BERKSHIRE LOCAL TRANSPORT BODY (BLTB)

REPORT TO: BLTB **DATE:** 4 June 2020

CONTACT OFFICER: Josie Wragg, Chief Executive, Slough Borough Council, lead officer to BLTB

Item 7: Financial Approval Thames Valley Berkshire Smart City Cluster project extension

Purpose of Report

1. To consider giving financial approval to the Thames Valley Berkshire Smart City Cluster project extension.

   The Thames Valley Berkshire Smart City Cluster project extension will extend the existing Thames Valley Berkshire Smart City Cluster project by extending the Internet of Things (IoT) communications infrastructure (Long Range, Wide Area Network (LoRaWAN)) across Slough Borough Council (SBC) and the Royal Borough of Windsor and Maidenhead (RBWM) with a small element of development work to be undertaken by Reading Borough Council (RBC) to further develop the LoRa to traffic signal control interface.

2. Specific project activities will include:

   1) Delivery of a smart city internet of things communication platform (LoRaWAN) for use by all for local authority devices for Slough and RBWM and as an open platform for commercial services and innovation. The aim is to provide over 90% coverage of population as is predicted for the existing deployment across the other four Berkshire authorities.

   2) Actively promote commercial and start-up innovation on the smart cities platform through providing free access for at least the duration period of the project to the smart city communications platform.

   3) Promote the smart city cluster and use the project momentum to develop and secure further funding opportunities.

Recommendation

3. You are recommended to give Thames Valley Berkshire Smart City Cluster project extension full financial approval in the sum of £283,620 in 2020/21 on the terms of the funding agreement set out at paragraph 11 step 5 below.

Other Implications

Financial

4. A call for bids process was undertaken in January 2020 and a list of prioritised projects were agreed at the BLTB meeting March 2020. See appendix 1. Thames Valley Berkshire Smart City Cluster project extension was given programme entry status at this meeting and funding for it was reallocated from Local Growth Funds to the Business Rates Retention Pilot (BRRP) monies.

~~5.~~ This report recommends that Reading Borough Council be authorised to draw down the capital sum £283,620 from the Local Transport Body funding for this scheme.

6. The funding agreement set out at paragraph 11 step 5 sets out the roles and responsibilities, reporting and auditing arrangements, timing and triggers for payments, contributions from other funders, consequences of delay, consequences of failure, claw back, and evaluation requirements at one and five years on.

Risk Management

7. The risk management arrangements already put in place by the Local Transport Body are as follows:
    - The Assurance Framework[i] has been drafted following DfT guidance and has been approved by the DfT for use in allocating capital funds for transport schemes
    - Hatch Regeneris has been appointed as Independent Assessors and have provided a full written report (see Appendix 2) on the full business case for the scheme
    - The funding agreement set out at paragraph 11, step 5 makes clear that the financial risk associated with implementation of the scheme rests with the scheme promoter.

Human Rights Act and Other Legal Implications

8. The scheme promoter is a local authority and they have to act within the law. Reading Borough Council will provide legal support for the BLTB, should any questions arise.

Supporting Information

9. The scheme will be carried out by Reading Borough Council.

10. The full details of the scheme are available from the Thames Valley Berkshire LEP website[ii]. A summary of the key points is given below:

Task	Timescale
Procurement	Via Reading Borough Council
Contractor appointed	Stantec
Project start	June 2020
Completion date	Feb 2021

Activity	Funder	Cost (approx)
Scheme development	Public sector (RBC, SBC & RBWM), including in-kind contribution	£71,040
Major scheme funding	Berkshire Local Transport Body	£283,620
Total		**£354,660**

11. The table below sets out the details of this scheme's compliance with steps1-5 of paragraph 14 of Assurance Framework[iii].

<table>
<tr><th>Assurance Framework Check list</th><th colspan="4">Thames Valley Berkshire Smart City Cluster project extension</th></tr>
<tr><td>Step 1: Development of Scheme proposal; initial sifting, scoring and prioritisation leading to award of Programme Entry Status. (See paragraphs 11-13)</td><td colspan="4">The Thames Valley Berkshire Smart City Cluster project extension will extend the existing Thames Valley Berkshire Smart City Cluster project by extending the Internet of Things (IoT) communications infrastructure (Long Range Wide Area Network (LoRa WAN)) across Slough Borough Council and the Royal Borough of Windsor and Maidenhead (RBWM) with a small element of development work to be undertaken by Reading Borough Council to further develop the LoRa to traffic signal control interface.
The updated prioritisation assessment process for schemes was used and the scheme was given 19 points and ranked 5th of 6 schemes submitted in January 2020.
<table>
<tr><th>Factor</th><th>Raw score</th><th>Weighting</th><th>Weighted score</th></tr>
<tr><td>Strategy</td><td>3</td><td>1.5</td><td>4.5</td></tr>
<tr><td>Deliverability</td><td>3</td><td>2.0</td><td>6.0</td></tr>
<tr><td>Economic Impact</td><td>1</td><td>4.0</td><td>4.0</td></tr>
<tr><td>TVB area coverage</td><td>2</td><td>1.0</td><td>2.0</td></tr>
<tr><td>Natural</td><td>2</td><td>1.0</td><td>2.0</td></tr>
<tr><td>Social</td><td>1</td><td>0.5</td><td>0.5</td></tr>
<tr><td>Total</td><td colspan="2"></td><td>19.0</td></tr>
</table></td></tr>
<tr><td>Step 2: Programme Entry: evolution of the scheme from outline proposal to full business case, external view on the business case, and independent assessment (See paragraphs 15 and 16)</td><td colspan="4">The project was agreed by the Thames Valley Berkshire LEP board in November 2017[iv].

The Thames Valley Berkshire LEP website[v] will hold the latest details of the project.

Any comments or observations on the project received by either TVB LEP or Reading Borough Council have been fully considered during the development of the scheme.

The report of the Independent Assessor is attached at Appendix 2. The Independent Assessor was asked to report as follows:
• Completeness – has the promoter prepared a complete Full Business Case submission, when judged against the</td></tr>
</table>

Assurance Framework Check list	Thames Valley Berkshire Smart City Cluster project extension
	prevailing advice from the DfT • Accuracy – has the promoter performed the relevant calculations and assessments accurately and without error • Relevance – has the Full Business Case considered all relevant matters, including use of appropriate forecasting models and planning assumptions, and has it included any irrelevant considerations such unduly-optimistic assumptions or out of date modelling data • Value for Money – does the scheme promoter's Value for Money assessment comply with the prevailing DfT guidance • Evaluation arrangements – has the scheme promoter made provision for appropriate post-implementation evaluation of the scheme. • Remedies – where the independent assessment reveals a gap between the FBC supplied and the standard anticipated by the DfT guidance, then the advice for the LTB should include recommendations for remedial actions required – e.g., collection of further data, sensitivity tests on particular assumptions etc.
Step 3: Full/Conditional Approval	The Independent Assessor has recommended that in this case full financial approval is appropriate.
Step 4: Recommendation of Financial Approval - High Value for Money - Support of the Independent assessor	Worst case scenario assessment by the Independent Assessor demonstrates that a minimum Benefit - Cost Ratio (BCR) of 2: 1 can be achieved. DfT has set thresholds of 2.00 (High VfM) and 4.00 (Very High VfM) and schemes with BCRs above these thresholds can described as having High or Very High Value for Money.
Step 5: Formal Agreement - roles - responsibilities - implementation - reporting - auditing - timing and triggers for payments, - contributions from other funders, - consequences of delay, - consequences	The capital grant of £283,620 is a maximum figure which cannot be increased but may be reduced if savings are achieved during implementation. In the event that Reading Borough Council wishes to alter the profile of the grant payments, it must seek prior written permission from TVB LEP, having first raised the matter with the BLTB. The grant is made subject to the following: 1. Roles: TVB LEP is a part funder of the scheme. Reading Borough Council is the scheme promoter and is the relevant highway and planning authority for works within Reading. Slough Borough Council and Royal Borough of Windsor and Maidenhead are the relevant highway and planning authority for works within their authorities. 2. Responsibilities: TVB LEP is responsible for allocating the capital finance in accordance with its Assurance Framework.

Assurance Framework Check list	Thames Valley Berkshire Smart City Cluster project extension
of failure, - claw back, - evaluation one and five years on	Reading Borough Council is responsible for all aspects of the design, risk management, insurance, procurement, construction and implementation of the scheme, including its responsibilities as highway and planning authority, any other statutory duties, and any financial or other liabilities arising from the scheme. 3. Implementation: In addition to any reporting requirements within Reading Borough Council, the scheme promoter will use the proforma supplied by TVB LEP to make reports on progress of the implementation of the capital scheme to each meeting of the BLTB until the build is complete. In particular, Reading Borough Council will report on any change in the size, scope or specification of the scheme; and on any substantial savings against the scheme budget whether achieved by such changes to the size, scope or specification of the scheme, or through procurement, or through the efficient implementation of the scheme. ~~4.~~ Reporting: The scheme promoter must provide accurate, timely, verified and quality assured quarterly monitoring and forecast data, which relate to defined output and outcome indicators agreed between TVB LEP and the promoter. 5. Auditing: Reading Borough Council will keep financial records such that the expenditure on the scheme is readily identifiable, and if and when BEIS, DfT or other government department or the Accountable Body for TVB LEP requests access to financial or other records for the purposes of an audit of the accounts, Reading Borough Council will co-operate fully. 6. Timing and Triggers for payments: See the Claim Proforma at Appendix 1 of the Capital Grant Letter – available on request. 7. Contributions from Other Funders: Reading Borough Council will contribute £2,000 in 2020/21, Slough Borough Council and the Royal Borough of Windsor and Maidenhead will each contribute £5,020 in 2020/21. In the event that the scheme experiences or it is anticipated that the scheme will experience a shortfall in these contributions, Reading Borough Council will be required to notify TVB LEP of these developments. The provisions of clauses 8, Consequences of Delay; 9, Consequences of Change to the Design or Specification of the Scheme; or 10, Consequences of Failure will then be applied. 8. Consequences of Delay: In the event that the scheme experiences minor delays to its overall Business Case

Assurance Framework Check list	Thames Valley Berkshire Smart City Cluster project extension
	programme (no more than 10 weeks), Reading Borough Council group will report these delays and the reasons for them, and the proposed remedial action to the next available meeting of the BLTB. In the event that the scheme experiences major delays to its overall Business Case programme (11 weeks or longer) Reading Borough Council will be required to seek permission from TVB LEP to reschedule any payments that are due, or may be delayed in falling due because of the delay to the overall Business Case programme. 9. Consequences of Change to the Design or Specification of the Scheme: In the event that Reading Borough Council wishes to change the design or specification of the scheme such the scheme delivered will vary in any material aspect from the description given in the overall business case, Reading Borough Council will be required to seek prior written consent from TVB LEP. Failing this permission, no further monies will be paid to Reading Borough Council after the change becomes apparent to TVB LEP. In addition, consideration will be given to recovering any monies paid to Reading Borough Council in respect of this scheme. 10. Consequences of Failure: As soon as it becomes apparent to Reading Borough Council that it will not be possible to deliver the scheme within the current BRRP programme, i.e. by the end of 2020/21, written notice shall be given to the Accountable Body for TVB LEP. No further monies will be paid to Reading Borough Council after this point. In addition, consideration will be given to recovering any monies paid to Reading Borough Council in respect of this scheme. 11. Claw back: If the overall scheme achieves savings against budget, these savings will be shared by TVB LEP and the other funders noted above in proportion to the amounts set out in the Financial Profile. The Accountable Body for TVB LEP reserves the right to claw back any amounts of grant that have been spent on purposes other than the scheme as approved and any repayments due as a consequence of changes to the design or specification of the scheme or scheme failure. 12. Evaluation One and Five Years On: Reading Borough Council will produce scheme evaluations One and Five years after practical completion that comply with DfT guidance. 13. Other Conditions: Reading Borough Council will acknowledge the financial contribution made to this scheme through

Assurance Framework Check list	Thames Valley Berkshire Smart City Cluster project extension
	Business Rates Retention Pilot (BRRP) funding and give due regard to the Equality Act 2010 - Public Sector and with the Public Services (Social Value Act) 2012, particularly through the employment of apprentices across the scheme supply chain.

Conclusion

12. Hatch Regeneris conclude that the strategic case for this project is sufficiently demonstrated and that the project will deliver high (probably very high) value for money, is deliverable, and is low risk.

Background Papers

13. The LTB and SEP scoring exercise papers are available on request.

[i] http://www.thamesvalleyberkshire.co.uk/berkshire-strategic-transport-forum
[ii] http://www.thamesvalleyberkshire.co.uk/tvbsmartcity.htm
[iii] http://www.thamesvalleyberkshire.co.uk/berkshire-strategic-transport-forum
[iv] http://www.thamesvalleyberkshire.co.uk/getfile/Public%20Documents/About%20us/Agendas%20and%20Minutes/Executive%20Board/Minutes/2017/Meeting%20Minutes%20TVB%20LEP%20Executive%20Board%207%20November%202017.pdf?inline-view=true
[v] http://www.thamesvalleyberkshire.co.uk/tvbsmartcity.htm

APPENDIX 1 – Local Growth Deal list of prioritised schemes agreed March 2020

Weighting	1.5	2	4	1	1	0.5				
Factor	**SEP**	**Deliv-erable**	**Econo mic Impact**	**TVB area**	**Natural Capital**	**Social Value**	**Total Weigh ted score**	**Rank**	**Contribution Sought**	**Cumulative spend**
LGF Eligible Projects										
Reading Buses: Completing the Connection	4.5	6	8	2	3	1.0	24.5	1	1,541,243	1,541,243
2.29 Wokingham: Winnersh Triangle Park and Ride – Extension	4.5	4	8	1	2	0.5	20.0	2	1,411,142	2,952,385
2.24 Newbury: Railway Station improvements – Extension	4.5	4	8	1	1	1.0	19.5	3	640,000	3,592,385
Slough Langley High Street (phases 1, 2 & 3)	4.5	2	8	2	1	0.5	18.0	4	4,000,000	7,592,385
BRRP Eligible Projects										
Superfast Broadband – Extension	4.5	6	8	2	1	0.5	22	1	46,920	46,920
2.30 TVB Smart City Cluster Extension	4.5	6	4	2	2	0.5	19	2	283,620	330,540

APPENDIX 2

Thames Valley Berkshire Local Enterprise Partnership

Independent Assessment Summary Report: Smart City Cluster Extension

May 2020

www.hatchregeneris.co.uk

Independent Review

Introduction

i. This technical note provides an independent assessment of the Smart City Cluster Extension business case submission to the Thames Valley Berkshire Local Enterprise Partnership (TVB LEP).
ii. The Thames Valley Smart City Cluster (TVSCC) is an existing project delivering Internet of Things (IoT) communications infrastructure (LoRa Wide Area Network) across Berkshire. The current project focuses upon the local authority areas of Bracknell, Reading, West Berkshire, and Wokingham, with a predicted coverage of 90% of the populations in these areas.
iii. The Extension project will extend the coverage of the TVSCC to the two remaining local authority areas, Slough Borough Council and the Royal Borough of Windsor and Maidenhead, alongside some additional development work for the 'LoRa-to-traffic signal' control interface.

Submitted Information

iv. The independent assessment process for the TVSCC Extension submission has been conducted on the basis of a 'Detailed Application Form' submitted the existing TVSCC Project Team.
v. Cross-references are provided to documentation related to the main TVSCC project.

Scheme Summary

vi. The application form sets out the case for investment in 42 separate LoRa Access Gateways, to be installed on buildings, tall poles and traffic signal infrastructure across Slough and Windsor and Maidenhead. The bid also incorporates supporting infrastructure, ancillary equipment, and installation. It will also provide signal interface software.
vii. The scheme cost is estimated to be £354,660 with £283,620 sought from the Local Growth Fund (LGF).

Review Findings

Part 1: Project Description and Logic Chains

1.1 The application document sets out the specific project activities related to the extension of TVSCC in Slough and RBWM, highlighting:

- The delivery a smart city internet of things communication platform (LoRaWAN) for use by local authority devices and as an open platform for commercial services and innovation;
- To actively promote commercial and start-up innovation on the smart cities platform;
- To manage the platform; and
- To promote the smart city cluster and use the project momentum to develop and secure further funding opportunities.

1.2 Seven objectives are established in relation to different parties, including local authorities, transport service providers, citizens, enterprises, the LEP, as well as in combinations.

1.3 The process for delivering the project is also set out, in terms of management, technical specification, procurement of equipment, the delivery programme, and the local authority investment. The way the services can be accessed and used by local authorities and businesses/innovators is also described.

1.4 The rationale for the project is established, demonstrating how LoRa is an open global standard for Internet of Things communication, its existing deployment across four of the six TVB local authorities, and the need to extend the benefits to Slough and RBWM.

1.5 The ways in which the TVSCC will address a range of barriers to growth is described in relation to the global importance of smart city environments and the current lack of a catalyst to 'kick-start' business investment in this field of technology within Slough and RBWM.

1.6 An overview of the key economic, social and environmental benefits of the TVSCC project is set out in terms of strengthening the economy, enabling the deployment of a range of low cost IoT-based products and services for communities, and which will facilitate, or promote, the use of low carbon solutions across a range of areas, including transport.

1.7 The project output indicators are defined in terms of the number of access points installed and coverage achieved with the sensors, as well

as the connection of traffic control equipment in Reading to the LoRa network.

1.8 Additional activities required to achieve the outcomes are described as both the promotion of the platform and applications that can use it, as well as ensuring local authorities are making maximum use of the technology.

1.9 Two critical success factors are identified as the delivery of the capital spend and ensuring the project scale is maximised.

Independent Assessor Comment

1.10 The initial section of the application provides a clear understanding of the scope of the TVSCC Extension, what it seeks to achieve, and how it will be delivered.

1.11 The objectives are well established for each different potential user groups of the LoRaWAN, and the need and rational for both Smart City technologies, and the specific extension, is clear. This includes the barriers that the project can help overcome.

1.12 The initial discussion of the types of benefits that will be delivered is useful, albeit relatively generic. The consideration of outputs indicators, supporting activities required, and critical success factors demonstrates that the applicant has given due consideration to how the project will be successfully delivered.

Part 2: Strategic Case

viii. The Strategic Case highlights how the project will support policy set out within the SEP and BLIS in particularly highlighting the alignment to 'people' and 'ideas' categories within the SEP, and "enabling the better use of digital technologies, through providing IoT communications infrastructure for all to use and also raising the profile of the smart city agenda across the Berkshire authorities" within the BLIS.

ix. A short description of the evidence of need, or demand, for the project is provided, focussing on the need for Thames Valley Berkshire towns to be world leaders in smart cities and so maximise the opportunities of the tech industry to deliver enhanced citizen services.

Independent Assessor Comment

x. There is clear evidence presented to demonstrate the TVSCC projects alignment to both national and regional policy, and that the extension will enable a wide range of benefits to businesses and communities across Slough and RBWM.

xi. Whilst the evidence of need presented by the application is high-level, and not particularly specific to either Slough of RBWM, when it is combined with information presented within Part 1 of the application, there is considered to be sufficient overall evidence to support the strategic case for investment within the TVSCC extension project.

Part 3: Economic Case

xii. The Economic Case sets out a 'do-nothing' option and the preferred scheme option, highlighting the advantages/disadvantages, impacts, risks, and reasons for selecting the preferred option.

xiii. A description of direct, indirect and induced economic impacts is set out, with reference to estimated quantified impacts. This includes Ofcom evidence of the predicted growth in IoT connections, and the market for business in Berkshire to expand into once the infrastructure is provided. Evidence is also presented that states the value of Smart Cities to the UK was projected to be over £30 billion pa from 2020. Bristol is provided as an example of a successful transformation into a leading smart city.

xiv. NOMIS data is quoted to show Slough and RBWM have higher levels of employment in the Information and Communication sector, in comparison to the national average, and so have significant potential maximise opportunities within the tech industry. In conclusion, it is demonstrated that the actual number of jobs that need to be created to justify the investment is very low in comparison to the potential (960).

xv. Whilst recognising that the TVSCC will act as a facilitator, rather than directly generating GVA impacts, the application is stated to conservatively estimate that 80 jobs, with 8 new start-ups could result.

xvi. The potential benefit cost ratio (discussed within the Financial Case) is demonstrated to be over a 2 to 1 ratio if a minimum of only 7 jobs are created as a result of the investment

xvii. Consideration of the overall economic 'additionality' is presented in qualitative terms, examining leakage, deadweight, displacement and multiplier affects. No specific values are applied within a quantified assessment.

xviii. A brief description of the environmental benefits of a low powered communication network are stated, alongside potential ways in which the technology could support projects delivering social benefits.

Independent Assessor Comment

xix. The application document provides a useful assessment of the comparative advantages, and impacts, of either a 'do-nothing' scenario or the preferred scheme option. This provides sufficient assurance that the impact of not extending the TVSCC project into Slough and RBWM have been considered and is understood as a reference case.

xx. A range of evidence is presented to demonstrate the significant economic potential that smart city projects can deliver. This is matched with specific evidence for Slough and RBWM that provides local context of how these areas are well positioned to maximise the benefits form the delivery of a LoRaWAN infrastructure network.

xxi. Whilst the direct link between the TVSCC extension and the creation of 80 jobs and 8 new start-up businesses is not established in detail, there is sufficient overarching evidence to demonstrate that there is reasonable potential for achieving at least this level of outcome, albeit it is reliant upon other activities and investments taking place that must utilise the LoRaWAN network.

xxii. Whilst a specific benefit cost ratio is not presented, there is clear evidence (within the Financial Case) that the scheme will enable on-going cost savings for the public sector and that these are likely to off-set a substantial proportion (if not all) of the up-front costs. In additional the applicant indicates (within the Financial Case) that only 7 jobs would need to generate a benefit cost ratio of above 2 to 1. Whilst the approach adopted by the applicant is not fully consistent with HM Treasury Green Book guidelines, our own independent assessment indicates that as few as 5 or 6 jobs created is likely to generate sufficient benefit for a 2 to 1 ratio, even when making allowance for risk, optimism bias, and additionality. Given that the forecast creation of 80 jobs does not seem unreasonable, there can be high confidence that the scheme will deliver high value for money.

xxiii. The applicant's qualitative description of additionality demonstrates that consideration has been given to the extent to which benefits will be delivered within the region and will increase overall output of the economy.

xxiv. The assessment of environmental and social impacts, whilst limited in nature, is considered acceptable for the scale of the investment and demonstrates that the project should have net positive impacts, even if this can't be directly quantified.

Part 4: Commercial Case

1.13 The Commercial Case sets out a description of the goods and services that will need to be procured and the location where they will be deployed.

1.14 It is stated that all procurement procedures will comply with public procurement requirements already agreed through the TVSCC project. Details of procurement approaches are outlined for each element of the project.

1.15 Issues of state aid, legal consideration, and planning or other consents are set out.

Independent Assessor Comment

1.16 Whilst not detailed in nature, the fact that the procurement approaches will replicate the existing TVSCC project provides confidence in the process and sufficient information is considered to be presented on the approach to individual elements of the process.

1.17 It is acknowledged that there are no state aid or legal issues and that the proposed approach has sought to minimise/eliminate any planning requirements through the location of equipment on public assets to avoid any risk of delays.

Part 5: Financial Case

xxv. The Financial case sets out the project funding requirements, with £283,620 from LGF funding, with the remaining £71,040 from the local authorities, split Reading (£13,800); Slough (£28,620); and RBWM (£28,620). Confirmation of available funding is made.

xxvi. A breakdown of the capital expenditure is provided and demonstrates a contingency od 10% has been included.

xxvii. No operational revenue is presented but it is then stated that the project will result in net cost savings for the local authorities, estimated to be in the region of £70k pa.

xxviii. The expected funding profile by individual sources is presented showing all expenditure in 2020/21.

xxix. Whilst there is no private sector investment directly in the project, this will be encouraged and promoted in terms of projects that maximise the use of the LoRaWAN infrastructure. The need for public sector investment is set out.

Independent Assessor Comment

xxx. The overall financial case for the TVSCC Extension project is considered robust. The costs are based upon current outturn resource costs for the on-going project. Whilst the level of contingency is not extensive (at 10%), this is considered to reflect the good understanding of costs from the current project.

xxxi. There is also demonstration that the project will result in notable on-going cost savings for Slough and RBWM local authorities that should, over a duration of 5 or 6 years, off-set the capital costs of the project.

xxxii. Whilst no direct private sector financial contribution is included within the bid, it is recognised that the project should encourage and facilitate subsequent private sector investment.

Part 6: Management Case

xxxiii. As a continuation of the current TVSCC project, the extension project will utilise much of the existing management arrangements. The Steering Committee will be extended to include representation from Slough and RBWM local authorities.

xxxiv. Key project milestones are set out, with a proposed completion by 5th February 2021.

xxxv. A risk register is provided, with the highest risk identified as the impact of COVID-19 upon suppliers and the installation programme.

Independent Assessor Comment

xxxvi. As a continuation project, there can be high confidence in the management procedures and governance of this extension project.

xxxvii. The tasks for completion are relatively straightforward and are clearly set out within the key milestones with precise delivery times. The risk outlined are general low with mitigation measures identified.

Conclusions

xxxviii. The Strategic Case sufficiently demonstrates the rationale and need for the scheme, and the alignment to strategic priorities. It also establishes clear objectives and criteria for success.

xxxix. The Economic Case provides a wide range of evidence to demonstrate the impact of Smart City measures upon economic outputs. It presents this within the context of Slough and RBWM and provides sufficient evidence that the scale of the impact is likely to significantly outweigh the capital costs. This includes reducing on-going operating costs incurred by the local authorities, as well as facilitating the creation of new start-ups and job creation. Whilst a specific benefit cost ratio is not provided, there is sufficient evidence to demonstrate a high probability that that a ratio well in excess of 2 to 1 will be achieved.

xl. The Commercial Case demonstrates that due consideration of procurement requirements has been undertaken and that the approaches will mirror those of the main TVSCC project that has already been successful delivered.

xli. The Financial Case is considered sound, with sufficient information presented, given the scale of the project. The saving in future year operational costs for the local authorities is likely to be of sufficient scale to off-set the capital costs. The financial risks associated with the capital costs are considered minimal.

xlii. The project is considered to have a robust plan for delivery, with a clearly defined programme of tasks, and limited risks for delays.

xliii. It is our conclusion that the Smart City Cluster Extension scheme aligns with strategic priorities, will deliver at least high (probably very high) value for money, is deliverable, and is low risk.

Recommendation

xliv. We recommend the Smart City Cluster Extension project for approval.

Appendix 3

Applicant Contact Information

Organisation name	Reading Borough Council
Address	Civic Offices, Bridge Street, Reading, RG1 2LU
Contact Name and Job Title	Simon Beasley, Network Manager
Contact Telephone	0118 937 2228
Contact Email	simon.beasley@reading.gov.uk
Delivery Partners (if applicable)	Reading Borough Council, Slough Borough Council, Royal Borough of Windsor and Maidenhead

Project Details

Title of project	Thames Valley Berkshire Smart City Cluster Extension
Total project cost (£)	354,660
Grant requested - capital or revenue	£283,620 capital Percentage of total project costs: 80% £120,000 to be paid 31st September 2020 £163,620 to be paid 31st March 2021
Location of Project	Slough and Royal Borough of Windsor and Maidenhead
Will the project also benefit an adjoining LEP area?	No
Changes in project since EoI	The project HAS NOT been subject to any material changes since the Expression of Interest

Part 1: Project Description and Logic Chain

1) Describe the specific project activities which the grant would be used for. If the grant is being used for a project which forms part of a wider programme of activity or investments, please explain:

- where the project fits in the programme
- how it will complement and add value to other activities or investments
- how the wider activities will be funded.

This project will extend the existing Thames Valley Berkshire Smart City Cluster project by extending the Internet of Things (IoT) communications infrastructure (LoRa Wide Area Network) across Slough Borough Council and the Royal Borough of Windsor and Maidenhead (RBWM) with a small element of development work to be undertaken by Reading Borough Council to further develop the LoRa to traffic signal control interface.

The specific project activities will include:

1) Deliver a smart city internet of things communication platform (LoRaWAN) for use by all for local authority devices for Slough and RBWM and as an open platform for commercial services and innovation. The aim is to provide over 90% coverage of population as is predicted for the existing deployment across the other four Berkshire authorities.

2) Actively promote commercial and start-up innovation on the smart cities platform through providing free access for at least the duration the period of the project to the smart city communications platform.

3) Manage the project delivery.

4) Promote the smart city cluster and use the project momentum to develop and secure further funding opportunities.

2) Provide a description of the project, which sets out:

- the objectives (in line with SMART (Specific, Measurable, Achievable, Relevant and Time-bound) principles)
- how the project will be delivered, including the technology to be deployed
- how the service will be accessed and used

Objectives

The project will utilise the LEP funding to move the smart agenda forward in the Thames Valley Berkshire region for the benefit of citizens, the public sector and commercial organisations through extension of the LoRaWAN internet of things communications infrastructure. The project has a number of objectives relating to the different parties which will be involved in or benefit from the project. These objectives are:

1) **Local Authorities** – Will deliver direct operational savings through use of the communications platform for existing services. It will facilitate significant future opportunities on a public sector owned platform, through opening up the opportunity to deploy IoT based solutions, for example the opportunity to roll out the West Berkshire falls demonstrator smart city cluster project across a wider geographical area.
2) **Transport Service Providers** – Potential for improved service reliability and services to customers as will be able to cost effectively deploy IoT technology, for example monitoring available seats and wheelchair spaces for elderly and disabled users (being demonstrated through a Bracknell trial).
3) **Citizens** – Reduce tax-payer burden, enable improved services and improved environment.
4) **Enterprises** – Provide the opportunity for local business investment into IoT solutions with a Berkshire wide market locally and other deployments nationally and internationally.
5) **Local Authorities, business and LEP** - Use the development of a smart city platform and the profile which comes with being a smart city cluster to encourage inward commercial investment. The Thames Valley is a focus for high tech industry and high-tech start-ups and the project aims to capitalise on this opportunity.
6) **LEP** – Use the project to raise profile, attract inward investment, and justify funding allocations and supporting cases for future funding.
7) **Overall** – Lever a much greater value than the £284k through commercial investment, growth in the economy, and through being a lever to secure further funding.

How will the project be delivered?

1) Management:
    - The project will be run through an extension to the current Smart City Cluster Steering Committee meetings with the inclusion of a representative from each of RBWM and Slough.
    - Reading Borough Council (RBC) will remain the overall lead and chair the steering committee. RBC will be supported by Stantec (formerly Peter Brett Associates) who has supported the project delivery throughout.
2) Technical Specifications:
    - Technical specifications for the LoRaWAN base station equipment purchase and installation procedures will be as those developed for the smart city cluster deployment and hence no development required.
    - Provisional work has already been undertaken for the development of the signal control interface which will be taken forward by RBC staff in the project.
3) Procurement of Equipment:
    - There are four key suppliers of LoRaWAN equipment that are known to have a good track record in producing quality equipment. We have already undertaken an exercise to agree the procurement approach for the main project and this approach can be simply re-run to procure the main units. For other equipment, e.g. tall poles, we will use existing RBC suppliers under a pre-existing framework as in the main project and most equipment is minor, such as cabling, electrical connections etc and this is easily purchased.
4) Project Delivery:
   The programme for completion is tight so the following has been allowed for in the project delivery:
    1) Quick procurement of the LoRaWAN units utilising the existing procurement documentation modified for the numbers of units, the programme for quoting. We will re-confirm that all suppliers have similar lead in times to previously to allow for any disruption due to COVID19.
    2) Confirm detailed site locations (outline design was undertaken at bid stage) for deployment in parallel with the procurement of the units. Tall poles have a reasonable lead in time so we will look to quickly agree their locations. No approvals are required for traffic signal installation.

3) Describe the rationale for the project, with reference to:

- the barriers or problems that the project will address
- the opportunities it will unlock
- the market failure justification for the project i.e. why the private sector will not do this on its own

LoRa is an open global standard for Internet of Things (IoT) communication, and according to the LoRa Alliance, is deployed in over 113 countries with a number of deployments in the UK, and with nearly 100m devices connected to the network worldwide. With the widest range of compatible devices already developed for any IoT communication platform, and the most cost effective IoT network for enterprises to use, LoRa is seen as a leading communications platform. This has been reflected in the Digital Catapult's programme of promoting LoRa deployment to encourage the take up of IoT. Reliability of the platform is key and once complete the TVB LoRa network will be maintained through the Berkshire Traffic Signals Contract with quick responses if there is any failure.

LoRa is currently being deployed across the four authorities in the main TVB Smart City Cluster project. Whilst only four of the six authorities are part of the current project, due to the way that the project evolved out of an Innovate UK bid, there is a strong desire by Slough and RBWM to join from the most senior levels in the councils. This funding will provide a first, but important step, by bringing the remaining two authorities into the project through extending the LoRa network. This will provide direct benefits to businesses wishing to use the LoRa network and will enable cross Berkshire IoT projects to be developed and implemented. We will look to seek further funding for these schemes.

The LoRaWAN (Low Powered Wide Area Network) is opening the opportunity for businesses to develop and deliver internet of things (IoT) technology. Within the main Smart City Cluster Project, the challenges are developing a range of applications using the network that are starting to show positive outcomes. Examples include: home monitoring systems to reduce falls in the elderly, energy efficiency monitoring of council homes to improve heating efficiency, smart energy usage monitoring to reduce the carbon footprint of business, and real time bus seat and wheelchair availability monitoring to give information, particularly to elderly and disabled travellers. In addition, the commercial potential of the network is much wider, and we will be on-par with authorities such as Norfolk and Cambridge that are deploying LoRaWAN at scale.

The extension is needed to bring the benefits of the smart city cluster project to Slough and RBWM with its success in raising the profile of smart cities within the four existing smart city cluster authorities and its role in providing a smart city communications platform which shows public sector commitment that the private sector can invest in with confidence across the whole of Berkshire.

The scheme will address a range of barriers to growth:

1) The lack of a smart city environment: Thames Valley Berkshire (TVB) needs a smart city environment which will encourage growth in smart city products and services and help encourage the inward investment that TVB has set out in its SEP. The TVB cluster in this bid is very strong, and looking at Reading as an indicator for Berkshire where tech industries are focused across the region, Nomis data shows that growth rates over the last few years have been very high with only Manchester experiencing higher job growth and KPMG named Reading as the number one UK tech cluster in 2015. Reading also has a much higher Location Quotient (LQ) than any of the other cities, other than London. This measures the relative concentration of jobs or businesses in the tech sector compared to the nation average. The tech sector accounts for 15.7% of employment which is over three times higher than the national average, giving a LQ of 3.1. Only Cambridge comes close to this. Whilst we can see that TVB is very strong in the tech sector we should not be complacent. IoT is seen as a disruptive technology and we need to ensure that this competitive advantage in the tech sector in the TVB region is protected and capitalised on through ensuring that it takes a leading role in smart city development.

   A cost-effective communications platform is a key aspect and UNB (Ultra Narrow Band) networks are being rolled out across the world with countries like France and Australia scheduled to have 2 competing national networks by the end of 2016. In the UK the largest 10 cities and Cambridge already have networks including key leading tech areas in London and Manchester, and it is only with LGF investment that we have a network being delivered across four of the six Berkshire

4) Describe the main economic, social and environmental outcomes that the project is expected to generate. These outcomes should relate to long term changes in socio-economic conditions that the project is addressing (these should also be consistent with the project objectives). Please identify the most relevant indicators that could be used to assess change.

Some projects may deliver a wide range of different outcomes, which should be summarised briefly here. However, the answer should focus particularly on those outcomes where the project is expected to have the greatest effect and make the greatest contribution to project objectives, and where there is a clear link or logic chain relating back to the project activities (no more than three should be selected and at least one of these should be an economic outcome).

A list of example outcomes which could be identified is provided below:

- *Economic: examples could include growing the cluster of local digital businesses, improved collaboration between businesses or increased innovation.*
- *Social: examples include improved health, enabling people to live independently, raising educational attainment or improving community safety.*
- *Environmental: examples could include reduced congestion, cleaner air, reducing consumption of energy, public realm improvements*

Economic Benefits: The project is expected to help deliver a range of benefits. A key one will be strengthening the local ecomony, both established businesses and start-ups through providing a local test bed for innovative smart city products and services. This will also encourage inward investment to the area with businesses moving and also from investors bringing venture capital.

Social Benefits: The LoRaWAN network enables the deployment of a range of low cost IoT based products and services, whether through the local uathorities or as commercial services. The main project is developing a number of cost efficient LoRa based applications that will have real societal benefit, from technologies in the home to reduce falls in the elderly to identifying seating and wheelchair space on buses in real time giving the elderly more confidence to travel and improving their quality of life.

Environmental Benefits: The LoRaWAN network enables the deployment of a range of low cost IoT based products and services that can improve the environment. LoRa itself is a low powered network, which immediately provides operational benefits and the opportunities that it enables are wide ranging. Examples from the main project include smart socket control in buildings using AI and communication over LoRa that is expected to reduce power consumption of buildings; reducing the cost of operating network management systems which means more efficient operation over time where revenue funding to keep systems working is tight, and where smoothing traffic flow can have large benefits to pollution and carbon; and using LoRa enabled street side devices as part of encouraging more sustainble travel to schools. These are just a few examples.

5) Describe the project level output indicators that could be used to monitor project activity (ie what the grant will pay for). This should distinguish between the different indicators that could be used to monitor activity related to the different target outcomes identified above.

The answer should focus on the direct project activities that the grant is being used for. However, if the project forms part of a wider programme of investments, please also specify the output indicators that could be used to measure this activity and how they relate to the main target outcomes identified above.

The project output indicators will be:

1) Smart city communication platform – can be measured by number of access points installed and coverage achieved with the sensors. The target is 45 LoRa access points and coverage of over 90% of the population in Slough and RBWM. This accords with the expected outcome of the main Smart City Cluster project for which the original target was only the main urban areas of Reading, Wokingham, Bracknell, Newbury and Theale with 45 LoRa access points and where we are on target to install more units and provide more extensive coverage of the overall population.
2) Connection of traffic control equipment in Reading to the LoRa network.

6) Describe any additional activities which may need to take place to achieve outcomes, but which are outside the scope of this project or the wider programme of activity. These could include activities undertaken by households, businesses or public organisations at a later date, but which have been made possible by this project. Please explain whether these activities are dependent on other forms of public funding and the status of this finance.

All the activities needed to take place to achieve the outcomes are included within the project and the project can be delivered as a stand-alone project although with reduced wider benefits. To fully achieve the ambition of the project the following additional activities will be needed:

1) Promotion of the platform and applications that can use it.
2) Local authorities to fully recognise the potential of the platform across all sectors to make use of the opportunity where it aligns with policy requirements.

7) What do you see as the critical success factors for achieving the outcomes and objectives? Please distinguish between those 'stop-go' factors that are critical to the delivery of the project and those success factors which will influence the scale or nature of benefits.

The critical success factors are:

1) Delivery of the capital spend where the main factors are:
    - Effective project management, including budget, programme and risks. Stantec and RBC have a track record in delivering innovation.
    - Effective collaboration between the Local Authority partners to be achieved through a steering committee.
    - Utilising all the work and lessons learned from the main project to enable effective specification, procurement and delivery.
    - Using the experienced team from the main project.

2) Ensuring that the project scale is maximised:
    - Continue to work to secure other smart city funding, such as through Innovate UK.
    - Effective 'marketing' of the platform and of the smart city cluster which will be supported by the LEP.

Part 2: Strategic Case

8) Explain how the project will contribute to the aims and objectives of Thames Valley Berkshire's Strategic Economic Plan (SEP) and other LEP strategies or priorities.

The scheme fully aligns with the SEP objectives as set out below:

People

a) **Use better those who are already in the workforce**. Through delivering a 'Smart towns cluster' environment for business and residents, there will be opportunities for employees of the businesses directly engaged in the project to upskill as we have seen in the main project. Within TVB Smart City Cluster authorities we have seen an increased awareness and understanding of the smart cities approach through having a project that is developing this area and this is helping to upskill the workforce and this awareness raising is part of the activities that will be undertaken by the new authorities. Also, the general awareness raising from living and working in a smart environment can help the workforce understand the potential of technology and inspire them to achieve more.

b) **Inspire the next generation and build aspirations and ambition.** Through delivering a smart environment for our younger generations and helping business to remain at the leading edge, the scheme will help to inspire the next generation who are coming into the labour market to stay in the TVB area. The scheme will deliver a platform for new business start-ups in IoT. IoT creates big data opportunities where there are excellent opportunities for the younger generations to become involved in developing mobile and web services as costs to enter the market are very low. Once available, big data can also be used by the academic community in projects and teaching, and the wider smart environment will provide scope for local teaching project activities. The current project is agreeing a student engagement programme, using a small part of the funding, which Slough and RBWM will be able to join.

c) **Ensure that economic potential is not restricted by labour supply issues**. By helping to make the TVB towns a truly smart city environment we will not only retain existing skills but will attract the additional skills needed to truly exploit the maximum economic potential of the area.

Ideas

d) **Ensure that knowledge is effectively commercialised and grown within Thames Valley Berkshire.** The current TVB Smart City Cluster project has directly funded Berkshire businesses to tackle smart city challenges which are showing promising progress and are all on track to complete by the end of the project, although currently delayed due to COVID 19. In doing so, this is commercialising knowledge and has led to direct upskilling and recruitment in most of the funded enterprises and in the LoRa installers. This extension does not include direct funding for business to develop on the platform, as this is not feasible within the funding timescale, but does create the opportunity with the LEP's commitment to supporting innovation clearly visible by the deployment of the network. There is a very strong IoT community with monthly meetings in the Thames Valley which has been keen to engage with the project and for which this extension will provide further scale and coverage to be one of the leading LoRa networks in the UK providing commercialisation opportunities at scale.

We see that we are on the edge of a big data revolution which will have a disruptive impact on our lives and this project is about putting all of Berkshire at the forefront of these changes and hence acting as a catalyst for much wider innovation in Berkshire.

e) **Strengthen networks and invest in the 'soft wiring' to use ideas better**. The scheme will improve links across Berkshire bringing Slough and RBWM into the project. Firstly, it will improve links at a local authority and business level with cross working between the authorities in the delivery of the scheme. The success of this has already been seen with the working together of the four authorities in the current project and this will give Slough and RBWM a seat at the table. Secondly, it will strengthen virtual links through a shared IoT network covering the region providing many

9) Which other local and national strategies will the project contribute to and how?

Berkshire Local Industrial Strategy (BLIS)

The BLIS, locally approved on 24th October 2019, sets out TVB LEP's response to the Government's requirement for all LEP's and combined authorities in England to develop a Local Industrial Strategy (LIS).

This project extension supports the BLIS in enabling the better use of digital technologies, through providing IoT communications infrastructure for all to use and also raising the profile of the smart city agenda across the Berkshire authorities.

Specifically, the BLIS aligns with all six local industrial strategies across the Greater South East in a number of areas of "*use digital technologies better, not least to reduce the pressures of congestion*" (Infrastructure)" (BLIS p7), where the LoRa network provides the opportunity for IoT innovation around sustainable transport across Berkshire, and also in directly reducing the network operation costs which benefit network management.

The BLIS sets out what Berkshire will do in section 10, Infrastructure. Section A: Securing a world class digital infrastructure and digital solutions identifies:

> *"Excellent digital infrastructure is vital both for the 'everyday' economy and for TVB's position as the UK's leading concentration of tech employment, much of which is internationally driven. Prioritising investment in our digital infrastructure will help to secure TVB's – and the UK's – competitiveness. It will reduce the need to travel, easing congestion and contributing to a reduction in carbon emissions.*
>
> *Traditional investment is very unlikely to solve congestion and as a result, economic growth is unlikely to be sustained through it. The LEP has recognised the importance of investing in and encouraging innovative, technological solutions and will continue to do so.*
> *With a world-class concentration of 'digital' businesses, we want to ensure that we have the world-class infrastructure that will underpin our long-term sustainability. We will put in place a Digital Infrastructure Group (DIG) to drive this forward, acting as TVB's 'Digital Champion' and 'Digital Infrastructure Co-ordinator'; this will result in more and better digital solutions to solve infrastructure/connectivity issues" (*page 34). This extension of the LoRa network directly aligns with the provision of this infrastructure and there is a representative of the DIG on the Smart City Cluster steering group. It supports the delivery of the overarching priority, "Enhancing productivity within Berkshire enterprises *…by accelerating the adoption of digital technologies (INFRASTRUCTURE Action A)" – (*page 36).

10) Provide evidence of need or demand for the project. This could include:

- A description of the potential size and characteristics of the market that this project is targeting.
- Evidence of successes and benefits from similar projects elsewhere, including evidence on demand or usage from businesses/households.
- Evidence of local demand or interest in the project from potential users or beneficiaries.

- Evidence of barriers or socio-economic challenges that this project will help to address

In proposing this project we are recognising the need for the TVB towns, already a focus of high tech industry, to be smart and to be world leaders in smart cities and in doing so maximise the opportunities of the tech industry at a local level to deliver enhanced citizen services. At a speech delivered at the New Year reception for the All-Party Parliamentary Group (APPG) on smart cities at the House of Commons The Rt Hon Greg Hands MP (Department of International Trade) emphasised the importance of the UK being at the forefront of smart cities. He said that *"Bristol and Milton Keynes are internationally recognised as leaders in smart city technology. They are making use of sensors to monitor air pollution levels, energy usage, water consumption, and even living patterns at home to detect early signs of illness."* In the context of the *"golden opportunity to use technology to enhance economic development, sustainability and quality of life for people in urban environments from Manchester to Mumbai"* he said that *"The UK will seize this opportunity and this government will pull out all the stops to ensure British business leads the way in making the cities of the UK and the world smarter."*. Hence the need is clear and this project is an important step to Thames Valley Berkshire being a leader in this area.

Part 3: Economic Case

11) Provide details of which options have been considered as part of the project by completing the table(s) below (please add additional tables as necessary)

As a minimum, this should include a 'do nothing' option so that the impacts of the project can be considered against a reference case. However, you are also encouraged to describe the other credible options which might contribute to project objectives (eg a more/less ambitious project or a project which tries to solve the same problem in a different way).

Option A – Do Nothing	
Brief Description: *Describe the option in 30 words.*	No investment in extending the LoRaWAN network to Slough and RBWM
Main advantages: *Use bullet points to summarise the main advantages of this option.*	• Does not cost any money • Ensures that any smart city development is fully commercially delivered

Main disadvantages: *Use bullet points to summarise the main disadvantages of this option.*	• Slough and RBWM would not be able to benefit from the smart city developments in the other 4 authorities and it will be more difficult to secure additional funding to develop the smart city cluster in Berkshire without a common platform across all authorities. • We will not be providing the best environment for our existing high-tech businesses right across Berkshire, to lead the way in delivering world class products and services. • We will not be providing the vibrant economy for new start-up enterprises right across the LEP area, which will be an important part of the future economy. Countries such as China have invested heavily in LoRa wide area networks and there is an expectation with new trade deals following Brexit that we will be growing our trade outside of Europe. • We will not enable all authorities across Berkshire to take advantage of more cost-effective methods of managing transport, health and the environment, providing longer term reductions to our revenue funding.
Impact on costs: *Use bullet points to summarise the impact on costs of this option*	• Zero cost
Impact on outputs: *Use bullet points to summarise the impact on project outputs of this option*	• Zero outputs
Impact on outcomes: *Use bullet points to summarise the impact on project outputs of this option*	• Zero outcomes
Overall risk of this option (H/M/L): *Describe the risks and constraints associated with this option, and rate the option.*	• Zero project risk as not delivered
Reasons for rejection: *Summarise the reasons for rejecting this option in favour of your preferred option*	• Strong belief that TVB councils can have a strong enabling role in developing TVB as a smart city cluster and this should be strengthened by extending the project to include Slough and RBWM. This has the potential to lead to wider benefits and inward investment as has been seen in cities such as Bristol, Barcelona and Amsterdam.

OPTION B – Extension of full Smart City Cluster Project to Slough and RBWM	

Brief Description:
Describe the option in 30 words.
	• Extension of the full smart city cluster project including:
	  ○ Extension of the LoRaWAN network as per this application
	  ○ Extension of the challenge call development workshops and challenge calls to run specific smart city projects in Slough and RBWM.

Main advantages: *Use bullet points to summarise the main advantages of this option.*	• Will provide a high level of LoRa coverage over Slough and RBWM resulting in a Berkshire wide communications platform to build on as current application. • Can be delivered efficiently as an extension to the existing with an experienced project team as current application. • Will directly raise the profile of smart cities across the two authorities through the workshop process of developing challenges. • Will demonstrate the benefits of smart cities directly through delivering smart city pilots within the authority areas to meet real challenges developed by them. • Will directly stimulate development of IoT through grant funding 2 to 4 projects.
Main disadvantages: *Use bullet points to summarise the main disadvantages of this option.*	• Tight funding deadline for all spend to be completed by end of March 2021 means that it would not be practicable to deliver the challenges. • It would have been a higher cost bid that may not have aligned with available funding.
Impact on costs: *Use bullet points to summarise the impact on costs of this option*	• Would have been around double the cost if each authority ran two challenges.
Impact on outputs: *Use bullet points to summarise the impact on project outputs of this option*	• Would have delivered additional outputs in the form of IoT pilots (2 per authority)
Impact on outcomes: *Use bullet points to summarise the impact on project outputs of this option*	• Would have a greater potential to raise the likelihood of Slough and RBWM increasing investment in smart cities due to effective demonstrators and engagement. • Would have helped raise the profile of the commitment to the LoRaWAN network in Slough and RBWM.
Overall risk of this option (H/M/L): *Describe the risks and constraints associated with this option, and rate the option.*	• Main risk was a high risk of not delivering the challenge fund element within the timeframe.
Reasons for rejection: *Summarise the reasons for rejecting this option in favour of your preferred option*	• Timeframe within which this funding allocation has to be spent.

12) Explain how the project will generate or contribute to increased economic activity (as measured by Gross Value Added (GVA) and employment), and estimate the scale of these benefits.

This should be based on the main economic outcomes that the project is expected to generate (identified in Part 1). The answer should distinguish between:

- *Direct impacts: those which are generated as a direct result of the project activities*
- *Wider programme impacts: those which are generated as a result of the wider programme activities (see Question 1)*
- *Indirect and longer term impacts: those generated through other activities beyond the scope of the project or programme (see Question 6). If these are included, you should explain how these other activities are facilitated by the project, whether and how they will be encouraged or supported, and how much additional public funding they would require.*

The assumptions for how economic impacts have been calculated must be clearly stated and sources provided. The answer should also identify the main areas of uncertainty in the calculations and carry out a sensitivity analysis if required.

The additionality of the economic benefits to GVA relate to the following:

1. From the supply and installation of the equipment directly funded through this scheme bid. This is the direct £283,620 plus £12,240 of local contribution spend on the supply and installation of equipment and supporting system integration, data management and consultancy services. Procurement and deployment of the infrastructure has been assumed to have no direct impact on number of employees although, except for the supply of the LoRa units, work will be undertaken by Berkshire based firms. The existing project has enabled the LoRa installers to train up 2 additional employees which will provide the capacity to deliver this project.

2. From additional funding secured off the back of this award by the local authorities or others. The funding of the smart city cluster project had a direct benefit to the formation of the bid team and successful bid to ADEPT for £4.75m for the Thames Valley Live Lab project. A Berkshire wide LoRa network and joined up cluster will strengthen the opportunities to bid and secure major funding.

3. This project encourages and enables growth in IoT products and services from start-ups and businesses in the Thames Valley area and is seen as a regional catalyst to encourage business. With the project extending to Slough and RBWM it encompasses all six Berkshire authorities and the smart industries that are distributed across these authorities. The benefit of the investment in terms of these matrices is in the opportunity for the private sector to use the network to develop new business ideas and grow into the market. According to Ofcom the number of IoT connections in the UK in key sectors are predicted to grow from around 13m in 2016 to over 150m by 2024 which would average to about 35% growth year on year. Looking across a variety of global growth figures for IoT, annual growth in IoT connections seems to vary from a conservative 10% (IoT Analytics research 2018) to around 30% (I-property management) up to the Ofcom predictions. This strong growth provides a large marketplace for Berkshire companies to expand into. The current project, through investment in challenges to develop IoT solutions, has led directly to 15 new jobs being generated prior to the launch of a LoRa network. In estimating the potential of the growth in jobs through this investment we have assumed that a number of businesses will look to use the platform to develop new products and services. We expect job growth in Slough and RBWM to grow faster than the global average of the market as business make the most of the new opportunities. NOMIS data shows that jobs in Information and Communication, which is related to the tech sector, are 7.1% of the workforce in Slough and 10.6% of the workforce in RBWM which is substantially higher than the 4.3% national average. It should be noted that the overall increase in the number of jobs to give a good return on investment is not significant in the context of the size of the Berkshire workforce. We show 20 jobs in the year after the completion of the network doubling year on year to 2023 with 80 employees. There is strong interest in IoT in Berkshire and the Thames Valley IoT meet up group has around 1,800 registered members, which gives a scale of the interest in IoT locally and we will continue to keep this group informed on the deployment of LoRa. From direct engagement with this group through the current project it is clear that there are a large number of interested parties in this space in Berkshire with a lot of potential to grow with the right products for the market. In addition, there is strong educational and academic interest in this project which can also help generate new business through education and collaboration.

4. IoT is a rapidly expanding sector and Gartner identifies that by 2020 more than half of major new business processes and systems will incorporate some element of the internet of things. McKinsey estimates the total IoT market size in 2015 was up to $900m and this will grow to $3.7bn in 2020. The value of Smart Cities to the UK is projected to be about £30.7 Billion per annum by 2020 which is 10% of the global market with future growth beyond that. Nomis data identifies that Slough and RBWM have approximately 0.8% of the jobs in the Information and Communication sector with total numbers in the tech sector being higher as there will be people recorded in manufacturing and Professional, scientific and technical activities. Hence, we could expect around 1% of the £30.7bn which is £30.7m per annum to be captured in the area. This is an underestimate as the data only relates to 2020 and it assumes that the Thames Valley doesn't increase the market share as against other areas. If just 80 jobs at an average salary of £35k are created due to the project this would have a value of £2.8m, a substantial return on a £286k investment and only a small proportion of the expected growth in the area that this project will facilitate.

5. Whilst the precise benefits of the investment to GVA are very difficult to predict the example of

13) Complete the following table with the expected outputs from this project. Please state whether the outputs are direct or indirect. If indirect, explain how the project is enabling

		Indirect or Direct	2020 / 21	2021/22	2022/23	2023/24	Later
Houses (units)	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector						
	Total						
Jobs	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector	Indirect		20	40	80	
	Total			20	40	80	
Employment floor space (sq m)	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector						
	Total						
Businesses created	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector – start -ups			2	4	8	
	Total						
Business assists	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector						
	Total						
Number of enterprises assisted to cooperate with research entities/institutions	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector						
	Total						
Other (please specify)	LGF/Growth Deal						
	Other public sector (specify ESIF, etc.)						
	Private sector						
	Total						

14) Describe the extent to which the economic benefits calculated would be additional to the Thames Valley Berkshire LEP area, with reference to:

- Leakage effects: the extent to which GVA or jobs impacts take place outside of the LEP area
- Deadweight effects: the extent to which these impacts would have occurred anyway without the intervention (please refer to the do-nothing scenario)
- Displacement effects: the extent to which increased jobs and GVA in one location or among one group of beneficiaries results in lower jobs or GVA elsewhere in the study area or for other groups.
- Multiplier effects: the extent to which the rise in GDP or jobs could be multiplied by increased business or consumer spending.

The additionality of the economic benefits relate to the following:

1) From the supply and installation of the equipment directly funded through this scheme bid for which we would expect:
    - Around 50% of the cost will be directly on equipment which will be tendered and is likely, to the most part, be manufactured outside of the TVB area although may be supplied by local business.
    - The other 50% relates to system integration and installation which will be delivered by companies both inside and outside of TVB.
    - This investment would not happen without the funding.

2) From additional funding secured off the back of this funding, such as ADEPT being secured with the existing project being a major part.

3) From the wider products and services developed by companies who will use the LoRaWAN platform

4) From the wider benefits of inward investment into a smart city cluster generated by the project and its promotion both nationally and internationally. Slough and RBWM will benefit from the promotion of the existing smart city cluster project.
    - It has been assumed that this benefit relates to the TVB area and there may be wider benefits beyond this.

In relation to the deadweight effects, what is clear is that where cities are actively investing in smart cities, these are the ones that are taking the lead and that there are not any smart cities driven purely by commercial interests. For example, we understand from speaking to Cambridge Smart City team that a private investment by Arquiva in Cambridge in an LPWAN network resulted in very little interest, a more recent investment by Cambridge in a LPWAN network as part of a Cambridge led smart city initiative has seen a marked level of interest. It may also be that the high-tech industry in TVB is already capturing the IoT market and that the uplift in jobs predicted may involve some double counting. However, even if this is the case there is a strong need to capture these benefits at a local level for citizens, employees and the Local Authorities which this investment will help deliver.

Considering displacement, any productivity benefits generated by the project (eg through improved network management) would not be at the expense of any other areas. Innovation benefits would allow the smart city cluster to capture a share of a growing market and to compete more efficiently with places like Bristol, Cambridge and other tech cities. Therefore, displacement within the smart city cluster is likely to be low.

Considering the multiplier affect we would expect the increased level of business start-ups and inward investment to lead to additional benefits through supply chain expenditure and the expenditure of employees in the local area. We cannot come up with any robust estimates of the scale of these benefits, but the HCA additionality guide suggests a multiplier of around 1.25 for business competitiveness interventions.

15) Explain how the project will generate or contribute to social and/or environmental benefits and how these benefits can be quantified.

This should focus on the main social and environmental outcomes of the project (identified in Part 1). Again, you should distinguish between direct impacts, wider project impacts and indirect impacts. Please provide an estimate of the expected level of change in the relevant

outcome indicator that could be attributed to the project, and how this has been calculated, including all assumptions and evidence sources.

The direct impacts of the project are through the provision of a low powered communication network which enables very energy efficient communication.

The wider impacts will be dependent on how the network is used. However, the current smart city cluster project is demonstrating LoRaWAN based technologies to reduce car dependence for school trips, is facilitating smart socket deployment that can substantially reduce energy usage in offices, and is demonstrating in home low cost energy usage and temperature monitoring technologies that can help people reduce energy usage and heat homes more efficiently. The potential for IoT technologies to reduce environmental impacts in cost effective way is substantial.

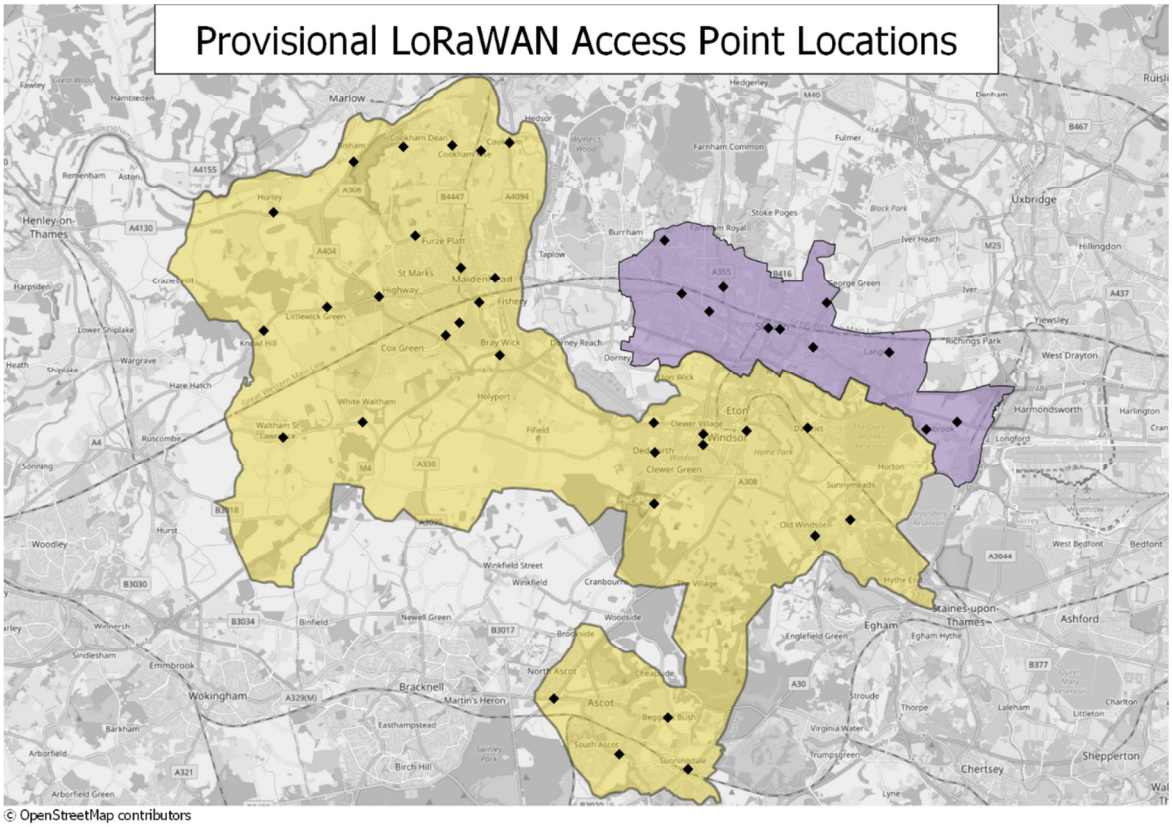
Part 4: Commercial Case

16) Provide a description of the goods and services that will need to be procured as part of the project

The following goods and services will be procured:

1) Supply of LoRa Access Gateways - 42 gatways to be installed on buildings, tall poles and traffic signal infrastructure
2) Tall poles – 12m tall poles to be installed in public highway for mounting of access points
3) Ancilliary equipment such as cabling, connection boxes etc
4) Configurator for the units
5) Installation
6) Signal interface software

Local Authority	Number of WPWAN access points (site surveys may lead to slight changes in these numbers)
Slough Borough Council	11
Royal Borough of Windsor and Maidenhead	31



17) Provide details of the procurement process for the project, and explain how the project will comply with public procurement requirements.

1) All procurement procedures to comply with public procurement requirements have already been agreed through the current TVB smart city cluster project:

- **LoRa access gateways** – will be procured through a competitive quoting process between key suppliers. This will be the same process as agreed for the LoRa access gateway procurement in the current TVB smart city cluster project and hence documentation will only require minor amendments to reflect quantities and dates.
- **Tall Poles** – will be procured through existing supply contract.
- **Ancillary Equipment** – low cost procurement.
- **Installation and configuration** – will be procurement through existing supply contract.
- **Signal Interface Software** – direct award as value low.

18) Please indicate how your project complies with the necessary regulations and requirements with regard to:

- State aid
- Legal issues, eg lease agreements, evidence of freehold and/or Memorandum of Understanding
- Planning or other consents
- Other (please specify)

The project fully complies with state aid, legal issues, planning and other consents. The key considerations are:

1) **State aid** – we will be openly procuring the major investments in accordance with the relevant LA procurement guidance and hence state aid is not applicable.
2) **Legal Issues** – Not applicable as all procurement and contractual agreements associated with the procurements are in place from the original project.
3) **Planning or other consents**. It is proposed that the majority of the equipment purchased through this project will be located on public highway, local authority land or within local authority assets and hence we do not anticipate any planning issues. Given programme constraints we will actively choose locations to install that avoid planning consents that could cause delay.

Part 5: Financial Case

19) Provide a summary of the required project funding in the table below

Project funding summary	Capital (£)	Revenue (£)	Total (£)	Status of funding (other than LGF - confirmed, pending)
LGF	283,620		283,620	
Private and/or voluntary sectors				
Public sector	12,040	59,000	71,040	
Total project cost	295,660	59,000	354,660	

20) Summarise the expected project capital and revenue costs

Costs (000's)	Total	2020/21	2021/22	2022/23	2023/24	Future years
Capital expenditure (Capex)						
Supply LoRa Access units		92				
Configuration / installation / including new poles / comms etc		100				
Signal Interface development		35				
Project Management and LA Staff Support		76				
Things Network instance		20				
Contingency		32				
Total capital expenditure		355				
Operational (revenue) expenditure (Opex)						
(Opex item)						
(Opex item)						
Total revenue Expenditure						
Total expenditure		355				

21) Explain the source and evidence for the costs set out above. Please provide a separate cost plan and cashflow and any other relevant supporting information eg business plan and/or financial analysis

Costings have been undertaken based on a preliminary design (attached) which is based on the direct experience from the current TVB smart city cluster project both in terms of pricing of equipment, installation, configuration etc and in terms of number of units required to provide a reasonable coverage. A contingency allowance has been included to allow for risk of price changes.

Funding the ongoing revenue costs of the platform. The following case was made for the current project and benefits are expected to similarly apply to the two new authorities, particularly as adding the two authorities will be a marginal cost to the system being set up to monitor and maintain the system.

- There is a clear revenue funding model for the LoRa platform as it will more than pay for itself through direct revenue savings to the Local Authorities. The LoRa platform will be delivered through RBC's network management team who are responsible for operating the traffic signals across the authorities. This includes around 600 traffic signal installations of which RBC believe around half could be switched from broadband lines to LoRa (junctions operating under SCOOT Urban Traffic Control cannot be switched to LoRa as they require higher band widths but all crossings, MOVA controlled junctions and other standalone junctions can be switched). The current revenue spend on these alone is approximately £150,000 per annum in communications costs. In addition, transport systems such as variable messages signs, Bluetooth journey time monitoring, bus shelter displays can also be switched (for Reading alone the current communications costs for these are around £25,000 per annum). Other systems such as highway pumping alerts, highway flood monitoring etc. all have communications which could be replaced by LoRa and provide further savings.

- Set against these annual revenue savings are the annual revenue costs of maintaining the system including maintaining the on-street access points and the back office software. Maintenance of the access points will be included in the Berkshire traffic signals maintenance contract and, with a lot of the equipment sitting on traffic signal equipment, we expect this to be low cost. The Reading WiMAX network has a similar number of nodes and is maintained as a stand-alone system for £28k per annum. This can be seen as a very much worst case maintenance cost. Responsibility for the system operation will be with RBC staff however we see that some external maintenance support will be required for the website which will manage access to the LoRa network. We estimate that this will be in the order of £30k per annum. In addition, maintenance of the core data platform is likely to be around £20k per annum.

- Overall, we have a revenue operating cost of conservatively about £80k per annum against savings of around £150k per annum just based on existing traffic signal control equipment and with much wider potential for Local Authority savings. Hence the ongoing operation of the platform will become a core element of delivering core local authority services at a reduced cost. It is this that ensures the ongoing provision of the communications platform as a base for the wider project.

The direct cost savings are only a small amount of the potential benefits. These benefits to the growth opportunities for enterprises will deliver a strong cost benefit. ONS data for 2008 shows a GVA of approximately £106,000 per annum per employee in the TVB area and hence, if only 7 jobs were created at the end of a five-year period this would equate to a benefit to cost ratio (BCR) of over 2.

22) Outline the expected funding profile by individual sources, including the amount of LGF support requested.

Funding (£000s)	Total	2020/21	2021/22	2022/23	2023/24	Future years
Capital funding						
(LGF)		283,620				
(Project income)						
(Other public sector RBC, SBC, RBWM) secured		12,040				
(Other public sector)						
(Other private sector)						
Total capital funding		295,660				
Revenue funding						
(LGF)						
(Project income)						
(Other public sector, RBC, SBC,RBWM) secured		59,000				
(Other private sector)						
(Other forms of funding)						
Total revenue funding		59,000				
Total funding		354,660				

23) How will the project ensure that private sector investment is maximised?

Private sector investment will be maximised through the following:

1) Providing a smart city cluster wide smart city platform which is an enabler to business innovation with associated publicity once installed building on the current TVB Smart City Cluster project publicity.

24) Explain why public funding, and in particular LGF support, is necessary, for example, due to a funding gap. Why is this the minimum level of LGF support required? What other funding sources have been explored?

In order to develop a smart city there needs to be a bringing together of public sector, private sector and citizens and a breaking down of barriers between the different silos within Government to deliver the maximum potential. Hence there is a key role for local authorities to take a lead and enable smart city development.

Current Government funding sources have not provided the necessary funding for smart city development.

The LGF funding identified will extend the LoRaWAN network to encompass all of Berkshire which is the minimum delivery required to move the smart city cluster forward.

Other funding sources have been and are continuing to be explored including Innovate UK funding, private sector funding, other Government funding around energy schemes, environment, and transport. However, these are not alternatives to the LGF funding, but are instead, additional funds which will enable the overall development of a smart city cluster. For example, the £5.5m ADEPT project spend has to be focused on innovation but does not have scope to deploy a communications network for example which is usually the nature of innovation funding. By providing this network across a wider geographical area we increase our ability to secure funding for projects that innovate on the platform.

25) Explain what arrangements have been made to secure the required level of match funding (if applicable). Please provide the name of the organisation providing the match, together with evidence such as a letter of resolution confirming availability of funding.

Specific match funding has been agreed with the Local Authorities engaged prior to the original application being submitted.

26) Please demonstrate that there is sufficient capability to meet the financial requirements and liabilities that flow from receipt of LGF support (eg to fund cashflow ahead of grant and to meet any cost overruns)

RBC as lead authority are familiar with the LGF funding process and can confirm that they have sufficient capability to meet the financial requirements associated with cashflow ahead of grant allocation.

Part 6: Management Case

27) Summarise the project governance and management arrangements, including the organisation and management structure for the project and key roles and responsibilities.

RBC will be lead authority with Simon Beasley as the lead officer and will be supported by Stantec in managing and reporting on the project as this is an extension to the current project.

The current TVB smart city cluster steering committee of local authorities will be extended to include lead officers from RBWM and Slough and will continue to be chaired by RBC. Progress reports will be produced by each authority in advance of the steering committee meetings as a basis for discussion. Face to face meetings will be quarterly with monthly meetings either face to face or via Skype / Teams call depending on project requirements.

28) Outline the indicative timescales for the key project milestones in the table below. Please also provide a Gantt Chart setting out the detailed project activities and timescales.

Milestone activity	Timescales
Funding Approvals	4th June 2020
Start date – date from which eligible expenditure will be incurred	8th June 2020
Procurement of LoRa Units	15th June 2020
Order of Tall poles	22nd June 2020
Planning Lora Deployment and agreements	15th June 2020
Delivery of Lora Units	10th August 2020
Delivery of Tall poles	7th September 2020
Installation and testing	17th August 2020
Work complete	25th January 2021
Final financial claim date	1st March 2021 (for time up to 5th February)
Proposed project completion date – date by which outputs/outcomes will be achieved	5th February 2021

29) For each of the key risks identified in the risk register, provide details of the risk mitigation and management measures. Please also attach a full risk register

Risk Category	Likelihood of risk (H/M/L)	Risk Mitigation / Management	Action Owner
Delays / cost of procurement of Kit	L	As a project extension risks here are low as we are just extending existing processes and procedures	RBC
Approvals for installation	L	We have designed the system to avoid extended approvals that could cause delay	RBC
Configuration / Installation delays	L	Minimised through using experienced team with existing installation procedures in place.	RBC

COVID 19	M	Key suppliers operating and installers have procedures for COVID19 and have not stopped work. Exception is the installers of the tall poles however we would anticipate that we will be sufficiently out of lock down in the timeframe for this not to delay the project.	RBC

Supporting Information

In addition to completing the above, please also provide the following, where relevant:

- Title
- Planning consent certificate
- State aid opinion
- Evidence of matched funding
- Land/building valuation
- **Cost plan – Annex 3**
- Design information (photo of existing building, plans of proposals, elevations images)
- Development appraisals
- Market demand report
- Business Plan (if appropriate)
- **Gantt Chart – Annex 2**
- **Organisation chart – Annex 4**
- Job descriptions
- Procurement policies
- Service level agreements
- **Risk register – Annex 1**
- Financial information about the applicant

Please also provide any additional information that you consider is relevant to your application.

Declaration

Declaration:	**I certify that the information provided in this application form is complete and, to the best of my knowledge, accurate.** **I acknowledge that the TVB LEP may seek to verify the information set out herein and agree to provide further information where it is available.** **I acknowledge that any funding agreement reached with the LEP is provisional until approved by the TVB LEP and confirmed in writing.**
Signature:	[*To Follow*]
Print Name:	Simon Beasley
Date:	
Position:	Network Manager
Organisation/ Company:	Reading Borough Council

Annex 1 - Risk Register

Risk	Likelihood (H / M / L)	Severity (H / M / L)	Mitigating actions
Delays to procurement of LoRa units	L	H	Given the tight programme, delays to procurement and hence delivery of equipment will be critical. Low risk as we will use the same specification and approved procurement approach as for the previous purchase. Will modify slightly to better cover suppliers that are importing from abroad to avoid any potential customs delays.
Delay to manufacture / delivery of LoRa units	L	H	Specification will require commitment to deliver by a certain date. We did not experience this as a problem in the last procurement.
Technical issues associated with compatibility / reliability of procured LoRa units	L	M	Agreed procurement approach is based on quotes from reputable suppliers to minimise any risks of compatibility issues.
Difficulty / delays securing approval to locate LoRa units on tall buildings	M	L	Given the impact of the difficulty in securing approval to use tall buildings in the current project, provisional design avoids using tall buildings. We will look to secure tall buildings and if tall buildings are secured then we will use spare units to build resilience and more robust coverage in other areas across all 6 authorities.
Long lead in times for tall poles for installation along highway	L	M	Lead in times are long but well understood and early ordering will be undertaken.

Availability of resource to configure and to install the LoRa units	M	M	Team of trained installers from existing project – will programme in early once funding is secured. Much greater certainty than in current project over procurement and delivery timescales will enable this.
Reliance on key staff	M	L	Resilience within management and implementation staff organisations to minimise risk of delay due, for example, illness. LoRa configuration is undertaken by a key individual but there are others in the Reading LoRa community that could be appointed to cover this role.
Unforeseen weather events	M	M	Events such as high winds or snow could affect installation programmes. Contingency built into the programme.
COVID19 – delays to supply and installation	M	M	Key suppliers operating and installers have procedures for COVID19 and have not stopped work. Exception is the installers of the tall poles however we would anticipate that we will be sufficiently out of lock down in the timeframe for this not to delay the project.

Annex 2 – Programme

June 2020
July
August
September
October
November
December
January 2021
Feb
Mar
w/c
1st
8th
15th
22nd
29th
6th
13th
20th
27th
3rd
10th
17th
24th
31st
7th
14th
21st
28th
5th
12th
19th
26th
2nd
9th
16th
23rd
30th
7th
14th
21st
28th
4th
11th
18th
25th
1st
8th
15th
22nd
1st
8th
15th
22nd
29th
Award
Procurement of LoRa Units (ITQ)
Order of tall poles
Planning LoRa deployment & agreements
Delivery of LoRa Units
Delivery of tall poles
Installation & testing
Completion of deployment
Contingency for delays

Annex 3 – Detailed Cost Breakdown

Item	Cost
LoraWAN Installation and Commissioning	£19,280
LoraWan Unit Cost – (42units)	£91,560
Installation of 12m pole for LoraWan Network	£77,615
Expansion of the TVB Smart City Cluster “things network” instance	£19,560
Unit development cost	£22,000
Backhaul Communication Cost -Sim Cards	£5,040
LA support to install locations and approvals in public highway - in time contribution	£59,000
Project Management and Design support	£28,395
Total	**£322,450**
Contingency (10%)	£32,210
Grand Total	**£354,660**