Report author: Joel Dodsworth
Tel: 0113 3788128

Report of Joel Dodsworth, UTMC Manager

Report to Chief Officer Highways & Transportation

Date: 06 April 2021

Subject: Design & Cost Report for implementation of the 2021/22 UTMC Detection Upgrade Programme

Capital Scheme Number:

Are specific electoral wards affected? If yes, name(s) of ward(s):	☐ Yes	☒ No
Has consultation been carried out?	☐ Yes	☒ No
Are there implications for equality and diversity and cohesion and integration?	☒ Yes	☐ No
Will the decision be open for call-in?	☐ Yes	☒ No
Does the report contain confidential or exempt information? If relevant, access to information procedure rule number: Appendix number:	☐ Yes	☒ No

Summary

1. Main issues

- Traffic signal control relies on detection of road users to operate effectively. More reliable and accurate detection increases the efficiency of the signal control operation and enables more responsive strategies to be implemented.

- The proposals detailed in this report will replace unreliable pedestrian and cyclist detection with technologically advanced detectors. This will improve efficiency of traffic signals at pedestrian/cycle crossings for all modes but, in particular, assist non-motorised users.

- The programme will also allow for further development of UTMC systems to improve monitoring and control of the network. This builds on investment through the West Yorkshire UTMC project and will help to maximise the benefits of major investment programmes such as LPTIP and the City Centre Package.

- This report seeks approval to implement the 2021/22 UTMC Detection Upgrade Programme. This includes the preparation and delivery of a programme of works to be funded from the Local Transport Plan Transport Policy Capital Programme during the 2021-22 financial year.

2. Best Council Plan Implications

- The Best Council plan outlines how Leeds City will achieve its ambition to become the Best City in the UK and Leeds City Council the best Local Authority.

- The scheme proposals contribute to several aspects of the Best Council Plan.

- **Health and Wellbeing**. The Best Council Plan states objectives of "supporting healthy, physically active lifestyles". The new detection technology will contribute by promoting a more equitable service for pedestrians and cyclists through traffic signal installations.

- **Age-Friendly Leeds**. The newer technologically advanced detectors will provide reliable detection of pedestrians waiting to cross the carriageway and reliable detection of the pedestrian during the pedestrian crossing period, regardless of the speed they are crossing at.

- **Sustainable Infrastructure**. The Best Council Plan states objectives of "improving transport connections, safety, reliability and affordability" and "less wasteful, more resource efficient, low carbon economy".

    a) Reliability of traffic signal detection contributes to achieving these objectives. The reliability is essential to minimising inefficiency which impacts all road users in terms of increased delay. Inefficiency of a junction as a result of unreliable detection can also lead to pedestrians and cyclists growing frustrated and crossing in gaps which presents a safety risk.

    b) The further development of UTMC systems will improve the efficiency of traffic signals directly controlled by UTC. It will also enable the road network to be monitored more effectively which will improve response times to incidents and assist in identifying areas of the network that cause regular delays to buses.

- The proposed improvements provide a safer and more efficient method of traffic signal control that benefits all road users.

3. Resource Implications

- The scheme proposals have no implications in terms of revenue resources as this scheme is fully funded from the UTMC LTP capital budget allocation. UTMC staff resources have been identified to undertake the design element of the scheme.

Recommendations

The Chief Officer (Highways & Transportation) is requested to:

a) Note the contents of this report; and

b) Approve spending of £60,000 (inclusive of all works costs, fees and legal costs) from the Local Transport Plan Transport Policy Capital Programme for the purposes of upgrading vehicle, cyclist and pedestrian detection at traffic signal sites.

1. Purpose of this report

1.1 To seek approval for spending of £60,000 from the Local Transport Plan Transport Policy Capital Programme, to be utilised for implementation of the 2021/22 UTMC Detection Upgrade Programme. This includes the replacement of pedestrian kerbside and on-crossing detection and inductive cycle loops as well as further development of UTMC systems.

2. Background information

Kerbside and on-crossing detection

2.1 There are operational and maintenance issues associated with older technology used to detect the presence of pedestrians and cyclists at signalised crossings.

2.2 Conventional kerbside detection, used to detect the presence of pedestrians and cyclists, uses radar technology which was initially developed for other applications, including reversing warning systems for the automotive industry. This detection can have operational issues in that, intermittently, a waiting pedestrian can be “lost” and the demand for the crossing is not registered, which becomes a safety issue as the frustrated pedestrian can then be tempted to cross in gaps in traffic.

2.3 On-crossing detectors, used to extend the safety clearance time for pedestrians on crossings, use microwave technology. However, this technology does not give good coverage closer to the detector, due to the lobe shape of the microwave beam. In addition, TOPAS 2506A specification states a minimum speed for detect at 0.5m per second and a height greater than or equal to 1 metre, any person not meeting this criteria will not be detected and will not extend the all-red safety clearance period.

UTMC systems

2.4 A contract has recently been awarded for a new, shared, West Yorkshire UTMC system to replace the existing disparate systems as part of a wider West Yorkshire UTMC project. This is expected to significantly improve functionality with regard to automation of tasks related to setting Variable Message Signs and traffic signal control strategies (i.e. day-to-day and in response to planned events/incidents). The integration of data from existing journey time monitoring equipment is also included in the scope of the WY UTMC project.

2.5 A new traffic signal optimiser is currently being developed by Leeds City Council to make use of richer data provided by new sensors in the city centre. Conventional traffic signal optimisation focuses on minimising vehicle delay and is not capable of processing the data provided by newer sensors. Newer detection technology has provided the opportunity to develop an optimiser with the objective function of minimising person delay.

3. Main issues

Kerbside and on-crossing detection

3.1 To address the operational and maintenance issues associated with older technology, the proposed scheme involves the procurement of new technologically advanced detectors that utilise thermal imaging to detect the presence of cyclists and pedestrians. The detectors are multi-purpose and will be used as kerbside and on-crossing detectors.

3.2 For on-crossing use, as there is no lower walking speed limit or lower height limit, any presence within the detection zone will register and extend the safety clearance period.

3.3 Implementation of more reliable pedestrian and cyclist detection will allow waiting times for pedestrians to be reduced at more standalone crossings. It is also proposed that the pre-timed max facility and an equivalent strategy in the more sophisticated MOVA traffic signal control system will be deployed across various sites across the network, taking advantage of the more reliable detection.

UTMC systems

3.4 The proposed scheme allows for further development of UTMC systems. In particular, there is an aspiration to introduce a new feature, outside the scope of the initial WY UTMC project, which will make use of existing real-time bus data feeds to monitor 'live' network performance from the perspective of bus journey times. It is envisaged that this will significantly improve day-to-day monitoring of the network with regard to regular congestion 'hotspots' for buses but, importantly, it will provide an improved tool to monitor bus priority interventions using the existing automatic vehicle location system.

3.5 Newer sensors being installed in the city centre provide significantly richer data than conventional traffic signal detection. A new optimiser is already under development but, given the nature of developing technology, this will require ongoing work to ensure that the system integrates effectively into other UTMC systems. Current work has been focused on processing the hugely increased volume of data for the optimiser to use but the next stage of work will focus on the performance of the optimiser itself.

3.6 It is proposed to start work as soon as approval is received. Work will continue throughout the financial year 2021/2022.

3.7 This proposal is a continuation of work that began in 2020/2021 and will accelerate improvements to level of service for active travel modes at traffic signals, complementing the General Refurbishment and Telecommunications schemes.

4. Corporate considerations

4.1 Consultation and engagement

4.1.1 The Executive Board Member for Climate Change, Transport and Sustainable Development has been consulted regarding this proposal and it has been positively received.

4.2 Equality and diversity / cohesion and integration

4.2.1 A screening document has been prepared and an independent impact assessment is not required for the approvals requested.

4.2.2 Improving the service to pedestrians at pedestrian crossing facilities will reduce barriers between communities with negligible impact on other road users.

4.2.3 Improved reliability of detection for cyclists at junctions will reduce delay and help to address negative perceptions of service to non-motorised users.

4.2.4 Improved kerbside detection is likely to offset any increased safety clearance times as it will more reliably cancel pedestrian demands when a pedestrian chooses to cross in gaps in traffic.

4.3 Council policies and the Best Council Plan

4.3.1 The scheme proposals contribute to several aspects of the Best Council Plan.

4.3.2 **Health and Wellbeing**. The Best Council Plan states objectives of "supporting healthy, physically active lifestyles". New detection technology will contribute by improving service for cyclists and pedestrians at traffic signal installations.

4.3.3 **Age-Friendly Leeds**. The newer technologically advanced detectors will provide reliable detection of pedestrians waiting to cross the carriageway and reliable detection of the pedestrian during the pedestrian crossing period, regardless of the speed they are crossing at.

4.3.4 **Sustainable Infrastructure**. The Best Council Plan states objectives of "improving transport connections, safety, reliability and affordability" and "less wasteful, more resource efficient, low carbon economy".

a) Reliability of traffic signal detection contributes to achieving these objectives. The reliability is essential to minimising inefficiency which impacts all road users in terms of increased delay. Inefficiency of a junction as a result of unreliable detection can also lead to pedestrians and cyclists growing frustrated and crossing in gaps which presents a safety risk.

b) The further development of UTMC systems will improve the efficiency of traffic signals directly controlled by UTC. It will also enable the road network to be monitored more effectively which will improve response times to incidents and assist in identifying areas of the network that cause regular delays to buses.

4.3.5 The proposed improvements provide a safer and more efficient method of traffic signal control that benefits all road users.

<u>Climate Emergency</u>

4.3.2 The implementation of improved detection will contribute to reduced emissions by preventing unnecessary stops for vehicles due to unreliable kerbside detection and longer waiting times due to unreliable on-crossing detection. The further development of UTMC systems will help to provide a more equitable service for active travel modes which will help to incentivise mode shift.

4.4 Resources, procurement and value for money

4.4.1 **Scheme Design Estimate:** The estimated total cost for this work is £60,000, consisting of £20,000 for the upgrade of detection, £25,000 for the development of UTMC systems and £15,000 staff costs. It is proposed to procure the equipment through the contract 3548 Supply and Installation of traffic signal equipment.

4.4.2 **Capital Funding and Cash Flow:** The estimated total cost of £60,000 will be funded from the Transport Policy Capital Programme 2021/ 2022 (LTP Government

grant funded), as part of the West Yorkshire Local Transport Plan Implementation Plan, received on a quarterly basis from the West Yorkshire Combined Authority.

Previous total Authority to Spend on this scheme	TOTAL £000's	TO MARCH 2019 £000's	FORECAST 2018/19 £000's	2019/20 £000's	2020/21 £000's	2021/22 £000's	2022 on £000's
LAND (1)	0.0						
CONSTRUCTION (3)	0.0						
FURN & EQPT (5)	0.0						
DESIGN FEES (6)	0.0						
OTHER COSTS (7)	0.0						
TOTALS	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Authority to Spend required for this Approval	TOTAL £000's	TO MARCH 2020 £000's	FORECAST 2018/19 £000's	2019/20 £000's	2020/21 £000's	2021/22 £000's	2022 on £000's
LAND (1)	0.0						
CONSTRUCTION (3)	45.0	0.0				45.0	
FURN & EQPT (5)	0.0						
DESIGN FEES (6)	15.0	0.0				15.0	
OTHER COSTS (7)	0.0						
TOTALS	60.0	0.0	0.0	0.0	0.0	60.0	0.0

Total overall Funding (As per latest Capital Programme)	TOTAL £000's	TO MARCH 2020 £000's	FORECAST 2018/19 £000's	2019/20 £000's	2020/21 £000's	2021/22 £000's	2022 on £000's
Government Grant TP/LTP	60.0	0.0	0.0	0.0	0.0	60.0	
Total Funding	60.0	0.0	0.0	0.0	0.0	60.0	0.0
Balance / Shortfall =	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Parent Scheme number:

Title : UTMC Detection Upgrade Capital Programme – LTP Grant Funded

4.5 Legal implications, access to information, and call-in

4.5.1 The scheme is not subject to Call In and there are no grounds for treating the contents of this report as confidential with the Council's Access to Information Rules.

4.6 Risk management

4.6.1 Failure to implement this scheme will result in losing the potential benefits from improved reliability of detection systems. It would also reduce the effectiveness of new technology that is currently being installed in the city centre which would impact most significantly on pedestrians and cyclists.

5. Conclusions

5.1 The proposals detailed in this report will replace unreliable pedestrian and cyclist detection with technologically advanced detectors. This will improve efficiency of traffic signals at pedestrian/cycle crossings for all modes but, in particular, assist non-motorised users.

5.2 The proposed programme will also contribute to further development of UTMC systems that will improve efficiency and provide a more equitable service to pedestrians and cyclists. It will also allow improved monitoring of the network which will lead to faster response times to incidents but also more useful data for transport planning purposes.

6. Recommendations

6.1 The Chief Officer (Highways and Transportation) is requested to:

a) Note the contents of this report; and

b) Approve spending of £60,000 (inclusive of all works costs, fees and legal costs) from the Local Transport Plan Transport Policy Capital Programme for the purposes of upgrading vehicle, cyclist and pedestrian detection at traffic signal sites.

7. Background documents

7.1 None

8. Appendices

8.1 EDCI Screening

Appendix 1

Equality, Diversity, Cohesion and Integration Screening

As a public authority we need to ensure that all our strategies, policies, service and functions, both current and proposed have given proper consideration to equality, diversity, cohesion and integration.

A **screening** process can help judge relevance and provides a record of both the **process** and **decision.** Screening should be a short, sharp exercise that determines relevance for all new and revised strategies, policies, services and functions. Completed at the earliest opportunity it will help to determine:

- The relevance of proposals and decisions to equality, diversity, cohesion and integration.
- whether or not equality, diversity, cohesion and integration is being/has already been considered, and
- Whether or not it is necessary to carry out an impact assessment.

Directorate: City Development	**Service area: Transport Policy**
Lead person: Joel Dodsworth	**Contact number: 3788128**

1. Title: **Design & Cost Report for implementation of the 2021/22 UTMC Detection Upgrade Programme**

Is this a:

☐	**Strategy / Policy**	✓	**Service / Function**	☐	**Other**

If other, please specify

2. Please provide a brief description of what you are screening

The screening process relates to the installation of improved detectors across the city for pedestrians and cyclists. It also relates to the further development of UTMC systems.

3. Relevance to equality, diversity, cohesion and integration

All the council's strategies/policies, services/functions affect service users, employees or the wider community – city wide or more local. These will also have a greater/lesser relevance to equality, diversity, cohesion and integration.

The following questions will help you to identify how relevant your proposals are.

When considering these questions think about age, carers, disability, gender reassignment, race, religion or belief, sex, sexual orientation and any other relevant characteristics (for example socio-economic status, social class, income, unemployment, residential location or family background and education or skills levels).

Questions	**Yes**	**No**
Is there an existing or likely differential impact for the different equality characteristics?	X	
Have there been or likely to be any public concerns about the policy or proposal?		X
Could the proposal affect how our services, commissioning or procurement activities are organised, provided, located and by whom?		X
Could the proposal affect our workforce or employment practices?		X
Does the proposal involve or will it have an impact on • Eliminating unlawful discrimination, victimisation and harassment • Advancing equality of opportunity • Fostering good relations		X

If you have answered **no** to the questions above please complete **sections 6 and 7**

If you have answered **yes** to any of the above and;

- Believe you have already considered the impact on equality, diversity; cohesion and integration within your proposal please go to **section 4.**
- Are not already considering the impact on equality, diversity, cohesion and integration within your proposal please go to **section 5.**

4. Considering the impact on equality, diversity, cohesion and integration

If you can demonstrate you have considered how your proposals impact on equality, diversity, cohesion and integration you have carried out an impact assessment.

Please provide specific details for all three areas below (use the prompts for guidance).

- **How have you considered equality, diversity, cohesion and integration?**

(**think about** the scope of the proposal, who is likely to be affected, equality related information, gaps in information and plans to address, consultation and engagement activities (taken place or planned) with those likely to be affected)

The proposed utilisation of thermal imaging technology to detect pedestrians will replace existing unreliable detection. In particular, this will benefit pedestrians. Improved on-crossing detection will enable pedestrians walking very slowly to continue to be detected which will extend the safety clearance time.

It is also proposed that pedestrian/cyclist waiting times will be reduced at standalone crossings where new detection is introduced. This will help to reduce community severance.

- **Key findings**

(think about any potential positive and negative impact on different equality characteristics, potential to promote strong and positive relationships between groups, potential to bring groups/communities into increased contact with each other, perception that the proposal could benefit one group at the expense of another)

Improving the service to pedestrians at pedestrian crossing facilities will reduce barriers between communities with negligible impact on other road users.

Improved reliability of detection for cyclists at junctions will reduce delay and help to address negative perceptions of service to non-motorised users.

- **Actions**

(think about how you will promote positive impact and remove/ reduce negative impact)

Improved kerbside detection is likely to offset any increased safety clearance times as it will more reliably cancel pedestrian demands when a pedestrian chooses to cross in gaps in traffic.

5. If you are **not** already considering the impact on equality, diversity, cohesion and integration you **will need to carry out an impact assessment**.

Date to scope and plan your impact assessment:	N/A
Date to complete your impact assessment	N/A
Lead person for your impact assessment (Include name and job title)	N/A

6. Governance, ownership and approval

Please state here who has approved the actions and outcomes of the screening

Name	**Job title**	**Date**
Joel Dodsworth	UTMC Manager	22/03/2021

7. Publishing

Though **all** key decisions are required to give due regard to equality the council **only** publishes those related to **Executive Board**, **Full Council, Key Delegated Decisions** or a **Significant Operational Decision.**

A copy of this equality screening should be attached as an appendix to the decision making report:

- Governance Services will publish those relating to Executive Board and Full Council.
- The appropriate directorate will publish those relating to Delegated Decisions and Significant Operational Decisions.
- A copy of all other equality screenings that are not to be published should be sent to equalityteam@leeds.gov.uk for record.

Complete the appropriate section below with the date the report and attached screening was sent:

For Executive Board or Full Council – sent to **Governance Services**	Date sent:

For Delegated Decisions or Significant Operational Decisions – sent to appropriate **Directorate**	Date sent:
All other decisions – sent to equalityteam@leeds.gov.uk	Date sent: