilst traffic and congestion on the road network have risen, investment over the past few decades has fallen. The document states that congestion on the whole road network is estimated to cost the economy £19bn every year which will worsen with future traffic flows anticipated to be 22-71% higher by 2040.

**Relevance:** The project seeks to mitigate the impacts of congestion on the highway network and, therefore, is aligned with the commitment to investment in the highway network to ensure transport is able to facilitate the efficient movement of people and goods.

#### National Planning Policy Framework, Department for Communities and Local Government (2012)

Government's planning policies for England are detailed in the National Planning Policy Framework (NPPF) and this includes how these policies are expected to be applied. The NPPF describes the purpose of the planning system as contributing to the achievement of sustainable development and identifies three mutually dependent dimensions: economic, social and environmental. Planning can therefore contribute to building 'a strong, responsive economy' whilst supporting 'strong, vibrant and healthy communities' and 'protecting and enhancing our natural, built and historic environment'.

The various aspects of sustainable development are detailed within the NPPF; of particular pertinence are the following:

Building a strong, competitive economy: This details the Government's commitment to





securing economic growth to create jobs and prosperity, whilst meeting the challenges of global competition and a low carbon future. This support includes addressing potential barriers to investment.

 Promoting sustainable transport: This section describes the transportation contribution to wider sustainability and health objectives. This includes encouragement of solutions which support reductions in greenhouse gas emissions and congestion.

The NPPF also highlights the Government is committed to boosting the supply of housing and delivering a wide choice of high quality homes. The local authority is entrusted to identify an annual supply of specific deliverable sites to provide housing over 5 years, 6-10 years and 11-15 years.

**Relevance:** There is demonstrable alignment between the project and the priorities within the NPPF. The scheme seeks to improve the efficiency of transport flows in West Yorkshire and consequently improve journey times and journey time reliability. This can stimulate economic growth and offer greater accessibility for those travelling on the highway (by car and bus). Environmentally, the easing of congestion can have resulting air quality and noise benefits. The project will also support deliver measurable improvements to the KRN that enable further housing new be built, supporting local authorities to meet their housing targets.

#### Local Growth: Realising Every Place's Potential, Department for Business, Innovation and Skills (2010)

This white paper details the Government's role in supporting locally driven growth, encouraging business investment and promoting economic development. The paper describes a shift to greater local power to increase accountability and transparency as well as ensuring that expenditure is responsive to the needs of local people and businesses. With regards to transport, the paper notes the Government commitment to the involvement of Local Enterprise Partnerships (LEPs) to make decisions about local strategic transport priorities.

**Relevance:** With greater commitment to local decision making, the project is clearly well-aligned by seeking to integrate highway systems to strengthen the management of the network across West Yorkshire in order to respond to the needs of those living, working and travelling through the region. Improved journey time reliability has benefits to business which can drive economic growth for West Yorkshire. The project complements wider improvements to be delivered through the WY+TF and NPIF schemes, to deliver network improvements that support benefit realisation including economic growth.

# Building Our Industrial Strategy – Green Paper, *Department for Business, Energy and Industrial Strategy* (2017)

This paper states that the objective of the modern industrial strategy is to improve living standards and economic growth by increasing productivity and driving growth across the whole country. Ten pillars are identified which are considered to be important to drive forward the industrial strategy across the economy. One of these pillars is *Upgrading Infrastructure* – this reflects a need to upgrade infrastructure standards, including transport, and better align central Government infrastructure investment with local growth priorities.

Good transport infrastructure is considered to have additional benefits beyond reducing delays as a result of the connectivity benefits enabling towns and cities to achieve agglomeration effects and support the rebalancing of the economy.

**Relevance:** As stated in **section 2.1.1**, almost 27% of signals on the KRN are over 15 years old with a further 9% between 12-15 years old. The proposed project seeks to upgrade the existing UTC network in West Yorkshire and therefore is closely aligned with the pillar to upgrade infrastructure. This will





ensure a consistently high standard of provision which will have benefits for all users of the highway network across West Yorkshire.

#### Proposals for the Creation of a Major Road Network, Department for Transport – Consultation (2017)

The DfT is currently consulting on the creation of a Major Road Network (MRN), comprising the most important local authority controlled roads. The objectives of the MRN proposal are to reduce congestion, support economic growth and regional rebalancing, support housing delivery, support all road users and support the Strategic Road Network (SRN). A draft of the network has been identified as part of the consultation document - it is envisaged that the length of the network across England will be similar to the SRN managed by Highways England. The MRN will be eligible for funding from the National Roads Fund, which will be established by 2020.

**Relevance:** A combined UTMC service across West Yorkshire will be important in terms of delivering integrated management of the MRN across West Yorkshire. It will also facilitate the development of the evidence base required by DfT to support investment proposals and assist in demonstrating the case for schemes within West Yorkshire to be included within the MRN Programme. The new service will enable staff to be released from day-to-day traffic management related duties to work on scheme development, including proposals relating to the MRN.

#### **Regional Policy**

#### Northern Powerhouse: One Agenda, One Economy, One North, TfN (2015)

This document presents a vision for a North which has 'a vibrant and growing economy, acts as a magnet for inward investment, and which capitalises on the strengths of Northern cities to build a Northern Powerhouse'. Transport is considered to have a fundamental role in achieving this aim with long-term investment necessary. Excellent connectivity seeks to improve journey times, improve capacity and resilience and simplify the user experience.

The strategy describes how congestion on city region roads is high and forecast to get higher with congestion having costs for businesses, logistics, bus operations, visitors and the public. It describes how motorists and freight use highways as a single network and that it makes sense to co-ordinate it accordingly.

With regards to highways, the strategy states that a faster, less congested strategic road network is crucial to delivering the Northern Powerhouse. Similarly, the need for city regions where people and goods can travel reliably by road is also stated with better real time traffic management and driver information specifically cited. The need for better coordination between local and strategic road networks and shared traffic information to mitigate congestion and enable drivers to avoid hotspots is a common theme throughout.

**Relevance:** This document stresses the impact of congestion for all users of the highway network and the logical benefits of coordinated use and management of the network. Therefore, the proposed project which seeks to harmonise UTMC/UTC systems across West Yorkshire has strong alignment with the Northern Powerhouse ambitions to mitigate and manage congestion.

#### Strategic Transport Plan Position Statement, TfN (2017)

The TfN vision is for 'a thriving North of England where modern transport connections drive economic growth and support an excellent quality of life'. The Strategic Transport Plan adopts an integrated approach to economic and transport planning across the whole of the North to support the case for investment and align funding. The prime objective is to transform economic performance but three





enabling objectives are also identified:

- Increasing efficiency, reliability and resilience on the transport system;
- Promotion and supporting the built and natural environment; and
- Improving opportunities across the north.

The statement describes how the strategic transport plan will seek to deliver a transport system that is user-centric, smart, autonomous and integrated, as well as resilient and sustainable. The final Strategic Transport Plan is due to be published in summer 2018.

**Relevance:** The proposed scheme has particular alignment with the objective to increase efficiency, reliability and resilience of the transport system through more effective management of the KRN. The characteristics of a more integrated UTMC/UTC service across West Yorkshire has synergies with TfN aims for a transport system that is smart, integrated, resilient and sustainable. Improvements to the KRN will also contribute to quality of life factors supporting existing and future households and businesses.

#### West Yorkshire Local Transport Plan 3, West Yorkshire Integrated Transport Authority (2017)

This 15-year Local Transport Plan (LTP) for West Yorkshire covers the period 2011 to 2026. The LTP vision places an emphasis on connecting people and places: 'working together to ensure that West Yorkshire's transport system connects people and places in ways that support the economy, the environment and quality of life'.

The plan states that road congestion, particularly during peak periods, is a major concern amongst businesses and the public and can also adversely impact bus service operations. Furthermore, the predicted growth in employment, population and housing are anticipated to exacerbate congestion and reliability issues with the transport network.

Six 'big ideas' are identified, with one of these being a new approach to network management to help make journeys for people and goods more smooth by providing the data for live traffic and travel information into one place. For example, the LTP describes a potential measure to develop a West Yorkshire wide network management centre to monitor traffic flow and manage incident response. It also suggests expanding systems such as 'traffic light priority' to speed up the flow of buses. Enhancing network management seeks to ensure that the existing transport network is used as efficiently and effectively as possible.

**Relevance:** Congestion on the road network is presented as a major concern within this document with a West Yorkshire wide network management centre specifically referenced to ensure the highway network is used as efficiently and effectively as possible. With a direct reference to elements of the project, there is clear alignment with the third West Yorkshire LTP. On-street infrastructure upgrades, as proposed by this project, are considered one part of the overall strategy to deliver improvements to the transport network and support growth in employment, housing and population across West Yorkshire.

#### West Yorkshire Transport Strategy 2040 (Draft), WYCA (2017)

This strategy recognises the importance of the transport system to connect people to jobs, bring businesses closer together, get goods to markets, provide opportunities for education and training and reduce social exclusion. It supports national, regional and local work undertaken to create a northern economic powerhouse.

A series of transport challenges are identified including traffic congestion, bus journeys being slow or unreliable, safety on roads, car dominance and poor air quality. The ambition for the road network is

PMO Doc Ref: T-003 Doc Version: V0.1





for 'an efficient, safe and reliable road network for all users that creates new opportunities for jobs and housing' whilst the ambition for asset management and resilience is 'to ensure that we make best use of our existing and future transport assets'. Policy 50 describes the use of Intelligent Traffic Management systems to reduce traffic delay and disruptions, and introduce an integrated network management and driver communications centre, working closely with Highways England for comprehensive coverage of the road network. This aims to improve journey times and reliability by harnessing technology to manage the road network efficiently and provide a consistent service across the region.

**Relevance:** Traffic congestion is cited as a particular challenge of the transport network and the proposed project seeks to more effectively manage this across West Yorkshire with improved facilities across the five districts. The aim for a consistent service across the region is also fulfilled by the proposed project which will integrate services to improve the driver experience throughout West Yorkshire. The proposed improvements will support the ambition for the road network to ensure opportunities to create jobs and new housing are not missed due to congestion.

#### Local Policy

#### Kirklees Local Plan (Draft) – Strategies and Policies, Kirklees Council (2016)

When adopted, the Kirklees Local Plan will become the main planning policy document for the district up to 2031. Ten strategic objectives are identified, with one being to '*improve transport links within and between Kirklees towns and with neighbouring towns and cities, giving priority to public transport, and to cycling and walking, providing an efficient highway network which supports the district's economy*'. Section 10 discusses transport in Kirklees; Policy PLP19 states an aim to achieve a balanced and integrated transport network which makes the most efficient and effective use of road, rail and public transport.

**Relevance:** The draft Kirklees Local Plan has ambitions to create a more efficient highway network and the proposed project will contribute to this with the introduction of an improved and integrated UTMC system within Kirklees as well as the relationship with neighbouring districts. This will be important to support Kirklees deliver approximately 30,000 new homes by 2031 to meet forecast demand.

#### Calderdale Local Plan (Draft), Calderdale Council (2017)

This draft of the local plan covers the period up to 2032 and provides a framework for development in Calderdale including approximately 17,000 new homes. Strategic Objective 7 considers Transport and the importance of planning in connecting people with opportunities. This objective is 'to ensure the provision of a sustainable, safe and efficient transport system which reduces and minimises any adverse effects upon the environment and communities'. The Local Plan has alignment with the council's Transport Strategy (2016-2031) that was adopted in November 2016.

The Local Plan describes how the movement of people, goods and raw materials have all contributed to congested traffic conditions and consequently air pollution. Furthermore, the plan notes that it is very likely traffic conditions will continue to worsen over the period. There is specific reference to active traffic management with information provided to the driving public at key decision points in the network. The plan states that UTM services will work with Highway England and other neighbouring authorities as well as public transport operators and the emergency services.

**Relevance:** The proposed scheme has demonstrable alignment with the Calderdale Local Plan owing to the intention to work with other authorities to improve the traffic management provision in Calderdale to prevent traffic conditions worsening.





#### Leeds Core Strategy, Leeds City Council (2014)

The core strategy describes the overall vision and strategic level policies to guide development and investment decisions in Leeds. With regards to transport, several priorities are presented including targeted highway schemes to alleviate congestion and assist improved connectivity for local and strategic orbital movements, and the strategic road network. The strategy notes there is little road capacity for increased car commuting into Leeds City Centre and limited spare capacity for rail community until extra capacity is provided on trains and at Leeds station. Therefore, better use needs to be made of the existing provision with network management and the continued use of UTMC is considered to have a key role.

**Relevance:** With limited opportunity for increasing road capacity, the strategy describes the need for better use of existing provision via network management. The proposed scheme will have a particular benefit in Leeds owing to the considerable number of installations that are more than 15 years old in the district. Improvements to the transport network, which focus on relieving and managing congestion, as proposed by this project, will together with an improved West Yorkshire management perspective, be important to support Leeds to provide the forecast 70,000 new homes to be delivered by 2028.

#### Wakefield Core Strategy, Wakefield Council (2009)

This document includes the strategies, policies and proposals to guide the use of land and new development (including approximately 35,000 new homes) throughout Wakefield up to 2026. With regards to transport, the strategy describes how peak period congestion particularly along the main radial routes into Wakefield is increasingly becoming a problem. Traffic is also considered to have a large impact on air quality along the strategic highway network and in city/town centres. Policy CS9 refers to the transport network and the importance of being able to move goods for logistics, warehousing and distribution companies as well as the vitality of urban areas.

**Relevance:** The proposed scheme seeks to mitigate congestion on the highway network which the strategy states is increasingly becoming a problem. Consequently, there is clear alignment between the proposed project and the strategy.

#### Bradford Core Strategy, Bradford Metropolitan District Council (2017)

The core strategy sets out the aims and objectives for sustainable development until 2030 within Bradford. Transport and movement policies are detailed in section 5.2 and the strategy describes how many of the key routes in the district are congested at peak times, with some also experiencing from congestion during off-peak periods. As a result of traffic and congestion levels, the strategy notes that some areas of the district suffer from poor air quality. A growing population (including a need for approximately 40,000 new homes by 2030) and economic growth are anticipated to significantly affect travel patterns which would increase demands on the transport network and increase congestion without effective management. Consequently, addressing traffic growth and congestion is presented as a major issue for Bradford.

Policy TR1 states the council will seek the effective and efficient management of the existing transport networks, including strategic and local highway. Policy TR6 describes the approach to freight and refers to the use of UTMC.

**Relevance:** Traffic growth and congestion are considered to be a particular issue within Bradford; therefore, the proposed project is well-aligned owing to its aim to more effectively manage the highway network. Such management improvements will be important to ensure the effective and sustainable delivery of new housing across Bradford.




## 2.1.5 Why is WYCA funding (Grant or Loan) required in order to carry out this scheme?

Without intervention, the existing issues with the highway network are likely to be exacerbated as housing and employment growth places further demand on the network and congestion worsens. This would have consequences for journey time reliability, congestion hotspots and the resulting impacts on the environment and safety of increased vehicles on the network.

The funding of this scheme by the WYCA is vital to its delivery for the following reasons:

- With reductions in local authority budgets and funding being stretched across services, investment is required to maintain and enhance existing infrastructure; and
- If funding from WYCA is not forthcoming then it is unlikely that a combined UTMC service would be delivered.

Without funding, several decisions would need to be made regarding the systems in Bradford, Kirklees and Leeds:

- Bradford: The existing UTC system in Bradford is obsolete so there will be a need to replace this system;
- Kirklees: The Kirklees system requires investment so that it is viable for the technological challenges ahead;
- Leeds/Calderdale: The UTMC system in Leeds is coming to the end of its ten year agreement so a formal contractual decision would have to be made on its viability; and
- Wakefield: Wakefield systems are relatively recent and as such do not require replacing but Wakefield does not currently utilise a UTMC system.

The two biggest replacement costs are the UTC and the UTMC systems. Costs to replace these have been gathered from suppliers who participated in a 'Meet the Buyer' event (see **Table 3.1**, Commercial Case). These costs indicated the most efficient method of delivering these two systems were to be cloud based and hosted off-site in a purpose built location. The main benefits of using a cloud based system are:

- Greater reliability of systems;
- Ability to work from any location;
- Lower operating costs from a single location as against a locally hosted server;
- More resilient systems;
- Better/wider information to users; and
- Newer means to provide bus and selected vehicle priority.

Element B is required to deliver wider WY+TF and NPIF schemes which will deliver GVA enhancements for West Yorkshire. The NPIF schemes must be delivered by 2021, so there is a requirement to progress delivery of this project in the short term.

2.1.6 What engagement/consultation has taken place with the main stakeholders and beneficiaries affected by the scheme?

A summary of the main stakeholders and their anticipated role is provided in **Table 2.2**.

The proposal for this project was developed through the Steering Group which is comprised of the five local authorities and WYCA. Consultation has also taken place with the Directors of Development and Chief Highways Officers. All of those consulted to date are supportive of the scheme and as are staff who are generally supportive of the project.





Engagement with bus operators will be via WYCA; whilst the emergency services will be kept up-todate via the five local authorities. Consultation with the Road Haulage Association will be via the KRN Board. It is anticipated that the KRN Board will become a key driver for the new engagement opportunities and also help with the delivery of bus and vehicle priority across West Yorkshire as greater integration of operations within West Yorkshire becomes business as usual.

The establishment of a combined UTMC service, with a central control centre, will have particular sensitivities with staff and it is proposed that staff will be kept informed via team meetings and briefings by the Project Executive and/or Project Manager. To date, staff have been made aware of the anticipated relocation to a single site with further detail to be provided as it is confirmed.

A communication strategy will be developed as part of the FBC to present the likely consultation to occur for each stakeholder – further information is provided in **section 6.4**.

Stakeholder	Anticipated Impact / Role
Five West Yorkshire Local Authorities	UTC and UTMC provision within the districts will be impacted as a result of the transition to a combined UTMC service with a single management structure. Existing UTC and UTMC staff will be affected by the relocation to a single site.
WYCA	WYCA brings together the local authorities and relevant organisations to deliver growth for the region. WYCA will fund the project through the WY+TF and oversee the design and delivery of the integrated service.
West Yorkshire KRN Board	The on-street improvements to junctions on the KRN and the enhanced management of services on the KRN will require engagement with the KRN Board.
Highways England	The scheme is likely to enhance the interface between the West Yorkshire Districts and Highways England. The combined UTMC service will provide a single point of contact with Highways England and will facilitate better integration with Highways England's Regional Control Centre.
Bus Operators	To ensure full integration with the transport network and those affected by enhanced traffic management, liaison with bus operators will be necessary. It is also anticipated that bus operators could co-locate in the new control room, as is the case at Transport for Greater Manchester.
Road Haulage Association	As a representative of users of the transport network, engagement with the Road Haulage Association will be undertaken.
Emergency Services	Liaison with the emergency services will be required to ensure there is full integration with the transport network.

#### Table 2.2: Key Stakeholders





# 3. Commercial Case

The purpose of the Commercial Case is to demonstrate the demand for the project and that there is a sound procurement strategy for the project that will ensure that the Scheme Objectives are realised over the life span of the project.

## 3.1 The Case for Change

3.1.1 What evidence is there to support the market demand justification for this project?

The UTMC programme of works is not designed to unlock a specific/nominated development site. Rather the project aims to deliver a joined-up management approach for the KRN across West Yorkshire, together with reduced localised congestion and delays on approach and exit from junctions upgraded with new on-street infrastructure (SCOOT and MOVA). Therefore, the business case does not provide evidence to illustrate market demand, for instance with regard to take up of commercial space or new housing as may be the case for some proposals. The project will however support new housing across West Yorkshire in a more general sense as a result of improved operation and management of the KRN.

A test of the scheme within the UDM highlighted potential to support **28 new indirect jobs (net)**. The SEP identifies a need to enable people from all communities to secure more and better jobs – the programme will indirectly support this wider aspiration through journey time reliability and accessibility improvements.

## 3.1.2 What evidence is available to support the projected take-up by the market?

The nature of the project is different to a typical transport scheme, in that take-up by the market is not a key determinant. The upgrades to on-street infrastructure / junctions to SCOOT and MOVA (Element A) will benefit existing traffic and will not displace existing activity. The co-ordination of adjacent signals, close together in corridors, as proposed through SCOOT and MOVA upgrades will be important and provide benefits to road users in the form of junction delay reductions.

The systems delivered by Element B are a key part of West Yorkshire's local authority's ongoing management practices for the KRN. The procurement process will ensure Element B components are financially sustainable beyond the initial hosting arrangements and adaptable for future additional development.

## **3.2 Procurement Strategy**

## 3.2.1 What is the procurement strategy/approach?

The procurement strategy for the programme has been detailed for each element below.

#### Element A (On-street improvements to UTC equipment)

Works undertaken for Element A would be procured and carried out using specialist signal contractors from the *West Yorkshire UTMC Supply and Installation Contract*, supervised and managed by the West Yorkshire UTMC teams. The joint Framework contract is administered by Leeds City Council on behalf of all five West Yorkshire local authorities. The contract began in January 2017 and will operate for a period of two years, with the potential to be extended for a further year. All activities relating to the procurement of the contract were strictly undertaken in accordance with the Leeds City Council's Contract Procedure Rules.





The contract includes the following authorised suppliers: Colas, Dynniq, Motus, Siemens and Telent. These contractors provide Civil Engineering, Traffic Signals, Wi-Fi and CCTV services. In tendering the contract, these suppliers returned the most economically advantageous tenders that met the quality requirements of the contract.

Although the framework is administered by Leeds City Council, each local authority would be responsible for managing their own on-street works improvements and engaging respective contractors through the contract. It is envisaged that multiple contractors will be required to deliver the complete package of SCOOT and MOVA upgrades across West Yorkshire due to the scale of works as part of this project and also interdependent WY+TF and NPIF schemes. This delivers on one of the contracts main purposes, to ensure the availability of alternative specialist resources to carry out works across the region.

West Yorkshire local authorities have considerable experience with the contract, with the Districts routinely using the framework to meet the procurement needs of the service with respect to the purchasing of equipment for new traffic signal projects together with their installation.

If there are any cost over-runs, the approach to how these are to be dealt with is outlined in **section 3.2.2**.

## Element B (Cloud Based Combined UTC/UTMC system)

A procurement strategy has been developed but, as with any UTMC/UTC project, the list of suppliers for this bespoke area of works is limited. There are only a handful of suppliers for UTMC systems and only two approved suppliers for the UTC system. There is however greater choice and therefore more competition for the professional services and technical support that will be needed for their installation.

#### Professional Services and Technical Support

Where possible these services will be procured using the WYCA Framework for Specialist Services contract awarded in 2016 (for instance business case support). In addition to price, the award of these works packages will also consider the local knowledge of suppliers.

#### UTC and UTMC Systems

These systems will have to be procured and conform to the EEC OJEU notice regulations owing to the sums involved. As the required systems are bespoke, the intention is this will be procured through the Restricted Route. It is likely that one local authority (Wakefield) will procure the systems on behalf of all partners and the legalities of that procurement will also be undertaken by the same authority on behalf of all of the West Yorkshire Districts.

Early contractor involvement has taken place with the suppliers for both systems over the last 12 months and this culminated with a "Meet the Buyer" event attended by at least one representative from each local authority and numerous representatives from the suppliers.

The aim of the "Meet the Buyer" event was to:

- Inform suppliers of the vision for the new service and its systems;
- Share the same information with all suppliers and a consistent message from all providers;
- Allow detailed questioning by suppliers of the local authorities; and
- Allow suppliers to produce an indication of costs for this OBC and highlight their ability to offer innovation to the project.

These indicative costs and technical innovations will then be used to form the basis of the technical specifications for the full tender process, so as not to specify items that are undeliverable within the current timescales or budgets.





Table 3.1: Returns Summary – Element B*						
	Over 5 Years			Over 10 Years		
	Low	High	OBC Assumption**	Low	High	
UTC	£1.250m	£1.614m	£1.250m	£1.554m	£1.804m	
UTMC	£0.553m	£1.142m	£0.533m	£0.683m	£1.242m	

\*excludes Bluetooth / Google and CCTV components of Element B

\*\* excludes contingencies (at 15%) and inflation which are included within the Financial Case

#### Element C (Combined UTMC Service)

The precise approach to procurement of Element C is unknown at this stage. However, it will be undertaken using local authority guidance to ensure that it is robust. It is anticipated that the authority leading the development of the service will undertake the procurement following approval from the five local authorities.

#### 3.2.2 Risk Allocation and Transfer

The scheme risks associated with the UTMC project have been considered and included within the risk register found in **Appendix G**. A further summary of the key project risks is provided at **section 6.3.3**. Where appropriate, the aim is to eliminate the risk, or prepare relevant mitigation measures to manage and reduce the impact of the risk. At this stage, the risks for the project sit with the Project Manager and/or Project Board but an owner has been allocated to each risk during the development of the risk register.

Following approval of the OBC, it is anticipated that a number of procurement activities will commence to support the delivery of Elements A and B. The general principle that will be adopted is that the risk should be managed by the party best able to manage them. As the project moves to delivery, aligned to many contracts led by West Yorkshire local authorities, it is likely that the majority of the delivery and financial risk will be transferred to the supplier at this point as the party most relevant to impact delivery.

For the project, it is envisaged that suppliers will be procured via the West Yorkshire UTMC Supply and Installation Contract for Element A – delivery of on-street SCOOT and MOVA improvements.

UTC and UTMC systems (Element B) will be procured to meet EEC OJEU notice regulations, potentially through a NEC3 contract.

The two procurement pathways will enable risks to be identified in the contractual arrangements. The procurement contracts will stipulate:

- Timescales for each process in the procurement strategy;
- Agreed mechanisms on measuring performance;
- Phased payments on signed off delivery of each phase;
- How changes to contract/compensation events will be dealt with;
- Penalties for non-performance;





- Retention of some of the contractual payment until final project sign off; and
- Agreed costs for additional works, which can only be authorised by the promoter.

The FBC will be submitted for Elements A and B following receipt of tender prices - further detail relating to risk allocation and transfer measures, particularly relating to the contract will be reported at this stage.

3.2.3 Statutory and Other Regulatory Consents

No consents are required for this project as all on-street works will be undertaken within the boundary of the highway.





# 4. Economic Case

The purpose of the Economic Case is to demonstrate the project offers value for money.

It is expected that any supporting documentation that summaries any work carried out to develop the Economic Case are referenced and attached as appendices.

For the Preferred Option Testing part of the Economic Case (Section 4.3), this has been split into two parts:

- Part 1 Non-Transport schemes should complete this section
- Part 2 **Transport** schemes should complete this section

Note – All sections should be reviewed and updated if this is the Full Business Case. A summary of any key changes and their implications on the business case should be included

## 4.1 Long List Options Testing

4.1.1 What Long List of Options has been considered?

#### Element A (On-street improvements to UTC equipment)

The long list of junctions were identified based on the following criteria:

- Sites that were located on the KRN;
- Ensuring there was no duplication of sites with NPIF or other schemes/programmes (see Appendix J);
- Local knowledge and evidence of issues and opportunities for the West Yorkshire highway network to target areas of the KRN experiencing congestion – this included consideration of average speed and delay – see Appendix A); and
- Selecting junctions that formed a corridor of improvements to maximise benefits without displacing issues to the next junction (see Appendix I).

#### Element B (Cloud Based Combined UTC/UTMC system)

There were two approaches for the joining of district UTC systems into one considered; this could be done physically with a server located at one of the authorities or it could be done virtually "in the cloud".

As the existing provision varies between the West Yorkshire authorities, it was determined to use the highest quality specification for a local authority as the minimum standard and this was the provision in Leeds. In addition to this, technology has progressed and air quality management and monitoring, and asset management services are now available to be specified – these are to be included within the specification. West Yorkshire local authorities determined it appropriate to also open the specification up to any innovation opportunities identified by suppliers. The service across the local authorities would then be integrated to deliver consistent provision across West Yorkshire.

#### Element C (Combined UTMC Service)

Five options were considered viable for Element C; **Table 4.1** provides a description of these options.





Table 4.1: Long List of Options – Element C (Combined UTMC Service)			
Option	Option Name	Option Description	
1	Do Nothing / Minimum	No change in the current organisation with four distinct district teams providing the service across the five local authorities.	
2	Cloud Based Combined UTC/UTMC system	This would involve existing UTMC teams remaining in their current location, but linked together within a virtual environment under common guidelines and standards. Each local authority would manage the network and operations within its own boundary. This is equivalent to delivering Element B (identified above), but was considered in scoping the full range of options for future service delivery arrangements.	
3	Two Centre Operating Model	This would require the merging of authorities within two operational groups and the relocating of some UTMC teams. These would be linked together within a virtual environment under common guidelines and standards.	
4	One Centrally Located Team	This would require UTMC teams to relocate to an existing or new central location acceptable to all parties; all personnel would be fully integrated within the new structure under a single management and operating regime. Consequently, all operations, design and maintenance would be undertaken from one location.	
5	One West Yorkshire Control Centre, Districts Keep Functions	Establishment of a West Yorkshire wide UTC control centre but with the design services located within the four districts.	

4.1.2 What Critical Success Factors (CSF)s have been used to evaluate the Long List of Options?

Table 4.2: Critical Success Factors – Element C				
CSF	CSF Name	CSF Description		
1	To facilitate economic growth and employment <i>(Objective 1)</i>	The facilitation of economic growth and employment will be influenced by the success of the objectives two to four as effective KRN and congestion management, with greater reliability, will provide greater confidence for businesses and commuters. Consequently, those options with greater integration are anticipated to have the larger impact on this objective.		
2	To better manage congestion on the West Yorkshire KRN <i>(Objective 2)</i>	Options with greater integration will have the most considerable impact on this objective as the integration of design, operations and maintenance will be undertaken consistently across the districts.		





3	To implement more effective management of the KRN within West Yorkshire, irrespective of boundaries and agencies (Objective 3)	Option 4 would have the greatest contribution to this objective as it removes the district boundaries and integrates services and staff to manage the KRN across West Yorkshire. Retaining a district function is likely to hinder coordinated and effective management of the KRN.
4	To deliver a more reliable highway network that supports users with information to inform travel choices (Objective 4)	Improving reliability is dependent on the collation of UTC data and appropriate response; this will be maximised with increased integration between the districts to provide a collective and consistent approach across West Yorkshire.
5	To reduce the adverse impacts of transport on local air quality <i>(Objective 5)</i>	Improvements to air quality are likely to occur following better management of congestion. Therefore, it is likely to be greater amongst the options with enhanced integration between districts.

4.1.3 How has the Long List of Options been appraised?

## Element A (On-street improvements to UTC equipment)

There was no formal sifting to identify the sites for on-street improvements. This was undertaken by the UTMC manager for each district using their professional judgement on the conditions of the network.

## Element B (Cloud Based Combined UTC/UTMC system)

The two options were practically assessed to identify which would be most suitable. Whilst options for procuring servers are still available from suppliers, advice from providers indicated that a 'cloud' based system was the most appropriate as the server-based approach is generally no longer implemented. This will be further considered as part of the Tender Specification and procurement process.

It is also noted that Element B will facilitate the delivery of a wider number of on-street improvements akin to Element A through the NPIF and WY+TF. The benefits for these schemes are captured as part of wider business cases; however, whilst not appraised as part of this business case it is important to emphasise the delivery of this element will enable such benefits to be maximised. The appraisal therefore acknowledges this aspect qualitatively.

## Element C (Combined UTMC Service)

An appraisal framework based on the DfT Early Assessment and Sifting Tool (EAST) was used to inform an assessment of the options to provide a qualitative analysis of potential UTMC service in West Yorkshire. The five options were assessed in relation to criteria identified under the five component cases of a business case with Option 2, 3 and 4 being the highest scorers. The options were also assessed against the scheme objectives and those options with greater integration performed more strongly. This assessment provides similar results to the business case assessment.





## 4.2 Short List Options Testing

## 4.2.1 What is the Short List of Options?

#### Element A (On-street improvements to UTC equipment)

The list of junctions proposed for on-street improvements was presented in **Figure 1.1**. The long list was refined based on budget constraints. Further junctions/corridors are available across the local authorities and subject to budget, could be brought forward for delivery (reserve list of sites).

#### Element B (Cloud Based Combined UTC/UTMC system)

This will deliver cloud based UTC / UTMC systems as the first phase; it will allow the majority of the systems and infrastructure to be put in place, including:

- A new Cloud based UTC system to control the 1,600 sets of traffic signals in West Yorkshire;
- A new Cloud based UTMC system to control the non-business critical systems such as Variable Message Signs (VMS), Car Park Guidance Systems, Journey Time Information, Pollution Monitoring, CCTV Integration, Fault Reporting; and
- The telecommunications systems to deliver the above.

This element would deliver some of the project benefits early, but would not deliver the benefits that would result from the combined UTMC service.

#### Element C (Combined UTMC Service)

#### Option 1: Do Nothing / Minimum

This option is not considered to be viable owing to the following problems in West Yorkshire:

- Duplication of equipment;
- Some equipment is expected to become obsolete very quickly;
- Duplication of staff and resources (some functions duplicated in each district);
- Additional revenue costs due to duplication of equipment and staff; and
- Problems with recruitment and retention of staff.

#### **Option 2: Cloud Based Combined UTC/UTMC system**

The Virtual Environment would form the foundation of the project and allow some of the benefits to be delivered early in the project. This option allows all the new systems and infrastructure to be procured and utilised. Existing staff would remain in their current locations and gain all the benefits of the new UTC and UTMC systems. In summary, it allows some of the core objectives to be delivered, but not all.

#### **Option 4: One Centrally Located Team**

This relocates all existing staff to one single location operating under common governance rules with the same service levels across all five West Yorkshire local authorities. It procures all the new systems and infrastructure to deliver this service. In summary, it will achieve all of the core objectives and all of the benefits outlined in this business case could be realised.

Ideally, all of the benefits would be delivered in one continuous programme with the direction of the scheme fully mapped out. Owing to the difficulties in determining location and governance, the Project Board has agreed to phase this project, with the delivery of Element C following Elements A and B.





#### Table 4.3: Short List of Options – Element C

Note: political agreement still to be sought/agreed for Element C

Option	Option Name	Option Description
1	Do Nothing / Minimum	Retain the status quo.
2	Cloud Based Combined UTC/UTMC system	This option allows all staff to work in a virtual environment with Option 4 delivered as and when decisions are made on location and governance. Although less ambitious, this would allow the project to progress initially. This is equivalent to Element B (identified above).
4	One Centrally Located Team	This option is the preferred option to deliver all the benefits; it locates all staff in one location under one central governance regime.

4.2.2 How has the Short List of Options been appraised?

**Elements A and B** – A single option has been identified within the short list of options for each element. The appraisal approach is set out within the ASR in **Appendix B**.

**Element C** - Confirmation of the proposed location and host of the service and detail underpinning the short list of options is required to appraise the options fully. A qualitative approach to Element C is included within this OBC.

4.2.3 How does the Scheme contribute to the SEP Headline Indicators (access the Plan here)?

**Section 2.1.2** highlighted the alignment with the Leeds City Region SEP, particularly the 'Infrastructure for Growth' priority.

In 2018, WYCA modelled Element A through the Urban Dynamic Model (UDM) - this resulted in a programme annual net GVA for West Yorkshire of **+£2.8m** (2009 prices) and **28** West Yorkshire jobs unlocked in a reporting year of 2031, compared to the Do-Minimum. This equates to a GVA per £ ratio of 2.44 to 1 (2010 prices, 10 year appraisal, discounted).

Journey time savings were calculated for the AM, IP and PM peak based on Trafficmaster data for defined routes. Delay at junctions was captured as the difference between the overnight period and the peak period. A 12% reduction in delay or SCOOT or 13% delay saving for MOVA upgrades was calculated at particular junctions to identify the journey time saving. The AM peak journey time saving percentages were used to align with the UDM which is an AM peak model. The journey time savings were attributed to the relevant route links. This provides a more robust approach than that used in 2014 which applied a 5% reduction in car generalised time across West Yorkshire.

It is also important to note the delivery of Element B is a pre-requisite for the wider delivery of WY+TF and NPIF schemes across West Yorkshire. The systems and capabilities delivered through the new cloud based UTMC and UTC software will enable the delivery of wider on-street improvements supporting the delivery of further GVA benefits for West Yorkshire.





Table 4.4: Summary of Contributions to SEP Headline Indicators						
Headline Indicator	Elem	ement A Eleme		ent B	Element C	
	Direct	Indirect	Direct	Indirect	Direct	Indirect
Growth and Productivity: Total economic output: annual GVA) (2009 prices)	-	£2.8m	-	-	-	-
Growth and Productivity: Jobs unlocked (2031)	-	28	-	-	-	-

## 4.3 Preferred Option Testing

## Part 2: Appraisal of Transport Schemes

## 4.3.1 What methodologies have been used for modelling and appraisal of the scheme?

Elements A and B have been appraised individually in order to demonstrate the benefit to cost ratio (BCR) of each element. Element C will require further consideration at FBC stage. The programme has then also been appraised at the aggregate level. Within this, Element C includes the costs without benefits. A detailed Appraisal Specification Report (ASR) was prepared and is included in **Appendix B**. The appraisal methodology was undertaken in accordance with the requirements of the WYCA Portfolio Management Office assurance framework.

## 4.3.2 What transport model(s) have been used for the scheme appraisal?

The appraisal of Element A has utilised the transport models for each district to understand traffic flows (Leeds, Bradford, Wakefield, Calderdale and Kirklees). These models are used by the local authorities to assess schemes and are comprised of highway and public transport assignment models. The ASR (**Appendix B**) provides further information regarding these models.

The appraisal of Elements B and C do not require the use of transport models. Element B monetises cost savings resulting from reduced response time from the police and emergency services to accidents. This has been undertaken using existing data available as well as qualitative commentary of the reliability benefits. Similarly, the appraisal of Element C includes a qualitative description and financial savings which are presented in the Financial Case only and do not require modelling.





## 4.3.3 What forecasting methodologies have been used for the scheme appraisal?

The appraisal of Element A has utilised the NTEM dataset 7.2 to forecast growth to account for the uplift in demand from the base year within the transport models to 2020. NTEM data has been reviewed by district to ensure the uplift factor for the proposed routes is most appropriate. In addition to a 2020 opening year scenario, a 2030 future year has also been forecast using traffic growth identified in NTEM dataset 7.2 with the growth for years between 2020 and 2030 interpolated accordingly.

4.3.4 How has the impact of the scheme on travel demand and behaviour been incorporated?

The scheme is not anticipated to result in any additional demand on the highway network. Whilst the journey time savings may result in some reassignment of traffic to benefit from a quicker and more reliable journey, at OBC stage this has not been included within the appraisal as it was felt to be negligible on the overall results.

4.3.5 What methodologies have been used to calculate the Monetised Benefits?

The approach to determining the monetised benefits of the scheme was developed in line with WebTAG guidance, principles and values. The key appraisal assumptions applied to all monetised benefits were:

- Appraisal period of ten years to reflect the typical lifespan of the asset and small scale nature of the scheme;
- Full scheme open in 2020 with no phased implementation (see Figure 6.1 for practical programme);
- Discounting to 2010 values; and
- Tax correction factor of 1.19 applied.

Further detail on the specific approach for monetising benefits of each element is provided below. It is important to note additional benefits have been presented qualitatively within the appraisal.

#### Element A (On-street improvements to UTC equipment)

The benefits associated with Element A primarily relating to the reduction in delays. The resulting public accounts impact has also been captured within the appraisal.

#### **Reduction in Delays and Localised Congestion**

To assess the reduction in delays due to SCOOT/MOVA being implemented at junctions in West Yorkshire, information on the current levels of delay and traffic flows at the proposed junctions to be upgraded was obtained from Trafficmaster data and the transport models respectively. This data has been analysed for the following time periods: AM peak (07:00-10:00), inter peak (10:00-16:00), PM peak (16:00-19:00) and overnight (19:00-07:00).

The transport models provide average traffic flow per hour and this was converted to the time periods using a factor of 2.8 for the AM and PM peaks and 6 for the inter peak. These factors were taken from recent West Yorkshire NPIF bids based on peak profiling. To annualise demand, a factor of 253 was applied to ensure the assessment takes into account the total number of working days per year.

The assumed reductions in delays were as follows:





- A 12% reduction in junction delays as a result of the implementation of SCOOT was assumed based on SCOOT Advice Leaflet (Traffic Advisory Leaflet 7/99) and previous studies.
- A 5% reduction in bus delays as a result of the implementation of SCOOT was assumed based on SCOOT Advice Leaflet (Traffic Advisory Leaflet 8/00) and previous studies.
- A 13% reduction in junction delay as a result of the implementation of MOVA was assumed based on MOVA Advice Leaflet (Traffic Advisory Leaflet 3/97).

For those corridors with both SCOOT AND MOVA upgrades, the benefits for MOVA were applied only.

The appraisal does not include the following benefits (conservative approach):

- Weekend benefits;
- Overnight benefits (between 7pm and 7am);
- Benefits on side roads (Trafficmaster data extracted for the main route only); and
- Junctions with limited data within Trafficmaster reported as 0 delay (i.e. no delay).

#### **Public Accounts Impacts**

The appraisal has also captured the reduction in Government revenues from duty and VAT on fuel as a result of the reduction in fuel consumption owing to the reduction in queuing from accidents due to better coordination of traffic flows on the KRN.

#### Element B (Cloud Based Combined UTC/UTMC system)

It is challenging to quantify the benefits of a joint traffic management system between the five local authorities. The appraisal has monetised benefits associated with the reduced response time to accidents.

#### **Reduced Costs for Accidents**

Interim Advice Note 190/12 assumes a 2% accident savings due to the implementation of CCTV and VMS. Element B joins existing CCTV and VMS systems so a 2% benefit saving has been applied to reflect the improved coordination of cameras and response time to accidents (rather than implementation of new CCTV and VMS).

The saving has been applied to an assumed annual accident rate. This rate has been inferred from casualty statistics of all West Yorkshire A roads between 2012 and 2016 and DfT road length statistics. The 2.0% has been applied only to the <u>medical and ambulance</u> and <u>police</u> proportion of the accident cost (as per WebTAG Table A4.1.3) to reflect likely benefits in response time through the joined up approach to CCTV and accident response across West Yorkshire local authority boundaries.

#### Element C (Combined UTMC Service)

Whilst it is anticipated that this element will result in efficiencies, these benefits have not been monetised within the appraisal to date as work is still required to develop the proposal. Key decisions are required regarding the host of the service and location in order to clarify the benefits and costs. For the purposes of the OBC, a conservative approach has been taken - a cost allowance of £1m has been included in the overall project appraisal but no benefits have been captured.





## 4.3.6 What methodologies has been used to calculate Monetised Costs?

#### Capital Costs

Estimated capital costs for each element were prepared by the Project Manager:

- Element A: On-street improvements to UTC equipment (£4.12m): The Traffic Signal Supply and Installation Contract informed this cost and it is based on 2017 rates. The cost includes contingency of 15%. With the scheme to be delivered in 2018/19, just one year of inflation has been applied (3.76%).
- Element B: Cloud Based Combined UTC/UTMC system (£2.32m): Following soft market testing exercise, potential suppliers provided non-contractual costs for the provision of a new UTMC system, a new UTC system, journey time monitoring via Bluetooth and google, and integration of CCTV across West Yorkshire. These costs have informed this element. This included 15% contingency and one year of inflation (3.76%) using 2017 rates. The capital costs rates for the UTMC and UTC systems are provided for five years for the appraisal this has been factored up to ten years based on rates provided through soft market testing.
- Element C: Combined UTMC Service (£1m): An allocation of £1m has been identified for Element C to cover a new combined UTMC control centre. At this stage, a detailed breakdown of these costs is not available - this will require formal approval of the joint location.

#### **Ongoing Costs**

Ongoing maintenance costs have been prepared for the 10 year appraisal period. These costs include accommodation, field equipment, staffing and monitoring and evaluation. No additional operational costs have been identified.

#### Treatment of Costs

Within the appraisal, the costs have been treated as follows:

- Real price increases in capital costs, are assumed at 1.5% per annum;
- WebTAG discount rate applied (3.5%);
- Tax Correction Factor of 1.19 applied in line with WebTAG; and
- All costs discounted to 2010 prices and values (WebTAG A1.1).

#### Optimism Bias

As the capital costs are based on contractor prices identified through early market engagement, 15% optimism bias has been applied to all elements of the project (in addition to the contingency allowance). This is consistent with a project within Stage 2 of a Transport Project (WebTAG A1.2) as well as other SCOOT schemes submitted by Bradford and Leeds through the NPIF. The rationale for identifying a 15% optimism bias is:

- Element A works are estimated using rates from the West Yorkshire Traffic Signal Supply and Installation contract, therefore providing a high degree of certainty for scheme costs;
- West Yorkshire undertook early market engagement with suppliers for the UTMC and UTC systems in 2017. Whilst it was acknowledged there would be a formal procurement following the approval of the OBC, and that suppliers would not be held to the costs provided in these initial discussions, it is considered this early engagement ensures a higher level of certainty for costs;
- As there are a limited number of suppliers in the market for the systems to be procured, the early market engagement covered all potential suppliers; and





 The systems to be delivered are standard software packages which are tried and tested across the country. In fact, the West Yorkshire local authorities in some capacity already deploy these systems.

## 4.3.7 How is uncertainty in the appraisal dealt with?

Sensitivity tests have been undertaken to consider the impact of increases to the scheme costs or reductions in benefits on the BCR and VfM. In total, six sensitivity tests have been undertaken including:

- Sensitivity Test 1: Plus/minus 25% of the present value benefits;
- Sensitivity Test 2: Plus/minus 25% of the present value costs;
- Sensitivity Test 3: A small level of scheme renewals costs will be assumed, to account for the replacement of corridor infrastructure at regular intervals throughout the appraisal period every five years at 5% of Capital Costs and every ten years at 10% of Capital Costs. An Annual Maintenance cost of 1% of Capital Costs will be applied with real price increases of 1% until 2031;
- Sensitivity Tests 4 and 5: Low and High Growth scenarios standard changes in demand will be undertaken in line with WebTAG guidance (M4 Forecasting and Uncertainty); and
- Sensitivity Test 6: 44% optimism bias is proposed to be undertaken to cover potential risk to the derivation of benefits. The core appraisal includes 15% optimism bias.

The ASR presents the methodology for these sensitivity tests and **Table 4.5** summarises the resulting impacts.

The sensitivity results highlight in all cases, the BCR for the programme remains above 1.0.





Table 4.5: Sensitivity Tests

Test 1: Benefits	-	25% PVB	Core		+25% PVB	
PVB		£9,807	£13,076		£16,345	
PVC		£7,355	£7,355		£7,355	
NPV		£2,452	£5,721		£8,990	
BCR		1.33	1.78		2.22	
Test 2: Costs	-	-25% PVC	Core		+25% PVC	
PVB		£13,076	£13,076		£13,076	
PVC		£5,516	£7,355		£9,194	
NPV		£7,560	£5,721		£3,882	
BCR		2.37	1.78		1.42	
Test 3: Renewals / Maint	tenance	Co	ore		Test 3	
PVB		£13,	.076		£13,076	
PVC		£7,	355		£8,770	
NPV		£5,721		£4,306		
BCR		1.78		1.49		
Test 4: High Growth		Core			Test 4	
PVB £1.		£13,	076 £12,385		£12,385	
PVC		£7,	355		£7,355	
NPV		£5,721			£5,030	
BCR		1.	.78 1.68		1.68	
Test 5: Low Growth		Core		Test 5		
PVB		£13,	3,076 £13,766		£13,766	
PVC	PVC £7,		355 £7,355		£7,355	
NPV		£5,	£5,721		£6,411	
BCR		1.78		1.87		
Test 6: Optimism Bias (44%)		Core		Test 6		
PVB		£13,	.076		£13,076	
PVC	£7,		355		£9,210	
NPV		£5,	721		£3,866	
BCR		1.	78 1.42		1.42	

4.3.8 Are there any Wider Scheme Benefits?

In 2018, WYCA ran Element A through the Urban Dynamic Model (UDM), resulting in a programme annual GVA for West Yorkshire of **+f2.8m** (2009 prices) and **28** West Yorkshire jobs unlocked in a reporting year of 2031, compared to the Do-Minimum – see **section 4.2.3**. This equates to a GVA per f ratio of 2.44 to 1 (2010 prices, 10 year appraisal, discounted).





#### 4.3.9 Are there any Low Carbon and Environmental Scheme Benefits?

Element A is expected to have environmental benefits due to the scheme contributing to the improved management of congestion, including the potential to reduce the stop-start nature of traffic. These benefits have not been monetised within the appraisal but a qualitative assessment is provided in **Table 4.7**. This highlights a negligible impact for most aspects with a slight positive impact anticipated for air quality and greenhouse gases.

Energy usage on an asset-by-asset basis was compiled and then savings were attributed where upgrades propose to shift toward LED. Local authorities buy energy from suppliers, which for the vast majority of installations is unmetered just as street lighting is. As part of this, local authorities declare estimated usage each month to suppliers. This is done by using the codes and switching regimes set by OFGEM and the charge codes set out in the excel MDD 263 v1.

Kirklees currently pay 10.5p per Kwh for energy but the trend is every increasing upwards so the savings are based on that cost with no inflation to cover the 15 years life span of the signals.

These benefits have not been monetised within the appraisal but anticipated CO<sub>2</sub> savings are reported in **Table 4.6** across three of the West Yorkshire local authorities (Wakefield, Calderdale and Leeds). For Bradford and Kirklees, there will no energy savings as the junctions already include LED and the asset is in a better condition than the other local authority areas. A detailed example for A650 Tingley Common Electricity Consumption is provided in **Appendix K** and sets out the approach used to calculate the energy savings reported below.

Table 4.0. Ellergy Savings – Element A						
District	Route	Costs / Kwh Savings per year		CO <sub>2</sub> savings		
	A636 Denby Dale Road	10p	£1.7k per year	9 tonnes per year		
	A642 Aberford Road	10p	£2.4k per year	11 tonnes per year		
Wakefield	A61 Barnsley Road	10p	£0.9k per year	5 tonnes per year		
	Various Puffins	10p	£1.3k per year	7 tonnes per year		
	MOVA Whitwood	10p	£0.5k per year	2.4 tonnes per year		
Calderdale	A58 Kings Cross, Halifax	10p	£3.4k per year	17 tonnes per year		
Leeds	A650 Tingley To Gildersome	10p	£7k per year	35 tonnes per year		
	M62 J28 to A6110	10p	£8K per year	40 tonnes per year		

## Table 4.6: Energy Savings – Element A





Table 4.7: Environmental Appraisal Summary – Element A				
Impact	Summary of Key Impacts	7 Point Scale		
1. Noise	Whilst likely to be very minor, localised impacts on noise associated with changing traffic flows and stop-start traffic, this is not anticipated to be sufficient enough to be included.	None / negligible impact		
2. Air quality	The scheme aims to better manage congestion and vehicular traffic is a notable contributor to local air quality. Changes to traffic flows are anticipated to have a slight positive impact as stop-start traffic is reduced along the corridors.	Slight positive		
3. Greenhouse gases	Changes in traffic speeds and/or volumes have an impact on greenhouse gas emissions. The on-site improvements at selected junctions (Element A) seek to ease congestion so are expected to have a slight positive impact.	Slight positive		
4. Landscape	Element A will be delivered within the existing highway land so there is unlikely to be any landscape impact. Elements B and C will have no impact on landscape.	None / negligible impact		
5. Townscape	Element A will be delivered within the existing highway land so there is unlikely to be any townscape impact. Elements B and C will have no impact on townscape.	None / negligible impact		
6. Heritage	Element A will be delivered within the existing highway land so there is unlikely to be any heritage impact. Elements B and C will have no impact on heritage.	None / negligible impact		
7. Biodiversity	Element A will be delivered within the existing highway land so there is unlikely to be any biodiversity impact. Elements B and C will have no impact on biodiversity.	None / negligible impact		
8. Water environment	Element A will be delivered within the existing highway land so there is unlikely to be any impact on the water environment. Elements B and C will have no impact on the water environment.	None / negligible impact		





## 4.3.10 How the scheme impacts across different social groups?

In preparing the ASR, DfT's screening proforma was completed to consider the impact of the primary appraisal of distributional impacts. The screening process determined that distributional impacts are not deemed necessary to form part of the appraisal approach. The scale of impact is not considered to have a significant impact on the distributional sub-impact criteria. The completed screening proforma can be found in **section 5.4** of the ASR.

Table 4.8: Social and	Table 4.8: Social and Distributional Analysis				
Item	Expected Impacts				
1. User Benefits	Delay savings attributed to the upgrades of junctions and puffins to MOVA and SCOOT (included within appraisal of Element A).				
2. Noise	Not applicable as impact too small to be considered.				
3. Air Quality	Improvements in air quality across towns and cities due to better coordination of traffic flows on the KRN. It is noted that there may be positive and negative benefits for individual areas across West Yorkshire, for example, less stop-start behaviour may be more beneficial but this may relate to movement of air quality issues to alternative locations.				
4. Accidents	Accident benefits associated with response times and efficiency in terms of how the UTC can respond were assessed for Element B. It is important to clarify the scheme is not directly linked to accident reductions but the reduction in overall cost of incidents owing to improved response times.				
5. Security	A number of users are expected to benefit from increased formal surveillance and greater integration of surveillance across West Yorkshire.				
6. Severance	Upgrade of puffins to SCOOT may impact severance, for example, where locations are adjacent to key services and educational institutions.				
7. Accessibility	Not applicable as impact too small to be considered.				
8. Affordability	Reduced congestion should have a positive impact on vehicle operating costs such as reduced stop-start behaviour. There will be no changes to public transport fares, parking costs and road user charges.				

## 4.3.11 What are the summary results from the appraisal of the scheme?

#### Appraisal Summary Table

A completed Appraisal Summary Table is provided in **Appendix C** for the whole programme. This highlights the core benefits are anticipated to be a result of the journey time savings and benefits to those travelling on the highway network.





Transport Economic Efficiency Table

A completed Transport Economic Efficiency Table is provided in **Appendix D** for each element and the overall programme.

Business impacts account for approximately 13% of the present Value benefits. Present value benefits are reported at £11.4m for all modes.

Analysis of Monetised Costs and Benefits Table

A completed Analysis of Monetised Costs and Benefits Table is provided in **Appendix E** for the overall project. The BCR for each element is provided in **Table 4.9**. A summary of the benefit to cost ratio and value for money presented in the AMCB is included in **section 4.3.12**.

Public Accounts Table

A completed Public Accounts Table is provided in **Appendix F** for each element and the overall programme. The PA Table highlights 100% of the investment costs are to be provided through the WY+TF.

4.3.12 What is the Value for Money position?

The three elements of the scheme have been appraised at a programme level and at an individual element level to demonstrate the BCR and VfM. The programme (including Elements A, B and C) has a **Medium** VfM proposition with a BCR of **1.78**.

Element A accounts for approximately 90% of the total monetised benefits reported for the programme. At an individual element level, **Element A has a high VfM with a BCR of 3.0**.

At OBC stage, monetised benefits for Element B are constrained to 2% of the medical and ambulance and police costs attributed to accidents in West Yorkshire on the KRN; while no monetised benefits are reported for Element C. The VfM assessment for the programme overall is therefore considered conservative with a number of additional benefits that have not been quantified.

Element B will facilitate the other West Yorkshire schemes e.g. NPIF schemes (upgrades proposed in Bradford and Leeds). This element is complementary and enables the benefits on these corridors to be delivered and maximised.

At FBC stage, there will be opportunity to monetise financial cost savings attributed to Element C. Much of this will be driven by the fact that fewer staff will be required in total to undertake day-to-day duties relating to the operation and management of the network. Whilst no overall reduction is proposed, the combined UTMC service will enable staff to be re-deployed from revenue related services to more fee earning work (e.g. transport fund scheme development). There will also be savings relating to reducing duplication of systems and software licences. Monetising these savings is anticipated to provide an uplift in the overall programme BCR and VfM.

As indicated previously, it is anticipated that a FBC for Elements A and B will be brought forward for June 2018 with a FBC for Element C to be prepared in the later part of 2018. For Elements A and B combined, the VfM is identified as high (2.03).





Table 4.9: Value for Money Assessment							
Corridor	Element A Element B Element C		Element A and B only	Programme Element A,B,C			
Present Value of Benefits (PVB)	£11,464	£1,612	£0	£13,076	£13,076		
Present Value of Costs (PVC)	£3,821	£2,626	£908	£6,447	£7,355		
Net Present Value (NPV)	£7,643	-£1,014	-£908	£6,629	£5,721		
Benefit to Cost Ratio (BCR)	3.00	0.61	0.00	2.03	1.78		
Value for Money (VfM) Category	High	Poor	-	High	Medium		

Table 4.10: Net Additional GVA Assessment					
		Preferred			
Total GVA without investment (£k)	D	£269,220,460			
Total GVA with investment (£k)	E	£269,238,423			
Net Additional GVA (£k)	E-D	£17,962			
Investment cost (£k)	F	£7,355			
Net GVA per £ investment	(E-D)/F	2.44			

Notes: (2010 prices, 10 year appraisal, discounted)

PVC includes optimism bias, real price increases, discounting, market price adjustment

It should be noted that the GVA assessment above includes adjustments for optimism bias, real price increases and market prices adjustment for compliance with WebTAG. If these elements are not included the net GVA per £ investment increases to **3.51**.





## 4.3.13 Preferred Option Selection and Justification

#### Element A (On-street improvements to UTC equipment)

It is proposed that all of the locations identified for on-street improvements are taken forward for delivery – these are identified in **Figure 1.1** and **Appendix I**. This represents a short list based on prioritisation work undertaken by each local authority. The cost benefit analysis demonstrates that this generates a BCR of 3 to 1, which represents high value for money. Further junctions/corridors could be brought forward if the project comes in under budget – a reserve list of sites has been prepared.

#### Element B (Cloud Based Combined UTC/UTMC system)

As identified above, there are limited options in delivering a combined UTC/UTMC system for West Yorkshire as new systems are typically cloud based. This element of the project will deliver the following:

- A new cloud based UTC system to control the 1,600 sets of traffic signals in West Yorkshire;
- A new cloud based UTMC system to control the non-business critical systems such as Variable Message Signs (VMS), Car Park Guidance Systems, Journey Time Information, Pollution Monitoring, CCTV Integration, Fault Reporting; and
- The telecommunications systems to deliver the above.

## Element C (Combined UTMC Service)

The preferred option is to provide a combined UTMC service for West Yorkshire in a single location. This would relocate all existing staff to one site under common governance rules with the same service levels across all five West Yorkshire local authorities. It will achieve all of the core objectives and all of the benefits outlined in this business case could be realised. This option will be particularly beneficial in terms of delivering an integrated approach to managing the network across West Yorkshire and in providing capacity to deliver key WY+TF projects. As part of the FBC, further work is required to determine the host and location of the new service, in addition to the changes in the operating costs that will result relative to the existing position.





# 5. Financial Case

The purpose of the Financial Case is to demonstrate that the preferred option is affordable and has the necessary funding. This should include the capital and on-going revenue costs and impacts.

Note – All sections should be reviewed and updated if this is the Full Business Case. A summary of any key changes and their implications on the business case should be included.

## 5.1 Capital Costs

5.1.1 What is the total project outturn capital cost?

**Table 5.1** presents the breakdown of capital costs by element. The table highlights a cost of **£7.49m**. The cost variation against the initial indicative allocation of £7.3m (at Expression of Interest Stage) relates to uplift in the costs for <u>inflation</u> (i.e. approximately £120k for Element A and £70k for Element B).

#### Table 5.1: Breakdown of Project Outturn Costs

	Total Project Outturn Costs (£m)	Brief Description	% of total costs
Element A	4.12	Total Cost inc Contingency	55%
Bradford	0.54	Cost for Bradford inc inflation	7%
Calderdale	0.30	Cost for Calderdale inc inflation	4%
Kirklees	0.51	Cost for Kirklees inc inflation	7%
Leeds	1.29	Cost for Leeds inc inflation	17%
Wakefield	0.65	Cost for Wakefield inc inflation	9%
Design and Supervision	0.33	Set at 10% of district costs	4%
Contingency	0.49	Set at 15% of district costs	7%
Element B	2.32	Total Cost inc Contingency	31%
UTC + 5 years hosting	1.30	Inc inflation	17%
UTMC + 5 years hosting	0.55	Inc inflation	7%
Bluetooth/Google	0.12	Incinflation	2%
ССТV	0.05	Incinflation	1%
Contingency	0.29	Set at 15% of base costs	4%
Element C	1.00	Indicative Allocation	13%





Summary			
Element A	4.12	Total Cost inc Contingency	55%
Element B	2.32	Total Cost inc Contingency	31%
Element C	1.00	Indicative Allocation	13%
Monitoring and Evaluation	0.05		1%
Total	7.49		100%

N.B. Costs presented in 2017 values.

5.2 Funding Profile								
5.2.1 What is the cash flow and funding profile for the project?								
Table 5.2: Cash	Flow and Funding	g Profile						
	WYCA funds (£m)Applicants' funds (£m)Other public sector (£m)Other private sector (£m)Total Cost (£m)							
Year 1 2016/17	0.058	-	-	-	0.058			
Year 2 2017/18	0.111	-	-	-	0.111			
Year 3 2018/19	6.271	-	-	-	6.271			
Year 4 2019/20	-	-	-	-	-			
Year 5 2020/21	1.000	-	-	-	1.000			
Future	0.050	-	-	-	0.050			
Total (£m)	7.490	-	-	-	7.490			





## 5.3 Revenue Costs

5.3.1 Are there any revenue, on-going/operational costs associated with the project?

#### Element A (On-street improvements to UTC equipment)

It is assumed that there will be no additional operating costs associated with the on-street improvement works at junctions.

#### Element B (Cloud Based Combined UTC/UTMC system)

The capitalised costs in the funding requirement for this business case include hosting costs for five years. Ongoing hosting costs will need to be met beyond the first five years. It is anticipated that following the initial five year period, the local authorities would cover the ongoing/operational costs as they do at present for their own services. Following the meet the buyer event, suppliers were asked to provide costs for hosting the service for ten years as well as five years – the costs for hosting for an additional five years were approximately £525,000 higher. As the scheme appraisal covers a ten year period, the appraisal (reported in the Economic Case) includes ongoing costs over a ten year period.

#### Element C (Combined UTMC Service)

The current total expenditure for all of the UTC services is £4,105,003 per annum. The services generate income of £1,474,898 per annum, resulting in a net cost of £2,630,105 per annum. The costs of the new combined service, including the ongoing costs are still to be determined as these are dependent on the host and location. It is anticipated that there will the consolidation of teams from four sites to one site and this will have savings with regards to ongoing costs. In addition, fewer staff will be required in total to undertake the day-to-day duties relating to the operation and management of the network. Whilst no overall reduction in staff is proposed, the combined UTMC service will enable staff to be re-deployed from revenue related activities to more fee earning work (e.g. transport fund scheme development). There will also be savings relating to reducing duplication of systems and software licences.

#### 5.4 Funding Source

5.4.1 What other funding sources are there within the project?

There is no other funding source except the WY+TF.

Table 5.3: Funding Source				
Funding Source	(£xm)	Current status (secured, pending, applied for)		
WY+TF	7.490	Applied for (OBC)		
Total (£m)	7.490			





5.4.2 What are the main financial risks and how will they be managed?

The key financial risks are as follows:

- Lack of funding: The project is wholly reliant on the WY+TF.
- Capital cost overruns: Whilst the capital costs have been informed by a market engagement event, there remains a risk that these costs could be greater than anticipated. The lack of competition can exacerbate the risk of capital cost overruns.
- Additional ongoing costs: No additional ongoing costs have been included within the core appraisal but there is a risk that additional costs will be identified. Hosting costs are included within the ten year appraisal period.
- Cost certainty: Element C requires further definition relating to the proposed location and arrangements to confirm costs.
- Apportionment of costs: A decision is required as to how the costs for the new service are to be apportioned between the Districts (for instance, vehicle kilometres versus asset size etc.).
- Agreements: An agreement between all five local authorities will be required in advance of implementation with regard to the sharing of liabilities which is to be equally distributed to ensure the host wouldn't be impacted unfairly from a financial perspective.

5.4.3 How will cost overruns be dealt with?

The Project Manager will be responsible for managing the budget on a day-to-day basis, with the SRO accountable to WYCA. Given the experience of each local authority in delivering SCOOT and MOVA upgrades on the network via the West Yorkshire UTMC Supply and Installation Contract (Element A), and the level of market testing that has been undertaken form the UTMC and UTC systems (Element B), there is confidence that the costs will not significantly exceed those presented in this OBC.

Should a cost overrun occur, the following four-tiered approach would be utilised by the project team:

- Level 1: In the first instance, the project team will be responsible for the management of the project, including scope and budget, to ensure the project is delivered within budget, and where possible mitigation measures will be deployed to avoid impacts of cost overruns;
- Level 2: Engagement with WYCA regarding the potential cost overruns in advance of incurring costs. This may include consideration of whether appropriate mechanisms for over expenditure may be considered as part of the WY+TF programme;
- Level 3: Engagement between the five West Yorkshire local authorities to ascertain whether cost overruns can be accommodated within existing District capital budgets. If so, determine an appropriate apportionment of the cost overruns between the local authorities. This may depend on the individual element where the cost overrun is experienced; and
- Level 4: Consider the potential to de-scope elements of the project to bring the costs within the approved capital spend profile. It is likely that this would relate to Element A and a potential reduction in the number of SCOOT and MOVA junction upgrades to be delivered. In the event this occurs, engagement with WYCA would be undertaken.

The levels available for each element will vary and should be considered on a case-by-case basis. For instance, with regard to Element C, level 4 will not be applicable as Elements A and B will already be contracted by this point.





5.4.3 Does the project offer any potential to generate a commercial return to pay back the WYCA funding?

There is no potential to generate a commercial return.

5.4.4 Has the project considered any State Aid implications?

There are no state aid implications.

5.4.5 Is the WYCA funding a loan? Only complete this section if applying for a loan from WYCA.

Not applicable.

When will the loan repayments start?	Not applicable.
When will the final loan payment be made?	Not applicable.





## 6. Management Case

The purpose of the Management Case is to demonstrate that the preferred option is capable of being delivered successfully, in accordance with recognised best practice.

# Note – All sections should be reviewed and updated if this is the Full Business Case. A summary of any key changes and their implications on the business case should be included.

## 6.1 Deliverability

6.1.1 How will the delivery of the project be managed?

The project is being delivered by Kirklees Council on behalf of all five West Yorkshire authorities using the PRINCE2 principles of project management. There are several key members of the project team and their roles and responsibilities are listed below.

#### Project Board

The purpose and role of the project board is to determine the strategic development and delivery of the project. It will also make recommendations to the WY+TF Investment Committee and act as a conduit to each of the five West Yorkshire local authorities.

The aims of the project board are to:

- Make executive decisions regarding the development and delivery of the project;
- Ensure the aspirations of the West Yorkshire districts and the WYCA are fully achieved;
- Identify and allocate appropriate resources to ensure the timely delivery of the project;
- Provide a formal structure for coordinating the project on behalf of the WY+TF; and
- Act as a conduit between the board and each local authorities senior officers and elected members.

It is expected that the following people, or their nominated substitutes, will form the Project Board:

- Kate Thompson Chair and WYCA;
- Julian Jackson City of Bradford Metropolitan District Council;
- Richard Hadfield Kirklees Council (also Project Executive);
- Gary Bartlett Leeds City Council;
- Graham West City of Wakefield; and
- David Caborn Kirklees Council (also Project Manager).

The board will be expanded to other partners as progress to Element C progresses, these partners are still to be identified but may include representatives from legal, communications and human resources.

Board meetings will be held at the regular monthly CHOs meeting unless additional meetings are advised. Regular updates will be supplied by the Project Manager in advance of the board meeting and a record of all meetings, decisions and actions will be stored in the WYCA Accellion database. Decisions made by the Project Board will be on the majority of members attending. Should the need arise, board members may be contacted between meetings for advice.

#### Project Executive

The purpose and role of the Project Executive is the day-to-day responsibility for the development





and strategy of the project on behalf of the Project Board. They will convey the direction set by the board and offer advice and direction should it be required.

The Project Executive/Senior Responsible Officer is currently Richard Hadfield (Kirklees Council).

#### Project Manager

The purpose and role of the Project Manager is to deliver the project on programme on budget and to support the Project Board and Project Executive. The Project Manager represents all UTMC managers to the Project Board and vice versa.

The Project Manager is David Caborn (Kirklees Council).

#### Project Assurance

The purpose and role of Project Assurance is to provide independent monitoring of performance and to ensure the WY+TF objectives are being met.

The Project Assurance is being managed by WYCA.

#### UTMC Managers

The purpose and role is to provide technical, strategic and operational recommendations to the Project Board and to assist in the delivery of this project.

The UTMC managers are:

- Joel Dodsworth Leeds City Council;
- Dennis Beever City of Wakefield;
- Manjit Singh City of Bradford MDC;
- David Caborn Kirklees Council; and
- Peter Stubbs Calderdale Council.

The exact location of the new service associated with Element C is unknown at present owing to the sensitivities regarding location identification and implications for staffing. This decision will finalise the governance arrangements for Element C; however, it is recognised that the relocation of staff will need to be carefully and sensitively managed through engagement with employees and management.

#### 6.1.2 Which organisations are involved in the delivery and management of this project?

#### Project Delivery

A number of organisations will be involved in the delivery of this project, most notably the five local authorities who will be equal partners. Kirklees Council are assigned responsibility to deliver the project to time and budget on behalf of the Project Board. The authorities will engage with suppliers of UTC and UTMC systems who are UK authorised and accredited to provide these systems and meet all of the criteria detailed by DfT.

#### Future Management

The future management arrangements for Element C will be dependent on the identification of the host for the combined UTMC service. This will be informed by ongoing political discussions.





Table 6.1: Project Delivery Partners			
Organisation	Role in project delivery		
Kirklees Council	Lead Authority and Partner		
Leeds City Council	Partner		
Bradford Council	Partner		
Wakefield Council	Partner		
Calderdale Council	Partner		
WYCA	Funder, Partner and PMO Process Management		
Suppliers	Supplier		

## 6.2 Scheme Programme

6.2.1 What is the anticipated scheme delivery timeframe?

The programme delivery timeframe is illustrated in **Figure 6.1** and key milestones to note are provided in **Table 6.2**.

It is proposed that a FBC is submitted for Elements A and B in June 2018 following receipt of tender prices. The FBC for Element C is likely to follow later in 2018 given the further work that is required to develop this element of the project (date to be confirmed).

Table 6.2: Scheme Programme				
Milestone	Date			
PAT Committee	January 2018			
Transport Committee / Investment Committee	March 2018			
Combined Authority	April 2018			
Procurement of UTC system	Starts May 2018			
Procurement of UTMC system	Starts July 2018			
On-street Improvements	April 2019 – April 2021			
Migrate UTC onto new cloud based system	January – December 2019			
Migrate UTMC onto new cloud based system	May 2019 – May 2020			
Element C complete	March 2021			

PMO Doc Ref: T-003 Doc Version: V0.1









## 6.3 Delivery Constraints & Risk Management 6.3.1 What Delivery Constraints exist? Not applicable. **Table 6.3: Key Delivery Constraints Scheme Position Delivery Constraint** Planning consents Not applicable **Compulsory Purchase Orders** Not applicable Public consultation Not applicable **Public Inquiry** Not applicable **Traffic Regulation Orders** Not applicable Transport and Works Act Not applicable Public sector match funding Not applicable Not applicable Private sector match funding Procurement contracts Technical specifications being drafted - will also cover Data ownership, GDPR as well as Cyber Security elements.

#### 6.3.2 What approach is being adopted towards risk management?

The management of risk and uncertainty is critical to the successful delivery of the UTMC programme. The risk management approach will identify the threats to project delivery and enable effective risk management actions to be assigned.

The overall risk management approach is owned by the SRO with day-to-day management the responsibility of the Project Manager / Business Case owner, David Caborn.

The approach to risk in this project is managed by utilising the agreed risk register protocols supplied by the WYCA. This register is updated on a monthly basis and reported to the project board by the project manager.

Risks captured in the risk register are categorised in three defined categories including:

- Management issues (e.g. Governance, Location, Financial and Managerial issues);
- Operational issues (e.g. Staff, Terms & Conditions); and
- Technical Issues (e.g. Compatibility, migration of systems and time restraints).

The risk register will continue to be a live document throughout the project lifecycle. Key risks are further reported in **Table 6.4** with the complete risk register attached at **Appendix G**.

As the project moves to delivery, the allocation of many risks will be transferred from the local authorities and West Yorkshire to the designated delivery partners. Further detail on risk allocation and transfer is presented in **section 5.4.2**.





## 6.3.3 What are the Scheme Headline Risks?

Table 6.4: Headline Risks					
Risk Title	Ref	Risk Description	Mitigation	Current Risk Ration	Mitigated Risk Rating
Financial	T002 / M002	Increase in capital costs identified through procurement leading to a requirement for further investment	Market rates obtained from existing framework for Element A Market testing for Element B completed Management of scope and approvals	High	Low
Premises	M006	Political risk associated with confirming the location of the new service including all costs and ability to migrate staff from four authorities	Engagement between local authorities and WYCA between OBC and FBC Progress Element A and B while Element C is resolved to not impact programme	High	Medium
HR	O005	Staff transfer risk that not all staff may wish to transfer to the new UTMC location (Element C) leading to a loss of experience	Consultation with staff Clearly defined new structures	High	Medium
Remoteness of Services	O006	New UTMC centre being physically removed from the LA highways network management teams may impact on LA network experience and local accountability	Develop new Communications Strategy and local accountability system	High	Medium
HR	O004	There is a risk there may be variations in pay grades across the four local authorities impacting harmonisation within the new service	Consultation with staff Clearly defined new structures Review/assessment of grading	Very High	Medium

PMO Doc Ref: T-003 Doc Version: V0.1



#### EEEDS CITY REGION ENTERPRISE PARTNERSHIP



Procurement		Limited number of suppliers for the UTC and UTMC systems impacts limits competition and may lead to higher than expected tender prices	Market testing completed Management of scope and approvals Engagement/benchmarking with other authorities/regions	Medium	Medium
-------------	--	--	--	--------	--------

6.3.4 Has a Quantified Risk Assessment been carried out?

A Quantified Risk Register has not been completed at OBC. This will be developed as part of the FBC and the procurement process. In preparing this OBC, a risk register has been prepared (**Appendix G**). Contingency of 15% has been allowed for within the capital outturn costs.

## 6.4 Communications and Stakeholder Management

6.4.1 Does the Project have a Communications Strategy?

A Communications Strategy will be prepared for the FBC detailing the communication and consultation plan for the three elements of the scheme. It is noted, however that there is no statutory requirement to consult on the works included as part of Elements A and B for this project. **Section 2.1.6** identified the key stakeholders and the anticipated impact on them or their role with the Communications Strategy likely to reference these stakeholders / organisations as well as the UTC teams.

The on-street improvements (Element A) will require road users to be notified. However, as the proposed upgrades are on the KRN, to align with the Traffic Management Act and KRN restrictions, no works can be undertaken during the peak and therefore no restrictions on lane capacity will impact key flows.

With regards to Element B; the creation of the cloud based combined UTMC system will have resulting training requirements for all staff members. The need for training will be identified by UTMC managers and consider the existing knowledge and skills of each member of staff and the anticipated role of an individual. The Communications Strategy will detail how and when this training will be delivered to ensure staff are supported with the transition.

The Communications Strategy will need to consider the approach to engagement with UTC teams regarding Element C, which will be determined as further negotiations and discussions are made. The relocation to a centralised site will result in changes to the employment arrangements for staff as the harmonisation of wages, conditions and training is undertaken. The Communications Strategy will be prepared in consultation with the five local authorities and a Communications Lead will be identified to ensure all staff are updated in a timely, consistent and appropriate manner. The strategy will provide an overview of the relocation process (including timeframe), the impact for staff and the contact information for the Communications Lead.





#### 6.5 Monitoring and Evaluation

#### 6.5.1 Is there a Benefits Realisation Plan?

To improve transparency of decision-making in relation to the scheme, the scheme objectives, identified in **section 1.1**, are accompanied by an Investment Logic Map (ILM) that shows a clear rationale for the investment including short, medium and long term outcomes / benefits (**Figure 6.2**). The ILM has guided the development of the business case, providing a foundation for examining in greater detail the problems and outcomes that the UTMC proposal (including Elements A, B and C) seeks to address.

#### Figure 6.2: Investment Logic Map (see Appendix H for more detail)

#### Investment Logic Map

Objectives	Context	Input	Outputs	Outcomes			
Objective 1: To better manage congestion on the West Yorkshire Key Route Network (KRN)	CCTV – Lack of coordination across boundaries / visibility restricted to individual local authorities	Funding through the West Yorkshire Plus Transport Fund via West Yorkshire Combined Authority	Element A - On-street improvements to UTC equipment / facilities at key junctions on the West Yorkshire KRN, including the implementation of SCOOT and MOVA and upgrading obsolete equipment Element B - The joining of all of the districts UTC systems into one central, comprehensive system located in the "cloud" including a common database: - Replace four UTC systems across West Yorkshire with one: Benking the en UTSC systems across Vest	Improved journey time and quality for vehicle users			
Objective 2: To implement more effective management of the KRN within West Yorkshire, irrespective of boundaries and agencies	Congestion: National average speed on A roads across England was 25.2mph (April 2016-March 2017) and West Yorkshire performed worse than this with an average	Partnership contribution from five local authorities (Wakefield, Bradford, Calderdale, Leeds and Kirklees) and West Yorkshire Combined Authority		Implementation of SCOOT and MOVA and upgrading obsolete equipment Element B - The joining of all of the districts	implementation of SCOOT and MOVA and upgrading obsolete equipment Element B - The joining of all of the districts	Implementation of SCOOT and MOVA and upgrading obsolete equipment Element 8 - The joining of all of the districts (SCOOT and MOVA)	Reduced localised congestion and delays on approach and exit from junctions to be upgraded with new on-street infrastructure (SCOOT and MOVA)
Objective 3: Deliver a more reliable highway network that supports users with information to inform travel choices	of 22.5mph. Lack of resilience in the transport network. This is likely to become exacerbated when	comprehensive system located in the "cloud" including a common database: - Replace four UTC systems across West Yorkshire with one; Paralow shows UTACE contensions		Reduced duplication of staff resources who could be reassigned elsewhere and provide new opportunities			
Objective 4: To facilitate economic growth and employment Objective 5: To support targeted	the Fare incodents, events and disruption to the highway network. Staff: As of December 2017, there were 27 staff across the region employed by UTC teams and several vacancies. The average		West Yorkshire with one; - Deliver a new journey time monitoring system; - Provide all the communication systems required to operate the new systems; - Interret and migrate the existing	Consistent management of KRN which will target congestion, setting of signs, planned and unplanned event management and interaction with the public, enabling more advice, warning and guidance to road users			
Improvements to Improve air quality	age of staff employed is 48 years of age with 19 (70%) above the age of 45.		systems to the new UTC and UTMC systems; - Integrate existing CCTV systems to enable the team to monitor and control the vast network of available CCTV	Potential to establish West Yorkshire UTMC as a school of excellence			
	Yorkshire, 27% (n=273) are more than 15 years and a further 9% (n=93) are 12-15 years old.	E	cameras across West Yorkshire. Element C - Reorganisation of West Yorkshire UTC services (combining existing four UTC teams) to provide improved day-to-day management and coordination across the network through an integrated team at a single location. The centre would also be used by partners e.g. bus operators	cameras across West Yorkshire. Element C - Reorganisation of West Yorkshir UTC services (combining existing four UTC	Enhanced detection of events and incidents on the KRN, and thus boosting resilience from enhanced coordination of CCTV surveillance		
	(PMn).			Reduction in cost of accidents due to improved response times, therefore improved road safety			
	Incidences/accidents on the KRN which stretch across multiple local authority areas.		Outputs from construction	Contribution to economic growth and employment, including GVA enhancements			
			Traffic impact from construction – limited to overnight periods for work	Contribution to improvements in air quality across towns and cities due to better coordination of traffic flows on the KRN – It is noted that there may be positive and negative benefits for individual areas across West Yorkshire			

The high level outcomes/benefits identified in the ILM include:

- Reduced localised congestion and delays on approach and exit from junctions to be upgraded with new on-street infrastructure (SCOOT and MOVA);
- Reduced duplication of staff resources who could be reassigned elsewhere and provide new opportunities;
- Consistent management of KRN which will target congestion, setting of signs, planned and unplanned event management and interaction with the public, enabling more advice, warning and guidance to road users;
- Enhanced detection of events and incidents on the KRN, and thus boosting resilience from enhanced coordination of CCTV surveillance. This would lead to a reduction in cost of accidents/incidents due to improved response times, therefore improved road safety;
- Contribution to improvements in air quality across towns and cities due to better coordination of traffic flows on the KRN – it is noted that there may be positive and negative benefits for individual areas across West Yorkshire; and




Contribution to economic growth and employment, including GVA enhancements.

Informed by the ILM, a Benefit Realisation Plan is to be developed as part of the FBC. It is envisaged that the Benefit Realisation Plan will identify the potential benefits of the UTMC programme including the measures, benefit profiles and reporting requirements to be considered through scheme delivery. This will also be intrinsically linked to the monitoring and evaluation requirements set out in **section 6.5.2**. The Benefit Realisation Plan will set out the overall approach and framework that will be used to manage the realisation and delivery of the benefits.

The Benefit Realisation Plan will provide West Yorkshire assurance that:

- the local authorities are committed to the identified benefits and their realisation;
- the benefits process will be actively managed;
- the benefits will be tracked and effectively resourced; and
- that accountabilities for those responsible for each benefit to be monitored are identified.

6.5.2 Is there a Monitoring and Evaluation Plan?

Monitoring and evaluation is required by West Yorkshire to demonstrate that funding provided to the local authorities for the UTMC programme of works via the WY+TF represents value for money to the tax payer. Additionally, to ensure the scheme meets its core objectives – this has regard to the scheme objectives set out in **section 1.1**.

Whilst a Monitoring and Evaluation Plan has not been prepared, the approach has broadly been agreed with a focus on scheme build/implementation, costs, scheme objectives, travel times and reliability of travel times, and impact on the economy.

It is proposed that reporting would take place at 12 months after delivery of Element A and four years after opening. As part of the monitoring and evaluation, consideration will be given to background effects that are not related to the scheme, for instance wider NPIF and WY+TF scheme delivery, to ensure changes are accurately represented.

The UTMC Manager will be accountable for the monitoring and evaluation. At this stage, it is envisaged that the monitoring and evaluation will be undertaken as a sub-stream of existing monitoring of the highway network by UTMC staff. The responsibility for discrete monitoring and evaluation tasks will be defined and delegated to appropriate UTMC staff following scheme approval. The benefit of using UTMC staff will be their expert day-to-day working knowledge of the relevant journey time monitoring tools that will be used to assess changes in journey times at junctions upgraded in Element A (a key scheme objective metric). This should also enable efficiencies in data collation and evaluation, by combining with existing monitoring practices.

A monitoring and evaluation budget of £50k has been identified. There is a requirement to estimate the specific costs of the activities and confirm the monitoring budget through delivery of the Monitoring and Evaluation Plan at FBC. The Plan will include identification of baseline metrics to be monitored, for instance identification of existing journey times for routes to be upgrades to SCOOT and MOVA.

It is proposed that monitoring and evaluation reports will be disseminated to all local authorities in West Yorkshire (Leeds, Wakefield, Kirklees, Bradford and Calderdale) and to the WYCA to contribute to the knowledge base upon which future decisions regarding transport investment, particularly, introduction of SCOOT and MOVA and technology schemes are taken within West Yorkshire.

Whilst a full Monitoring and Evaluation Plan has not been prepared, the approach has broadly been agreed with a budget of 0.5-1% of the total budget identified. The monitoring and evaluation will be





undertaken as a sub-stream of existing monitoring of the highway network. Therefore, staff that already have experience undertaking monitoring and evaluation will be able to apply these skills for specific analysis of this project.

## 6.6 Change Management

## 6.6.1 How will changes be managed

The transition to a combined UTMC service will need to be carefully managed, particularly the communications and necessary training of staff. It will be the responsibility of the Project Manager to ensure all communications are issued in a timely and appropriate manner. The UTC manager in each district will then be responsible for ensuring all staff are kept up-to-date. It is likely all staff will require some training of the technical delivery of a centralised service operation whilst there is also likely to be some non-technical training involved in the revised organisation. Any training needs will be identified in existing performance reviews based on a comparison of current skills and knowledge and those skills required. A detailed Contingency Plan will be prepared as part of the FBC.